CLACKAMAS COUNTY

DAN JOHNSON
DIRECTOR

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

Board of County Commissioners
Clackamas County

Members of the Board:

Approval of a Contract with Carter & Company, Inc., for the Canby Marquam Highway: Bear Creek Bridge Project: Total Contract Value: $1,711,843.60, State Funded Local Project Program funds: $1,536,037.26 and County Road funds: $175,806.34. No General Funds.

Purpose/Outcome	The contract will construct a new bridge over Bear Creek on Canby Marquam Highway.
Dollar Amount and Fiscal Impact	Contract Value: $1,711,843.60
Funding Source	State Funded Local Project Program funds: $1,536,037.26 County Road funds: $175,806.34
Duration	Contract Execution through April 30, 2023.
Previous Board Action/Review	04/05/22: Discussion item at issues 03/21/19: BCC approval of a Local Agency Agreement No. 33216 with Oregon Department of Transportation for the Canby Marquam Hwy: Bear Creek Bridge #06027. 10/17/19: BCC approval of a personal services contract with David Evans and Associates, Inc. for the Canby Marquam Hwy: Bear Creek Bridge.
Strategic Plan Alignment	-This item supports the DTD Strategic Focus on Safe Roads and Strategic Result of "Travelers on Clackamas County roads will experience roads in good condition." -This item aligns with "Build a Strong Infrastructure" by replacing a functionally obsolete and structurally deficient bridge.
Counsel Review	Counsel Date: March 22, 2022 Counsel Initials: AN
Procurement Review	Was this project processed through Procurement? Yes.
Contact Person	Joel Howie, Civil Engineering Supervisor 503-742-4658
Contract No.	5240

Background:
The County obtained federal Highway Bridge Program funds from the Oregon Department of Transportation (ODOT) Local Bridge Program to replace the existing bridge over Bear Creek on Canby Marquam Highway. The existing bridge, built in 1960, is showing signs of decay as a result of heavy truck traffic. The bridge is considered functionally obsolete (narrow) and structurally deficient, with a sufficiency rating of 27.2 out of 100. The bridge is composed of undersized timber members that have shear and flexure damage, which were temporary repaired until the bridge can be

replaced. The asphalt pavement wearing surface requires constant repair due to the bridge vibrating and shaking when trucks travel on the bridge.

The County requested to exchange the federal funds for state funds, which was approved by ODOT. The total cost of the project is estimated to be $2,620,547, with $2,076,172.74 in state exchange funds and $544,374.26 in County Road Funds. The County requested and additional $275,244 in state exchange funds from the ODOT Local Bridge Program, which would result in a total County Road Funds match of 10.27 percent. The construction phase costs are anticipated to be $2,040,247, which includes construction engineering and inspection services, and the remaining costs were related to design ($529,500) and right of way ($50,800). Construction is anticipated to begin in May of 2022 following contract signing and a preconstruction conference. The project is anticipated to take approximately 1 year to substantially complete and another 6 months for plant establishment.

Procurement Process:
This project was advertised in accordance with ORS and LCRB Rules on January 11, 2022. Bids were publicly opened on February 10, 2022. The County received four (4) bids: BENT LLC, $1,945,453.00; Oregon State Bridge Construction, $1,973,258.95; Carter & Company, Inc., $1,711,843.60; and Steller J Corporation, $1,974,376.21. After review of the bids, Carter & Company, Inc., was determined to be the lowest responsive bidder.

Recommendation:
Staff respectfully recommends that the Board approve and sign this public improvements contract with Carter & Company, Inc., for the Bear Creek Bridge Project.

Sincerely,

Joel Howie

Joel Howie,
Civil Engineering Supervisor

Placed on the BCC Agenda _____ by Procurement

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT
Contract #5240

This Public Improvement Contract (the "Contract"), is made by and between the Clackamas County, a political subdivision of the State of Oregon, hereinafter called "Owner," and **Carter & Company, Inc**, hereinafter called the "Contractor" (collectively the "Parties"), shall become effective on the date this Contract has been signed by all the Parties and all County approvals have been obtained, whichever is later.

Project Name: # BID# 2022-03 Canby Marquam Highway: Bear Creek Bridge

1. Contract Price, Contract Documents and Work.
The Contractor, in consideration of the sum of **One Million Seven Hundred Eleven Thousand Eight Hundred Forty-Three Dollars and Sixty Cents ($1,711,843.60)** (the "Contract Price"), to be paid to the Contractor by Owner in the manner and at the time hereinafter provided, and subject to the terms and conditions provided for in the Instructions to Bidders and other Contract Documents (as defined in the project specifications) referenced within the Instructions to Bidders), all of which are incorporated herein by reference, hereby agrees to perform all Work described and reasonably inferred from the Contract Documents. The Contract Price is the amount contemplated by the Base Bid as indicated in the accepted Bid.

Also, the following documents are incorporated by reference in this Contract and made a part hereof:

- Notice of Contract Opportunity
- Supplemental Instructions to Bidders
- Bid Form
- Performance Bond and Payment Bond
- Payroll and Certified Statement Form
- Addendum #1
- Instructions to Bidders
- Bid Bond
- Public Improvement Contract Form
- Prevailing Wage Rates
- Plans, Specifications and Drawings
- Geotechnical Report

The Plans, Specifications and Drawings expressly incorporated by reference into this Contract includes, but is not limited to, the Special Provisions for Highway Construction (the "Specifications"), together with the provisions of the Oregon Standard Specifications for Construction (2018) referenced therein.

The Contractor shall comply 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

2. Representatives.
Contractor has named Todd Carter 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 Joel Howie 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: Todd Carter shall be the Contractor's project executive, and will provide oversight and guidance throughout the project term.

Project Manager: Colby Fleck shall be the Contractor's project manager and will participate in all meetings throughout the project term.

Job Superintendent: Jeff Carter shall be the Contractor's on-site job superintendent throughout the project term.

Project Engineer: Alvaro Mendoza 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.
COMMENCEMENT DATE: Upon Issuance of Notice to Proceed ("NTP")
SUBSTANTIAL COMPLETION DATE: October 31, 2022
FINAL COMPLETION DATE: April 30, 2023 (See Special Provision 00180.50(h)(1) and (2)

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 and Required Performance and Payment Bonds.

5.1 In accordance with Section 00170.70 of the Specifications, Contractor shall furnish proof of the required insurance naming Clackamas County as an additional insured. Insurance certificates may be returned with the signed Contract or may be emailed to Procurement@clackamas.us.

5.2 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.

5.2.1 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.

5.3 Builder's Risk Insurance: 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.

5.4 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.

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

5.4.2 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.

5.5 "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).

5.6 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.

5.7 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.

5.8 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.

5.9 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.

6. Responsibility for Damages/Indemnity.

6.1 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.

6.2 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 6.1; (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 6.2.

6.3 In claims against any person or entity indemnified under Section 6.2 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 6.2 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.

7. Tax Compliance.

Contractor must, throughout the duration of this Contract and any extensions, comply with all tax laws of this state and all applicable tax laws of any political subdivision of this state. Any violation of this section shall constitute a material breach of this Contract. Further, any violation of Contractor's warranty in this Contract

that Contractor has complied with the tax laws of this state and the applicable tax laws of any political subdivision of this state also shall constitute a material breach of this Contract. Any violation 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, at law, or in equity, including but not limited to: (A) Termination of this Contract, in whole or in part; (B) Exercise of the right of setoff, and withholding of amounts otherwise due and owing to Contractor, in an amount equal to County's setoff right, without penalty; and (C) Initiation of an action or proceeding for damages, specific performance, declaratory or injunctive relief. County shall be entitled to recover any and all damages suffered as the result of Contractor's breach of this Contract, including but not limited to direct, indirect, incidental and consequential damages, costs of cure, and costs incurred in securing replacement performance. These remedies are cumulative to the extent the remedies are not inconsistent, and County may pursue any remedy or remedies singly, collectively, successively, or in any order whatsoever.

The Contractor represents and warrants that, for a period of no fewer than six calendar years preceding the effective date of this Contract, has faithfully complied with: (A) All tax laws of this state, including but not limited to ORS 305.620 and ORS chapters 316, 317, and 318; (B) Any tax provisions imposed by a political subdivision of this state that applied to Contractor, to Contractor's property, operations, receipts, or income, or to Contractor's performance of or compensation for any work performed by Contractor; (C) Any tax provisions imposed by a political subdivision of this state that applied to Contractor, or to goods, services, or property, whether tangible or intangible, provided by Contractor; and (D) Any rules, regulations, charter provisions, or ordinances that implemented or enforced any of the foregoing tax laws or provisions.

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. Liquidated Damages
The Contractor acknowledges that the Owner will sustain damages as a result of the Contractor's failure to substantially complete the Project in accordance with the Contract Documents. These damages may include,

but are not limited to delays in completion, use of the Project, and costs associated with Contract administration and use of temporary facilities.

11.1 Liquidated Damages shall be as follows if the actual Substantial Completion exceeds the required date of Substantial Completion:

11.1.1. $ 800.00 per Calendar day past the Substantial Completion date as identified in section 00180.85 (b).

12. 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.

13. Responsibility for Taxes. Contractor is solely responsible for payment of any federal, state, or local taxes required as a result of the Contract or the Work including, but not limited, to payment of the corporate activity tax imposed under enrolled HB 3427 (2019 Oregon regular legislative session). Contractor may not include its federal, state, or local tax obligations as part of the cost to perform the Work.

14. Escrow and Retainage. If retainage is withheld, unless the Contractor requests and the Owner accepts a form of retainage permitted under ORS 279C.560, the Owner 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.

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.

Signature page to follow.

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

Contractor DATA:
Carter & Company, Inc
4676 Commercial Street SE #203
Salem, Oregon 97302

Contractor CCB # 103592 Expiration Date: 12/16/2023
Oregon Business Registry # 428681-82 Entity Type: DBC State of Formation: Oregon

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.

Carter & Company, Inc

Authorized Signature Date

Matthew T. Carter, President
Name / Title Printed

Clackamas County

Chair Date

Recording Secretary

APPROVED AS TO FORM

03/22/2022
County Counsel Date

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT OPPORTUNITY

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CLACKAMAS COUNTY
NOTICE OF PUBLIC IMPROVEMENT CONTRACT OPPORTUNITY

INVITATION TO BID #2022-03
Canby Marquam Highway: Bear Creek Bridge
January 11, 2022

Clackamas County ("County") through its Board of County Commissioners is accepting sealed bids for the **Canby Marquam Highway: Bear Creek Bridge** Project until **February 10, 2022, 2:00 PM,** Pacific Time, ("Bid Closing") at the following location:

DELIVER BIDS TO: Clackamas County Procurement Division via email to procurement@clackamas.us.

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-C01010-000001725.
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.

Engineers Estimate: $1,485,000.000

Contact Information
Procurement Process and Technical Questions: Tralee Whitley at TWhitley@clackamas.us

Bids will be opened and publicly read aloud at the above Delivery address after the Bid Closing. Bid results will also be posted to the OregonBuys listing shortly after the opening.

To be eligible for award under this Invitation to Bid, bidders (prime contractors) must submit a prequalification application (either ODOT or County) to the County at least two business days prior to the Bid Closing. County will reject bids from bidders who are not prequalified for the class of work indicated prior to the Bid Closing. **Bidders must be prequalified in Bridges and Structures (REIN)**

State 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 1, 2022, which can be downloaded at the following web address: http://www.oregon.gov/boli/WHD/PWR/Pages/pwr_state.aspx The Work will take place in Clackamas County, Oregon.

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

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, 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 Architect (read "Engineer" throughout in lieu of Architect 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 Architect in the Project Manual, the Bidder may submit to the Architect 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 Architect may request.

To establish a basis of quality, certain processes, types of machinery and equipment or kinds of materials may be specified in the Project Manual either by description of process or by designating a

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

Any interpretation of the Project Manual or approval of manufacturer's material will be made only by an Addendum duly issued. All Addenda will be posted to the OregonBuys listing and will become a part of the Project Manual. 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 Architect approves a substitution by Addendum, it is with the understanding that the Contractor guarantees the substituted article or material to be equal or better than the one specified.

Article 4. 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 Procurement 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 Clackamas County Procurement 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.

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

SUPPLEMENTAL INSTRUCTIONS TO BIDDERS

Project Name: # BID# 2022-03

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. To be eligible for award under this Invitation to Bid, bidders (prime contractors) must submit a prequalification application (either ODOT or County) to the County at least two business days prior to the Bid Closing. County will reject bids from bidders who are not prequalified for the class of work indicated prior to the Bid Closing. **Bidders must be prequalified in Bridges and Structures (REIN)**

2. **Email of Bids -** 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, **February 10, 2022**. The Bid must be emailed to the following address: **Procurement@clackamas.us. The email subject line must read "Bid for #2022-03 Canby Marquam Highway: Bear Creek Bridge."** 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:

   ZOOM LINK
   Join Zoom Meeting
   https://clackamascounty.zoom.us/j/85322480194

   Meeting ID: 853 2248 0194
   One tap mobile
   +14086380968,,85322480194# US (San Jose) 16699006833,,85322480194# US +(San Jose)

   Dial by your location
   +1 408 638 0968 US (San Jose)
   +1 669 900 6833 US (San Jose)
   +1 253 215 8782 US (Tacoma)
   +1 346 248 7799 US (Houston)

+1 646 876 9923 US (New York)
+1 301 715 8592 US (Washington DC)
+1 312 626 6799 US (Chicago)
Meeting ID: 853 2248 0194
Find your local number: https://clackamascounty.zoom.us/u/kcnvsKlKzO

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

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 Procurement@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
PUBLIC IMPROVEMENT CONTRACT

BID BOND

Project Name: #2022-03 Canby Marquam Highway: Bear Creek Bridge

We, Carter & Company, Inc., as "Principal,"
(Name of Principal)

and Liberty Mutual Insurance Company, an Massachusetts 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 of 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.

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 18th day of January, 2022.

Principal: Carter & Company, Inc.

By: _____
Signature

_____
Official Capacity

Attest: _____
Corporation Secretary

Surety: Liberty Mutual Insurance Company

By: Attorney-In-Fact

Tracy Stewart
Tracy Stewart Name

1605 Liberty Street SE
Address

Salem, OR 97302
City State Zip

(503) 362-2711
Phone

tracy@agsadowski.com
Fax Email

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: **8200178-905038**

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Ty Moffett, A. G. Sadowski, Derek A. Sadowski, Tracy Stewart

all of the city of Salem state of Oregon each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 26th day of December, 2018.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 26th day of December, 2018 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 18th day of January, 2022.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

BID FORM

PROJECT: # BID 2022-03 Canby Marquam Highway: Bear Creek Bridge
BID CLOSING: February 10, 2022, 2:00 PM, Pacific Time
BID OPENING: February 10, 2022, 2:05 PM, Pacific Time

FROM: Carter & Company, Inc.
Bidder's Name (must be full legal name, not ABN/DBA)

TO: Clackamas County
Procurement Division – procurement@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

__X__c. A corporation organized under the laws of the State of Oregon; or

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

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

one million seven hundred ~~thousand~~ eleven thousand eight hundred fifty three dollars and sixty cents Dollars ($ 1,711,843.60)

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
- Prevailing Wage Rates
- Plans, Specifications and Drawings
- Supplemental Instructions to Bidders
- Bid Form
- Performance Bond and Payment Bond
- Payroll and Certified Statement Form

- ADDENDA numbered 1 through 1, inclusive *(fill in blanks)*

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

4. The work shall be completed within the time stipulated and specified in 00180.50(h) of the Special Provisions for **Canby Marquam Hwy: Bear Creek Bridge**

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 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:

Liberty Mutual Insurance Company.

(name of surety company - not insurance agency)

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

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

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

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

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

11. Contractor's CCB registration number is 103592. 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 SAIF Corp, Policy No. 515678-13, and that Contractor shall submit Certificates of Insurance as required.

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

Project Executive:	Todd Carter	Cell Phone:	503-749-1531
Project Manager:	Colby Fleck	Cell Phone:	503-749-5062
Job Superintendent:	Jeff Carter	Cell Phone:	503-949-1533
Project Engineer:	Alvaro Mendoza	Cell Phone:	503-779-4471

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: Carter & Company, Inc

ADDRESS: 4676 Commercial St. SE #203
Salem, OR 97302

TELEPHONE NO: (503) 371-4582

EMAIL: Carterbids@carter-co.com

SIGNATURE 1): N/A
Sole Individual

or 2): N/A
Partner

or 3):
Authorized Officer or Employee of Corporation

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

CANBY MARQUAM HWY: BEAR CREEK BRIDGE

ADDENDA #1 BID SCHEDULE

2/3/2022

ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
MISCELLANEOUS					
00196-9Z90000E	EXTRA WORK AS AUTHORIZED	LS	1	$50,000	$50,000
00196-9Z90000E	WORKPLACE HARASSMENT PREVENTION PROGRAM PLAN	LS	1	2000.00	2,000.00
TEMPORARY FEATURES AND APPURTENANCES					
0210-0100000A	MOBILIZATION	LS	1	150,000.00	150,000.00
0221-0100000A	TEMPORARY PROTECTION AND DIRECTION OF TRAFFIC	LS	1	23,119.93	23,119.93
0222-0102000J	TEMPORARY SIGNS	SQFT	685	18.00	12,330.00
0222-0164000E	PORTABLE CHANGEABLE MESSAGE SIGNS	EACH	4	10,000.00	40,000.00
0223-0168000T	FLAGGERS	HOUR	60	60.00	3,600.00
0224-0105000E	TEMPORARY BARRICADES, TYPE III	EACH	12	125.00	1,500.00
0225-0153000F	TEMPORARY STRIPING	FOOT	2,000	.50	1,000.00
0245-0000000A	TEMPORARY WATER MANAGEMENT FACILITY AT STATION 17+00	LS	1	15,000.00	15,000.00
0270-0106000F	TEMPORARY TYPE 2 FENCE	FOOT	140	25.00	3,500.00
0280-0110030E	CONSTRUCTION ENTRANCE, TYPE 2	EACH	4	500.00	2,000.00
0280-0106040E	CHECK DAM, TYPE 3	EACH	10	100.00	1,000.00
0280-0106010E	COMPOST EROSION BLANKET	SQYD	1,800	3.90	7,020.00
0280-0113000F	SEDIMENT FENCE	FOOT	320	4.00	1,280.00
0280-0115030F	SEDIMENT BARRIER, TYPE 3	FOOT	990	3.20	3,168.00
0280-0115090F	SEDIMENT BARRIER, TYPE 9	FOOT	950	8.00	7,600.00
0280-0119000E	STRAW BALE	EACH	4	60.00	240.00
0280-0101000J	EROSION CONTROL	LS	1	18,000.00	18,000.00
0290-0102000A	POLLUTION CONTROL PLAN	LS	1	3,000.00	3,000.00
0294-0200010M	CONTAMINATED SOIL DISPOSAL	TON	25	78.00	1,950.00
0294-0500000A	LEAD COMPLIANCE PLAN	LS	1	2,000.00	2,000.00
0294-0600000A	SEGREGATE AND STOCKPILE CONTAMINATED SOIL	LS	1	2,000.00	2,000.00
0294-0700000E	SOIL SAMPLE COLLECTION AND ANALYTICAL TESTING	EACH	6	1,300.00	7,800.00
ROADWORK					
0305-0100000A	CONSTRUCTION SURVEY WORK	LS	1	25,000.00	25,000.00
0310-0106000A	REMOVAL OF STRUCTURES AND OBSTRUCTIONS	LS	1	20,000.00	20,000.00
0310-0112000A	REMOVAL OF FENCES	LS	1	5,000.00	5,000.00
0310-0113000A	REMOVAL OF GUARDRAIL	LS	1	10,000.00	10,000.00
0310-0116000A	REMOVAL OF PIPES AND CULVERT	FOOT	50	25.00	1,250.00
0320-0100000R	CLEARING AND GRUBBING	ACRE	0.5	30,000.00	15,000.00
0330-0123000K	EMBANKMENT IN PLACE	CUYD	1,950	20.00	39,000.00
0331-0112000J	24 INCH SUBGRADE STABILIZATION	SQYD	210	65.00	13,650.00
0350-0105000J	SUBGRADE GEOTEXTILE	SQYD	1,220	2.40	2,928.00
0390-0105000K	LOOSE RIPRAP, CLASS 50	CUYD	395	80.00	31,600.00
DRAINAGE AND SEWERS					
0445-010012AF	12 INCH CULVERT PIPE, 5 FOOT DEPTH	FOOT	40	150.00	6,000.00
0445-0700120E	SLOPED END SECTIONS, 12 INCH	EACH	1	350.00	350.00
BRIDGES					
0501-0100000A	BRIDGE REMOVAL WORK	LS	1	40,000.00	40,000.00
0510-0100000A	SHORING, CRIBBING, AND COFFERDAMS	LS	1	20,000.00	20,000.00
0510-0101000K	STRUCTURE EXCAVATION	CUYD	251	25.00	6,275.00
0510-0106000K	GRANULAR WALL BACKFILL	CUYD	60	320.00	19,200.00
0520-0100000A	FURNISH PILE DRIVING EQUIPMENT	LS	1	50,000.00	50,000.00
0520-0127000F	FURNISH 16" DIA. x 0.50" PP STEEL PILES	FOOT	848	68.00	57,664.00
0520-0312000E	DRIVE 16" DIA. x 0.50" PP STEEL PILES	EACH	16	800.00	12,800.00
0520-0330000E	REINFORCED PILE TIPS	EACH	16	400.00	6,400.00
0530-0104000O	REINFORCEMENT, GRADE 60	LS	1	65,000.00	65,000.00

CANBY MARQUAM HWY: BEAR CREEK BRIDGE

ADDENDA #1 BID SCHEDULE

2/3/2022

ITEM NUMBER	ITEM DESCRIPTION	UNIT	AMOUNT	UNIT COST	TOTAL
0540-0207000K	DECK CONCRETE, CLASS HPC4500	LS	1	85,000.00	85,000.00
0540-0301000A	GENERAL STRUCTURAL CONCRETE, CLASS 3300	LS	1	105,000.00	105,000.00
0545-0100000J	REINFORCED CONCRETE BRIDGE END PANELS	SQYD	167	300.00	50,100.00
0559-0401000J	SAW CUT TEXTURING	SQYD	512	4.71	2,411.52
0550-0139000F	30 INCH PRECAST PRESTRESSED SLABS	FOOT	838	420.00	351,960.00
0584-0100000F	ELASTOMERIC CONCRETE NOSING	LF	74	188.00	13,912.00
0585-0206100A	POURED JOINT SEAL	LS	1	3500.00	3,500.00
0587-0126100A	TYPE "F" CONCRETE RAIL, 42 INCH	FOOT	250	208.00	52,000.00
BASES					
0620-0120000J	COLD PLANE PAVEMENT REMOVAL, 2 INCHES DEEP	SQYD	410	18.00	7,380.00
0640-0100000M	AGGREGATE BASE	TON	1,100	32.00	35,200.00
WEARING SURFACES					
0744-0302000M	LEVEL 3, 1/2 INCH ACP MIXTURE	TON	600	95.00	57,000.00
0749-0100000E	EXTRA FOR ASPHALT APPROACHES	EACH	1	1,000.00	1,000.00
PERMANENT TRAFFIC SAFETY AND GUIDANCE DEVICES					
0810-0104000F	GUARDRAIL, TYPE 2A	FOOT	375	34.00	12,750.00
0810-0107000F	GUARDRAIL, TYPE 3	FOOT	50	75.00	3,750.00
0810-0126000E	GUARDRAIL TRANSITIONS	EACH	4	4,000.00	16,000.00
0810-0128000E	GUARDRAIL CONNECTIONS	EACH	4	500.00	2,000.00
0810-0120000E	GUARDRAIL ANCHORS, TYPE 1 MODIFIED	EACH	2	1,000.00	2,000.00
0810-0122000E	GUARDRAIL END PIECES, TYPE B	EACH	1	150.00	150.00
0810-0131000E	GUARDRAIL TERMINALS, NON-FLARED, TEST LEVEL 3	EACH	3	3,750.00	11,250.00
0855-0107000E	BI-DIRECTIONAL YELLOW TYPE 1AR MARKERS, RECESSED	EACH	13	120.00	1,560.00
0865-0116510F	METHYL METHACRYLATE, EXTRUDED, SURFACE, NON-PROFILED	FOOT	2,000	2.60	5,200.00
PERMANENT TRAFFIC CONTROL AND ILLUMINATION SYSTEMS					
0905-0101000A	REMOVE AND REINSTALL EXISTING SIGNS	LS	1	1,445.15	1,445.15
0920-0100000A	SIGN SUPPORT FOOTINGS	LS	1	1,650.00	1,650.00
0930-0114000A	PERFORATED STEEL SQUARE TUBE SLIP BASE SIGN SUPPORTS	LS	1	1,900.00	1,900.00
RIGHT OF WAY DEVELOPMENT AND CONTROL					
1012-0100000A	WATER QUALITY SWALE, STA "P" 15+50 TO "P" 16+50	LS	1	25,000.00	25,000.00
1014-0100000A	WATER QUALITY FILTER STRIP, STA "P" 17+22 to 19+40	LS	1	5,000.00	5,000.00
1014-0100000A	WATER QUALITY FILTER STRIP, Sta "P" 18+12 to 19+33	LS	1	5,000.00	5,000.00
0390-0105000K	RIPRAP DITCH	LS	1	15,000.00	15,000.00
1030-0102000E	SEEDING MOBILIZATION	LS	1	500.00	500.00
1030-0109000R	PERMANENT SEEDING, MIX NO. 1	ACRE	0.4	6,000.00	2,400.00
1030-0119000R	WATER QUALITY SEEDING, MIX NO. 1	ACRE	0.05	25,000.00	1,250.00
1040-0114000E	CONIFER TREES, 6 FT HEIGHT	EACH	67	180.00	12,060.00
1040-0153000E	SHRUBS, #1 CONTAINER	EACH	335	12.00	4,020.00
1050-0104000F	TYPE 2 FENCE	FOOT	310	25.00	7,750.00
1050-0116000E	20 FOOT DOUBLE GATES	EACH	1	3520.00	3,520.00

PROPOSED COST $1,711,843.60

(Numerically)

PROPOSED COST One million seven hundred eleven thousand eight hundred forty three and sixty cents.

(Written in Words)

COMPANY NAME Carter & Company, Inc.

AUTHORIZED SIGNATURE

FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM
PROJECT: #2022-03

BID OPENING: February 10, 2022, 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: Procurement@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.	NONE	NONE	NONE
2.			
3.			
4.			
5.			
6.			

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: Carter & Company, Inc

Bidder Signature: _____ Phone # (503) 371-4582

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

Prime Contractor Name: Carter & Co., Inc. **Total Contract Amount:** $1,711,843.60

Project Name: #2022-03 Canby Marquam Highway: Bear Creek Bridge

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)*

flagging	structural concrete
excavation	traffic control
demolition	site prep
embankment	fence removal
rebar support	guardrail removal

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. Hand delivery to Procurement, 2051 Kaen Road, Oregon City, OR 97045 or email to procurement@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 Willamette Fence CO., INC **Address** 11304 N.E. Marx **City/St/Zip** Portland, OR 97220 **Phone#** 503-285-2761 **OCCB#** 80008		$14,770.00	☐	☐	☐
Name Columbia River River Contractors, INC. **Address** P.O. Box 1070 **City/St/Zip** Clackamas, OR 97015-1070 **Phone#** 503-722-1777 **OCCB#** 123490		$44,805.00	☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐

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

Prime Contractor Name: Carter + Co., Inc. **Total Contract Amount:** $1,711,843.60

Project Name: # 2022-03 Canby Marquam Highway: Bear Creek Bridge

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 Jonnic Construction **Address** 32602 S Hwy 213 **City/St/Zip** Molalla, OR 97038 **Phone#** 503-863-1127 **OCCB#** 199546	Joints	$17,512.50	☐	☐	☐
Name Fox Erosion Control & Landscape INC. **Address** 11901 Hwy 212 **City/St/Zip** Clackamas, OR 97015 **Phone#** 503-654-8816 **OCCB#** LCB# 7393	Landscape	$54,643.00	☐	☒	☐
Name Hatch Western Company, INC. **Address** P.O. Box 4070 **City/St/Zip** Wilsonville, OR 97070-4070 **Phone#** 503-683-6234 **OCCB#** 63338	Milling	$6,293.50	☐	☐	☐
Name Eagle Elsner, INC. **Address** 17400 SW Hillsboro Hwy **City/St/Zip** Sherwood, OR 97140 **Phone#** 503-628-1137 **OCCB#** 27112	Paving	$56,380	☐	☐	☐
Name Bar M Steel Commercial INC. **Address** 28080 SE Hwy 212 unit 1-A **City/St/Zip** Boring, OR 97009 **Phone#** 503-512-7673 **OCCB#** 155773	Tie Rebar	$37,488.7	☐	☐	☐
Name Cutting Edge Concrete Cutting LLC **Address** 89186 Old Mohawk Rd. **City/St/Zip** Springfield, OR 97478 **Phone#** 541-744-7360 **OCCB#** 172339	Saw Cutting	$3,228.40	☐	☐	☒

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

Prime Contractor Name: Carter + Co., Inc. **Total Contract Amount:** $1,711,843.60

Project Name: # 2022-03 Canby Marquam Highway: Bear Creek Bridge

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 Cartello **Address** P.O. Box 2405 **City/St/Zip** Oregon City, OR 97304 **Phone#** 503-680-9923 **OCCB#** 7391	Signs	$18,530.00	☐	☒	☒
Name Hicks Striping & Curbing, LLC **Address** P.O. Box 9127 **City/St/Zip** Brooks, OR 97305 **Phone#** 503-364-4577 **OCCB#** 64685	Striping	$8,760.00	☐	☐	☐
Name Longhorn Geomatics **Address** 10940 SW Barnes Rd. **City/St/Zip** Portland OR 97225 **Phone#** 503-985-9762 **OCCB#** Not Applicable	Surveying	$20,380.00	☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐
Name **Address** **City/St/Zip** **Phone#** **OCCB#**			☐	☐	☐

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

Prime Contractor:
Project: #2022-03 Canby Marquam Highway: Bear Creek Bridge

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

NAME OF M/W/ESB SUBCONTRACTOR	Divisions of Work (Painting, electrical, landscaping, etc.)	Date Solicitation Letter / Fax Sent	PHONE CONTACT		BID ACTIVITY Check Yes or No			REJECTED BIDS (if bid received & not used)		Notes
			Date of Call	Person Receiving Call	Will Bid	Bid Received	Bid Used	Bid Amount	Reason Not Used (Price, Scope or Other. If Other, explain in Notes>>)	
Cartello Construction Inc.	Signs	2/3/2022	2/3/2022	Ethan	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	$18,530.00		Received bid & used
1 Alliance Geomatics, LLC	Survey		2/3/2022	Jason	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No		No bid	Did not recieve quote too far away.
Kuahashi and Associates Company	Survey		2/3/2021	No response	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No		No bid	No Response
Anderson's Erosion Control INC.	Landscape		2/3/2022	Patt	☒ Yes ☐ No	☒ Yes ☐ No	☐ Yes ☒ No	$72,730.00	Price is high	Received bid & Did not use
Four Seasons Landscape Maintenance LLC	Landscape		2/3/2022	Agustin Rios	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No		No Response	Called and received no Response
PTS Surveying INC.	Survey		2/3/2022	No Response	☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No		No bid	No Response
Fox Erosiong Control and Landscape INC.	Landscape		2/3/2022	Brian	☒ Yes ☐ No	☒ Yes ☐ No	☒ Yes ☐ No	$54,643.00		Recieved bid & used
C & C Flagging LLC	Flagging		2/3/2022	Candice	Yes	Yes	NO	$1600	We will self perform	Recieved bid & Did Not use

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

PERFORMANCE BOND

Bond No.: 53S208042
Solicitation: #2022-03
Project Name: Canby Marquam Highway: Bear Creek Bridge

Liberty Mutual Insurance Company	(Surety #1)	Bond Amount No. 1:	$ 1,711,843.60
	(Surety #2)*	Bond Amount No. 2:*	$
** If using multiple sureties*		Total Penal Sum of Bond:	$ 1,711,843.60

We, Carter & Company, Inc. as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns firmly by these presents to pay unto Clackamas County, the sum of (Total Penal Sum of Bond) * (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

*One Million Seven Hundred Eleven Thousand Eight Hundred Forty Three Dollars & 60/00

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 21st day of March, 2022.

PRINCIPAL: Carter & Company, Inc.

By: _____
Signature

President
Official Capacity

Attest: _____
Corporation Secretary

SURETY: Liberty Mutual Insurance Company
[Add signatures for each if using multiple bonds]

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

Tracy Stewart
Name

Tracy Stewart
Signature

1605 Liberty Street SE
Address

Salem, OR 97302
City State Zip

(503) 362-2711 tracy@agsadowski.com
Phone Fax Email

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT

PAYMENT BOND

Bond No.: 53S208042
Solicitation: #2022-03
Project Name: Canby Marquam Highway: Bear Creek Bridge

Liberty Mutual Insurance Company	(Surety #1)	Bond Amount No. 1:	$ 1,711,843.60
	(Surety #2)*	Bond Amount No. 2:*	$
* *If using multiple sureties*		Total Penal Sum of Bond:	$ 1,711,843.60

We, Carter & Company, Inc., as Principal, and the above identified Surety(ies), authorized to transact surety business in Oregon, as Surety, hereby jointly and severally bind ourselves, our respective heirs, executors, administrators, successors and assigns firmly by these presents to pay unto Clackamas County, the sum of (Total Penal Sum of Bond) One Million Seven Hundred Eleven Thousand Eight Hundred Forty Three Dollars & 60/00 (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 21st day of March, 2022.

PRINCIPAL: Carter & Company, Inc.

By: _____
Signature

_____
Official Capacity

Attest: _____
Corporation Secretary

SURETY: Liberty Mutual Insurance Company
[Add signatures for each if using multiple bonds]

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

Tracy Stewart
Name

_____
Signature

1605 Liberty Street SE
Address

Salem, OR 97302
City State Zip

(503) 362-2711 tracy@agsadowski.com
Phone Fax Email

This Power of Attorney limits the acts of those named herein, and they have no authority to bind the Company except in the manner and to the extent herein stated.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

Certificate No: **8200178-905038**

POWER OF ATTORNEY

KNOWN ALL PERSONS BY THESE PRESENTS: That The Ohio Casualty Insurance Company is a corporation duly organized under the laws of the State of New Hampshire, that Liberty Mutual Insurance Company is a corporation duly organized under the laws of the State of Massachusetts, and West American Insurance Company is a corporation duly organized under the laws of the State of Indiana (herein collectively called the "Companies"), pursuant to and by authority herein set forth, does hereby name, constitute and appoint, Ty Moffett, A. G. Sadowski, Derek A. Sadowski, Tracy Stewart

all of the city of Salem state of Oregon each individually if there be more than one named, its true and lawful attorney-in-fact to make, execute, seal, acknowledge and deliver, for and on its behalf as surety and as its act and deed, any and all undertakings, bonds, recognizances and other surety obligations, in pursuance of these presents and shall be as binding upon the Companies as if they have been duly signed by the president and attested by the secretary of the Companies in their own proper persons.

IN WITNESS WHEREOF, this Power of Attorney has been subscribed by an authorized officer or official of the Companies and the corporate seals of the Companies have been affixed thereto this 26th day of December, 2018.

Liberty Mutual Insurance Company
The Ohio Casualty Insurance Company
West American Insurance Company

By: _____
David M. Carey, Assistant Secretary

State of PENNSYLVANIA
County of MONTGOMERY ss

On this 26th day of December, 2018 before me personally appeared David M. Carey, who acknowledged himself to be the Assistant Secretary of Liberty Mutual Insurance Company, The Ohio Casualty Company, and West American Insurance Company, and that he, as such, being authorized so to do, execute the foregoing instrument for the purposes therein contained by signing on behalf of the corporations by himself as a duly authorized officer.

IN WITNESS WHEREOF, I have hereunto subscribed my name and affixed my notarial seal at King of Prussia, Pennsylvania, on the day and year first above written.

COMMONWEALTH OF PENNSYLVANIA
Notarial Seal
Teresa Pastella, Notary Public
Upper Merion Twp., Montgomery County
My Commission Expires March 28, 2021
Member, Pennsylvania Association of Notaries

By: _____
Teresa Pastella, Notary Public

This Power of Attorney is made and executed pursuant to and by authority of the following By-laws and Authorizations of The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company which resolutions are now in full force and effect reading as follows:

ARTICLE IV – OFFICERS: Section 12. Power of Attorney.
Any officer or other official of the Corporation authorized for that purpose in writing by the Chairman or the President, and subject to such limitation as the Chairman or the President may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Corporation to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact, subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Corporation by their signature and execution of any such instruments and to attach thereto the seal of the Corporation. When so executed, such instruments shall be as binding as if signed by the President and attested to by the Secretary. Any power or authority granted to any representative or attorney-in-fact under the provisions of this article may be revoked at any time by the Board, the Chairman, the President or by the officer or officers granting such power or authority.

ARTICLE XIII – Execution of Contracts: Section 5. Surety Bonds and Undertakings.
Any officer of the Company authorized for that purpose in writing by the chairman or the president, and subject to such limitations as the chairman or the president may prescribe, shall appoint such attorneys-in-fact, as may be necessary to act in behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations. Such attorneys-in-fact subject to the limitations set forth in their respective powers of attorney, shall have full power to bind the Company by their signature and execution of any such instruments and to attach thereto the seal of the Company. When so executed such instruments shall be as binding as if signed by the president and attested by the secretary.

Certificate of Designation – The President of the Company, acting pursuant to the Bylaws of the Company, authorizes David M. Carey, Assistant Secretary to appoint such attorneys-in-fact as may be necessary to act on behalf of the Company to make, execute, seal, acknowledge and deliver as surety any and all undertakings, bonds, recognizances and other surety obligations.

Authorization – By unanimous consent of the Company's Board of Directors, the Company consents that facsimile or mechanically reproduced signature of any assistant secretary of the Company, wherever appearing upon a certified copy of any power of attorney issued by the Company in connection with surety bonds, shall be valid and binding upon the Company with the same force and effect as though manually affixed.

I, Renee C. Llewellyn, the undersigned, Assistant Secretary, The Ohio Casualty Insurance Company, Liberty Mutual Insurance Company, and West American Insurance Company do hereby certify that the original power of attorney of which the foregoing is a full, true and correct copy of the Power of Attorney executed by said Companies, is in full force and effect and has not been revoked.

IN TESTIMONY WHEREOF, I have hereunto set my hand and affixed the seals of said Companies this 21st day of March, 2022.

By: _____
Renee C. Llewellyn, Assistant Secretary

Not valid for mortgage, note, loan, letter of credit, currency rate, interest rate or residual value guarantees.

To confirm the validity of this Power of Attorney call 1-610-832-8240 between 9:00 am and 4:30 pm EST on any business day.

CLACKAMAS COUNTY
PUBLIC IMPROVEMENT CONTRACT
PROJECT INFORMATION, PLANS, SPECIFICATIONS AND DRAWINGS

PROJECT: #2022-03 Canby Marquam Highway: Bear Creek Bridge

Project Background:
The Clackamas County Department of Transportation is seeking services for construction of Canby Marquam Highway Bridge over Bear Creek. The existing bridge, built in 1960, is showing signs of decay as a result of heavy truck traffic. The bridge is considered functionally obsolete and structurally deficient, with a low sufficiency rating. The bridge is composed of undersized timber members that have shear and flexure damage, which were temporary repaired until the bridge can be replaced. The asphalt pavement wearing surface requires constant repair due to the bridge vibrating and shaking when trucks travel on the bridge.

Engineers Estimate: $1,485,000.00

Key Dates:
All Basic Bid Work may begin as soon as the Notice to Proceed ("NTP") is issued
Substantial Completion: October 31, 2022
Final Completion: April 30, 2023

Time is of the essence for this Project. Note the Liquidated Damages requirements as described in the project Specifications.

The Scope further includes the following Reports, Plans, Specifications and Drawings:

Geotechnical Engineering Report-Canby Marquam Highway: Bear Creek Bridge Project by Shannon & Wilson, Inc., September 2020, 88 pages

SPECIAL PROVISIONS FOR CONSTRUCTION- DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT CLACKAMAS COUNTY, OREGON- Bridges and Structures Canby Marquam Hwy: Bear Creek Bridge, 85 pages

CANBY MARQUAM HWY: BEAR CREEK BRIDGE APPROACH CONSTRUCTION Drawing Set, Sheets No. 1 - 9, J01- J10, TC01, TC02

SUBMITTED TO:
David Evans & Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201

BY:
Shannon & Wilson, Inc.
3990 Collins Way, Suite 100
Lake Oswego, OR 97035

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GEOTECHNICAL ENGINEERING REPORT

Canby Marquam Highway: Bear Creek Bridge Project

CLACKAMAS COUNTY, OREGON

SHANNON & WILSON

September 2020

Shannon & Wilson No: 103169

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Submitted To: David Evans & Associates, Inc.
2100 SW River Parkway
Portland, Oregon 97201
Attn: Mr. Joel Tubbs

Subject: GEOTECHNICAL ENGINEERING REPORT, CANBY MARQUAM HIGHWAY: BEAR CREEK BRIDGE PROJECT, CLACKAMAS COUNTY, OREGON

We are pleased to submit this geotechnical engineering report for the above referenced project. The report presents the results of our geotechnical investigations, and engineering analysis and design recommendations for the proposed project.

Shannon & Wilson, Inc. (Shannon & Wilson), participated as a consultant to David Evans & Associates, Inc. (DEA). Our scope of services was specified in Task Order No. 1, fully executed on October 28, 2019.

We appreciate the opportunity to be of service to you on this project. If you have questions concerning this report, or we may be of further service, please contact us.

Sincerely,

SHANNON & WILSON, INC.

Travis Nguyen, PE, GE
Senior Associate | Geotechnical Engineer

Risheng "Park" Piao, PE, GE
Vice President | Geotechnical Engineer

NMV:TTN:RPP:KJW/las:srs

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ACRONYMS

ASTM International	American Society for Testing and Materials International
AASHTO	American Association of State Highway and Transportation Officials
BDDM	Bridge Design and ing Manual
bgs	below ground surface
CSZ	Cascadia Subduction Zone
FHWA	Federal Highway Administration
GDM	Geotechnical Design Manual
GDPS	Guide of Design of Pavement Structures
LRFD	Load and Resistance Factor Design
ODOT	Oregon Department of Transportation
OHWM	Ordinary High Water Mark
PDG	Pavement Design Guide
SPT	Standard Penetration Test
USCS	Unified Soil Classification System
WEAP	Wave Equation Analysis

1 INTRODUCTION

This report presents the results of our geotechnical design recommendations for the proposed Bear Creek Bridge replacement project (the Project) on Canby Marquam Highway (Highway 170) in Clackamas County, Oregon. As a consultant to DEA, Shannon & Wilson, Inc. is providing geotechnical engineering services. The location of the project site is shown on the Vicinity Map, Figure 1.

1.1 Scope of Services

Shannon & Wilson's services were conducted in accordance with Task Order No. 1, fully executed on October 28, 2019. The completed geotechnical design services for the project consisted of the following tasks:

- Performing a site reconnaissance to determine site conditions, access, potential drilling locations, and safety concerns;
- Preparing a Subsurface Exploration and Testing Work Plan outlining the drilling and sampling procedures, preliminary laboratory testing plan, and traffic control plan;
- Preparing a Field Safety Plan;
- Performing the Field Exploration and Testing Program, including drilling four borings and four pavement cores, and four Dynamic Cone Penetrometer tests;
- Performing laboratory testing to determine soil index properties;
- Evaluating subsurface conditions;
- Reviewing available existing geotechnical data including geology, soil maps, seismicity, and previous borings;
- Evaluating site-specific seismic hazards including liquefaction potential, lateral spreading, and slope instability;
- Evaluating overall stability of the bridge abutments;
- Evaluating up to three bridge deep foundation types;
- Providing deep foundation axial capacities relative to depth;
- Providing material properties for LPILE input soil parameters for evaluation of lateral loads on deep foundations;
- Providing group efficiency for deep bridge foundation;
- Providing construction considerations for deep foundations;
- Providing new pavement design for widening areas and reconstruction;

- Providing earthwork recommendations, including site and subgrade preparation, excavation, backfill, and fill placement and compaction; and
- Preparing this Geotechnical Engineering Report summarizing all tasks listed above.

2 PROJECT UNDERSTANDING

2.1 Site Description

The existing Bear Creek Bridge is located at milepost 1.19 on the Canby Marquam Highway, approximately 0.4 miles north of the intersection with the Woodburn-Estacada Highway (OR 211). Canby Marquam Highway is an arterial connecting OR 211 to the south and the OR 99E to the north in Canby. Bear Creek Bridge is located on a tangent horizontal alignment near the bottom of a relatively long downhill grade. In the vicinity of the bridge, the highway is on a fill embankment with steep slope on the northwest and hill side on the southwest of the highway. There is a gentle slope along the southeast and northeast of the highway. A drainage ditch is located along the southeast at the toe of the embankment.

Exhibit 2-1: Existing Bridge Site looking North on Canby Marquam Highway

2.2 Project Description

The existing bridge, built in 1960, is showing signs of decay as a result of heavy truck traffic. The bridge is considered functionally obsolete and structurally deficient. The bridge is composed of undersized timber members that have shear and flexure damage, which were temporarily repaired until the bridge can be replaced.

We understand that there are two bridge alignment alternatives being evaluated. The alternatives consist of the Shift Alignment and On Existing Centerline Alignment. For the Shift Alignment alternative, the centerline of the proposed bridge would be shifted approximately 10 feet to the west. For the On Existing Centerline Alternative, the centerline of the proposed bridge would be located on the centerline of the existing bridge. We understand that the On Existing Centerline Alternative is the preferred alternative. Geotechnical discussions for both proposed alignments and associated development are discussed further in details in Section 7.2.

We understand that the 100-year scour elevation is approximately 156.7 feet which is approximately 3 feet below the bottom of the creek. We also understand that riprap protection will be provided to withstand scour. Therefore, we do not consider scour effects on the bridge foundation in our analysis. If scour protection will not be provided, we should be contacted to revise our recommendations.

3 REGIONAL GEOLOGY AND SEISMIC SETTING

3.1 Regional Geology

The Bear Creek bridge site is located at the northeastern margin of the Willamette Valley and the adjacent foothills of the Cascade Range. The project site and areas near the project site have been researched, geologically mapped and discussed by Gannett and Caldwell (1998), Tolan and Beeson (1999), Miller and Orr (1986), Hampton (1972) and Price (1967). The Tertiary-age volcanic and sedimentary bedrock units exposed in the hills and mountains south and southeast of the project site (northeast of Salem) generally dip west and northwest into the Willamette Valley where they are overlain by thick (30 to greater than 150 meters thick) Pliocene and Pleistocene sedimentary basin fill (Toland and Beeson, 1999). The oldest Tertiary-age volcanic and sedimentary bedrock units are made up of the Little Butte Volcanics, the Scotts Mills Formation, and the Columbia River Basalt Group (CRBG). These bedrock units underwent excessive faulting and folding to create the basin filled by late Tertiary sediments and then Pliocene and Pleistocene sediments. The oldest of

these sediments is the Sardine Formation of Tolan and Beeson (1999), also similar in age and composition to the Molalla Formation of Miller and Orr (1986). The stream-deposited volcanic and pyroclastic deposits of the middle Miocene to early Pliocene age Sardine Formation are thought to consist predominantly of medial to distal volcaniclastic deposits produced by, and possibly related to, western Cascade arc volcanism (Tolan and Beeson, 1999). The stream-deposited volcanic and pyroclastic deposits consist of poorly indurated, fluvial and pebble conglomerates, sandstones and siltstones, and are interbedded with lahar run-out deposits. Previous work cited by Miller and Orr (1986) indicates that the Troutdale Formation overlies the Sardine and Molalla Formations and CRBG in the foothills of the western cascades.

In his early work on the geology of the Molalla-Salem slope area, Hampton (1972) assigned most of the basin-fill sediment in the eastern part of the Willamette Valley to the Troutdale Formation. According to later work by Tolan and Beeson (1999), overlying the CRBG in the central and northern Willamette Valley are undifferentiated late Miocene to Pleistocene fluvial sediments. They group these sediments into a unit they refer to as "Quaternary-Tertiary Sediments" which are thought to represent deposits of the ancestral Willamette River and its tributaries. More recent mapping by O'Connor and others, 2001, designates the basin-fill sediments overlying the CRBG in the project area as Troutdale Formation, sand, gravel, sandstone, conglomerate, siltstone and mudstone. In the context of this report, we collectively refer to the "Quaternary-Tertiary Sediments" of Tolan and Beeson (1999), and Troutdale Formation of Hampton (1972) as the Troutdale Formation after O'Connor and others, 2001.

Overlying the Troutdale Formation, O'Connor and others (2001) indicate the site is underlain by upper Pleistocene age glacial outburst sediments referred to as Missoula Flood Deposits and Holocene and upper Pleistocene age Alluvium. They describe the Missoula Flood Deposits as fine-grained and consisting of stratified silt and clay with minor sand deposited in floods originating in glacial Lake Missoula which travelled down the Columbia River and back flooded into the Willamette Valley as far south as Eugene. These deposits underlie much of the Willamette Valley lowland floor, and in the project area, make up the flat terraces and lowlands above the current Bear Creek floodplain. Since the time of the Missoula Floods, streams, creeks and rivers have eroded stream channels into the Missoula Flood Deposits. In the project area, Bear Creek is underlain by alluvium deposits consisting of unconsolidated clay, silt, sand and minor gravel, deposited in its active creek channel and floodplain.

3.2 Seismic Setting

Earthquakes in the Pacific Northwest occur largely because of the region's proximity to an active convergent plate boundary. At this boundary, dense oceanic crust is subducting beneath less dense continental crust. At this subduction plate boundary (known as the Cascadia Subduction Zone, or CSZ), the Explorer, Juan de Fuca, and Gorda Oceanic Plates are subducting beneath the overriding, westward-moving North American Plate. Oblique convergence of these plates not only results in east-west compressive strain, but also results in dextral (right lateral) shear, clockwise rotation, and north-south compression of accreted crustal blocks that form the leading edge of the North American Plate (Wells and others, 1998). The CSZ extends about 750 miles from northern California to southern British Columbia, and lies approximately 98 miles west of the project site. Within the present understanding of the regional tectonic framework and historical seismicity, three broad seismogenic sources have been identified.

- A mega-thrust source at the interface between the North American and Juan de Fuca plates in the CSZ;
- A deep intraslab source in the subducted Juan de Fuca Plate, within the CSZ; and
- A shallow crustal source within the North American Plate

The following sections briefly describe the location, characteristics, and seismicity of each of the sources.

3.2.1 Cascadia Subduction Zone (CSZ); Mega-Thrust Interface Source

CSZ mega-thrust earthquakes originate along the interface between the subducting oceanic plates and the North American plate. Because of the significant uncertainty of the landward extent of a potential rupture surface, estimates of the closest distance between the project and potential rupture surface range from about 80 to 105 horizontal miles. Focal depths for mega-thrust earthquakes are commonly on the order of about 15 to 25 miles. Rupture of the interface could result in earthquakes with moment magnitudes on the order of 8.5 to over 9.0, with strong shaking that lasts for several minutes. No large earthquakes have occurred in this zone during historic times (the last 170 years). However, geologic evidence suggests that coastal estuaries have experienced rapid subsidence at various times within the last 2,000 years (e.g., Atwater, 1987; Atwater and Hemphill-Haley, 1997) due to tectonic movement associated with mega-thrust earthquakes on the CSZ. It appears that ruptures of this zone have occurred at irregular intervals that span from about 100 to more than 1,200 years, with an average recurrence interval of about 300 to 500 years (Atwater and Hemphill-Haley, 1997). Based on historical tsunami records in Japan (Satake and others, 1996) the most recent interplate event on the CSZ was a moment magnitude (Mw) 9 event on January 26, 1700.

3.2.2 Cascadia Subduction Zone: Intraslab Source

CSZ intraslab earthquakes originate from within the subducting oceanic plates due to down-dip tensional forces and bending, caused by mineralogical and density changes in the plates at depth. These earthquakes typically occur 28 to 37 miles beneath the surface. Ludwin and others (1991) estimate that the maximum Mw from this source zone would be about 7.5. Ground shaking produced by intraplate earthquakes would generally be less intense and less prolonged in the project area than ground motions generated by large subduction zone interface earthquake events. Historic seismicity from this source zone includes the 1949 Mw 6.7 Olympia earthquake; the 1965 Mw 6.7 earthquake between Tacoma and Seattle; and the 2001 Mw 6.8 Nisqually earthquake. While intraslab events have occurred frequently in the Puget Sound area, they are historically rare in Oregon.

3.2.3 Shallow Crustal Source

Shallow crustal earthquakes within the North American Plate have historically occurred in a diffuse pattern within the Pacific Northwest, typically within the upper 4 to 19 miles of the continental crust. The largest known crustal earthquake in the Pacific Northwest is the 1872 North Cascades earthquake at approximate Mw 6.5 to 7.0. Other examples include the 1993 Mw 5.6 Scotts Mill earthquake and 1993 Mw 6.0 Klamath Falls earthquake.

Shallow crustal faults and folds throughout Oregon and Washington have been located and characterized by the United States Geological Survey (USGS). The USGS provides approximate fault locations and a detailed summary of available fault information in the USGS Quaternary Fault and Fold Database (USGS, 2019). The database defines four categories of faults, Class A through D, based on evidence of tectonic movement known or presumed to be associated with large earthquakes during Quaternary time (within the last 2.6 million years). For Class A faults, geologic evidence demonstrates that a tectonic fault exists and that it has likely been active within the Quaternary period. For Class B faults, there is equivocal geologic evidence of Quaternary tectonic deformation, or the fault may not extend deep enough to be considered a source of significant earthquakes. Class C and D faults lack convincing geologic evidence of Quaternary tectonic deformation or have been studied carefully enough to determine that they are not likely to generate significant earthquakes.

According to the USGS Quaternary Fault and Fold database (USGS, 2019) there are seven Class A features within approximately 30 miles of the project site. Their names, general locations relative to the site, and the time since their most recent deformation are summarized in Exhibit 3-1. The CSZ itself is approximately 119 miles west of the site, with an average slip rate of approximately 40 millimeters (1.5 inches) per year and the most recent deformation occurring about 300 years ago (Personius and Nelson, 2006).

Exhibit 3-1: USGS Class A and B Faults Within a 30-mile Radius of the Bridge Site

Fault Name	USGS Fault Number	USGS Class	Approximate Distance and Direction from Site	Slip Rate	Time Since Last Deformation
Canby-Molalla Fault	716	A	3.9 miles NE, E	<0.2 mm/yr	<15 ka
Mount Angel Fault	873	A	8.0 miles SW	<0.2 mm/yr	<15 ka
Bolton Fault	874	B	12.7 miles NE	<0.2 mm/yr	<1.6 Ma
Oatfield Fault	875	A	14.7 miles NE	<0.2 mm/yr	<1.6 Ma
Portland Hills Fault	877	A	15.3 miles NE	<0.2 mm/yr	<1.6 Ma
Newberg Fault	717	A	15.7 miles NW	<0.2 mm/yr	<1.6 Ma
Damascus-Tickle Creek Fault Zone	879	A	16.7 miles NE	<0.2 mm/yr	<750 ka
Waldo Hills Fault	872	A	20.0 miles SW	<0.2 mm/yr	<1.6 Ma
Turner and Mills Creek Faults	871	A	20.1 miles S, SW	<0.2 mm/yr	<1.6 Ma
Beaverton Fault Zone	715	A	23.0 miles NW	<0.2 mm/yr	<750 ka
Grant Butte Fault	878	A	23.1 miles NE	<0.2 mm/yr	<750 ka
Gales Creek Fault Zone	718	A	24.2 miles NW	<0.2 mm/yr	<1.6 Ma
East Bank Fault	876	A	24.2 miles N	<0.2 mm/yr	<750 ka
Salem-Eola Hills Homocline	719	A	26.8 miles SW	<0.2 mm/yr	<1.6 Ma

NOTES:
Approximate distance from site center to nearest extent of fault mapped at the ground surface.
mm = millimeters; yr = year.
Ma = “Mega-annum” or million years ago; ka = “Kilo-annum” or one thousand years ago.

4 FIELD EXPLORATION AND LABORATORY TESTING

4.1 Geotechnical Exploration

The field exploration program for the project included four (4) geotechnical borings, designated Borings B-1 through B-4 with four (4) pavement cores and four (4) Dynamic Cone Penetrometer tests. A pavement core and a DCP test were performed for each boring. The borings were advanced to depths ranging from 40.8 to 76.5 feet below the existing ground surface using open-hole mud rotary drilling techniques. The geotechnical borings were drilled from December 18, 2019 to December 30, 2019 using a truck mounted CME® 75 drill rig provided and operated by Western States Soil Conservation, Inc. of Hubbard, Oregon. The boring locations were surveyed by DEA. Boring locations are shown on the Site and Exploration Plan, Figure 2.

A Shannon & Wilson geologist was on site throughout the exploration program to locate the borings, observe the drilling, collect samples, and log the materials encountered. Details of the exploration program, including descriptions of the techniques used to advance and sample the borings, logs of the materials encountered, rock core photographs, and backfill details are presented in Appendix A, Field Explorations.

4.2 Laboratory Testing

Laboratory tests were performed on selected samples from the field explorations to determine basic index and engineering properties of the soils encountered. The soil testing program included visual soil classification, moisture content tests, Atterberg limits tests, and particle-size analyses. Testing was performed by Shannon & Wilson at our in-house laboratory in Lake Oswego, Oregon. All tests were performed in accordance with applicable ASTM International (ASTM) standards. The results of the laboratory tests and brief descriptions of the test procedures are presented in Appendix B, Laboratory Testing Results.

5 SUBSURFACE CONDITIONS

We grouped the materials encountered in our field explorations into three geotechnical units, as described below. Our interpretation of the subsurface conditions is based on the explorations and regional geologic information from published sources. The geotechnical units are as follows:

- **Fill**: Soft to stiff Silty CLAY with trace sand (CL).
- **Alluvium**: Medium stiff to hard Silty CLAY with trace sand (CL), medium stiff to stiff CLAY with varying amounts of sand (CH), very stiff to hard Organic CLAY with trace sand and gravel (OH), and medium dense to dense GRAVEL with varying amounts of clay and sand (GP-GC, GC).
- **Troutdale Formation**: Hard Clayey SILT with trace sand (MH), hard Silty CLAY with varying amounts of sand and gravel (CL), very stiff to very hard CLAY with varying amounts of sand and gravel (CH), dense to very dense Silty SAND with varying amounts of gravel (SM), and very dense GRAVEL with varying amounts of clay and sand (GP-GC, GC).

These geotechnical units were grouped based on their engineering properties, geologic origins, and their distribution in the subsurface. The units and our interpretations of their inter-relationships in the subsurface are shown on the Interpretive Subsurface Profile A-A,' Figure 3. The location of the profile and cross section is shown on Figure 2. The profile and cross section are interpretive, and variations in subsurface conditions may exist between the

borings. Contacts between the units may be more gradational than shown in the profiles, cross sections, and drill logs in Appendix A. The SPT N-values presented in the figures and discussed below are as counted in the field (uncorrected). The following sections describe the geotechnical unit characteristics in greater detail.

5.1 Subsurface Soil Units

5.1.1 Fill

Fill is material typically placed during land or roadway development either to bring up low areas or as embankments to create usable ground above floodplains and includes upper pavement sections. Fill was encountered at the surface in every boring and extended to depths ranging from 4.5 to 10 feet below the ground surface (bgs). Pavement sections were encountered at the ground surface in all borings and included asphalt concrete, Portland cement concrete and base aggregate. These sections generally consisted of 8.75 to 11-inches of asphalt concrete over gravelly base aggregate material except for boring B-2 which encountered an approximate 6.75-inch thick section of Portland cement concrete below the asphalt concrete. The Fill material underlying the pavement sections generally consisted of soft to medium stiff Silty CLAY with trace sand (CL). The Fill material contains varying amounts of fine sand, and the fines constituent is generally low to medium plasticity. The Fill typically exhibits a disturbed texture and contains trace organics and rootlets. SPT N-values in the Fill unit ranged from 3 to 11 blows per foot (bpf) and averaged 6 bpf. Natural moisture contents of two samples of Fill indicated moisture contents of 32 and 25 percent. Atterberg limit tests on the same two specimens indicated plasticity indexes of 13 and 26 percent, and a Unified Soil Classification System (USCS) group symbol of CL.

5.1.2 Alluvium

Alluvium deposited by Bear Creek was encountered below the Fill in all borings and extended to depths ranging from 19 to 20.5 feet bgs. The unit generally consists of medium stiff hard Silty CLAY with trace sand (CL); Medium stiff to stiff CLAY with varying amounts of sand (CH); very stiff to hard Organic CLAY with trace sand and gravel (OH); and medium dense to dense GRAVEL with varying amounts of clay and sand (GP-GC, GC). The Gravel where encountered, is generally fine to coarse, subangular to rounded and the sand constituent in the gravel is generally fine to coarse. The fines constituent in the alluvium is generally low to high plasticity, and within the fine-grained alluvium such as the clays and silty clays, the sand constituent is typically fine. Organic material was observed in many of the samples of Alluvium and consisted of fine organic debris, rootlets and wood fragments.

SPT N-values in the Alluvium unit ranged from 5 to 35 bpf and averaged 14 bpf. SPT N-values in the clay unit ranged from 5 to 12 bpf. SPT N-values in the gravel unit ranged from 24 to 35 bpf. A natural moisture content of one specimen was 32 percent. An Atterberg limit test on the same specimen indicated a plasticity index of 25 and a Unified Soil Classification System (USCS) group symbol of CH.

5.1.3 Troutdale Formation

The Troutdale Formation was encountered in all four borings at depths ranging from 19 to 20.5 feet bgs and all borings were terminated within the unit at depths of between 40.8 and 76.5 feet bgs. Three different types of Troutdale Formation unit material were encountered in the borings, a gravel dominant material, and sand dominant material and a fine-grained material consisting of silts and clays. The gravel dominant material consists of dense to very dense GRAVEL with varying amounts of clay and sand (GP-GC, GC). The sand dominant material consists of dense to very dense Silty SAND (SM) with varying amounts of gravel. The fine-grained Troutdale Formation material consists of hard Clayey SILT with trace sand (MH); hard Silty CLAY (CL) with varying amounts of sand and gravel; and very stiff to very hard CLAY (CH) with varying amounts of sand and gravel. Where encountered, the gravel with generally fine to coarse, and subrounded to rounded. The sand constituent in the gravel and sand dominant material is generally fine to coarse, while in the fine-grained material is generally fine. The fines were generally low to high plasticity in the fine-grained material and gravel dominant material, while in the sand dominant material the fines were generally nonplastic to low plasticity. Slight to moderate iron oxidation and staining was often observed in the Troutdale Formation and occasional weak cementation was also noted.

SPT N-values in the unit ranged from 26 to 87 bpf and averaged 51 bpf. Eleven SPTs performed out of 29 SPTs within the Troutdale Formation unit met refusal, where more than 50 blows were required to drive the sampler through a six-inch interval. Natural moisture contents of two fine-grained specimens were 45 and 43 percent, and a natural moisture content of a gravel dominant specimen was 15 percent. An Atterberg limit test on one specimen indicated a plasticity index of 33 and a Unified Soil Classification System (USCS) group symbol of MH.

5.2 Groundwater

The geotechnical borings performed for this study were drilled using mud rotary techniques that make it difficult to discern the depth to groundwater because of the use of drilling fluids in the boreholes. The water level in the creek was measured at 12.5 feet (approximate elevation 161.0 feet) below the top of the bridge deck on December 19, 2019 by Shannon & Wilson staff. The average annual ground water level should be used to evaluated

seismically induced liquefaction based on Oregon Department of Transportation Geotechnical Design Manual, March 2018 (ODOT GDM). However, we understand that average annual ground water level is not available and therefore, we used the Ordinary High Water Mark (OHWM) for liquefaction evaluation. The OHWM is at elevation 164.0 feet was provided by DEA. The OHWM will be used for design.

Groundwater levels across the project alignment should be expected to vary seasonally and with changes in topography, precipitation, and the level of the Bear Creek. Locally, groundwater highs typically occur in the late fall to spring and groundwater lows typically occur in the late summer and early fall.

6 SEISMIC HAZARD EVALUATION

6.1 Site Class

The Seismic Site Class for this location was developed based on the recommended procedure in the American Association of State Highway and Transportation Officials (AASHTO) Bridge Design Specifications, 2014. Our evaluation, based on the subsurface conditions described in Section 5, indicates that the site is classified as Site Class D. Site Class D corresponds to soft clay with an average shear wave velocity between 600 and 1,200 feet per second (fps), or an average SPT blow count between 15 and 50 bpf in the upper 100 feet of soil.

6.2 Ground Motion Parameters

For engineering design, the ODOT GDM recommends that the peak ground acceleration (PGA), and other seismic ground motions, be based on the 2014 U.S. Geological Survey (USGS) Seismic Hazard Map data for the Pacific Northwest Region. The recommended ground motion parameters corresponding to 1,000-year return periods (Life Safety) are provided in Exhibit 6-1. The recommended design response spectrum for the Operational Level Cascadia Subduction Zone (CSZ) Earthquake using the ODOT acceleration response spectrum tool developed by Portland State University is presented in Exhibit 6-2.

Exhibit 6-1: Ground Motion Parameters for 1000yr Return Period (Life Safety) Design Response Spectra

Seismic Parameter	USGS Class
Site Class	D
Site Factor, F_{pga}	1.36
Peak Ground (Bedrock) Acceleration, PGA	0.24g
Peak Ground Surface Acceleration, A_S	0.33g
Site Factor, F_a	1.38
Short Period Acceleration, S_s	0.52g
Site Factor, F_v	2.21
Long Period Acceleration, S_1	0.20g
Seismic Design Category	C

NOTES:
g = gravity acceleration

Exhibit 6-2: Ground Motion Parameters for CSZ (Operational) Design Response Spectra

Period, T (sec)	Spectral Acceleration, S_a (g)
0	0.165
0.05	0.169
0.1	0.245
0.15	0.306
0.2	0.338
0.25	0.355
0.3	0.367
0.4	0.366
0.5	0.340
0.6	0.310
0.7	0.294
0.8	0.279
1	0.243
1.5	0.180
2	0.140
2.5	0.114
3	0.094

NOTES:
g = gravity acceleration

6.3 Geo-Seismic Hazards

6.3.1 General

The expected seismic hazards at the project site are primarily ground shaking. Other seismic hazards, such as liquefaction, fault rupture, tsunami, and seiche are not considered hazards for this site. The following sections include a discussion of the relevant seismic hazards present at the project site.

6.3.2 Liquefaction

Soil liquefaction is a phenomenon in which excess pore water pressure of loose to medium dense, saturated, granular soils increases during ground shaking to a level near the initial effective stress. The increased excess pore pressure results in a reduction of soil shear strength. The effects of liquefaction typically include lateral spreading, slope instability, and ground settlement.

We evaluated the geotechnical borings B-1 through B-4 for potentially liquefiable soil layers. The site is underlain by medium to high plastic clay and dense to very silty sand, sandy gravel, and clayey gravel. Based on our screening analysis is based on the 2018 ODOT GDM liquefaction susceptibility criterion, we do not expect the soils encountered at the site are susceptible to liquefaction and therefore, the risk of liquefaction at the site is low.

7 ENGINEERING DESIGN RECOMMENDATIONS

7.1 General

Design recommendations are based on the data collected in this report, the additional information provided by DEA, and our review of the available existing information. Geotechnical design recommendations are provided for the proposed bridge in the following sections. Also, key construction considerations were developed associated with the geotechnical design recommendations. If foundation types or configurations change after this report, Shannon & Wilson should be contacted to provide updated recommendations.

We understand that the bridge foundations will be designed considering the following manuals and specifications:

- ODOT Geotechnical Design Manual (GDM), March 2018;
- ODOT Bridge Design and ing Manual (BDDM), May 2019;
- ODOT Soil and Rock Classification Manual, 1987;

- ODOT Oregon Standard Specification for Construction (OSSC), 2018;
- AASHTO LRFD Bridge Design Specifications, 8th Edition; and
- Applicable FHWA geotechnical guidelines.

7.2 Bridge Alignment Alternatives

The two bridge alignment alternatives consist of the Shift Alignment and On Existing Centerline Alignment. For the Shift Alignment alternative, the centerline of the proposed bridge would be shifted approximately 10 feet to the west. The proposed bridge is 40 feet wide and 91 feet long. A cut retaining wall would be required along the west side of the south abutment. Additional fills ranging between 6 and 9 feet would be required at both abutments. The loads from additional fills would produce settlement of the underlying soft to medium stiff clay at the bridge abutment and roadway and resulting in downdrag loads on deep foundation of the bridge. In addition, the additional fills may cause slope instability at the bridge abutments and structural mitigation may be required to withstand the additional loads from slope instability.

For the On Existing Centerline Alternative, the centerline of the proposed bridge would be located on the centerline of the existing bridge. The proposed bridge is 40 feet wide and 83 feet long. Cut wall along the southwest side of the alignment and additional fills at the bridge west abutments would not be required for this alternative. We understand that the On Existing Centerline Alternative is the preferred alternative. The design recommendations provide below are for the preferred alternative.

For both alternatives, we understand that the proposed bridge structure will consist of precast prestressed 30-inch slabs, with a 5-inch cast-in-place spanning Bear Creek. The proposed bridge will consist of abutment walls and wing walls. Preliminary loads for each abutment were provided by DEA. The loads per abutment consist of 1,067 kips for Service Limit State and 1,517 kips for Strength Limit State.

The south abutment and north abutment are designated Bents 1 and 2, respectively.

7.3 Bridge Abutment Global Stability

We conducted a global stability analysis for the proposed bridge abutments using the computer program SLOPE/W, Version 10. This program employs limit equilibrium methods in accordance with the ODOT GDM. The Morgenstern-Price slope stability analysis method was used. The analysis was performed for static and seismic conditions. Based on the discussion in Section 6.3.2, the subsurface materials are not considered susceptible to liquefaction and thus we did not evaluate a post-seismic condition. A live

load of 250 pounds per square foot (psf) was assumed for the static condition. For seismic global stability analyses, pseudo-static procedures described in the ODOT GDM Chapter 6 were followed. Horizontal acceleration coefficients equal to one-half of the site peak ground accelerations (0.5 x F_{pga} x PGA) were used. For our seismic global stability analysis, we used a horizontal seismic coefficient equal to 0.16 for the 1,000-year ground motion level. An OHWM elevation of 164.0 feet was assumed in the design for the water level in the creek.

We analyzed global stability at the proposed Bent 1 (boring B-2) and Bent 2 (boring B-1) locations. Generalized subsurface conditions and soil parameters were determined from the results of the field explorations and laboratory testing for borings B-1 through B-4.

The ODOT GDM requires that slopes supporting bridge foundations be designed with a maximum resistance factor for global stability of 0.65, equivalent to a factor of safety (FS) of 1.5, for the static conditions. For seismic conditions, a maximum resistance factor of 0.9, or an FS of 1.1, is required.

Global stability analysis results are presented in Exhibit 7-1 and in Appendix C. Soil design parameters are included in Figures C1 through C4 in Appendix C. Based on our analysis, the proposed bridge abutments will satisfy the minimum global stability FS requirements for static and seismic conditions for both bents.

Exhibit 7-1: Global Stability Analysis Results

Abutment	Type of Analysis	Factor of Safety
Bent 1	Static Condition	1.5
	Seismic Condition	1.2
Bent 2	Static Condition	1.8
	Seismic Condition	1.7

7.4 Bridge Foundation Design Alternatives

The selection of an appropriate foundation system for the proposed bridge structure is dependent upon several factors, including foundation capacities, tolerance to total and differential settlement resulting from static and dynamic loads, and construction considerations. Based on the explored subsurface conditions and the design loads, shallow foundation systems were not considered due present of soft to medium stiff clay and organic clay in the upper 15 to 16 feet. Therefore, we considered deep foundation systems such as driven pile and drilled shaft foundations. A comparison of these two types of foundations is presented in Exhibit 7-2.

Exhibit 7-2: Comparison of Bridge Foundation Alternatives

Foundation Type	Description	Advantages	Disadvantages
Driven Steel Piles (Open-End)	Piles driven into Troutdale Formation with a nominal compressive resistance on the order of 150 to 300 kips	▪ Generates relatively high skin resistance ▪ Feasible for proposed construction sequence ▪ Relatively fast construction ▪ Lower cost than drilled-in foundations	▪ Potential risk of damaging existing adjacent structures due to vibrations generated by driving ▪ Requires special equipment
Small- to Medium-Diameter Drilled Shafts (2- to 4-foot diameter)	Multiple small- to medium-diameter shafts embedded into Troutdale Formation, a nominal resistance on the order of 300 to 800 kips	▪ Higher level of control of construction variability compared to driven piles ▪ Provides higher lateral load than driven piles ▪ Feasible for proposed construction sequence ▪ Can be constructed using non-vibratory methods	▪ Relatively more expensive than driven piles ▪ Requires a specialty contractor ▪ Highest construction QA/QC requirements ▪ Relatively longer construction duration compared to driven piles ▪ High mobilization/demobilization costs compared to driven piles

Based upon the comparisons summarized in Exhibit 7-2, the driven pile foundation is more cost effective and has faster construction compared to drilled shafts. Driven pile foundations are being evaluated by the project team. Design recommendations for driven pile foundations are provided in this report.

7.5 Driven Pile Design Recommendations

7.5.1 General

The following sections provide our recommendations for axial and lateral resistance of driven steel open-end pipe piles at Bents 1 and 2. We understand that each bridge abutment will be supported by a single row of six (6) 16-inch-diameter open-end pipe piles with 0.5-inch wall thickness. The bottom of the pile cap will be located at approximate depths of 11 to 12 feet at Bents 1 and 2, respectively. The preliminary loads per bent were provided by DEA and consist of the following:

Strength Limit State = 1,517 kips/bent

Services Limit State = 1,067 kips/bent

7.5.2 Driven Pile Axial Resistance

We recommend that the steel piles conform to the requirements of ASTM A252, Grade 3. Mill certification of the steel should be provided by the supplier. All portions of pile design and construction should meet the requirements of the ODOT OSSC, Section 00520, and its project special provisions. Exhibit 7-3 presents the typical pile section design properties.

Exhibit 7-3: Steel Pipe Pile Section Properties

Pile Diameter x Thickness (inches)	Steel Grade (kips/inch^2)	Section Area (inch^2)	End Condition	Ultimate Structural Capacity (kips)
PP 16 x 0.5	A252 Grade 3	24.7	Open-End	865

We expect that the compressive resistance of the driven pile will consist of a combination of end bearing and skin friction. The estimated nominal pile compressive resistances for the recommended pile sections are presented in Figures 4 and 5 and summarized below in Exhibit 7-4.

Exhibit 7-4: Steel Pipe Pile Length and Compressive Resistance for Bridge Foundations[1]

Abutment	Pile Type	Number of Piles	Estimated Driven Length for Each Pile (feet)[2]	Estimated Pile Tip Elevation for Each Pile (feet)	Factored Axial Compressive Resistance, R_f for Each Pile (kips)[3]
Bent 1	PP 16 x 0.5	6	52	123	255
Bent 2	PP 16 x 0.5	6	50	122	255

1 Recommendations provided are for both abutments

2 Estimated driven pile length, taken as the distance between bottom pile cap and estimated pile tip elevation, is assumed to be ±5 feet of the table value.

3 The factored axial compressive resistance for each pile includes downdrag load.

The estimated nominal axial resistances assume the piles are spaced at least 2.5 pile diameters apart, measured center-to-center. Based on this assumption, the pile group effects for are not considered. If the pile spacing is reduced during final design, the appropriate pile efficiency factor must be established and applied, as recommended by AASHTO LRFD.

7.5.3 Driven Pile Lateral Resistance

The driven pile foundations will be subjected to lateral loads resulting from live and seismic. We understand that the laterally loaded pile analyses will be performed with the aid of the LPILE computer program. Geotechnical input parameters for LPILE are presented in Table 1, attached at the end of this report, for the static/seismic.

The estimated lateral resistance parameters presented in Table 1 are recommended for driven piles with center-to-center spacing greater than five pile diameters (5D) and in a

single row. Based on this assumption, the pile group effects are not considered. If the pile spacing is less than 5D, or multiple rows of piles are required, the appropriate P-Multiplier must be established and applied, as recommended by the AASHTO LRFD Bridge Design Specifications, Section 10.7.2.4.

7.5.4 Pile Driving Criteria and Construction Considerations

As previously stated, we recommend that pile driving and installation follow the ODOT OSSC, Section 00520. If splicing pile lengths in the leads is necessary to install the piles, then splicing locations should be approved by the structural engineer. All pile splices should be made according to the ODOT OSSC and procedures for piling with lateral and tension loading conditions. Also, the piles should be driven no closer together than 2.5 pile diameters, measured from center to center and within 6 inches of locations shown on the plans. The pile driving alignment tolerance should follow the ODOT OSSC.

The piles should be driven with an impact hammer such as a single or double acting air, steam, or diesel hammer. Selection of the pile driving hammer to drive the pile to the required nominal resistance, should be determined based on minimum hammer energy as required by the ODOT OSSC, Section 00520. According to the ODOT OSSC, wave equation analysis is required to determine the appropriate pile hammer for any piles with a nominal resistance more than 600 kips. The driving energy of a pile hammer used for piles with a nominal resistance less than 600 kips may be qualified using Table 00520-1 in the ODOT OSSC, Section 00520.

The piles should be driven to a minimum "last set" and to a minimum pile length of 12 feet as required by the ODOT OSSC, Section 00520.41c. If the "last set" is reached before the minimum tip elevation or minimum pile embedment, driving should continue until the minimum design requirements are reached. If driving must be terminated before the minimum requirements are achieved because driving stresses are greater than 90 percent of the yield strength, F_y (of the steel pile), or to prevent other damage to the pile or hammer, the driving records should be reviewed by a professional geotechnical engineer to evaluate both compressive and lateral resistance of the pile.

Prior to construction, pile driving criteria including "last set" should be established for the specific pile-driving equipment proposed for use. The hammer selected by the contractor should be capable of achieving the required nominal resistance at a blow count between 2 and 10 blows per inch. ODOT OSSC requires the use of the Wave Equation Analysis Program (WEAP) for all piles with nominal compressive resistance greater than 600 kips. We recommend the use of WEAP to establish "last set" criteria for all piles, which will allow for the use of a higher resistance factor, 0.50, to establish nominal pile resistance. This analysis should include the specific hammer, helmet, and cushion characteristics proposed

by the contractor for the project. A resistance factor of 0.40 is recommended to determine nominal pile resistance if the FHWA Gates equation is used to establish "last set" criteria. If the FHWA Gates equation is used to establish suitability of driving equipment, consideration must be given to potential overstressing of the pile during driving. This is of particular importance where piles are driven to high tip resistance within a dense bearing layer. Exhibit 7-8 presents the recommended WEAP input parameters.

Exhibit 7-5: Recommended Input Parameters for WEAP Analysis

Pile Section	Estimated Driven Length (feet)	Quake (inches)		Damping (s/ft)		Percent Skin Friction (%)	Nominal Axial Compressive Resistance, R_n (kips)
		Skin	Toe	Skin	Toe		
PP 16 x 0.5	See Exhibit 7-4	0.10	0.10	0.15	0.15	75	320

* AASHTO LRFD recommendations indicate that R_{nom} should be equal to factored design load multiplied by a resistance factor of 0.5 when WEAP analysis is used.

During pile driving, a continuous record of pile driving resistance (bpf) should be maintained for the full length of each pile driven, as well as other pertinent information, including observed hammer performance. If an open-end diesel hammer is used to drive the piles, the pile-driving contractor should supply a Saximeter™ during pile driving to determine an actual stroke height and pile driving energy. We recommend that an engineering staff representative, under the guidance of a professional geotechnical engineer, monitor pile driving to evaluate the suitability of each pile driven. If the pile does not achieve the required blow count at the estimated tip elevation during initial drive, we recommend that pile driving be suspended and that a 72 hour restrike be performed after soils have regained strength.

In the project vicinity, pipe piles have been observed to "walk" out of alignment or "bounce" when driven in primarily fine-grained soils. This behavior is attributed to a build-up of pore water pressure at the pile tip and that exceeds the pile side resistance. If this type of behavior is observed during pile installation, we recommend that pile driving be paused for 24 hours at each observed location to allow pore pressures to dissipate before driving is restarted.

7.6 Bridge Abutment and Wing Walls

7.6.1 General

Wing walls heights up to 12 feet and approximately 20 feet in length, parallel to the roadway, are indicated in the preliminary plans at each corner of the proposed bridge. It is understood that these wing walls will be cantilevered from the pile cap and bridge abutments beneath the bridge deck. The wing walls will have level backslope. This will

impose additional loads on the piles supporting the bridge, although lateral loads due to earth pressures will be partially offset due to the wing wall on the opposite end of the pile cap.

For design purposes, we have assumed that subdrainage systems will be installed to prevent hydrostatic pressure from developing behind all retaining walls. Also, we have assumed that the backfill behind the walls is level.

7.6.2 Lateral Earth Pressures

The lateral earth pressures on the retaining walls depend on the type of wall (i.e., yielding or non-yielding), the type and method of placement of backfill against the wall, the magnitude of surcharge weight on the ground surface adjacent to the wall, the slope of the backfill, and the design criteria. We recommend that at-rest (non-yielding wall) earth pressures with level backslope be considered at the wing walls and abutments.

Based on the structural design information and the above assumptions, the lateral earth pressures on the walls were developed according to the ODOT GDM and AASHTO LRFD Bridge Design Specifications. The static lateral earth pressure acting on walls consists of two components: static earth pressure and static surcharge pressure. The seismic lateral earth pressure on walls consists of three components: static earth pressure, static surcharge pressure, and seismic earth pressure. A horizontal acceleration coefficient, kh, equal to the site peak ground acceleration (Fpga x PGA), As, was used to determine the seismic earth pressure for non-yielding walls. The distributions of these lateral pressures are shown on Figure 6, Lateral Earth Pressure Distribution on Abutments, Wing Walls, and Retaining Walls.

7.6.3 Subdrainage

Suitable drainage for walls can be provided by granular backfill material and a wall base subdrain system consisting of a 6-inch-diameter perforated or slotted drain pipe wrapped in an envelope of filter material at least 12 inches thick and confined by a separation geotextile. The filter material is specified in Section 02610.10(a) of the ODOT OSSC. The subdrain should be above the typical groundwater level, convey any collected seepage to the end of the wall, and daylight at low spots below the wall elevation.

7.6.4 Backfill Material and Compaction

The wall backfill material should be in accordance with standard Granular Wall Backfill (Section 00510.12 of the ODOT OSSC). Heavy compaction equipment should not be allowed closer than 3 feet to the retaining wall to prevent high lateral earth pressures and/or wall yielding and/or damage. Required compaction of wall backfill within 3 feet of the walls

shall be obtained using light-weight hand-operated compaction equipment, such as a vibrating plate compactor.

7.6.5 Lateral Resistances

Based on our evaluation, the static and seismic lateral resistance of the abutment wall can be provided by the pile foundations. We assume the lateral resistance for the wing walls will be generated through the structural connection with the pile cap. If it is determined that bridge foundations designed without specific consideration for retaining wall loading cannot adequately support the retaining walls, specific foundation design recommendations will be provided upon request.

8 PAVEMENT DESIGN RECOMMENDATIONS

8.1 General

This section presents the new asphalt concrete pavement design for widening/reconstruction of Canby Marquam Highway in the vicinity of the Bear Creek Bridge replacement.

We understand that the pavement design will be designed considering the following manuals and specifications:

- AASHTO Guide for Design of Pavement Structures (GDPS), 1993;
- ODOT Pavement Design Guide (PDG), 2019; and
- ODOT Oregon Standard Specification for Construction (OSSC), 2018.

The following sections describe the pavement design procedures, methodology, and input parameters considered in the design and present pavement design recommendations.

The recommended pavement sections meet the minimum structural requirements. However, there may be additional project considerations, such as cost effectiveness, that may influence final selection of pavement sections. All pavement construction should be performed in accordance with the ODOT OSSC.

8.2 New ACP and Reconstruction Designs

This section discusses inputs and results for new asphalt concrete pavement (ACP) as well as reconstruction.

8.2.1 Design Life

The PDG calls for 30-year design life for bridge approach and 20-year design life for new ACPs in rural and not grade constraint urban area. It should be mentioned that design and analysis for construction of widening of existing roads and reconstruction of roadway are the same according to PDG. In addition, Clackamas County requests a 20-year design life for new ACPs outside of bridge approach.

8.2.2 Traffic Data

Traffic data for the highway design section was provided by Clackamas County. Average Daily Traffic (ADT) counts were provided in Appendix D. It was assumed that the ADT data represents Annual Average Daily Traffic (AADT) as well. Combined counts for northbound (NB) and southbound (SB) directions was provided. The 2018 daily counts and truck percentages are presented in Exhibit 8-1.

Exhibit 8-1: Daily Vehicle Counts and Truck Percentage

Location/Direction	Daily Vehicles	
	2018 Counts	Truck Percentage
Both Direction	2,603	9.6%

The provided daily traffic counts, truck classification and percentage, and ODOT truck conversion factors were used to calculate flexible equivalent single-axle (18-kip) loads (ESALs) for each traffic location/direction. A directional distribution factor of 0.55 and lane distribution factor of 1.00 were used for the design lane traffic calculations. Clackamas County provided the growth rate of 4.0%. Summary of the calculated flexible ESALs are presented in Exhibit 8-2 for both 20, and 30-year designs.

Exhibit 8-2: Summary of Flexible ESALs

Location/Direction	20-Year Design ESALs (Flexible)	30-Year Design ESALs (Flexible)
Each Direction	1,074,817	2,024,343

8.2.3 Subgrade Resilient Modulus (M_R)

Four Dynamic Cone Penetrometer (DCP) tests were conducted on exiting roadway in the project vicinity. The subgrade soils at the DCP test and geotechnical soil boring locations were classified as silty sand (SM). The average corrected resilient modulus values (M_R), based on ODOT's DCP correlation equation and correction factor of 0.35, are presented in Exhibit 8-3.

Exhibit 8-3: DCP Corrected Subgrade M_R Values

DCP Designation	Corrected M_R (psi)
B-1	4,000
B-2	4,500
B-3	5,000
B-4	6,000

Based on the above tabulated subgrade resilient modulus values, an M_R of 5,000 psi was considered for the design.

8.2.4 ODOT ACP Design Inputs

Other design input parameters considered in the ACP pavement design following the ODOT guidelines are presented in Exhibit 8-4.

Exhibit 8-4: ODOT Flexible Pavement Design Inputs

Parameter	Value
Reliability Level	0.85 (rural)
Overall Standard Deviation	0.49
Initial Serviceability Index	4.2
Terminal Serviceability Index	2.5
Drainage Coefficient	1.0

8.2.5 New ACP and Reconstruction Design Recommendations

The required structural number (SN) for the design traffic level was calculated according to AASHTO GDPS design method. The empirical layered design method described in AASHTO GDPS was employed to calculate layer thicknesses. Recommended values for layer coefficients and base modulus according to PDG are presented in Exhibit 8-5 and were used for the new ACP design.

Exhibit 8-5: ODOT ACP Design Inputs

Parameter	Value
New AC	Layer Coefficient=0.42
New Aggregate Base	Layer Coefficient=0.10
Aggregate Base Modulus	20,000 psi

AC and aggregate base thickness values obtained following the design guidelines in AASHTO GDPS and ODOT OSSC were rounded up to the nearest 1/2 inch and are presented in Exhibit 8-6 for new ACP.

Exhibit 8-6: New ACP and Reconstruction Section Design Recommendations

Design Life (Years)	Layer	Layer Thickness (Inches)
20	AC	6.0
	Aggregate Base	15.0
20 (Alternative)	AC	7.0
	Aggregate Base	11.0
30	AC	7.5
	Aggregate Base	14.0
30 (Alternative)	AC	8.0
	Aggregate Base	11.0

The AC layer material is recommended to be Level 3, 1/2" Dense PG 64-22.

8.3 Subgrade Preparation and Stabilization

Subgrade preparation should follow our recommendations provided in Section 9 below. It is recommended that a non-woven subgrade separation geotextile meeting the requirements of ODOT OSSC Section 02320 be placed between the aggregate base course and subgrade to reduce the potential for fines to migrate into the aggregate base.

It is also recommended that the exposed subgrade be inspected to identify any soft or weak spots prior to the placement of pavement material. The subgrade inspection should, at a minimum, consist of proof-rolling the subgrade with a fully loaded dump truck. For fine-grained soil that is wet and sensitive to disturbance, proof-rolling the subgrade is not recommended. Instead, the subgrade should be evaluated by probing. Soft or weak spots should be over-excavated and replaced with compacted granular material. Soft or weak spots should be over-excavated and replaced with compacted aggregate base in accordance with OSSC Section 00331, Subgrade Stabilization. Provisions should be made under this contract for a quantity of subgrade stabilization equivalent to 20 percent of the total area of new or reconstructed pavement areas during dry weather. During wet weather, provisions should be made under this contract for a quantity of subgrade stabilization equivalent to 50 percent of the total area of new or reconstructed pavement construction.

9 GENERAL CONSTRUCTION CONSIDERATIONS

9.1 Site Preparation and Earthwork

Bridge, retaining walls, and roadway subgrade preparation will include: (1) clearing and grubbing; and (2) removal of existing structures, pavement, and underground utilities. These construction activities should generally be accomplished in accordance with ODOT OSSC, Part 00300. We expect that site excavation could be accomplished using conventional excavating equipment.

After site stripping and preparation activities are completed, the exposed subgrade receiving fill should be proof-rolled with a fully-loaded 10- to 12-yard dump truck or similar heavy rubber-tired construction equipment to identify soft, loose, or unsuitable areas.

The site stripping and proof-roll should be observed by a qualified geotechnical engineer or representative, who should determine stripping depth, evaluate the suitability of the subgrade, and identify areas of yielding. If loose and/or wet, soft soil zones are identified during proof-rolling, the soils should be removed and replaced with compacted structural fill in accordance with ODOT OSSC, Part 00331, Subgrade Stabilization.

Disturbance of subgrade soil due to construction equipment and activities could affect support of the proposed walls and embankment. The contractor should take necessary steps to protect the subgrade from becoming disturbed.

9.2 Wet Weather Earthwork

Wet weather generally begins about mid-October and continues through about May, although rainy periods may occur at any time of year. Some of the near-surface soils at the site contain sufficient silts and fines to produce an unstable mixture when wet. Fine-grained soils are generally sensitive to changes in water content and tend to become unstable and difficult, or impossible, to compact if their moisture content significantly exceeds the optimum. If earthwork at the site continues into the wet season, or if wet conditions are encountered, we recommend the following:

- The ground surface in and surrounding the construction area should be sloped as much as possible to promote runoff of precipitation away from work areas and to prevent ponding of water.
- Earthwork should be accomplished in small sections to minimize exposure to wet conditions: that is, each section should be small enough so that the removal of unsuitable soils and placement and compaction of clean structural fill can be accomplished on the same day.

- The size of construction equipment may have to be limited to prevent soil disturbance. It may be necessary to excavate soils with a backhoe, or equivalent, located so that equipment does not traffic over the excavated area. Thus, subgrade disturbance caused by equipment traffic will be minimized.
- No excavated soil should be left uncompacted and exposed to moisture. A smooth drum vibratory roller, or equivalent, should roll the surface to seal out as much water as possible.
- In-place soils or fills that become wet and unstable and/or too wet to suitably compact should be removed and replaced with clean, granular structural fill.
- Excavation and placement of structural fill material should be observed on a full-time basis by a geotechnical engineer (or representative) experienced in earthwork to determine that all work is being accomplished in accordance with the project specifications and our recommendations.
- Grading and earthwork should not be accomplished during periods of heavy, continuous rainfall.

9.3 Temporary Cut Slopes

Temporary cut slopes should be the responsibility of the Contractor who is continually at the site; is able to observe the nature and conditions of the subsurface materials encountered, including groundwater; and has responsibility for the methods, sequence, and schedule of construction. Any excavations deeper than 4 feet bgs and that involve on-site personnel entering the excavation should be adequately sloped or shored in accordance with Oregon OSHA requirements.

For planning purposes, we recommend that temporary, unsupported, open-cut slopes up to 10 feet bgs be no steeper than 1.5H:1.0V in fill or loose/soft surficial soils. When caving or sloughing soil is encountered, the slope should be made at 2.0H:1.0V or flatter, depending on the conditions.

These recommendations are applicable to slopes in areas where groundwater and/or groundwater seepage is not present. Temporary cuts that encounter groundwater should be shored and adequately braced, or provisions made for dewatering of the excavations. We recommend that all exposed slopes be protected with waterproof covering during periods of wet weather to reduce sloughing and erosion.

9.4 Creek Channel Excavation

We anticipate some excavation may be required for the proposed creek channel excavation. We anticipate the excavation could be performed with conventional excavating equipment.

9.5 Temporary Water Management

We understand that the water in the creek channel will be allowed to flow during construction and therefore, temporary water management may not be required.

10 LIMITATIONS

The analyses, conclusions, and recommendations contained in this report are based on site conditions as they presently exist, and further assume that the explorations are representative of the subsurface conditions throughout the site; that is, the subsurface conditions everywhere are not significantly different from those disclosed by the explorations. If subsurface conditions different from those encountered in the explorations are encountered or appear to be present during construction, we should be advised at once so that we can review these conditions and reconsider our recommendations, where necessary. If there is a substantial lapse of time between the submission of this report and the start of construction at the site, or if conditions have changed because of natural forces or construction operations at or adjacent to the site, we recommend that we review our report to determine the applicability of the conclusions and recommendations.

Within the limitations of scope, schedule, and budget, the analyses, conclusions, and recommendations presented in this report were prepared in accordance with generally accepted professional geotechnical engineering principles and practice in this area at the time this report was prepared. We make no other warranty, either express or implied. These conclusions and recommendations were based on our understanding of the project as described in this report and the site conditions as observed at the time of our explorations.

Unanticipated soil conditions are commonly encountered and cannot be fully determined by merely taking soil samples from test borings. Such unexpected conditions frequently require that additional expenditures be made to attain a properly constructed project. Therefore, some contingency fund is recommended to accommodate such potential extra costs.

This report was prepared for the exclusive use of Clackamas County and DEA in the design of the Canby Marquam Highway: Bear Creek Bridge Project. The data and report should be provided to the contractors for their information, but our report, conclusions, and interpretations should not be construed as a warranty of subsurface conditions included in this report.

The scope of our present work did not include environmental assessments or evaluations regarding the presence or absence of wetlands, or hazardous or toxic substances in the soil,

surface water, groundwater, or air, on or below or around this site, or for the evaluation or disposal of contaminated soils or groundwater should any be encountered.

Shannon & Wilson, Inc., has prepared and included in Appendix F, "Important Information About Your Geotechnical/Environmental Report," to assist you and others in understanding the use and limitations of our reports.

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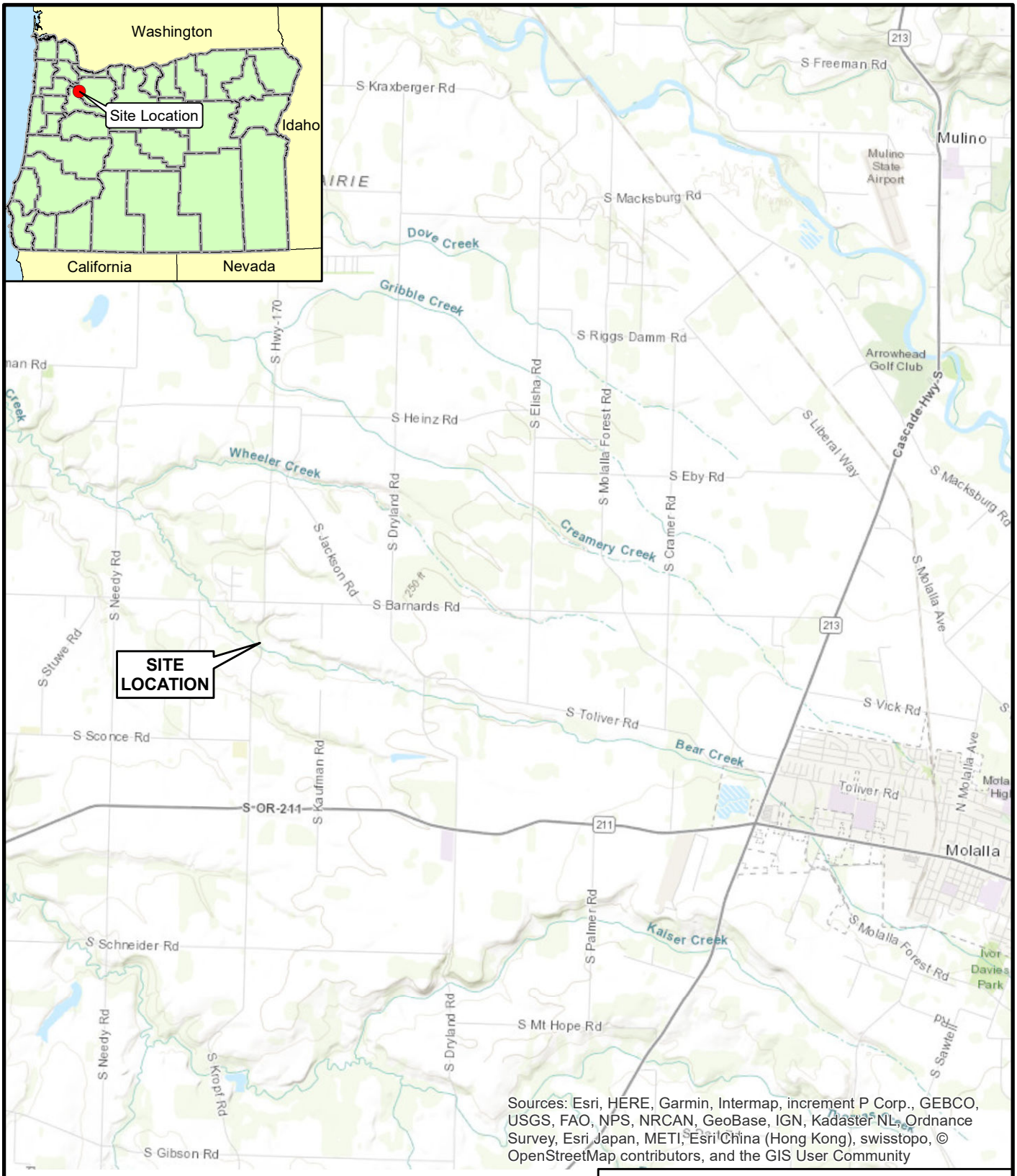
Table 1 - Recommended LPILE Geotechnical Input Parameters for Bridge Foundations

	Depth[a] (feet) From	To	Soil Unit	Recommended P-Y Curve	Effective Unit Weight (pcf)	Friction Angle (deg)	k (pci)	Undrained Cohesion (psf)	Strain Factor, ε_{50}
B-1 (North Abut)	0	15.4	Fill / Alluvium	Soft Clay (Matlock)	110	--	--	500	0.017
	15.4	32	Troutdale (Granular)	Sand (Reese)	130	40	125	--	--
	32	38	Troutdale (Cohesive)	Stiff Clay w/o free water	120	--	--	4,000	0.004
	38	76	Troutdale (Granular)	Sand (Reese)	130	40	125	--	--
B-2 (South Abut)	0	16	Fill / Alluvium	Soft Clay (Matlock)	110	--	--	500	0.017
	16	37	Troutdale (Granular)	Sand (Reese)	130	40	125	--	--
	37	48	Troutdale (Cohesive)	Stiff Clay w/o free water	120	--	--	4,000	0.004
	48	63	Troutdale (Granular)	Sand (Reese)	130	40	125	--	--
	63	66	Troutdale (Cohesive)	Stiff Clay w/o free water	120	--	--	4,000	0.004

NOTES:

a Depth = 0 feet corresponds to existing ground surface at borings B-1 and B-2, approximately Elevations 172 and 175 feet, respectively

deg = degrees; pcf = pounds per cubic foot; pci = pounds per cubic inch; psf = pounds per square foot; psi = pounds per square inch; UCS = uniaxial compressive strength



Bear Creek Bridge
Canby Marquam Hwy
Clackamas County, Oregon

VICINITY MAP

May 2020 103169

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS

FIG. 1

Filename: T:\Projects\PDX\103000s\103169_Bear_Creek\Avmxd\VicinityMapGeo_10.6.mxd Date: 5/11/2020 Login: AEH

Filename: T:\Projects\PDX\103000s\103169_Bear_Creek\Avmxd\SitePlanGeo_10.6.mxd Date: 5/11/2020 Login: AEH

0 20 40 80

Scale in Feet

LEGEND

B-1 Designation and Location of Boring

Proposed Bridge - On-Center Existing Alignment (Preferred)

Proposed Bridge - Shift Alignment (Alternative)

A A' Designation and Location of Interpretive Subsurface Profile

NOTES

1. Aerial imagery obtained through Google Maps Satellite.
2. Boring locations and existing contours from file SV-BS-X-CLKX0045.dwg , provided by David Evans and Associates on April 1, 2020.
3. Proposed bridge on existing alignment from file 2020EB_CLKX0045_Master.dwg, provided by David Evans and Associates on April 30, 2020.
4. Proposed bridge on alternative alignment from file EB_CLKX0045_Align-Shift_Master.dwg, provided by David Evans and Associates on May 7, 2020.

Bear Creek Bridge
Canby Marquam Hwy
Clackamas County, Oregon

SITE AND EXPLORATION PLAN

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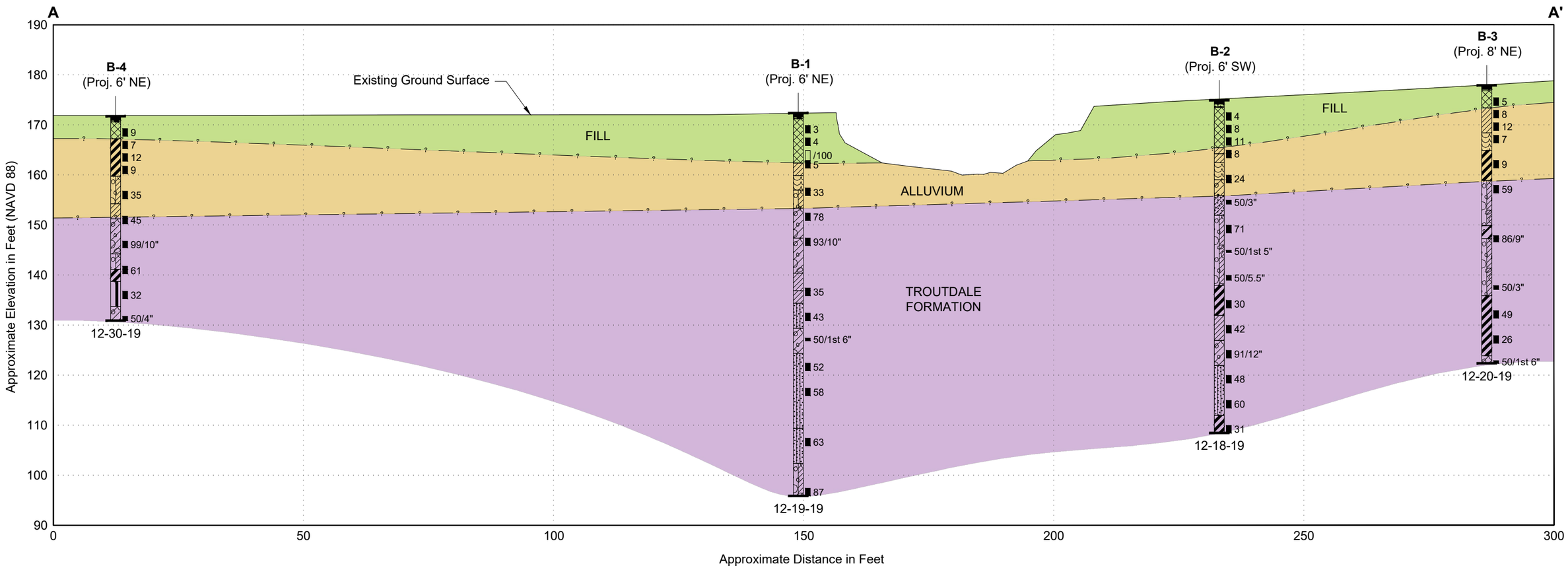
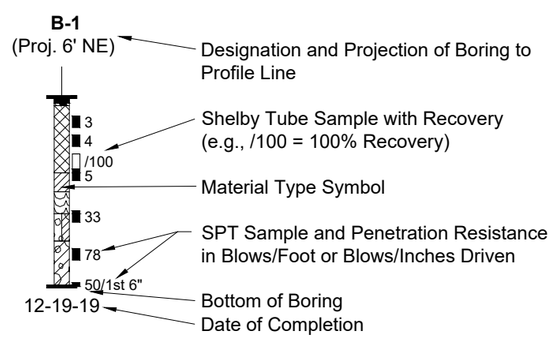
FIG. 2

FIG. 2



LEGEND



NOTES

1. Ground surface generated from surface in drawing SV-BS-X-CLKX0045.dwg, provided by David Evans and Associates, Inc., on April 1, 2020.
2. Profile generalized from materials observed in borings. Variations may exist between profile and actual conditions. See Appendix A for complete boring logs and explanations of symbols.
3. See Figure 2 for profile location.
4. Boring locations and elevations from drawing SV-BS-X-CLKX0045_3-18-20.dwg, provided by David Evans and Associates, Inc., on March 18, 2020.

Bear Creek Bridge
Canby Marquam Hwy
Clackamas County, Oregon

INTERPRETIVE SUBSURFACE PROFILE A-A'

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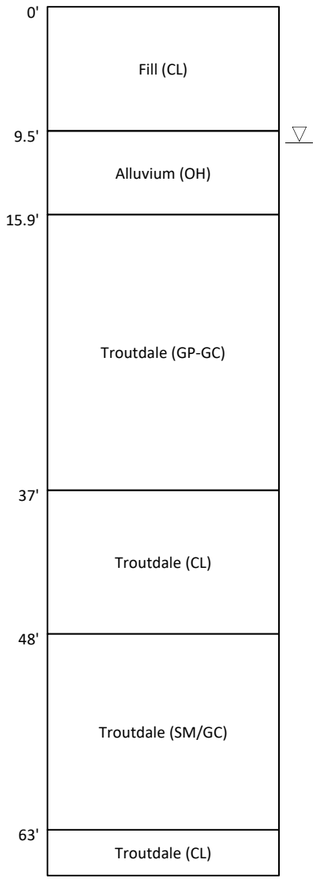
FIG. 3

File: I:\EF\PDX\103000s\103169 Bear Creek Brid\DRAFTING\Profile.dwg Date: 04-06-2020 Author: AEH

ASSUMED SUBSURFACE PROFILE

Based on Nearby Explorations:

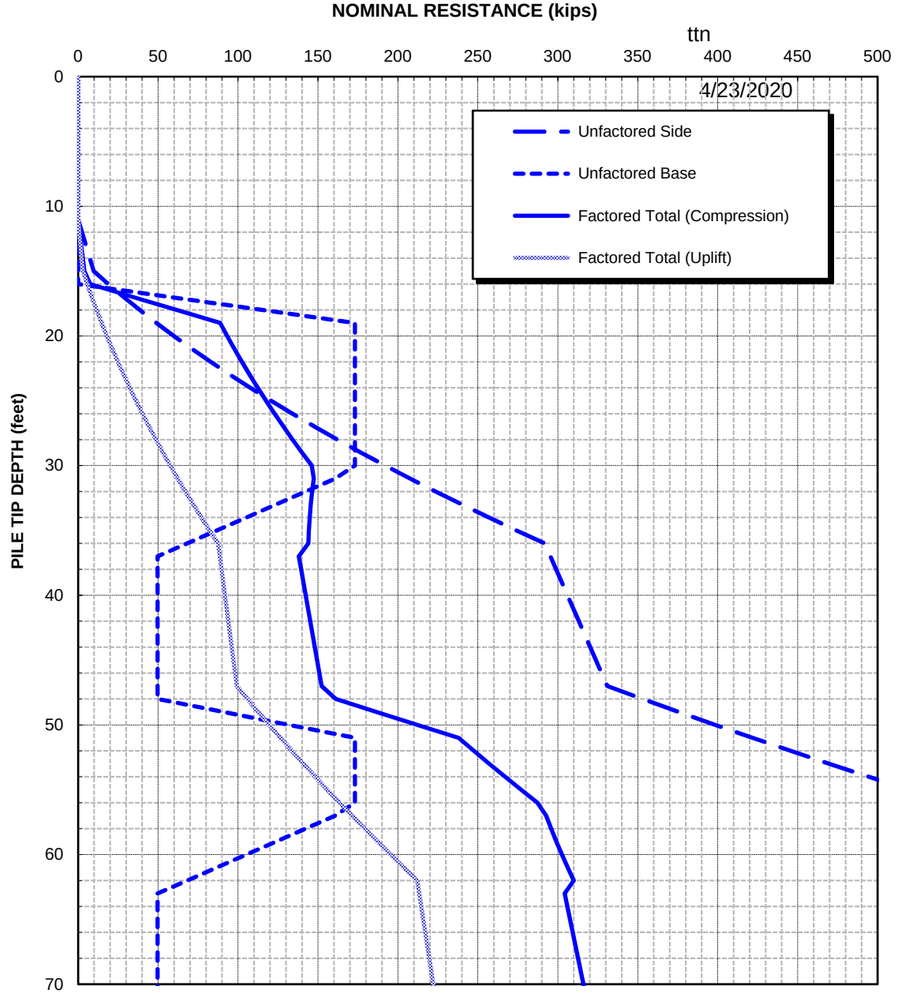
B-2



Bottom of Boring at 66.5 feet

STRENGTH LIMIT

NOMINAL RESISTANCE (kips)

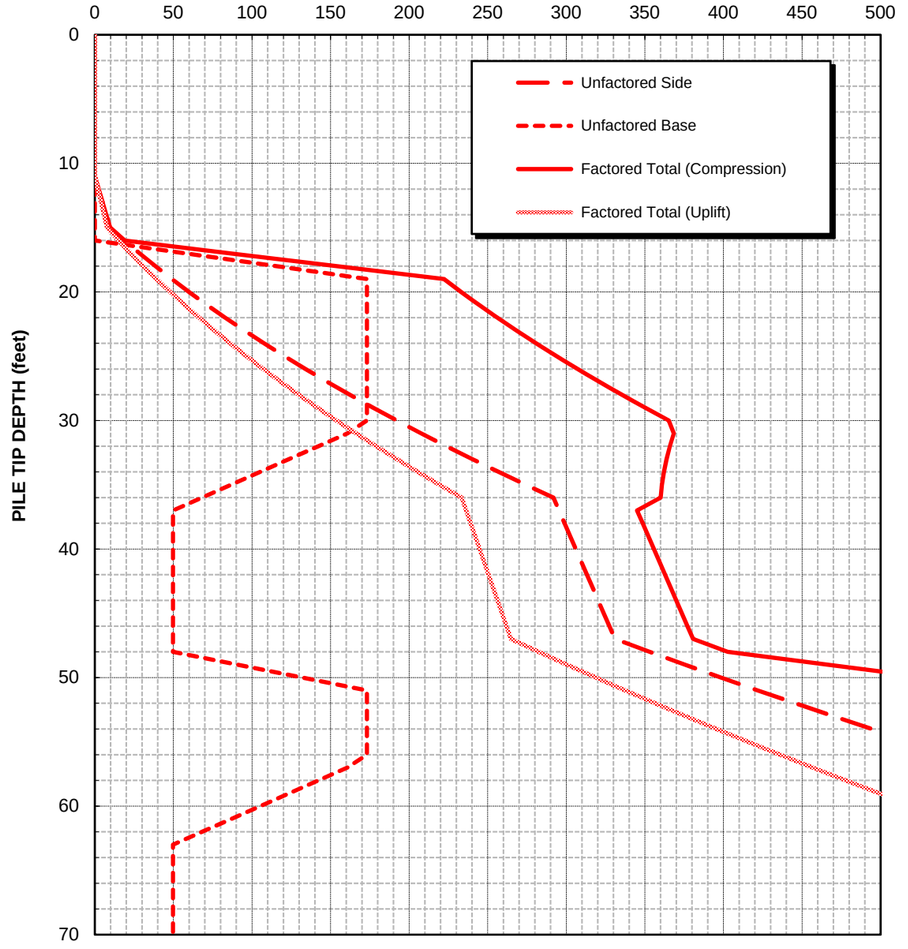


STRENGTH LIMIT NOTES:

1. Recommended resistance factors are 0.4 and 0.4 for side and base resistance, respectively.
2. Pile uplift capacity can be estimated by using the unfactored side resistance shown above and a recommended resistance factor of 0.3 .

EXTREME EVENT LIMIT

NOMINAL RESISTANCE (kips)



EXTREME EVENT LIMIT NOTES:

1. Recommended resistance factors are 1.0 and 1.0 for side and base resistance, respectively.

GENERAL NOTES

1. The analyses were performed based on guidelines included in the ODOT Geotechnical Design Manual (GDM) and local experience. The analyses are based on a single pile and do not consider group action of closely spaced piles (closer than 2.5 diameters, center to center).
2. Factored total pile resistance shown on plots is determined by adding its unfactored side and base resistances multiplied by the appropriate resistance factors as noted above.
3. Estimated capacities assume that the driven piles will be installed after construction of the approach embankments. Downdrag loads due to potential fill embankment settlement have not been included.

Canby Marquam Highway: Bear Creek Bridge
Clackamas County, Oregon

ESTIMATED AXIAL PILE RESISTANCE
16" x 0.5" OPEN-END PIPE PILE
BENT 1

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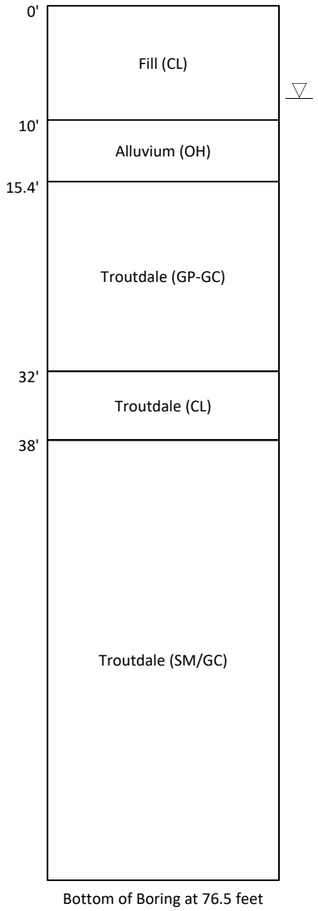
FIG. 4

ASSUMED SUBSURFACE PROFILE

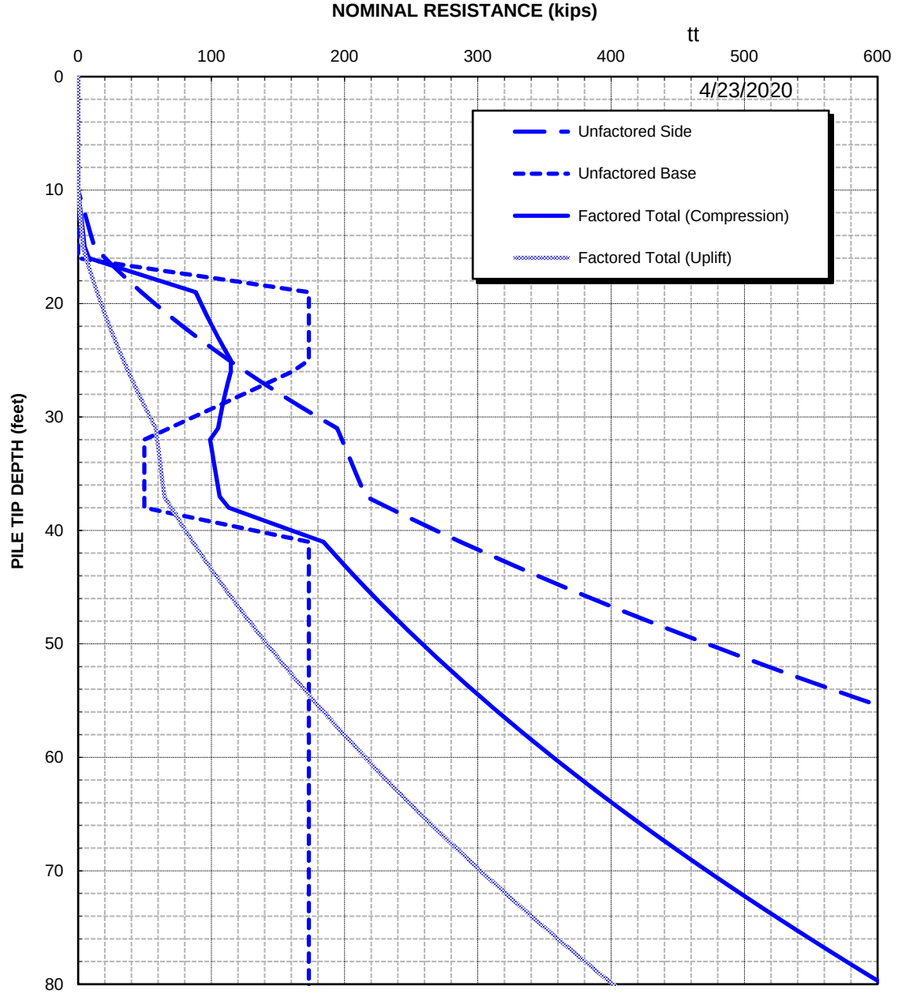
Based on Nearby Explorations:
B-1



Bottom of Boring at 76.5 feet

STRENGTH LIMIT

NOMINAL RESISTANCE (kips)

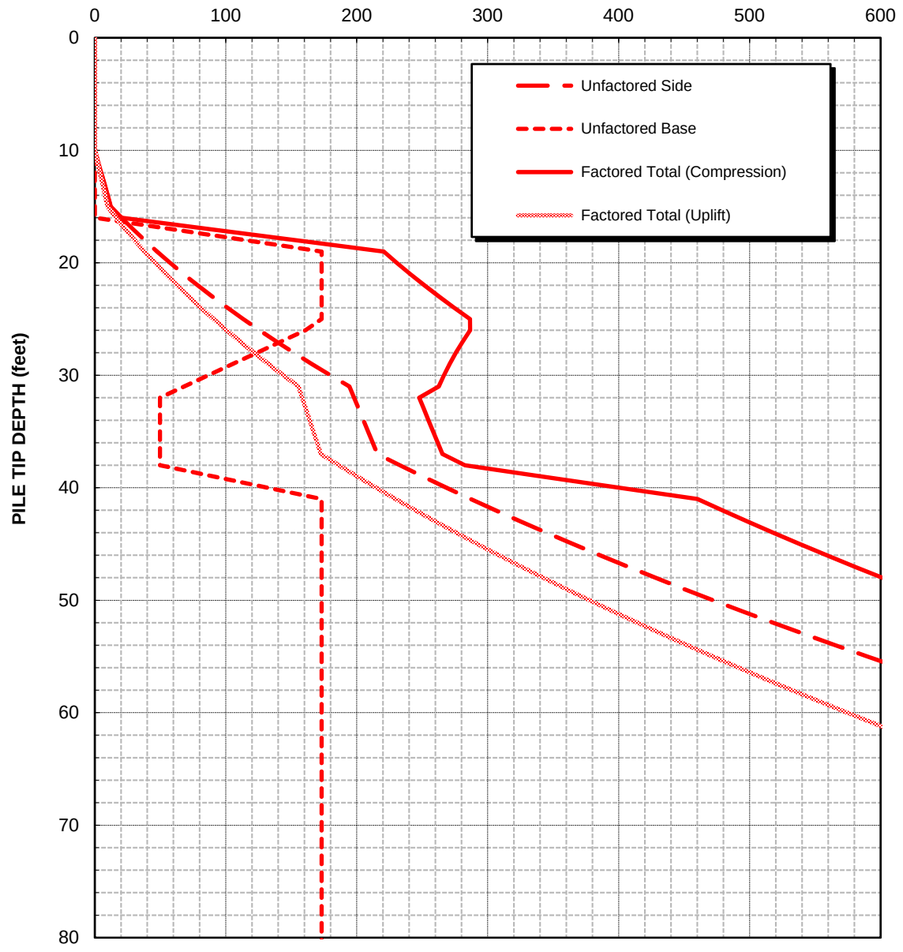


STRENGTH LIMIT NOTES:

1. Recommended resistance factors are 0.4 and 0.4 for side and base resistance, respectively.
2. Pile uplift capacity can be estimated by using the unfactored side resistance shown above and a recommended resistance factor of 0.3 .

EXTREME EVENT LIMIT

NOMINAL RESISTANCE (kips)



EXTREME EVENT LIMIT NOTES:

1. Recommended resistance factors are 1.0 and 1.0 for side and base resistance, respectively.

GENERAL NOTES

1. The analyses were performed based on guidelines included in the ODOT Geotechnical Design Manual (GDM) and local experience. The analyses are based on a single pile and do not consider group action of closely spaced piles (closer than 2.5 diameters, center to center).
2. Factored total pile resistance shown on plots is determined by adding its unfactored side and base resistances multiplied by the appropriate resistance factors as noted above.
3. Estimated capacities assume that the driven piles will be installed after construction of the approach embankments. Downdrag loads due to potential fill embankment settlement have not been included.

Canby Marquam Highway: Bear Creek Bridge
Clackamas County, Oregon

ESTIMATED AXIAL PILE RESISTANCE
16" x 0.5" OPEN-END PIPE PILE
BENT 2

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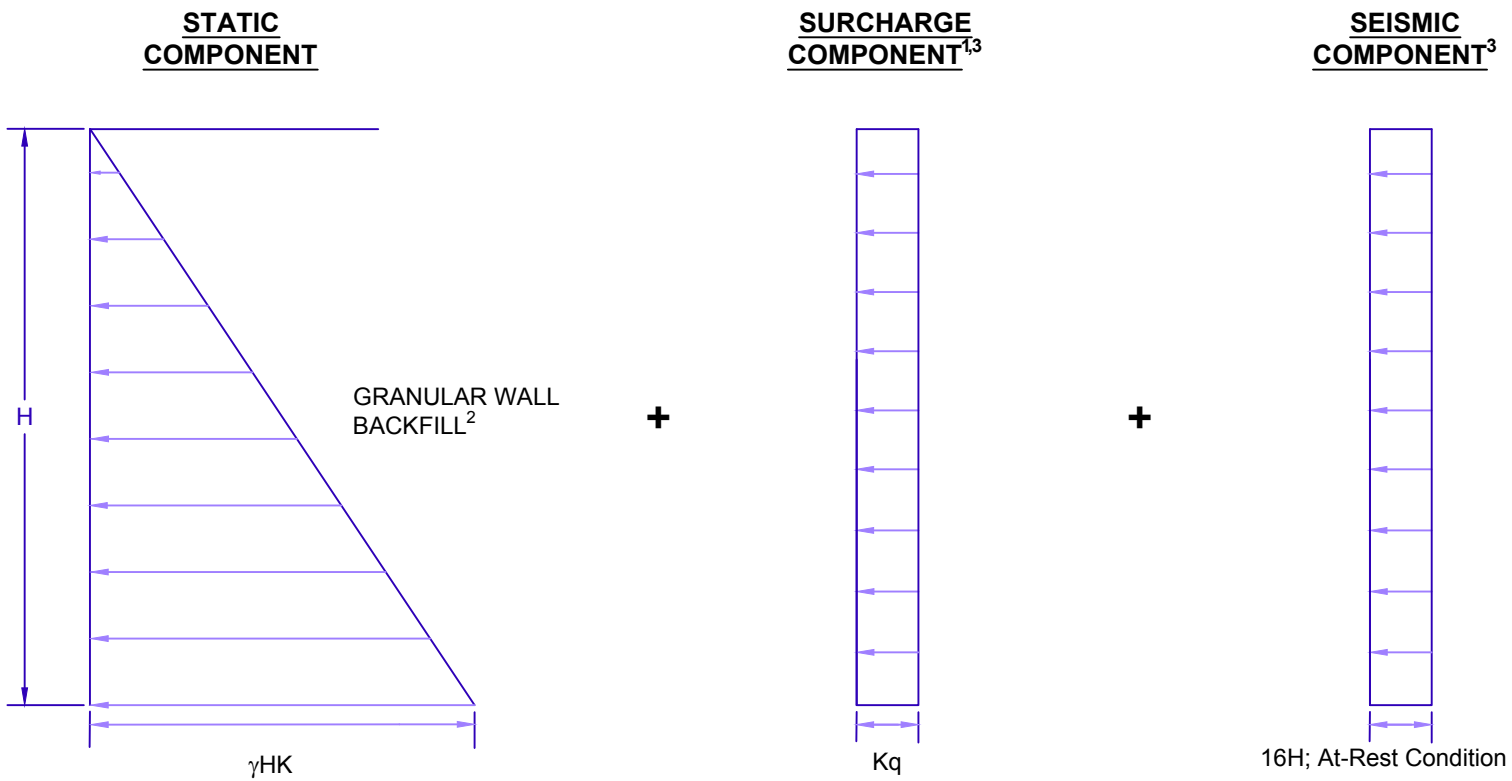
FIG. 5



NOT TO SCALE

MATERIAL PROPERTIES			
Backfill Material	Unit Weight, γ (pcf)	Friction Angle, ϕ (°)	Static Properties: At-rest K_o
Granular Wall Backfill	135	36	0.41

NOTES

1. Surcharge due to live load shall include 250 psf as specified in ODOT GDM Section 15.3.12.
2. Granular wall backfill assumed to be drained imported granular backfill material.
3. Pressure increase due to surcharge and seismic loading should be added to the static pressure.
4. Groundwater assumed to be below the bottom of the wall footings.
5. The walls are assumed to have a level back slope behind the wall.

Bear Creek Bridge
Canby Marquam Hwy
Clackamas County, Oregon

LATERAL EARTH PRESSURE DISTRIBUTION ON ABUTMENT AND WING WALLS

May 2020 103169

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FIG. 6

FIG. 6

APPENDIX A: SUBSURFACE EXPLORATIONS

Appendix A

Subsurface Explorations

CONTENTS

Figures

APPENDIX A: SUBSURFACE EXPLORATIONS

A.1 GENERAL

Shannon &Wilson, Inc., explored subsurface conditions at the project site with four geotechnical borings, designated B-1 through B-4, pavement cores and Dynamic Core Penetrometer (DCP) test were performed at each of the four borings. The boring locations were surveyed by DEA. Boring locations are shown on the Site and Exploration Plan, Figure 2. This appendix describes the techniques used to advance and sample the borings and presents logs of the materials encountered.

A.2 DRILLING AND SAMPLING

The geotechnical borings were drilled from December 18, 2019 to December 30, 2019 using a truck mounted CME® 75 drill rig provided and operated by Western States Soil Conservation, Inc. of Hubbard, Oregon. At each boring location the upper pavement section was first cored using an 8-inch diameter core barrel, a DCP test was performed through the cored hole and the boring was then advanced through the cored hole. The borings were advanced to depths ranging from 40.8 to 76.5 feet below the existing ground surface using open-hole mud rotary drilling techniques. A Shannon & Wilson geologist was present during drilling to locate the drilling sites, observe the drilling, perform the DCP tests, and collect soil and pavement samples, and log the materials encountered.

A.2.1 Mud-Rotary Drilling

Mud-rotary drilling was used in all borings to advance through the subsurface. Open-hole mud rotary drilling techniques generally involve using a tri-cone bit and a string of hollow drill rods (narrower than the bit) through which bentonite drilling slurry is pumped. The slurry is mixed on site using water and powdered bentonite. The drilling slurry serves to cool the bit, keep the hole open, and flush the cuttings to the surface. The returning drill slurry is typically passed through a screen and into a tub over the hole. The screen collects the cuttings and the tub collects the mud for recirculation back into the hole. If fine-grained, cohesive soils are encountered, other styles of drill bits may also be used with the mud-rotary method, such as a scraper or drag bit.

A.2.2 Disturbed Sampling

In an SPT, the sampler is driven 18 inches into the soil using a 140-pound hammer dropped 30 inches. The number of blows required to drive the sampler the last 12 inches is defined as the standard penetration resistance, or N-value. The SPT N-value provides a measure of in situ relative density of cohesionless soils (silt, sand, and gravel), and the consistency of

cohesive soils (silt and clay). All disturbed samples were screened, as described herein, and then were visually identified and described in the field, sealed in a labeled jar to retain moisture, and taken to our field laboratory for additional examination and testing.

SPT N-values can be significantly affected by several factors, including the efficiency of the hammer used. One automatic hammer was used throughout the exploration program. Automatic hammers generally have higher energy transfer efficiencies than cathead driven hammers. For reference, cathead hammers are typically assumed to have an average energy efficiency of 60 percent. All N-values presented in this report are in blows per foot, as counted in the field. No corrections of any kind have been applied.

An SPT was considered to have met refusal where more than 50 blows were required to drive the sampler six inches. If refusal was encountered in the first 6-inch interval (for example, 50 for 1.5″), the count is reported as 50/1st 1.5″. If refusal was encountered in the second 6-inch interval (for example, 48, 50 for 1.5″), the count is reported as 50/1.5″. If refusal was encountered in the last 6-inch interval (for example, 39, 48, 50 for 1.5″), the count is reported as 98/7.5″. Sample recovery is identified as a percentage of material retained for the length the sampler was driven.

A.2.3 Undisturbed Sampling

Undisturbed samples were collected in 3-inch-O.D. thin-wall Shelby tubes, which were hydraulically pushed into the undisturbed soil at the bottoms of boreholes. The soils exposed at the ends of the tubes were examined and described in the field. After examination, the ends of the tubes were sealed to preserve the natural moisture of the samples. The sealed tubes were stored in the upright position, and care was taken to avoid shock and vibration during their transport and storage in our laboratory.

A.3 BOREHOLE ABANDONMENT

The boreholes were backfilled with bentonite-cement grout in accordance with Oregon Water Resources Department regulations. The surface was completed with 12 inches of gravel and matching sections of asphalt cold-patch. No wells or other forms of instrumentation were installed in the boreholes. Drill cuttings were drummed and disposed by the drilling subcontractor.

A.4 MATERIAL DESCRIPTIONS

In the field, samples were described and identified visually in accordance with the ODOT Soil and Rock Classification Manual (1987). The ASTM International (ASTM) D2488 Visual-

Manual method was also used as a guide in determining the key diagnostic properties of soils. Consistency, color, relative moisture, degree of plasticity, peculiar odors, and other distinguishing characteristics of the samples were noted. Once returned to our laboratory, the samples were reexamined, various laboratory tests were conducted, and the field descriptions and identifications were modified where necessary. Please refer to the ODOT Soil and Rock Classification Manual (1987) for definitions of descriptive terminology used in the Drill Logs.

In the field, samples were described and identified visually in accordance with the ODOT Soil and Rock Classification Manual (1987). The ASTM International (ASTM) D2488 Visual-Manual method was also used as a guide in determining the key diagnostic properties of soils. Consistency, color, relative moisture, degree of plasticity, peculiar odors, and other distinguishing characteristics of the samples were noted. Once returned to our laboratory, the samples were reexamined, various laboratory tests were conducted, and the field descriptions and identifications were modified where necessary. Please refer to the ODOT Soil and Rock Classification Manual (1987) for definitions of descriptive terminology used in the Drill Logs.

A.5 DRILL LOGS

Summary logs of the borings are presented in the Drill Logs, Figures A1 through A4. Soil descriptions and interfaces on the logs are interpretive, and actual changes may be gradual. The left-hand portion of the drill logs gives individual sample intervals, percent recovery, Standard Penetration Test data, and natural moisture content measurements. Material descriptions and geotechnical unit designations are shown in the center of the drill log, and the right-hand portion provides a graphic log, miscellaneous comments, and a graphic depicting hole backfill details. Laboratory testing from Shannon & Wilson is included in the Drill Logs.

A.6 PAVEMENT CORING

Core samples of existing pavements were taken at all four (4) of the boring locations to aid in assessment of existing pavement conditions. The pavement core samples were drilled and extracted with an 8-inch-diameter core barrel. This appendix presents logs of the pavement core samples on Figures A5 through A8. Photographs of the pavement core samples are presented in Figures A9 through A12.

A.7 DYNAMIC CONE PENETROMETER (DCP) TESTS

Pavement subgrade testing was conducted at the boring locations using a Dynamic Cone Penetrometer (DCP). The DCP is a device used to determine in-situ strength properties of base materials and subgrade soils. The four main components of the DCP include the cone, rod, anvil, and hammer. The cone tip is attached to one end of the DCP rod while the anvil and hammer are attached to the other end. Energy is applied to the cone tip through the rod by dropping a 17.64-pound hammer a distance of 22.6-inches against the anvil. The diameter of the cone is 0.16 inches larger than the rod to ensure that only tip resistance is measured. The number of blows required to advance the cone into the subsurface materials is continuously recorded. The DCP index is the ratio of the depth of penetration to the number of blows of the hammer. This can be correlated to a variety of material properties, including California Bearing Ratio (CBR) and Resilient Modulus. DCP testing was performed and documented by a Shannon & Wilson geologist or engineer. The DCP Test Data is presented in Figures A13 through A16.

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

DRILL LOG

OREGON DEPARTMENT OF TRANSPORTATION

			Hole No. **B-1**
Project **Canby Marquam Highway Bear Creek Bridge Replacement**		Purpose **Subsurface Exploration**	E.A. No.
Highway **170**		County **Clackamas**	Key No. **N/A**
Hole Location Northing: **43,067.4**	Easting: **346,048.0**		Start Card No. **N/A**
Equipment **CME-75 Truck Rig #374**		Driller **Holt Services, Inc.**	Bridge No. **N/A**
Project Geologist **Cody K. Sorensen, CEG**		Recorder **Christine M. Maher**	Ground Elev. **172.3 ft.**
Start Date **December 19, 2019**	End Date **December 19, 2019**	Total Depth **76.50 ft**	Tube Height **N/A**

Test Type
"A" - Auger Core
"X" - Auger
"C" - Core, Barrel Type
"N" - Standard Penetration
"U" - Undisturbed Sample
"T" - Test Pit
"GP" - GeoProbe®

Rock Abbreviations

Discontinuity	Shape	Surface Roughness
J - Joint	Pl - Planar	P - Polished
F - Fault	C - Curved	Sl - Slickensided
B - Bedding	U - Undulating	Sm - Smooth
Fo - Foliation	St - Stepped	R - Rough
S - Shear	Ir - Irregular	VR - Very Rough

Typical Drilling Abbreviations

Drilling Methods	Drilling Remarks
WL - Wire Line	LW - Lost Water
HS - Hollow Stem Auger	WR - Water Return
DF - Drill Fluid	WC - Water Color
SA - Solid Auger	DP - Down Pressure
CA - Casing Advancer	DR - Drill Rate
HA - Hand Auger	DA - Drill Action

Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level/ Date	Backfill/ Instrumentation
0						**0.00 - 0.80 Asphalt Concrete: 11-inches thick; (Fill)**		Borehole advanced using open-hole mud rotary drilling technnique (5-inch diameter hole).	
						0.80 - 1.13 Base Aggregate; (Fill)			
	N1	0	1-2-1		N- 1 (2.50-4.00) No Recovery	**1.13 - 10.00 Silty CLAY with trace sand; CL; Brown; Low plasticity; Moist; Soft to medium stiff; Fine sand; Micaceous; Disturbed texture; (Fill)**			
5	N2	20	2-2-2	32	N- 2 (5.00-6.50) Silty CLAY with trace sand; CL; Brown; Low plasticity; Moist; Soft to Medium Stiff; Fine sand; Micaceous; Disturbed texture; (Fill)			Atterberg Limits N2: LL=35, PL=22, PI=13.	
	U1	100			U- 1 (7.50-9.50) Silty CLAY with trace sand; CL; Brown; Low plasticity; Moist; Fine sand; (Fill)				
	N3a	80	4-3-2		N- 3a (9.50-10.00) Silty CLAY with trace sand; CL; Brown; Low plasticity; Moist; Medium stiff; Fine sand; Micaceous; (Fill)				
10	N3b				N- 3b (10.00-11.00) Silty CLAY with trace sand; CL; Gray; Medium plasticity; Moist; Medium stiff; Fine sand; Micaceous; (Alluvium)	**10.00 - 12.50 Silty CLAY with trace sand; CL; Gray; Medium plasticity; Moist; Medium stiff; Fine sand; Micaceous; (Alluvium)**			
						12.50 - 15.40 Organic CLAY with trace sand and gravel; OH; Gray; Medium to high plasticity; Wet; Hard; Fine to coarse, subangular to rounded gravel; Fine sand; Some organics and wood debris; (Alluvium)		Driller indicated stiffer material at 13 feet.	
15	N4a	73	13-19-14		N- 4a (15.00-15.40) Organic CLAY with trace sand and gravel; OH; Gray; Medium to high plasticity; Wet; Hard; Fine to coarse, subangular to rounded gravel; Fine sand; Some organics and wood debris; (Alluvium)				
	N4b				N- 4b (15.40-16.50) Sandy GRAVEL with some clay; GP-GC; Gray; Medium plasticity fines; Moist; Dense; Fine to coarse, subangular to rounded gravel; Fine to coarse sand; Few to some organics and wood debris; (Alluvium)	**15.40 - 19.00 Sandy GRAVEL with some clay; GP-GC; Gray; Medium**			
20									

ODOT DRILL LOG - FOR SW REVIEW 103169.GPJ ODOT_MANWITHSWLAB.GDT 3/18/20

Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description (SOIL: Soil Name, USCS, Color, Plasticity, Moisture, Consistency/Relative Density, Texture, Cementation, Structure, Origin. ROCK: Rock Name, Color, Weathering, Hardness, Discontinuity Spacing, Joint Filling, Core Recovery, Formation Name.)	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level/ Date	Backfill/ Instrumentation
20	N5	7	26-36-42		N- 5 (20.00-21.50) Sandy GRAVEL with some clay; GP-GC; Gray and brown; Low plasticity fines; Moist; Very dense; Fine to coarse, subangular to subrounded gravel; Fine to coarse sand; (Troutdale Formation)	**plasticity fines; Moist; Dense; Fine to coarse, subangular to rounded gravel; Fine to coarse sand; Few to some organics and wood debris; (Alluvium)**			
25	N6	67	28-43-50/4"		N- 6 (25.00-26.50) Clayey GRAVEL with some sand; GC; Orange-brown, brown and yellow-brown; Low to medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)	**19.00 - 25.00 Sandy Gravel with some clay; GP-GC; Gray and brown; Low plasticity fines; Moist; Very dense; Fine to coarse, subangular to subrounded gravel; Fine to coarse sand; (Troutdale Formation)**			
30						**25.00 - 32.00 Clayey GRAVEL with some sand; GC; Orange-brown, brown and yellow-brown; Low to medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)**		Driller indicated out of gravel at 32 feet.	
35	N7a N7b	100	9-16-19	45	N- 7a (35.00-35.50) Silty CLAY with some sand; CL; Brown and orange-brown; Low to medium plasticity; Moist; Hard; Fine sand; Micaceous; (Troutdale Formation) N- 7b (35.50-36.50) Silty CLAY with trace sand; CL; Gray; Medium plasticity; Moist; Hard; Fine sand; Micaceous; (Troutdale Formation)	**32.00 - 35.50 Silty CLAY with some sand; CL; Brown and orange-brown; Low to medium plasticity; Moist; Hard; Fine sand; Micaceous; (Troutdale Formation)**		N7a: 0% Gravel, 20% Sand, 80% fines.	
40	N8	100	17-21-22		N- 8 (40.00-41.50) Silty SAND with trace gravel; SM; Orange-brown, red-brown and brown; Nonplastic to low plasticity fines; Moist; Dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Moderate iron oxidation and staining; (Troutdale Formation)	**35.50 - 38.00 Silty CLAY with trace sand; CL; Gray; Medium plasticity; Moist; Hard; Fine sand; Micaceous; (Troutdale Formation)**			
45	N9	27	50/1st 6"		N- 9 (45.00-45.50) Sandy clayey GRAVEL; GC; Brown; Medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight to moderate iron oxidation and staining; (Troutdale Formation)	**38.00 - 43.00 Silty SAND with trace gravel; SM; Orange-brown, red-brown and brown; Nonplastic to low plasticity fines; Moist; Dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Moderate iron oxidation and staining; (Troutdale Formation)**			
50						**43.00 - 48.00 Sandy clayey GRAVEL; GC; Brown; Medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight to moderate**			

Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description (SOIL: Soil Name, USCS, Color, Plasticity, Moisture, Consistency/Relative Density, Texture, Cementation, Structure, Origin. ROCK: Rock Name, Color, Weathering, Hardness, Discontinuity Spacing, Joint Filling, Core Recovery, Formation Name.)	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level/ Date	Backfill/ Instrumentation
50	N10	100	10-25-27		N- 10 (50.00-51.50) Silty SAND; SM; Orange-brown and brown; Low plasticity fines; Moist; Very dense; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)	**iron oxidation and staining; (Troutdale Formation)**			
						48.00 - 63.00 Silty SAND; SM; Orange-brown and brown; Low plasticity fines; Moist; Very dense; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)			
55	N11	100	16-26-32		N- 11 (55.00-56.50) Silty SAND; SM; Orange-brown and brown; Low plasticity fines; Moist; Very dense; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)				
60									
						63.00 - 70.00 Silty SAND; SM; Dark gray; Nonplastic to low plasticity fines; Moist; Very dense; Fine to medium sand; Stratified with few to some interbeds of Sandy SILT (ML); (Troutdale Formation)			
65	N12	100	17-26-37		N- 12 (65.00-66.50) Silty SAND; SM; Dark gray; Nonplastic to low plasticity fines; Moist; Very dense; Fine to medium sand; Stratified with few to some interbeds of Sandy SILT (ML); (Troutdale Formation)				
70						**70.00 - 76.50 Sandy GRAVEL with some clay; GP-GC; Gray; Low plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; (Troutdale Formation)**		Driller indicated gravel at 70 feet.	
75	N13	80	42-42-45		N- 13 (75.00-76.50) Sandy GRAVEL with some clay; GP-GC; Gray; Low plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; (Troutdale Formation)				
						76.50 End of hole			
80									

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

DRILL LOG
OREGON DEPARTMENT OF TRANSPORTATION

			Hole No. **B-2**
Project **Canby Marquam Highway Bear Creek Bridge Replacement**		Purpose **Subsurface Exploration**	E.A. No.
Highway **170**		County **Clackamas**	Key No. **N/A**
Hole Location Northing: **42,989.7**	Easting: **346,082.1**		Start Card No. **N/A**
Equipment **CME-75 Truck Rig #374**		Driller **Holt Services, Inc.**	Bridge No. **N/A**
Project Geologist **Cody K. Sorensen, CEG**		Recorder **Christine M. Maher**	Ground Elev. **174.9 ft.**
Start Date **December 18, 2019**	End Date **December 18, 2019**	Total Depth **66.50 ft**	Tube Height **N/A**

Test Type
"A" - Auger Core
"X" - Auger
"C" - Core, Barrel Type
"N" - Standard Penetration
"U" - Undisturbed Sample
"T" - Test Pit
"GP" - GeoProbe®

Rock Abbreviations

Discontinuity	Shape	Surface Roughness
J - Joint	Pl - Planar	P - Polished
F - Fault	C - Curved	Sl - Slickensided
B - Bedding	U - Undulating	Sm - Smooth
Fo - Foliation	St - Stepped	R - Rough
S - Shear	Ir - Irregular	VR - Very Rough

Typical Drilling Abbreviations

Drilling Methods	Drilling Remarks
WL - Wire Line	LW - Lost Water
HS - Hollow Stem Auger	WR - Water Return
DF - Drill Fluid	WC - Water Color
SA - Solid Auger	DP - Down Pressure
CA - Casing Advancer	DR - Drill Rate
HA - Hand Auger	DA - Drill Action

Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description (SOIL: Soil Name, USCS, Color, Plasticity, Moisture, Consistency/Relative Density, Texture, Cementation, Structure, Origin. ROCK: Rock Name, Color, Weathering, Hardness, Discontinuity Spacing, Joint Filling, Core Recovery, Formation Name.)	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level/ Date	Backfill/ Instrumentation
0						**0.00 - 0.75 Asphalt Concrete: 8.75 to 11-inches thick; (Fill)**		Borehole advanced using open-hole mud rotary drilling technique (5-inch diameter hole).	
						0.75 - 1.30 Portland Cement Concrete: 6.75-inches thick; (Fill)			
	N1	0	5-2-2		N- 1 (2.50-4.00) No Recovery	**1.30 - 1.47 Base Aggregate: 2-inches thick; (Fill)**			
5	N2	53	3-3-5	25	N- 2 (5.00-6.50) Silty CLAY with trace sand; CL; Brown and dark brown; Medium plasticity; Moist; Stiff; Fine to medium sand; Trace organics and rootlets; Micaceous; Disturbed texture; (Fill)	**1.47 - 9.50 Silty CLAY with trace sand; CL; Brown and dark brown; Medium plasticity; Moist; Stiff; Fine to medium sand; Trace organics and rootlets; Micaceous; Disturbed texture; (Fill)**		Atterberg Limits N2: LL=49, PL=23, PI=26.	
	N3	53	5-5-6		N- 3 (7.50-9.00) Silty CLAY with trace sand; CL; Brown and dark brown; Medium plasticity; Moist; Stiff; Fine to medium sand; Trace organics and rootlets; Micaceous; Disturbed texture; (Fill)				
10	N4a	93	5-4-4		N- 4a (10.00-10.70) Silty CLAY with trace sand; CL; Brown; Low to medium plasticity; Moist; Stiff; Fine sand; Trace organics; Micaceous; (Alluvium)	**9.50 - 10.70 Silty CLAY with trace sand; CL; Brown; Low to medium plasticity; Moist; Stiff; Fine sand; Trace organics; Micaceous; (Alluvium)**			
	N4b				N- 4b (10.70-11.50) Silty CLAY with trace sand; CL; Gray; Medium plasticity; Moist; Stiff; Fine sand; Trace organics and rootlets; Micaceous; (Alluvium)	**10.70 - 12.50 Silty CLAY with trace sand; CL; Gray; Medium plasticity; Moist; Stiff; Fine sand; Trace organics and rootlets; Micaceous; (Alluvium)**			
15	N5a	100	1-9-15		N- 5a (15.00-15.90) Organic CLAY with some sand; OH; Gray and dark brown; Medium to high plasticity; Wet; Very stiff; Fine to coarse sand; Some organics and wood fragments; (Alluvium)	**12.50 - 15.90 Organic CLAY with some sand; OH; Gray and dark brown; Medium to high plasticity; Wet; Very stiff; Fine to coarse sand; Some organics and wood fragments;**			
	N5b				N- 5b (15.90-16.50) Clayey GRAVEL with some sand; GC; Gray; Medium plasticity fines; Moist; Medium dense; Fine to coarse, subangular to rounded gravel; Fine to coarse sand; Trace organics; (Alluvium)				
20									

ODOT DRILL LOG - FOR SW REVIEW 103169.GPJ ODOT_MANWITHSWLAB.GDT 3/18/20

Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description (SOIL: Soil Name, USCS, Color, Plasticity, Moisture, Consistency/Relative Density, Texture, Cementation, Structure, Origin. ROCK: Rock Name, Color, Weathering, Hardness, Discontinuity Spacing, Joint Filling, Core Recovery, Formation Name.)	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level/ Date	Backfill/ Instrumentation
20	N6	73	30-50/3"		N- 6 (20.00-20.75) Sandy silty CLAY with some gravel; CL; Yellow-brown, brown and orange-brown; Medium plasticity; Moist; Hard; Fine to coarse, subangular to rounded gravel; Fine to coarse sand; Weak cementation; (Troutdale Formation)	**(Alluvium)** **15.90 - 19.00 Clayey GRAVEL with some sand; GC; Gray; Medium plasticity fines; Moist; Medium dense; Fine to coarse, subangular to rounded gravel; Fine to coarse sand; Trace organics; (Alluvium)**			
25	N7	80	36-27-44	15	N- 7 (25.00-26.50) Sandy GRAVEL with some clay; GP-GC; Yellow and orange-brown; Medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)	**19.00 - 23.00 Sandy silty CLAY with some gravel; CL; Yellow-brown, brown and orange-brown; Medium plasticity; Moist; Hard; Fine to coarse, subangular to rounded gravel; Fine to coarse sand; Weak cementation; (Troutdale Formation)**		N7: 55% gravel, 33% sand, 12% fines.	
30	N8	27	50/1st 5"		N- 8 (30.00-30.41) Sandy GRAVEL with some clay; GP-GC; Brown and red-brown; Medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Moderate iron oxidation and staining; (Troutdale Formation)	**23.00 - 37.00 Sandy GRAVEL with some clay; GP-GC; Orange-brown, red-brown, brown and yellow-brown; Medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight to moderate iron oxidation and staining; (Troutdale Formation)**			
35	N9	60	38-50/5.5"		N- 9 (35.00-35.96) Sandy GRAVEL with some clay; GP-GC; Orange-brown, red-brown and yellow-brown; Medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight to moderate iron oxidation and staining; (Troutdale Formation)				
						37.00 - 43.00 CLAY with some sand; CH; Gray; Medium to high plasticity; Moist; Very stiff to hard; Fine to coarse sand; (Troutdale Formation)		Driller indicated out ot gravel at 37 feet.	
40	N10	100	10-11-19		N- 10 (40.00-41.50) CLAY with some sand; CH; Gray; Medium to high plasticity; Moist; Very stiff to hard; Fine to coarse sand; (Troutdale Formation)				
						43.00 - 48.00 Silty CLAY with some sand; CL; Gray; Low to medium plasticity; Moist; Hard; Fine to medium sand; (Troutdale Formation)			
45	N11	100	12-22-20		N- 11 (45.00-46.50) Silty CLAY with some sand; CL; Gray; Low to medium plasticity; Moist; Hard; Fine to medium sand; (Troutdale Formation)				
						48.00 - 53.00 Sandy clayey GRAVEL; GC; Brown; Medium plasticity fines; Moist; Very			
50									

Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description (SOIL: Soil Name, USCS, Color, Plasticity, Moisture, Consistency/Relative Density, Texture, Cementation, Structure, Origin. ROCK: Rock Name, Color, Weathering, Hardness, Discontinuity Spacing, Joint Filling, Core Recovery, Formation Name.)	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level/ Date	Backfill/ Instrumentation
50	N12	100	20-41-50/6"		N- 12 (50.00-51.50) Sandy clayey GRAVEL; GC; Brown; Medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)	**dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)**		
						53.00 - 63.00 Silty SAND; SM; Red-brown and brown; Nonplastic fines; Moist to wet; Dense to very dense; Fine to medium sand; Slight to moderate iron oxidation and staining; (Troutdale Formation)		
55	N13	80	17-22-26		N- 13 (55.00-56.50) Silty SAND; SM; Red-brown and brown; Nonplastic fines; Moist; Dense; Fine to medium sand; Moderate iron oxidation and staining; (Troutdale Formation)			
60	N14	93	19-27-33		N- 14 (60.00-61.50) Silty SAND; SM; Red-brown and brown; Nonplastic fines; Moist to wet; Very dense; Fine to medium sand; Slight iron oxidation and staining; (Troutdale Formation)			
						63.00 - 66.50 CLAY with trace sand; CH; Gray; Medium to high plasticity; Moist; Hard; Fine sand; (Troutdale Formation)		
65	N15	100	9-16-15		N- 15 (65.00-66.50) CLAY with trace sand; CH; Gray; Medium to high plasticity; Moist; Hard; Fine sand; (Troutdale Formation)			
						66.50 End of hole		
70								
75								
80								

ODOT DRILL LOG - FOR SW REVIEW 103169.GPJ ODOT_MANWITHSWLAB.GDT 3/18/20

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

DRILL LOG
OREGON DEPARTMENT OF TRANSPORTATION

Hole No. **B-3**

Project **Canby Marquam Highway Bear Creek Bridge Replacement**		Purpose **Subsurface Exploration**	E.A. No.
Highway **170**		County **Clackamas**	Key No. **N/A**
Hole Location Northing: **42,934.5**	Easting: **346,083.7**		Start Card No. **N/A**
Equipment **CME-75 Truck Rig #374**		Driller **Holt Services, Inc.**	Bridge No. **N/A**
Project Geologist **Cody K. Sorensen, CEG**		Recorder **Christine M. Maher**	Ground Elev. **177.9 ft.**
Start Date **December 20, 2019**	End Date **December 20, 2019**	Total Depth **55.50 ft**	Tube Height **N/A**

Test Type
"A" - Auger Core
"X" - Auger
"C" - Core, Barrel Type
"N" - Standard Penetration
"U" - Undisturbed Sample
"T" - Test Pit
"GP" - GeoProbe®

Rock Abbreviations

Discontinuity	Shape	Surface Roughness
J - Joint	Pl - Planar	P - Polished
F - Fault	C - Curved	Sl - Slickensided
B - Bedding	U - Undulating	Sm - Smooth
Fo - Foliation	St - Stepped	R - Rough
S - Shear	Ir - Irregular	VR - Very Rough

Typical Drilling Abbreviations

Drilling Methods	Drilling Remarks
WL - Wire Line	LW - Lost Water
HS - Hollow Stem Auger	WR - Water Return
DF - Drill Fluid	WC - Water Color
SA - Solid Auger	DP - Down Pressure
CA - Casing Advancer	DR - Drill Rate
HA - Hand Auger	DA - Drill Action

Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description (SOIL: Soil Name, USCS, Color, Plasticity, Moisture, Consistency/Relative Density, Texture, Cementation, Structure, Origin. ROCK: Rock Name, Color, Weathering, Hardness, Discontinuity Spacing, Joint Filling, Core Recovery, Formation Name.)	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level/ Date	Backfill/ Instrumentation
0						**0.00 - 0.80 Asphalt Concrete: 9-inches thick; (Fill)**		Borehole advanced using open-hole mud rotary drilling technnique (5-inch diameter hole).	
						0.80 - 1.10 Gravelly CLAY (cored with asphalt); (Fill)			
	N1	40	2-2-3		N- 1 (2.50-4.00) Silty CLAY with trace sand; CL; Brown; Medium plasticity; Moist; Medium stiff; Fine sand; Micaceous; Disturbed texture; (Fill)	**1.10 - 4.50 Silty CLAY with trace sand; CL; Brown; Medium plasticity; Moist; Medium stiff; Fine sand; Micaceous; Disturbed texture; (Fill)**			
5	N2	53	4-4-4		N- 2 (5.00-6.50) Silty CLAY with trace sand; CL; Brown; Medium plasticity; Moist; Medium stiff to stiff; Fine sand; Trace organics and rootlets; Micaceous; (Alluvium)	**4.50 - 9.50 Silty CLAY with trace sand; CL; Brown; Medium plasticity; Moist; Medium stiff to stiff; Fine sand; Trace organics and rootlets; Micaceous; (Alluvium)**			
	N3	40	4-7-5		N- 3 (7.50-9.00) Silty CLAY with trace sand; CL; Brown; Medium plasticity; Moist; Stiff; Fine sand; Trace organics and rootlets; Micaceous; (Alluvium)				
10	N4	73	3-4-3		N- 4 (10.00-11.50) Organic CLAY with trace sand; OH; Gray and dark brown; High plasticity; Wet; Medium stiff; Fine sand; Some organic debris and wood fragments; (Alluvium)	**9.50 - 13.00 Organic CLAY with trace sand; OH; Gray and dark brown; High plasticity; Wet; Medium stiff; Fine sand; Some organic debris and wood fragments; (Alluvium)**			
						13.00 - 19.00 CLAY with some sand; CH; Gray; High plasticity; Moist; Stiff; Fine to medium sand; Trace wood fragments; Micaceous; (Alluvium)			
15	N5	100	2-4-5		N- 5 (15.00-16.50) CLAY with some sand; CH; Gray; High plasticity; Moist; Stiff; Fine to medium sand; Trace wood fragments; Micaceous; (Alluvium)				
						19.00 - 28.00 Sandy GRAVEL with		Driller indicated gravel at 19 feet.	
20									

ODOT DRILL LOG - FOR SW REVIEW 103169.GPJ ODOT_MANWITHSWLAB.GDT 3/18/20

Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description (SOIL: Soil Name, USCS, Color, Plasticity, Moisture, Consistency/Relative Density, Texture, Cementation, Structure, Origin. ROCK: Rock Name, Color, Weathering, Hardness, Discontinuity Spacing, Joint Filling, Core Recovery, Formation Name.)	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level/ Date	Backfill/ Instrumentation
20	N6	53	11-18-41		N- 6 (20.00-21.50) Sandy GRAVEL with some clay; GP-GC; Gray and yellow-brown; Low to medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)	**some clay; GP-GC; Gray and yellow-brown; Low to medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)**			
25									
30	N7a	80	8-36-50/3"		N- 7a (30.00-30.60) Gravelly CLAY with some sand; CH; Red-brown to brown; High plasticity; Moist; Very hard; Fine to coarse, subangular to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)	**28.00 - 30.60 Gravelly CLAY with some sand; CH; Red-brown to brown; High plasticity; Moist; Very hard; Fine to coarse, subangular to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)**			
	N7b				N- 7b (30.60-31.25) Sandy GRAVEL with some clay; GP-GC; Orange-brown, brown and yellow-brown; Low to medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; (Troutdale Formation)	**30.60 - 42.00 Sandy GRAVEL with some clay; GP-GC; Red-brown, orange-brown, brown and yellow-brown; Low to medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Moderate iron oxidation and staining; Weak cementation; (Troutdale Formation)**			
35									
40	N8	53	42-50/3"		N- 8 (40.00-40.75) Sandy GRAVEL with some clay; GP-GC; Red-brown, brown and yellow-brown; Low to medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Moderate iron oxidation and staining; Weak cementation; (Troutdale Formation)				
						42.00 - 54.00 CLAY with trace sand; CH; Gray; High plasticity; Moist; Very stiff to hard; Fine sand; (Troutdale Formation)		Driller indicated out of gravel at 42 feet.	
45	N9	100	11-23-26		N- 9 (45.00-46.50) CLAY with trace sand; CH; Gray; High plasticity; Moist; Hard; Fine sand; (Troutdale Formation)				
50									

ODOT DRILL LOG - FOR SW REVIEW 103169.GPJ ODOT_MANWITHSWLAB.GDT 3/18/20

Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description (SOIL: Soil Name, USCS, Color, Plasticity, Moisture, Consistency/Relative Density, Texture, Cementation, Structure, Origin. ROCK: Rock Name, Color, Weathering, Hardness, Discontinuity Spacing, Joint Filling, Core Recovery, Formation Name.)	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level/ Date	Backfill/ Instrumentation
50	N10	100	8-11-15		N- 10 (50.00-51.50) CLAY with trace sand; CH; Gray; High plasticity; Moist; Very stiff; Fine sand; (Troutdale Formation)				
55	N11	27	50/1st 6"		N- 11 (55.00-55.50) Sandy clayey GRAVEL; GC; Dark gray and brown; Medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Weak cementation; (Troutdale Formation)	**54.00 - 55.50 Sandy clayey GRAVEL; GC; Dark gray and brown; Medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Weak cementation; (Troutdale Formation)**		Driller indicated gravel at 54 feet.	
60						**55.50 End of hole**			
65									
70									
75									
80									

ODOT DRILL LOG - FOR SW REVIEW 103169.GPJ ODOT_MANWITHSWLAB.GDT 3/18/20

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

DRILL LOG
OREGON DEPARTMENT OF TRANSPORTATION

			Hole No. **B-4**
Project **Canby Marquam Highway Bear Creek Bridge Replacement**		Purpose **Subsurface Exploration**	E.A. No.
Highway **170**		County **Clackamas**	Key No. **N/A**
Hole Location Northing: **43,198.5**	Easting: **346,009.9**		Start Card No. **N/A**
Equipment **CME-75 Truck Rig #374**		Driller **Holt Services, Inc.**	Bridge No. **N/A**
Project Geologist **Cody K. Sorensen, CEG**		Recorder **Christine M. Maher**	Ground Elev. **171.7 ft.**
Start Date **December 30, 2019**	End Date **December 30, 2019**	Total Depth **40.83 ft**	Tube Height **N/A**

Test Type
"A" - Auger Core
"X" - Auger
"C" - Core, Barrel Type
"N" - Standard Penetration
"U" - Undisturbed Sample
"T" - Test Pit
"GP" - GeoProbe®

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Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description (SOIL: Soil Name, USCS, Color, Plasticity, Moisture, Consistency/Relative Density, Texture, Cementation, Structure, Origin. ROCK: Rock Name, Color, Weathering, Hardness, Discontinuity Spacing, Joint Filling, Core Recovery, Formation Name.)	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level/ Date	Backfill/ Instrumentation
0						**0.00 - 0.80 Asphalt Concrete: 9-inches thick; (Fill)**		Borehole advanced using open-hole mud rotary drilling technnique (5-inch diameter hole).	
						0.80 - 1.13 Base Aggregate: 4-inches thick; (Fill)			
	N1	60	6-4-5		N- 1 (2.50-4.00) Silty CLAY with trace sand; CL; Brown; Low to medium plasticity; Moist; Stiff; Fine sand; Micaceous; Disturbed blocky texture; (Fill)	**1.13 - 4.50 Silty CLAY with trace sand; CL; Brown; Low to medium plasticity; Moist; Stiff; Fine sand; Micaceous; Blocky disturbed texture; (Fill)**			
5	N2	67	5-3-4		N- 2 (5.00-6.50) CLAY with trace sand; CH; Red-brown and brown; High plasticity; Moist; Medium stiff; Fine sand; Slight iron oxidation and staining; (Alluvium)				
	N3	100	4-5-7	32	N- 3 (7.50-9.00) CLAY with trace sand; CH; Gray and orange-brown; High plasticity; Moist; Stiff; Fine sand; Slight iron oxidation and staining; (Alluvium)	**4.50 - 12.00 CLAY with trace sand; CH; Red-brown and brown to orange-brown and brown; High plasticity; Moist; Medium stiff to stiff; Fine sand; Slight iron oxidation and staining; (Alluvium)**		Atterberg Limits N3: LL=54, PL=21, PI=33.	
10	N4	100	2-4-5		N- 4 (10.00-11.50) CLAY with trace sand; CH; Gray and orange-brown; High plasticity; Moist; Stiff; Fine sand; Micaceous; Slight iron oxidation and staining; (Alluvium)				
						12.00 - 17.50 Sandy GRAVEL with some clay; GP-GC; Green-gray to gray; Low plasticity fines; Moist; Dense; Fine to coarse, subangular to subrounded gravel; Fine to coarse sand; (Alluvium)		Driller indicated gravel at 12 feet.	
15	N5	47	10-10-25		N- 5 (15.00-16.50) Sandy GRAVEL with some clay; GP-GC; Green-gray to gray; Low plasticity fines; Moist; Dense; Fine to coarse, subangular to subrounded gravel; Fine to coarse sand; (Alluvium)				
						17.50 - 20.50 Silty CLAY with trace sand; CL; Dark green; Medium plasticity; Moist; Hard; Fine sand; (Alluvium)			
20									

ODOT DRILL LOG - FOR SW REVIEW 103169.GPJ ODOT_MANWITHSWLAB.GDT 3/18/20

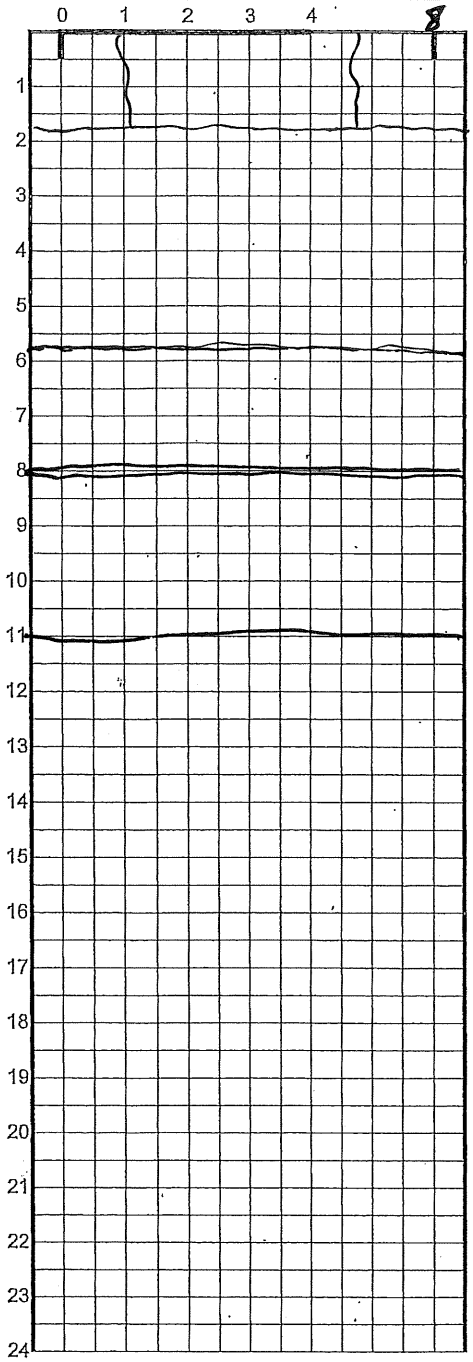
Depth (ft)	Test Type, No.	Percent Recovery	Soil / Rock: Driving Resistance / Discontinuity Data Or RQD%	Percent Natural Moisture	Material Description (SOIL: Soil Name, USCS, Color, Plasticity, Moisture, Consistency/Relative Density, Texture, Cementation, Structure, Origin. ROCK: Rock Name, Color, Weathering, Hardness, Discontinuity Spacing, Joint Filling, Core Recovery, Formation Name.)	Unit Description	Graphic Log	Drilling Methods, Size and Remarks / Water Level / Date	Backfill / Instrumentation
20	N6a	80	3-3-42		N- 6a (20.00-20.50) Silty CLAY with trace sand; CL; Dark green; Medium plasticity; Moist; Hard; Fine sand; (Alluvium)	**20.50 - 27.50 Clayey GRAVEL with some sand to Sandy clayey GRAVEL; GC; Orange-brown, brown and yellow-brown; Low to medium plasticity fines; Moist; Dense to very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)**			
	N6b				N- 6b (20.50-21.50) Clayey GRAVEL with some sand; GC; Yellow-brown and brown; Low to medium plasticity fines; Moist; Dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; (Troutdale Formation)				
25	N7	87	34-49-50/4"		N- 7 (25.00-26.30) Sandy clayey GRAVEL; GC; Orange-brown, brown and yellow-brown; Low to medium plastic fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)				
30	N8a	100	43-46-15		N- 8a (30.00-30.60) Sandy GRAVEL with some clay; GP-GC; Orange-brown, brown and yellow-brown; Low to medium plastic fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)	**27.50 - 30.60 Sandy GRAVEL with some clay; GP-GC; Orange-brown, brown and yellow-brown; Low to medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)**			
	N8b				N- 8b (30.60-31.50) CLAY with trace sand; CH; Brown; Medium plasticity; Moist; Very hard; Fine to medium sand; (Troutdale Formation)				
35	N9	100	9-15-17	43	N- 9 (35.00-36.50) Clayey SILT with trace sand; MH; Gray; High plasticity; Moist; Hard; Fine to medium sand; (Troutdale Formation)	**30.60 - 33.00 CLAY with trace sand; CH; Brown; Medium plasticity; Moist; Very hard; Fine to medium sand; (Troutdale Formation)**		Atterberg Limits N9: LL=66, PL=33, PI=33.	
						33.00 - 38.00 Clayey SILT with trace sand; MH; Gray; High plasticity; Moist; Hard; Fine to medium sand; (Troutdale Formation)			
40	N10	73	46-50/4"		N- 10 (40.00-40.83) Sandy clayey GRAVEL; GC; Orange-brown and gray; Low to medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)	**38.00 - 40.83 Sandy clayey GRAVEL; GC; Orange-brown and gray; Low to medium plasticity fines; Moist; Very dense; Fine to coarse, subrounded to rounded gravel; Fine to coarse sand; Slight iron oxidation and staining; (Troutdale Formation)**			
45						**40.83 End of hole**			
50									

ODOT DRILL LOG - FOR SW REVIEW 103169.GPJ ODOT_MANWITHSWLAB.GDT 3/18/20

PAVEMENT CORE LOG

PROJECT: 103169 – Bear Creek Bridge
HIGHWAY: Canby-Marquam Hwy
LOCATION:
CORE LENGTH: 11"

Saved: Yes No. B-1
PD #
Date: 2-14-20
Logged By: SHJ
Designer: SHJ



Key No.:

DRILLED THROUGH PATCH: (NO) YES

DRILLED ON CRACK: NO (YES) (Trans. Long. (Fat.) Other):

TYPE: (Dense AC) Open AC ~~PCC~~ CTB Oil Mat Other
CONDITION: Good Fair (Poor)

TYPE: (Dense AC) Open AC PCC CTB Oil Mat Other
CONDITION: (Good) Fair Poor

TYPE: (Dense AC) ~~Open AC~~ PCC CTB Oil Mat Other
CONDITION: Good (Fair) Poor

TYPE: (Dense AC) Open AC ~~PCC~~ CTB Oil Mat Other
CONDITION: Good Fair (Poor)

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

NOTE DISTANCE FROM EDGE OF PAVEMENT AND DIRECTION

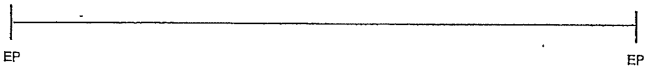


Fig. A5

PAVEMENT CORE LOG

PROJECT: 103169 - Bear Creek Bridge

HIGHWAY: Canby - Marquam HWY

LOCATION:

CORE LENGTH: 8 3/4" to 11"

Saved: Yes No. B-2

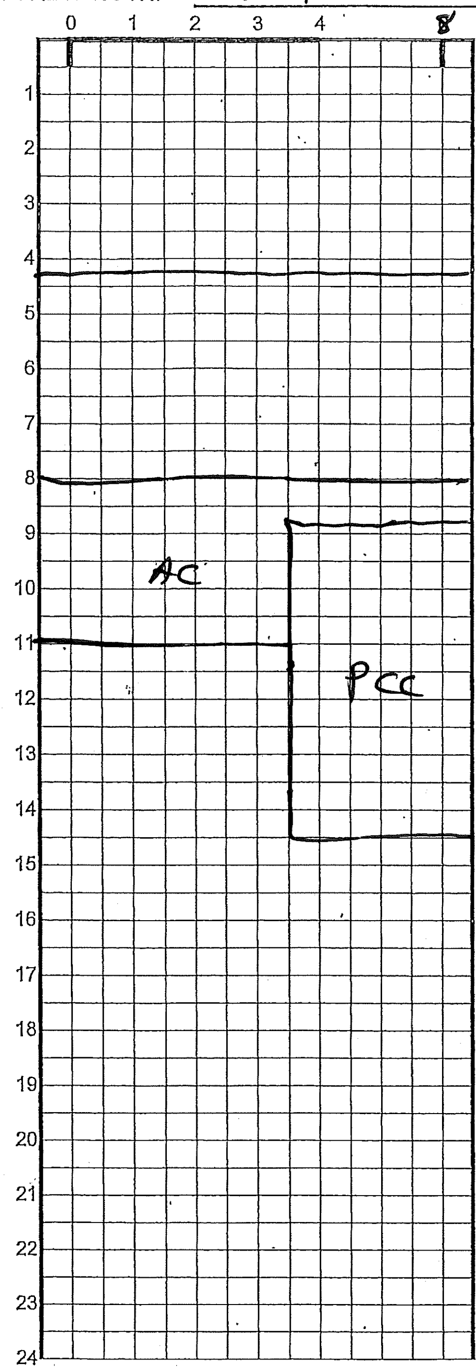
PD #

Date: 2-14-20

Logged By: SHJ

Key No.:

Designer: SHJ



DRILLED THROUGH PATCH: NO YES

DRILLED ON CRACK: NO YES (Trans. Long. Fat. Other):

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC ~~Open AC~~ PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

NOTE DISTANCE FROM EDGE OF PAVEMENT AND DIRECTION

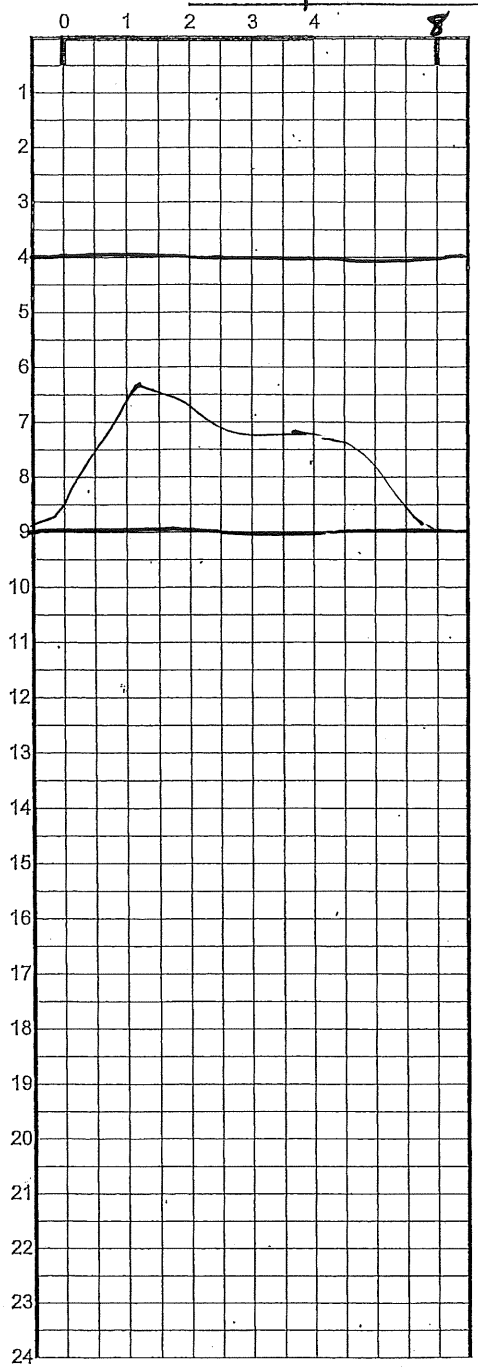
EP EP

Fig. A6

PAVEMENT CORE LOG

PROJECT: 103169 - Bear Creek Bridge
HIGHWAY: Canby-Marquam Hwy
LOCATION:
CORE LENGTH: 9"

Saved: Yes No. B-3
PD #
Date: 2-14-20
Logged By:
Designer: SHJ



Key No.:

DRILLED THROUGH PATCH: (NO) YES

DRILLED ON CRACK: (NO) YES (Trans. Long. Fat. Other):

TYPE: (Dense AC) Open AC PCC CTB Oil Mat Other
CONDITION: (Good) Fair Poor

TYPE: (Dense AC) Open AC PCC CTB Oil Mat Other
CONDITION: Good (Fair – Poor)

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

NOTE DISTANCE FROM EDGE OF PAVEMENT AND DIRECTION

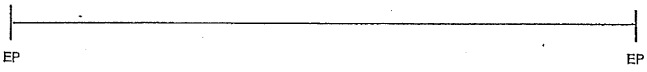
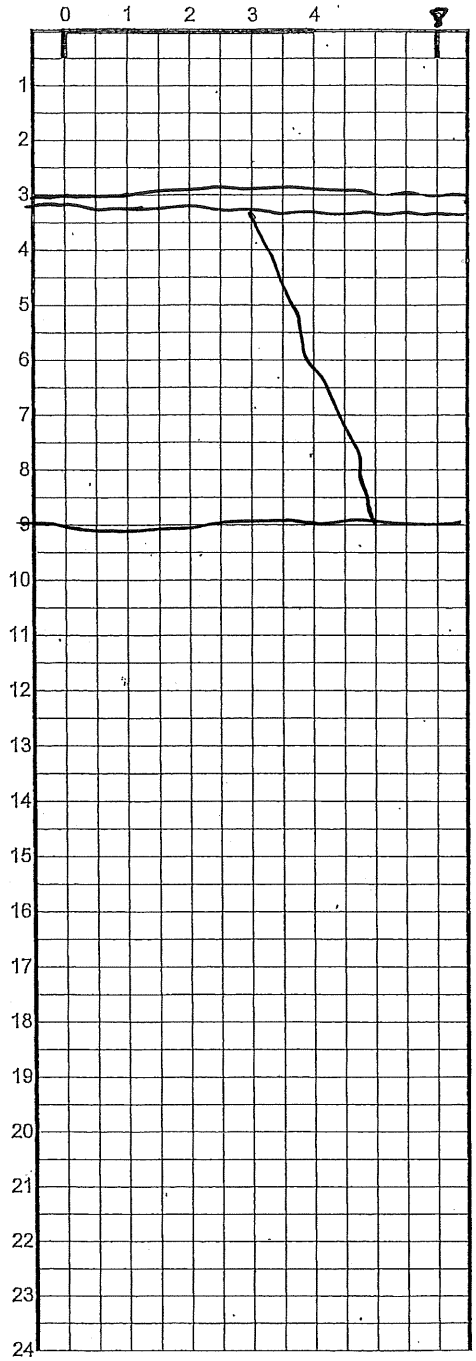


Fig. A7

PAVEMENT CORE LOG

PROJECT: 103169 - Bear Creek Bridge
HIGHWAY: Canby - Marquam Hwy
LOCATION: 9e
CORE LENGTH:

Saved: Yes No. B-4
PD #
Date: 2-14-20
Logged By:
Designer: SBJ



Key No.:

DRILLED THROUGH PATCH: NO YES

DRILLED ON CRACK: NO YES (Trans. Long. Fat. Other):

TYPE: (Dense AC) Open AC PCC CTB Oil Mat Other
CONDITION: Good (Fair) Poor

TYPE: (Dense AC) Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair (Poor)

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

TYPE: Dense AC Open AC PCC CTB Oil Mat Other
CONDITION: Good Fair Poor

NOTE DISTANCE FROM EDGE OF PAVEMENT AND DIRECTION

Fig. A8

Canby Marquam Highway
Bear Creek Bridge
Clackamas County, Oregon

BORING B-1
PAVEMENT CORE PHOTOGRAPH

February 2020 103169-001

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FIG. A9

FIG. A9

Canby Marquam Highway
Bear Creek Bridge
Clackamas County, Oregon

BORING B-2
PAVEMENT CORE PHOTOGRAPH

February 2020 103169-001

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FIG. A10

FIG. A10

Canby Marquam Highway
Bear Creek Bridge
Clackamas County, Oregon

BORING B-3
PAVEMENT CORE PHOTOGRAPH

February 2020 103169-001

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FIG. A11

FIG. A11

Canby Marquam Highway
Bear Creek Bridge
Clackamas County, Oregon

BORING B-4
PAVEMENT CORE PHOTOGRAPH

February 2020 103169-001

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FIG. A12

FIG. A12

DCP TEST DATA

Project: *Bear Creek* **Date:** *19-Dec-19*

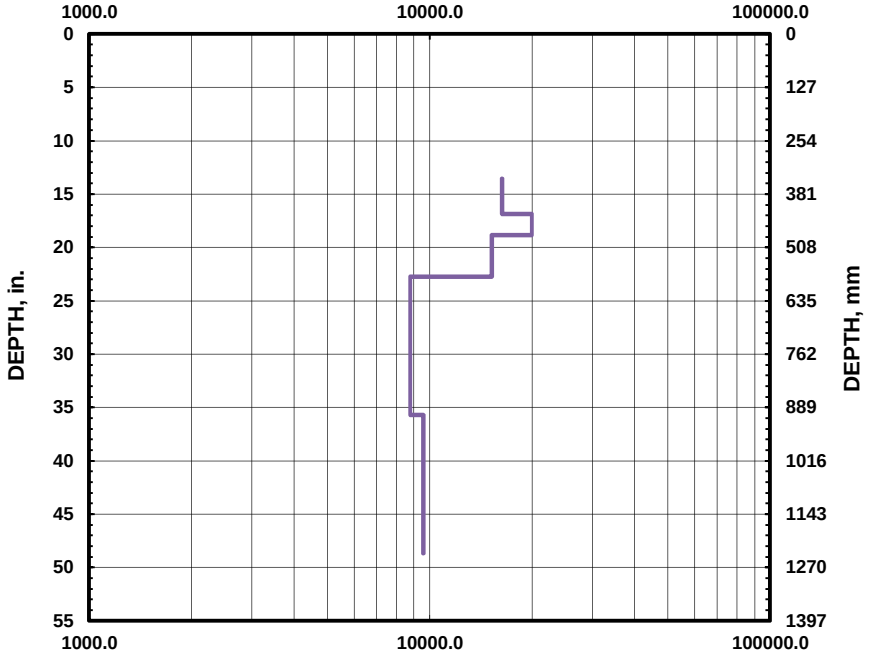
Location: *B-1* **Soil Type(s):** *ML*

Hammer
- 10.1 lbs.
- 17.6 lbs.
- Both hammers used

- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	344	1
5	428	1
5	478	1
5	578	1
4	907	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1
5	1237	1

SUBGRADE MODULUS (MR) psi



CORRECTED SUBGRADE MODULUS (MR) psi

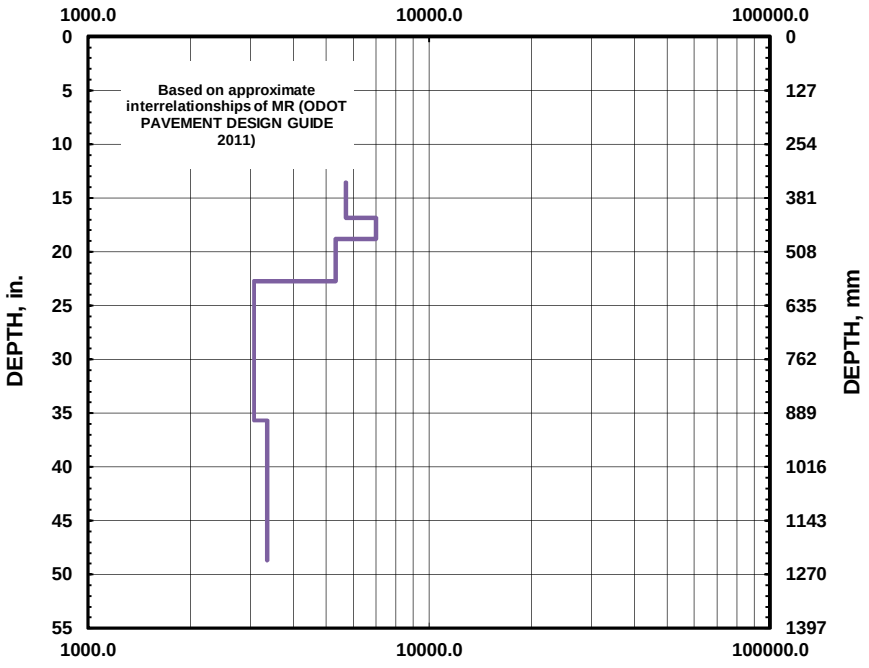


FIG. A13

DCP TEST DATA

Project: *Bear Creek* **Date:** *18-Dec-19*

Location: *B-2* **Soil Type(s):** *CH*

Hammer
- 10.1 lbs.
- 17.6 lbs.
- Both hammers used

- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	448	1
5	559	1
5	668	1
5	783	1
5	985	1
5	1315	1
1	1389	1
5	1389	1
5	1389	1
5	1389	1
5	1389	1
5	1389	1
5	1389	1
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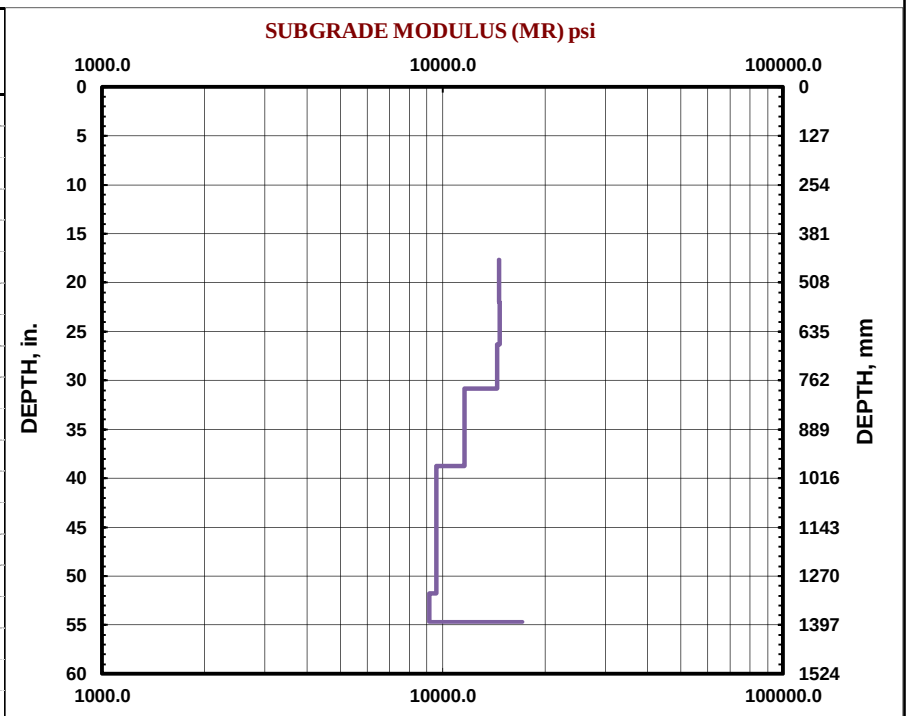


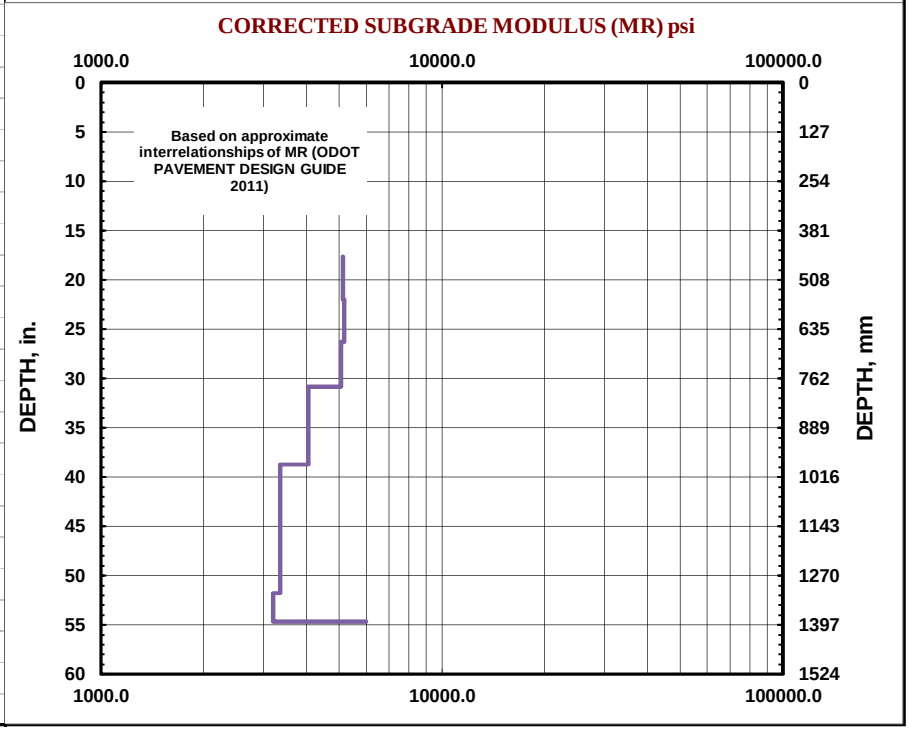


FIG. A14

DCP TEST DATA

Project: *Bear Creek* **Date:** *20-Dec-19*

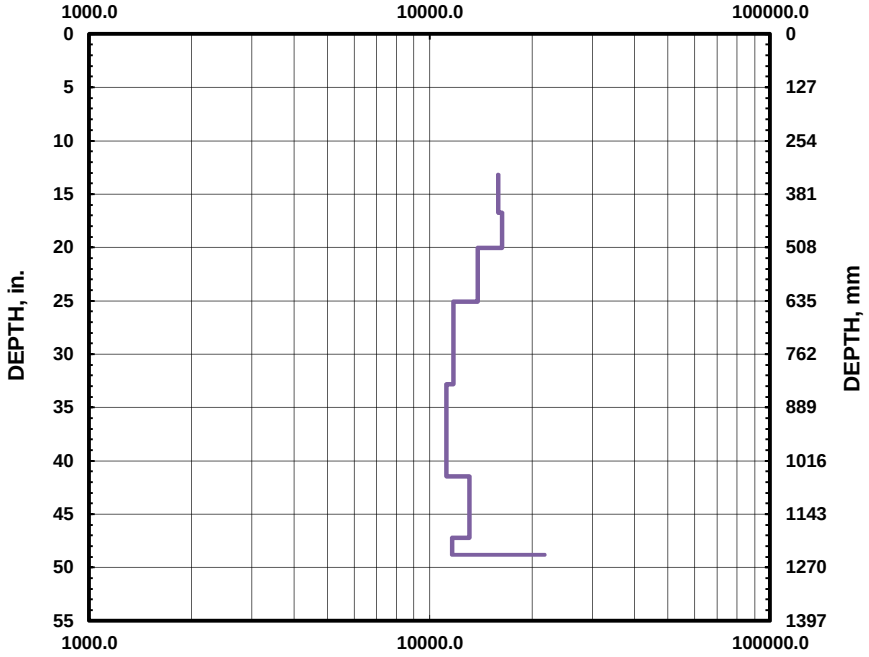
Location: *B-3* **Soil Type(s):** *CL*

Hammer
- 10.1 lbs.
- 17.6 lbs.
- Both hammers used

- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	335	1
5	425	1
5	509	1
5	637	1
5	833	1
5	1053	1
5	1200	1
1	1240	1
5	1240	1
5	1240	1
5	1240	1
5	1240	1
5	1240	1
5	1240	1
5	1240	1
5	1240	1
5	1240	1
5	1240	1
5	1240	1
5	1240	1

SUBGRADE MODULUS (MR) psi



CORRECTED SUBGRADE MODULUS (MR) psi

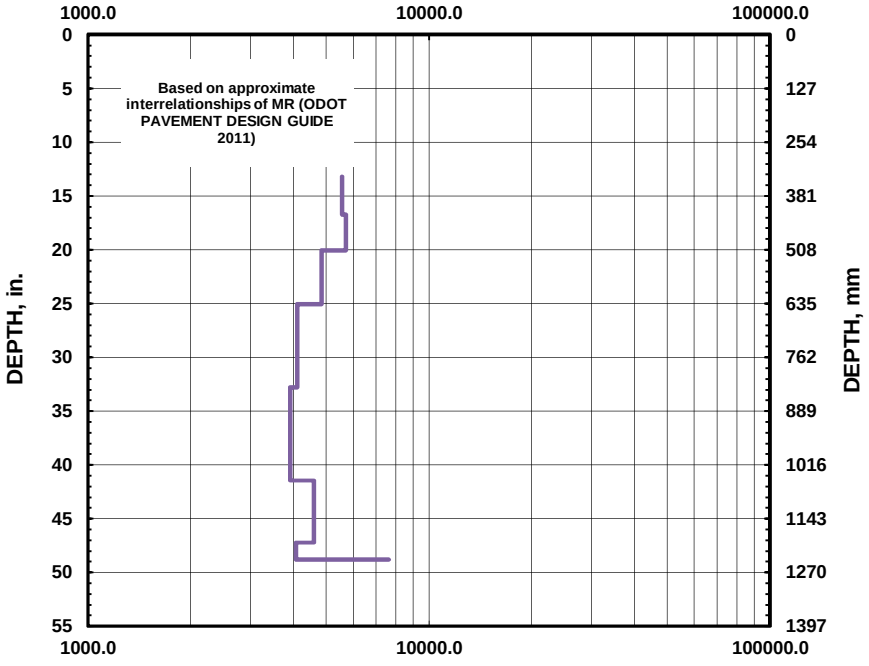


FIG. A15

DCP TEST DATA

Project: *Bear Creek* **Date:** *30-Dec-19*

Location: *B-4* **Soil Type(s):** *ML*

Hammer
- 10.1 lbs.
- 17.6 lbs.
- Both hammers used

- CH
- CL
- All other soils

No. of Blows	Accumulative Penetration (mm)	Type of Hammer
0	344	1
5	391	1
5	462	1
5	597	1
5	721	1
5	887	1
5	1115	1
5	1215	1
5	1278	1
5	1327	1
5	1376	1
5	1422	1
5	1457	1
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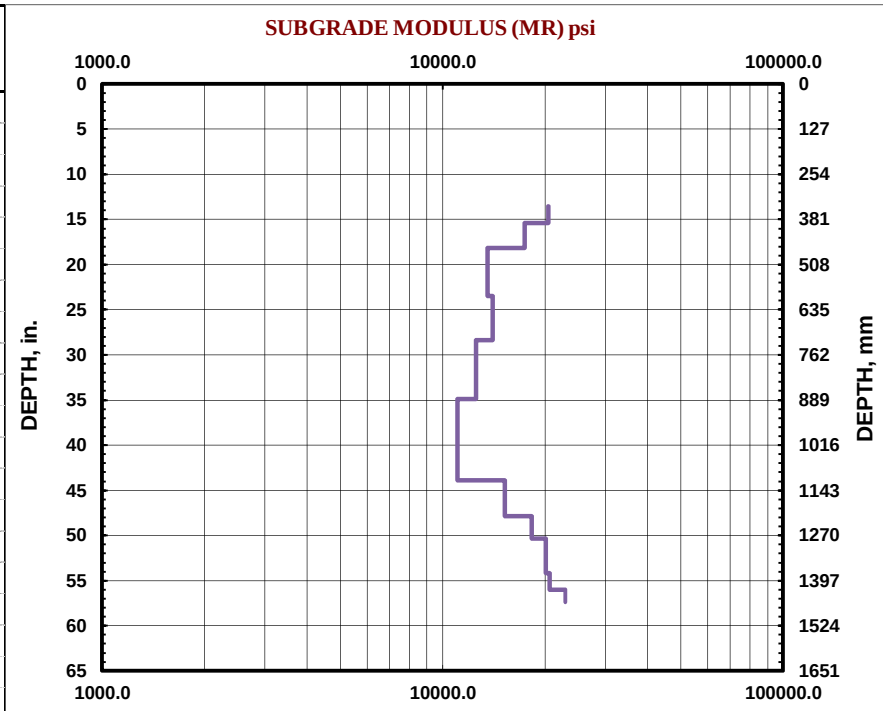
5	1457	1



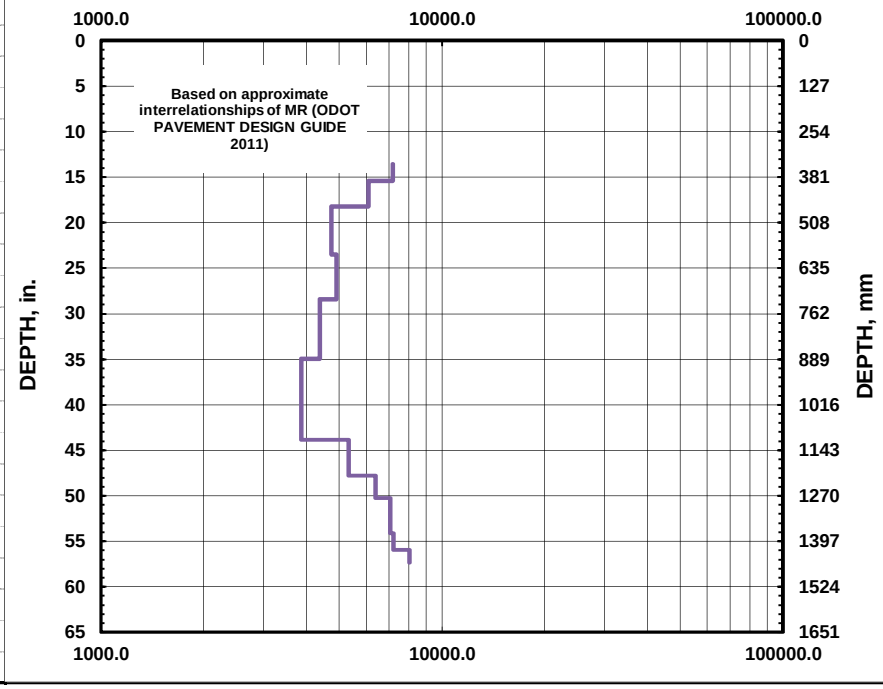


FIG. A16

APPENDIX B: LABORATORY TEST RESULTS

Appendix B

Laboratory Test Results

CONTENTS

Figures

APPENDIX B: LABORATORY TEST RESULTS

B.1 GENERAL

The soil samples obtained during the field explorations were described and identified in the field in accordance with the ODOT Soil and Rock Classification Manual (1987). The samples were then reviewed in the laboratory. Physical characteristics of the samples were noted, and field descriptions and identifications were modified as necessary. During the course of the examination, representative samples were selected for further testing. We refined our descriptions and identifications based on the results of the laboratory tests, in accordance with the ODOT Soil and Rock Classification Manual (1987).

The soil testing program included moisture content analyses, Atterberg limits determinations, and particle-size analyses. All testing was performed by Shannon & Wilson, Inc. in accordance with applicable ASTM International standards. General descriptions of the tests are summarized in the following paragraphs.

B.2 SOIL TESTING

B.2.1 Moisture (Natural Water) Content

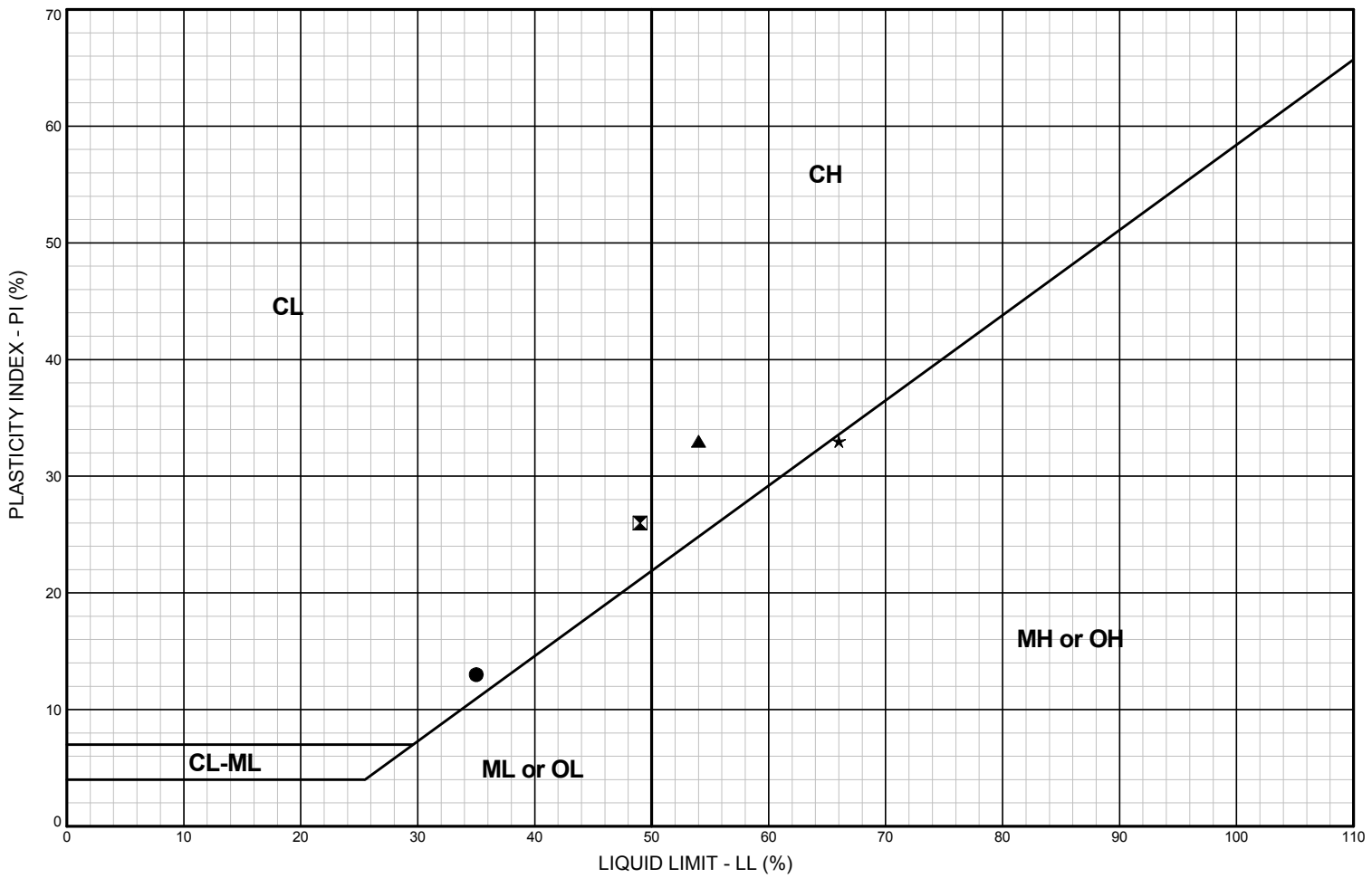
Natural moisture content analyses were performed in accordance with ASTM D2216 on selected soil samples. The natural moisture content is a measure of the amount of moisture in the soil at the time the explorations are performed and is defined as the ratio of water weight to dry soil weight, expressed as a percentage. The results of the moisture content analyses are presented on the Logs of Borings in Appendix A.

B.2.2 Atterberg Limits

Atterberg limits were determined on selected samples in accordance with ASTM D4318. This analysis yields index parameters of the soil that are useful in soil identification, as well as in a number of analyses, including liquefaction analysis. An Atterberg limits test determines a soil's liquid limit (LL) and plastic limit (PL). These are the maximum and minimum moisture contents at which the soil exhibits plastic behavior. A soil's plasticity index (PI) can be determined by subtracting PL from LL. The LL, PL, and PI of tested samples are presented on Figure B1, Atterberg Limits Results. The results are also shown on the Logs of Borings in Appendix A. For the purposes of soil description, Shannon & Wilson uses the term nonplastic to refer to soils with a PI less than 4, low plasticity for soils with a PI range of 4 to 10, medium plasticity for soils with a PI range of 10 to 20, high plasticity for soils with a PI greater than 20.

B.2.3 Particle-Size Analyses

Particle-size analyses were conducted on selected samples to determine their grain-size distributions. Grain size distributions were determined in accordance with ASTM D6913, D1140, as applicable. For all samples, a wet sieve analysis was performed to determine the percentage (by weight) of each sample passing the No. 200 (0.075 mm) sieve. For select samples, the material retained on the No. 200 sieve was shaken through a series of sieves to determine the distribution of the plus No. 200 fraction (ASTM D6913). For some samples, only the percentage of the sample passing the No. 200 (0.075mm) sieve was determined (ASTM D1140). Results of all particle-size analyses are presented on Figure B2, Grain Size Distribution. The percentage of each sample passing the No. 200 sieve is also shown graphically on the Logs of Borings in Appendix A.



NOTES

1) Atterberg limits tests were performed in general accordance with ASTM D4318 unless otherwise noted in the report.

2) Group Name and Group Symbol are in accordance with ASTM D2488 and are refined in accordance with ASTM D2487 where appropriate laboratory tests are performed.

3) Plasticity adjectives used in sample descriptions correspond to plasticity index as follows:
- Nonplastic (NP) (< 3%)
- Low Plasticity (3 to 15%)
- Medium Plasticity (15 to 30%)
- High Plasticity (> 30%)

BORING AND SAMPLE NO.	DEPTH (feet)	GROUP SYMBOL[2]	GROUP NAME[2]	LL %	PL %	PI %[3]	NAT. W.C. %	FINES %
● B-1, N2	5.0	*CL*	*Silty CLAY with trace sand*	35	22	13	32	
⧓ B-2, N2	5.0	*CL*	*Silty CLAY with trace sand*	49	23	26	25	
▲ B-4, N3	7.5	*CH*	*CLAY with trace sand*	54	21	33	32	
★ B-4, N9	35.0	*MH*	*Clayey SILT with trace sand*	66	33	33	43	

Canby Marquam Highway
Bear Creek Bridge Replacement
Canby, Oregon

ATTERBERG LIMITS RESULTS

May 2020 103169

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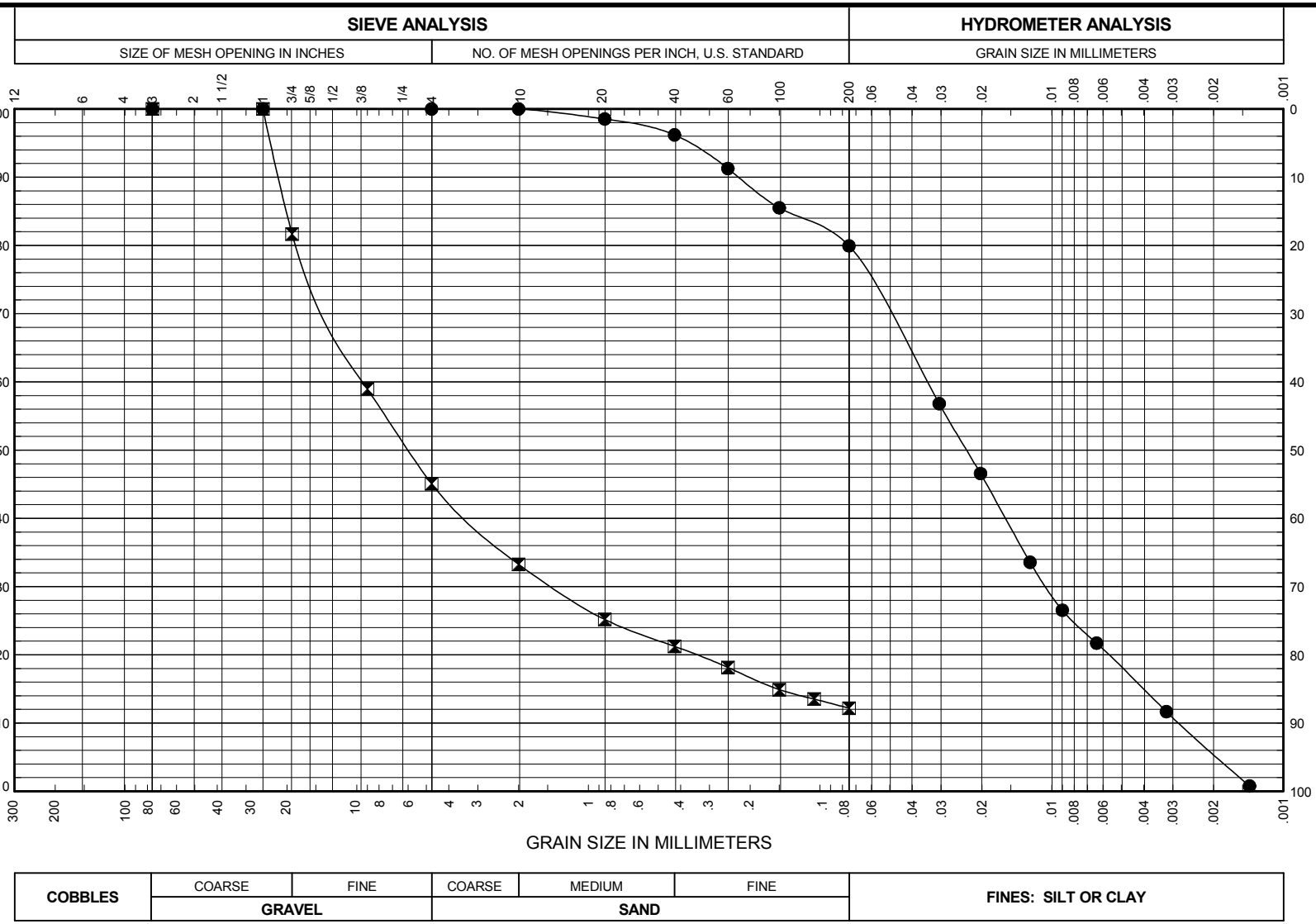
FIG. B1

FIG. B1

ATT_MAIN 103169.GPJ SHAN_WIL.GDT 2/13/20



NOTES:
1) Sieve analyses were performed in general accordance with ASTM D6913, sieve with hydrometer analyses were performed in general accordance with ASTM D422, and amount finer than #200 sieve analyses were performed in general accordance with ASTM D1140 unless otherwise noted in the report.
2) Group Name and Group Symbol are in accordance with ASTM D2488 and are refined in accordance with ASTM D2487 where appropriate laboratory tests are performed.

BORING AND SAMPLE NO.	DEPTH (feet)	GROUP SYMBOL[2]	GROUP NAME[2]	GRAVEL %	SAND %	FINES %	NAT. W.C. %	DRY DENSITY PCF
● B-1, N7a	35.0	*CL*	*Silty CLAY with some sand*	0	20	80	45	
⧓ B-2, N7	25.0	*GP-GC*	*Sandy GRAVEL with some clay*	55	33	12	15	

Canby Marquam Highway
Bear Creek Bridge Replacement
Canby, Oregon

GRAIN SIZE DISTRIBUTION

May 2020 103169

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FIG. B2

FIG. B2

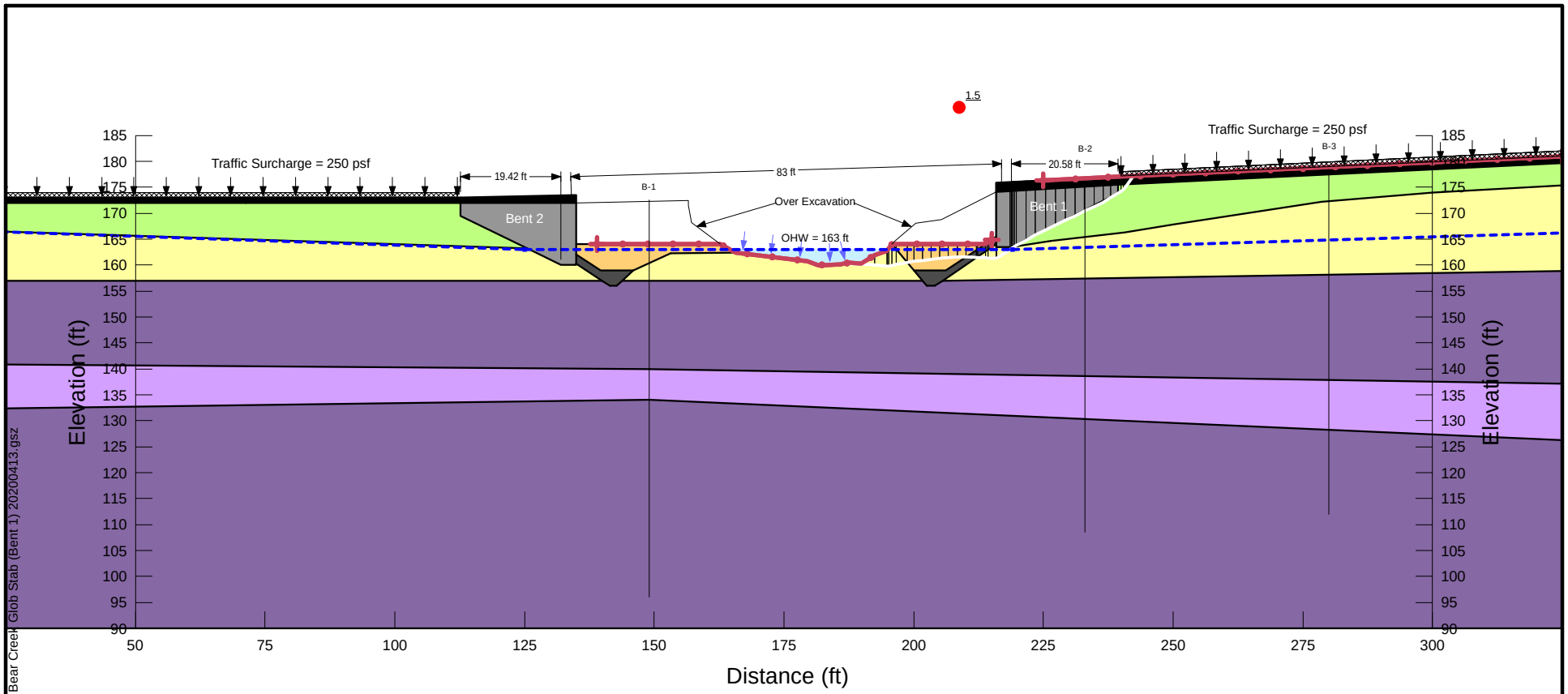
GSA MAIN 103169.GPJ SHAN WIL.GDT 2/13/20

APPENDIX C: SLOPE STABILITY ANALYSIS RESULTS

Appendix C

Slope Stability Analysis Results

Figures



Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	01 - Pavement	Mohr-Coulomb	140	0	40
	02 - Abutments	High Strength	135		
	03 - Rip Rap	Mohr-Coulomb	140	0	40
	04 - River Bank Fill	Mohr-Coulomb	115	0	30
	05 - Fill (Drained)	Mohr-Coulomb	105	100	26
	06 - Alluvium (Drained)	Mohr-Coulomb	105	100	29
	07 - Troutdale - Clay (Drained)	Mohr-Coulomb	120	500	29
	08 - Troutdale - Sand & Gravel	Mohr-Coulomb	130	0	41

NOTES

1. Critical failure surface estimated using the entry and exit search criteria and the Morgenstern and Price (1965) analysis method.
2. Horizontal distance has no reference to Project Stationing.
3. See report text for additional information about analyses and assumptions.

Canby Marquam Highway
Bear Creek Bridge Replacement Project
Clackamas County, Oregon

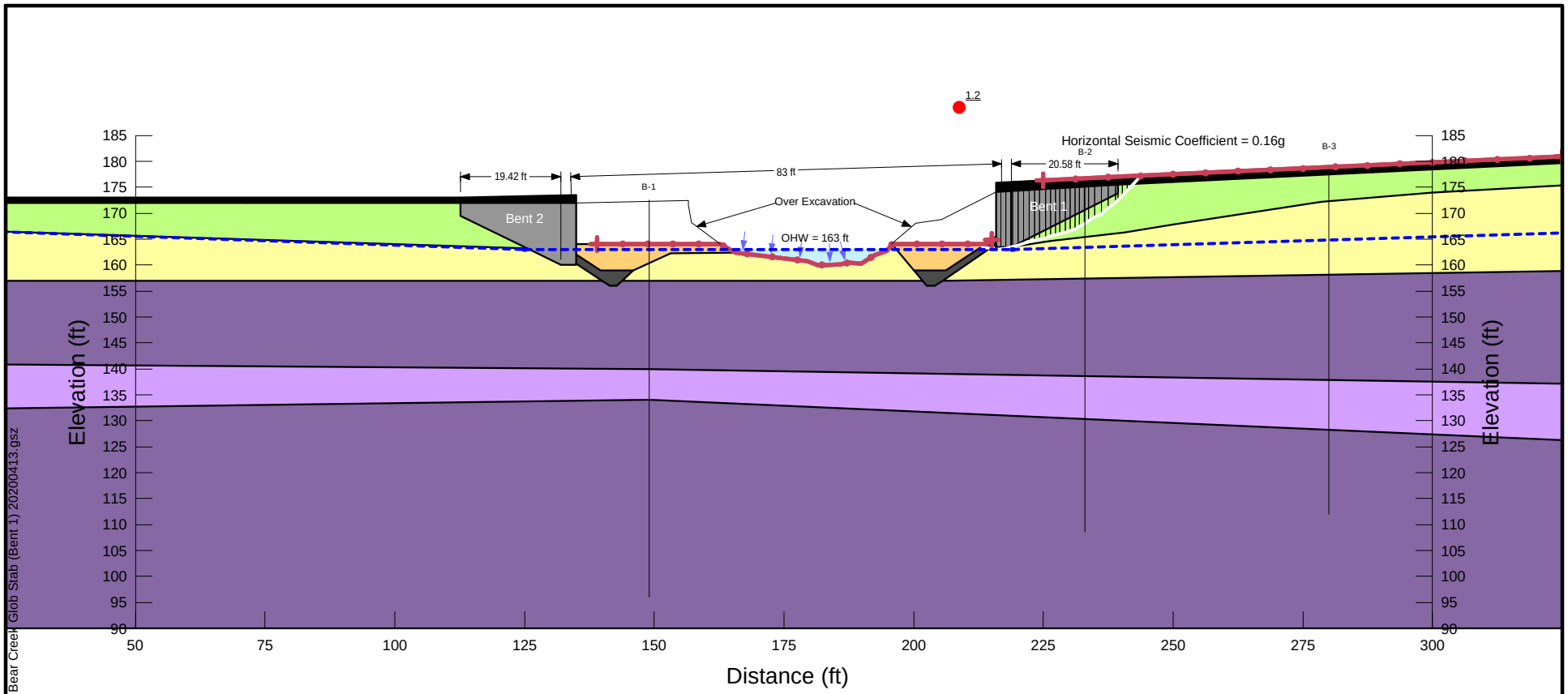
GLOBAL STABILITY ANALYSIS
1A - STATIC CONDITION
BENT 1

April 2020 103169

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. C1

I:\EF\PDX\103000s\103169 Bear Creek Brid\Analysis\02 Global Stability\103169 Bear Creek Glob Stab (Bent 1) 20200413.gsz



Color	Name	Model	Unit Weight (pcf)	Cohesion (psf)	Cohesion' (psf)	Phi' (°)
	01 - Pavement	Mohr-Coulomb	140		0	40
	02 - Abutments	High Strength	135			
	03 - Rip Rap	Mohr-Coulomb	140		0	40
	04 - River Bank Fill	Mohr-Coulomb	115		0	30
	05 - Fill (Undrained)	Undrained (Phi=0)	105	500		
	06 - Alluvium (Undrained)	Undrained (Phi=0)	105	1,000		
	07 - Troutdale - Clay (Undrained)	Undrained (Phi=0)	120	1,500		
	08 - Troutdale - Sand & Gravel	Mohr-Coulomb	130		0	41

NOTES
1. Critical failure surface estimated using the entry and exit search criteria and the Morgenstern and Price (1965) analysis method.
2. Horizontal distance has no reference to Project Stationing.
3. See report text for additional information about analyses and assumptions.

Canby Marquam Highway
Bear Creek Bridge Replacement Project
Clackamas County, Oregon

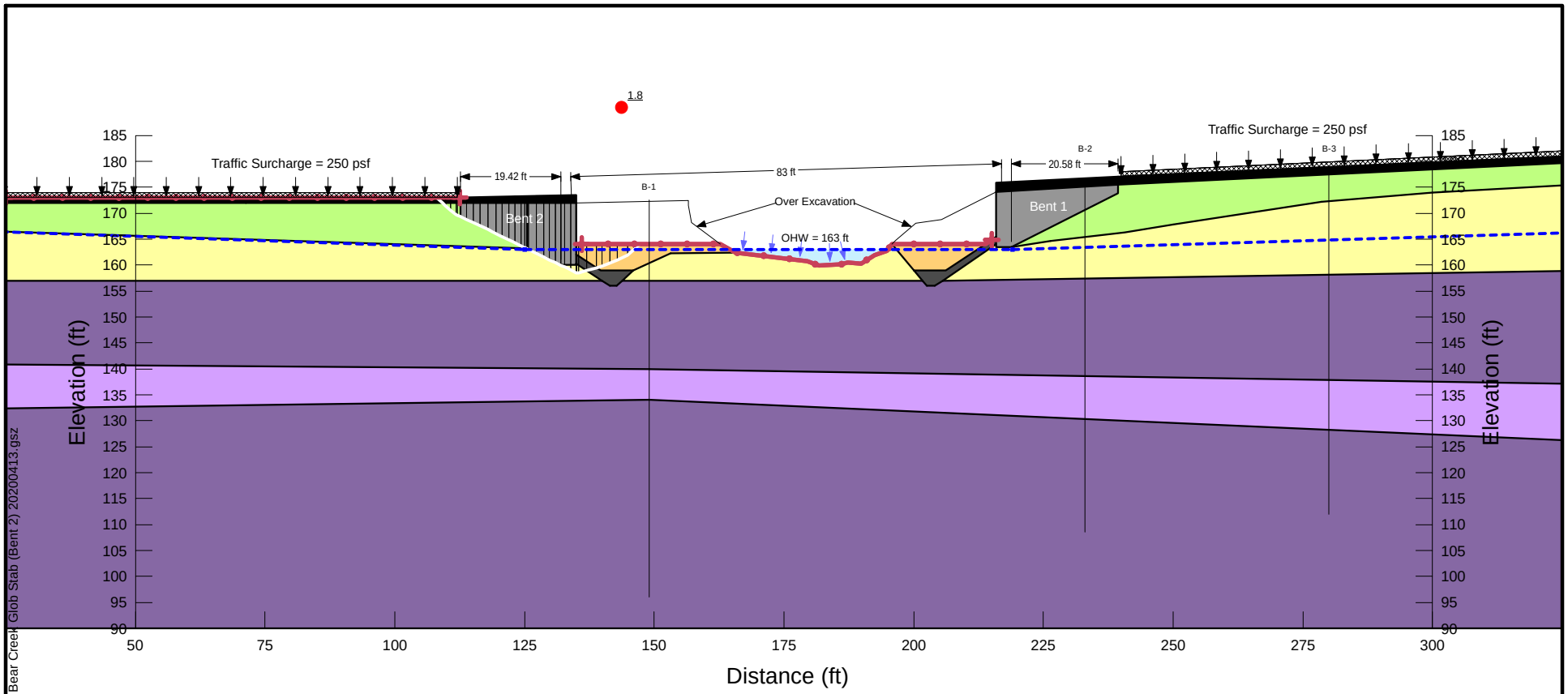
GLOBAL STABILITY ANALYSIS
1B - SEISMIC CONDITION
BENT 1

April 2020 103169

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. C2

I:\EF\PDX\103000s\103169 Bear Creek Brid\Analysis\02 Global Stability\103169 Bear Creek Glob Stab (Bent 1) 20200413.gsz



Color	Name	Model	Unit Weight (pcf)	Cohesion' (psf)	Phi' (°)
	01 - Pavement	Mohr-Coulomb	140	0	40
	02 - Abutments	High Strength	135		
	03 - Rip Rap	Mohr-Coulomb	140	0	40
	04 - River Bank Fill	Mohr-Coulomb	115	0	30
	05 - Fill (Drained)	Mohr-Coulomb	105	100	26
	06 - Alluvium (Drained)	Mohr-Coulomb	105	100	29
	07 - Troutdale - Clay (Drained)	Mohr-Coulomb	120	500	29
	08 - Troutdale - Sand & Gravel	Mohr-Coulomb	130	0	41

NOTES
1. Critical failure surface estimated using the entry and exit search criteria and the Morgenstern and Price (1965) analysis method.
2. Horizontal distance has no reference to Project Stationing.
3. See report text for additional information about analyses and assumptions.

Canby Marquam Highway
Bear Creek Bridge Replacement Project
Clackamas County, Oregon

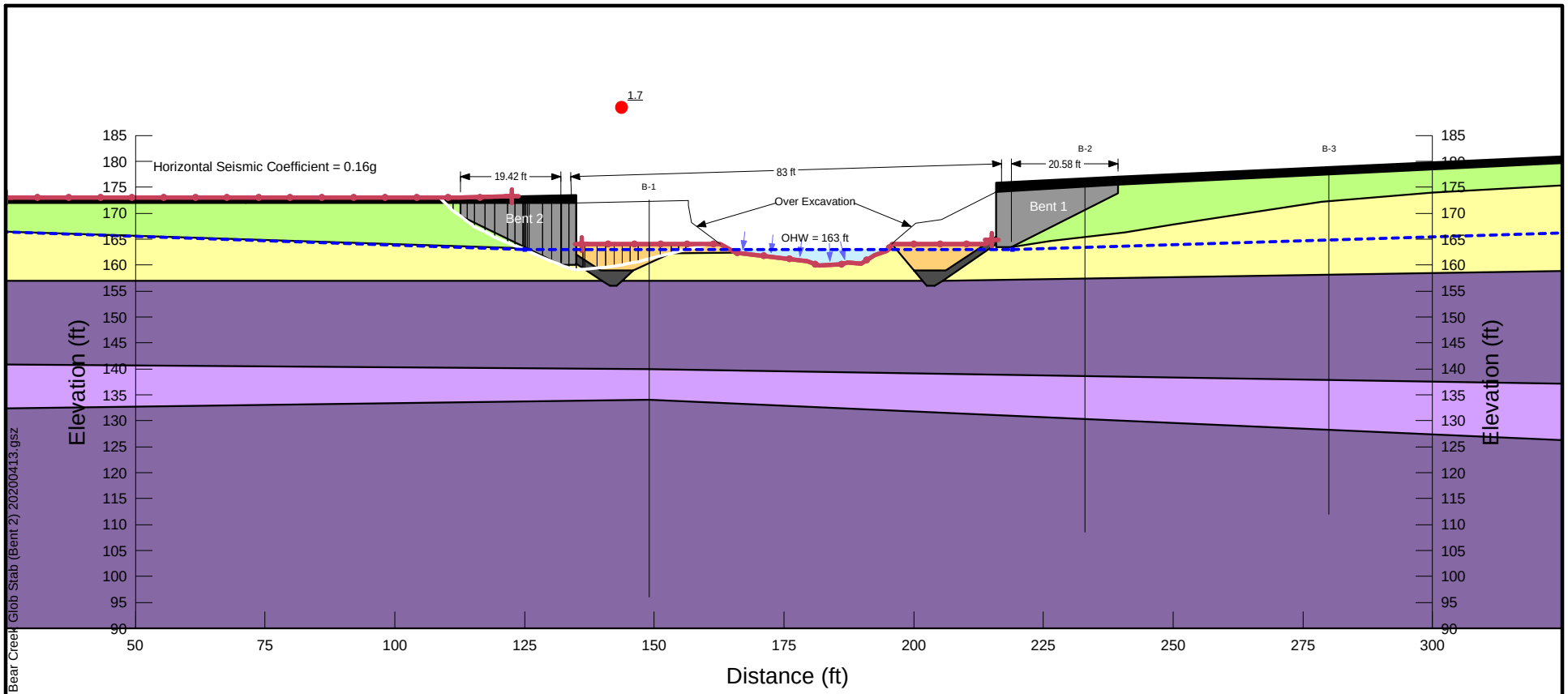
GLOBAL STABILITY ANALYSIS
2A - STATIC CONDITION
BENT 2

April 2020 103169

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. C3

I:\EF\PDX\103000s\103169 Bear Creek Brid\Analysis\02 Global Stability\103169 Bear Creek Glob Stab (Bent 2) 20200413.gsz



Color	Name	Model	Unit Weight (pcf)	Cohesion (psf)	Cohesion' (psf)	Phi' (°)
	01 - Pavement	Mohr-Coulomb	140		0	40
	02 - Abutments	High Strength	135			
	03 - Rip Rap	Mohr-Coulomb	140		0	40
	04 - River Bank Fill	Mohr-Coulomb	115		0	30
	05 - Fill (Undrained)	Undrained (Phi=0)	105	500		
	06 - Alluvium (Undrained)	Undrained (Phi=0)	105	1,000		
	07 - Troutdale - Clay (Undrained)	Undrained (Phi=0)	120	1,500		
	08 - Troutdale - Sand & Gravel	Mohr-Coulomb	130		0	41

NOTES
1. Critical failure surface estimated using the entry and exit search criteria and the Morgenstern and Price (1965) analysis method.
2. Horizontal distance has no reference to Project Stationing.
3. See report text for additional information about analyses and assumptions.

Canby Marquam Highway
Bear Creek Bridge Replacement Project
Clackamas County, Oregon

GLOBAL STABILITY ANALYSIS
2B - SEISMIC CONDITION
BENT 2

April 2020 103169

SHANNON & WILSON, INC.
Geotechnical and Environmental Consultants

FIG. C4

I:\EF\PDX\103000s\103169 Bear Creek Brid\Analysis\02 Global Stability\103169 Bear Creek Glob Stab (Bent 2) 20200413.gsz

APPENDIX D: TRAFFIC DATA

Appendix D

Traffic Data

Questions concerning this report call 503.742.4704
<http://www.clackamas.us/engineering/>

LOCATION : #161 - CANBY-MARQUAM HWY S OF BARNARDS
COORDINATES : 45.171566, -122.679802
WEATHER : SUNNY ~ 45

Site: 14596282
3/20/2018
Tuesday

24 Hour Classification

Combined Channels

Interval Start	Total	Motor Bikes	Cars & Trailers	2 Axle Long	Buses	2 Axle 6 Tire	3 Axle Single	4 Axle Single	<5 Axle Double	5 Axle Double	>6 Axle Double	<6 Axle Multi	6 Axle Multi	>6 Axle Multi
12:00 AM	7	0	7	0	0	0	0	0	0	0	0	0	0	0
1:00 AM	3	0	2	1	0	0	0	0	0	0	0	0	0	0
2:00 AM	5	0	3	1	0	0	0	0	0	1	0	0	0	0
3:00 AM	9	0	8	1	0	0	0	0	0	0	0	0	0	0
4:00 AM	23	0	18	4	0	0	0	0	1	0	0	0	0	0
5:00 AM	93	0	71	15	0	6	0	0	0	1	0	0	0	0
6:00 AM	155	1	100	38	3	11	0	0	0	1	1	0	0	0
7:00 AM	219	0	152	41	2	14	1	0	7	2	0	0	0	0
8:00 AM	154	0	108	26	1	11	4	0	1	2	0	0	0	1
9:00 AM	131	0	85	30	0	4	2	0	4	3	1	0	0	2
10:00 AM	138	0	82	36	3	8	2	0	1	6	0	0	0	0
11:00 AM	124	0	88	28	2	4	0	0	1	1	0	0	0	0
12:00 PM	135	2	90	21	0	12	3	0	2	2	2	0	0	1
1:00 PM	152	4	100	26	0	12	1	0	4	3	2	0	0	0
2:00 PM	165	4	111	36	2	5	2	0	0	3	1	0	0	1
3:00 PM	190	0	125	51	3	7	1	0	2	1	0	0	0	0
4:00 PM	247	3	182	43	3	12	0	0	4	0	0	0	0	0
5:00 PM	231	0	169	44	1	10	1	0	3	1	1	0	0	1
6:00 PM	169	0	121	34	0	11	0	0	3	0	0	0	0	0
7:00 PM	84	0	61	19	0	4	0	0	0	0	0	0	0	0
8:00 PM	72	0	54	13	0	5	0	0	0	0	0	0	0	0
9:00 PM	57	0	44	10	0	2	0	0	1	0	0	0	0	0
10:00 PM	25	0	21	3	0	1	0	0	0	0	0	0	0	0
11:00 PM	15	0	13	2	0	0	0	0	0	0	0	0	0	0
Total	2603	14	1815	523	20	139	17	0	34	27	8	0	0	6
%		0.5	69.7	20.1	0.8	5.3	0.7	0.0	1.3	1.0	0.3	0.0	0.0	0.2

IMPORTANT INFORMATION

Important Information

About Your Geotechnical Report

IMPORTANT INFORMATION

CONSULTING SERVICES ARE PERFORMED FOR SPECIFIC PURPOSES AND FOR SPECIFIC CLIENTS.

Consultants prepare reports to meet the specific needs of specific individuals. A report prepared for a civil engineer may not be adequate for a construction contractor or even another civil engineer. Unless indicated otherwise, your consultant prepared your report expressly for you and expressly for the purposes you indicated. No one other than you should apply this report for its intended purpose without first conferring with the consultant. No party should apply this report for any purpose other than that originally contemplated without first conferring with the consultant.

THE CONSULTANT'S REPORT IS BASED ON PROJECT-SPECIFIC FACTORS.

A geotechnical/environmental report is based on a subsurface exploration plan designed to consider a unique set of project-specific factors. Depending on the project, these may include the general nature of the structure and property involved; its size and configuration; its historical use and practice; the location of the structure on the site and its orientation; other improvements such as access roads, parking lots, and underground utilities; and the additional risk created by scope-of-service limitations imposed by the client. To help avoid costly problems, ask the consultant to evaluate how any factors that change subsequent to the date of the report may affect the recommendations. Unless your consultant indicates otherwise, your report should not be used (1) when the nature of the proposed project is changed (for example, if an office building will be erected instead of a parking garage, or if a refrigerated warehouse will be built instead of an unrefrigerated one, or chemicals are discovered on or near the site); (2) when the size, elevation, or configuration of the proposed project is altered; (3) when the location or orientation of the proposed project is modified; (4) when there is a change of ownership; or (5) for application to an adjacent site. Consultants cannot accept responsibility for problems that may occur if they are not consulted after factors that were considered in the development of the report have changed.

SUBSURFACE CONDITIONS CAN CHANGE.

Subsurface conditions may be affected as a result of natural processes or human activity. Because a geotechnical/environmental report is based on conditions that existed at the time of subsurface exploration, construction decisions should not be based on a report whose adequacy may have been affected by time. Ask the consultant to advise if additional tests are desirable before construction starts; for example, groundwater conditions commonly vary seasonally.

Construction operations at or adjacent to the site and natural events such as floods, earthquakes, or groundwater fluctuations may also affect subsurface conditions and, thus, the continuing adequacy of a geotechnical/environmental report. The consultant should be kept apprised of any such events and should be consulted to determine if additional tests are necessary.

MOST RECOMMENDATIONS ARE PROFESSIONAL JUDGMENTS.

Site exploration and testing identifies actual surface and subsurface conditions only at those points where samples are taken. The data were extrapolated by your consultant, who then applied judgment to render an opinion about overall subsurface conditions. The actual interface between materials may be far more gradual or abrupt than your report indicates. Actual conditions in areas not sampled may differ from those predicted in your report. While nothing can be done to prevent such situations, you and your consultant can work together to help reduce their impacts. Retaining

IMPORTANT INFORMATION

your consultant to observe subsurface construction operations can be particularly beneficial in this respect.

A REPORT'S CONCLUSIONS ARE PRELIMINARY.

The conclusions contained in your consultant's report are preliminary, because they must be based on the assumption that conditions revealed through selective exploratory sampling are indicative of actual conditions throughout a site. Actual subsurface conditions can be discerned only during earthwork; therefore, you should retain your consultant to observe actual conditions and to provide conclusions. Only the consultant who prepared the report is fully familiar with the background information needed to determine whether or not the report's recommendations based on those conclusions are valid and whether or not the contractor is abiding by applicable recommendations. The consultant who developed your report cannot assume responsibility or liability for the adequacy of the report's recommendations if another party is retained to observe construction.

THE CONSULTANT'S REPORT IS SUBJECT TO MISINTERPRETATION.

Costly problems can occur when other design professionals develop their plans based on misinterpretation of a geotechnical/environmental report. To help avoid these problems, the consultant should be retained to work with other project design professionals to explain relevant geotechnical, geological, hydrogeological, and environmental findings, and to review the adequacy of their plans and specifications relative to these issues.

BORING LOGS AND/OR MONITORING WELL DATA SHOULD NOT BE SEPARATED FROM THE REPORT.

Final boring logs developed by the consultant are based upon interpretation of field logs (assembled by site personnel), field test results, and laboratory and/or office evaluation of field samples and data. Only final boring logs and data are customarily included in geotechnical/environmental reports. These final logs should not, under any circumstances, be redrawn for inclusion in architectural or other design drawings, because ers may commit errors or omissions in the transfer process.

To reduce the likelihood of boring log or monitoring well misinterpretation, contractors should be given ready access to the complete geotechnical engineering/environmental report prepared or authorized for their use. If access is provided only to the report prepared for you, you should advise contractors of the report's limitations, assuming that a contractor was not one of the specific persons for whom the report was prepared, and that developing construction cost estimates was not one of the specific purposes for which it was prepared. While a contractor may gain important knowledge from a report prepared for another party, the contractor should discuss the report with your consultant and perform the additional or alternative work believed necessary to obtain the data specifically appropriate for construction cost estimating purposes. Some clients hold the mistaken impression that simply disclaiming responsibility for the accuracy of subsurface information always insulates them from attendant liability. Providing the best available information to contractors helps prevent costly construction problems and the adversarial attitudes that aggravate them to a disproportionate scale.

READ RESPONSIBILITY CLAUSES CLOSELY.

Because geotechnical/environmental engineering is based extensively on judgment and opinion, it is far less exact than other design disciplines. This situation has resulted in wholly unwarranted claims

being lodged against consultants. To help prevent this problem, consultants have developed a number of clauses for use in their contracts, reports, and other documents. These responsibility clauses are not exculpatory clauses designed to transfer the consultant's liabilities to other parties; rather, they are definitive clauses that identify where the consultant's responsibilities begin and end. Their use helps all parties involved recognize their individual responsibilities and take appropriate action. Some of these definitive clauses are likely to appear in your report, and you are encouraged to read them closely. Your consultant will be pleased to give full and frank answers to your questions.

The preceding paragraphs are based on information provided by the ASFE/Association of Engineering Firms Practicing in the Geosciences, Silver Spring, Maryland

SPECIAL PROVISIONS
FOR CONSTRUCTION

DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT
CLACKAMAS COUNTY, OREGON

Bridges and Structures

Canby Marquam Hwy: Bear Creek Bridge

CLACKAMAS COUNTY DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

SPECIAL PROVISIONS

FOR

Structures, Paving, Storm Sewer, and Grading
Canby Marquam Hwy: Bear Creek Bridge
Canby-Marquam Highway
Clackamas County

PROFESSIONAL OF RECORD CERTIFICATION:

Seal w/signature (Prisciliano Peralta)	I certify the Special Provision Section(s) listed below are applicable to the design for the subject project for Temporary Traffic Control, Roadway Items. Modified Special Provisions were prepared by me or under my supervision. Section(s) 00220, 00221, 00222, 00223, 00305, 00310, 00320, 00330, 00351, 00640, 00730, 00744, 00749, 00810, 00850, 00865, 00940

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

CLACKAMAS COUNTY DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

SPECIAL PROVISIONS

FOR

Structures, Paving, Storm Sewer, and Grading
Canby Marquam Hwy: Bear Creek Bridge
Canby-Marquam Highway
Clackamas County

PROFESSIONAL OF RECORD CERTIFICATION:

Seal w/signature (James Hencke)	I certify the Special Provision Section(s) listed below are applicable to the design for the subject project for Temporary and Permanent Erosion Control Modified Special Provisions were prepared by me or under my supervision.
 RENEWS: 10/31/2022	Section(s) 00245, 00280, 01030, 01040

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

Canby Marquam Hwy: Bear Creek Bridge
Bridge Replacement

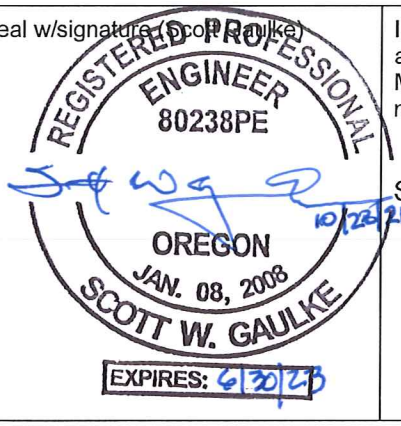
CLACKAMAS COUNTY DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

SPECIAL PROVISIONS

FOR

Structures, Paving, Storm Sewer, and Grading
Canby Marquam Hwy: Bear Creek Bridge
Canby-Marquam Highway
Clackamas County

PROFESSIONAL OF RECORD CERTIFICATION:

Seal w/signature (Scott Gaulke)  	I certify the Special Provision Section(s) listed below are applicable to the design for the subject project for Contaminated Media Modified Special Provisions were prepared by me or under my supervision. Section(s) 00294

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

CLACKAMAS COUNTY DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

SPECIAL PROVISIONS

FOR

Structures, Paving, Storm Sewer, and Grading
Canby Marquam Hwy: Bear Creek Bridge
Canby-Marquam Highway
Clackamas County

PROFESSIONAL OF RECORD CERTIFICATION:

Seal w/signature (Anthony Calcagno)	I certify the Special Provision Section(s) listed below are applicable to the design for the subject project for Temporary Work Access, Structural Items. Modified Special Provisions were prepared by me or under my supervision.
 EXPIRES: 12-31-21	Section(s) 00253, 00501, 00504, 00510, 00520, 00530, 00540, 00545, 00550, 00584, 00585, 00587, 02001, 02030, 02690

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

CLACKAMAS COUNTY DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

SPECIAL PROVISIONS

FOR

Structures, Paving, Storm Sewer, and Grading
Canby Marquam Hwy: Bear Creek Bridge
Canby-Marquam Highway
Clackamas County

PROFESSIONAL OF RECORD CERTIFICATION:

Seal w/signature (Atalia Raskin) 	I certify the Special Provision Section(s) listed below are applicable to the design for the subject project for Drainage, Stormwater Control. Modified Special Provisions were prepared by me or under my supervision. Section(s) 00350, 00390, 00445, 01012, 01014

FINAL ELECTRONIC DOCUMENT AVAILABLE UPON REQUEST

TABLE OF CONTENTS FOR SPECIAL PROVISIONS

Canby-Marquam Hwy: Bear Creek Bridge
Bridge Replacement

SPECIAL PROVISIONS

WORK TO BE DONE

The Work to be done under this Contract consists of the following on Bear Creek Bridge Section of the Canby-Marquam Highway in Clackamas County:

1. Construct new bridge.
2. Construct storm sewer modifications.
3. Pave and install pavement markings.
4. Perform additional and incidental Work, as called for by the Specifications and Plans.

APPLICABLE SPECIFICATIONS

The Specifications that are applicable to the Work on this Project are the General Conditions for Construction for Clackamas County published by the Agency, which contain Part 00100 General Conditions and the 2021 "Oregon Standard Specifications for Construction," Parts 00200 through 03000, published by the Oregon Department of Transportation which contain the detailed “Technical Specifications”.

All number references in these Special Provisions shall be understood to refer to the Sections and subsections of the General Conditions or Standard Specifications bearing like numbers and to Sections and subsections contained in these Special Provisions in their entirety.

CLASS OF PROJECT

This is a Local Agency Project.

SECTION 00110 - ORGANIZATION, CONVENTIONS, ABBREVIATIONS, AND DEFINITIONS

Comply with Section 00110 of the General Conditions for Construction for Clackamas County modified as follows:

00110.05(e) Reference to Websites - Add the following bullet list to the end of this subsection:

- American Traffic Safety Services Association (ATSSA)

www.atssa.com

- Clackamas County's Local Contract Review Board (LCRB) Rules

https://dochub.clackamas.us/documents/drupal/ef976bc9-14f4-495b-9bd8-c69ee7334685

- ODOT Construction Section

www.oregon.gov/odot/construction/pages/index.aspx

- ODOT Construction Section - Qualified Products List (QPL)

www.oregon.gov/ODOT/Construction/Pages/Qualified-Products.aspx

- ODOT Construction Surveying Manual for Contractors

www.oregon.gov/ODOT/ETA/Documents_Geometronics/Construction-Survey-Manual-Contractors.pdf

- ODOT Traffic Control Plans Unit

www.oregon.gov/ODOT/Engineering/Pages/Work-Zone.aspx

- ODOT Traffic Standards

www.oregon.gov/ODOT/Engineering/Pages/Signals.aspx

00110.10 Abbreviations

Add the following:

CCDA - Clackamas County Development Agency
DTD - Clackamas County Department of Transportation and Development
LCRB - Local Contract Review Board
ODFW - Oregon Department of Fish and Wildlife
UNS - Utility Notification System
WES - Water Environment Services of Clackamas County

00110.20 Definitions

Add or modify definitions as follows:

Agreement Form – The written agreement between the Owner and Contractor covering the work to be performed under the contract.

Amendment – A contract modification for Additional Work, Changed Work, Extra Work, Field Directives, or other changes. An Amendment changes the contract value, scope, and/or time. Amendments require formal approval by the Board of County Commissioners, pursuant to LCRB Rule Division C-049-160, prior to approval of such work.

Approved Equal - Materials or services proposed by the contractor and approved by the County as equal substitutes for those materials or services specified.

Award – Same as “Notice to Intent to Award”.

BCC – The Clackamas County Board of County Commissioners

Bid - A written offer by a bidder on forms furnished by the County to do work stated in the bid documents at the prices quoted. "Bid" is synonymous with "proposal" in these bid documents.

Bid Closing - The date and time for Bid Closing is the same as the date and time for Bid Opening.

Bid Documents- The following documents together comprise the Bid Documents:

- Invitation to Bid, Instructions to Bidders, Bid Form, Bid Proposal, Schedule of Prices, Bid
- Bond, Performance Bond
- Certificate of Insurance, Prevailing Wage Rates
- The "Oregon Standard Specifications for Construction" by ODOT and APWA, 2021 edition.
- Plans and drawings
- Other bid documents included or referenced in the bid documents
- Addenda, if any
- The Agreement Form and Special Provisions

Bonds - The bond or surety bond is a written document given by the surety and principal to the obligee to guarantee a specific obligation.

Change Order - A price agreement for Extra Work, Changed Work, field directives, or other changes. A Change Order does not change the contract value, scope, or time until it is incorporated into an Amendment. Change Orders will be agreed upon, in writing, by the County Project Manager and the Contractor’s designated representative.

Contract - The written contract agreement, including amendments, signed by the Contractor and Clackamas County, which describes the work to be done, the contract amount, and defines the relationships and obligations of the Contractor and the County.

Contract Documents - The Invitation to Bid, the Instructions to Bidders, the accepted Bid Proposal and Schedule of Prices, the Subcontractor List, the Bid Bond, the Performance and Payment Bond, the Certificate of Insurance, the Prevailing Wage Rates, the Standard Specifications and Special Provisions, Amendments, the Plans and Drawings, the Agreement, as well as all documents incorporated by reference therein, and any and all addenda prepared by or at the direction of and adopted by the County and further identified by the signature of the parties and all modifications thereof incorporated in the documents before their execution.

County - The term "County" shall mean Clackamas County, including the Board of County Commissioners, employees and agents of the County authorized to administer the conditions of these contract documents.

Department – A subdivision of the Agency.

Engineer - The County's Project Manager either acting directly or through an authorized representative(s). When referring to approval of extra work or other Contract modifications, “Engineer” also refers to the County’s legal authority according to the LCRB rules.

Invitation to Bid - The public announcement (Notice to Contractors) inviting bids for work to be performed or materials to be furnished.

Legal Holiday - As defined in ORS 279C.540.

Lump Sum - A method of payment providing for one all-inclusive cost for the work or for a particular portion of the work.

Notice of Intent to Award - A written notice from the County notifying bidders that the County intends to award to the responsible bidder submitting lowest responsive bid.

ODOT Procurement Office – Clackamas County Purchasing Department.

Owner – Synonymous with Agency.

Plan Holder’s List – A list of contractor’s names, contact names, phone and fax numbers that the County’s Purchasing Department creates during bidding of the Project.

Project Manager – The Owner’s representative who directly supervises the engineering and administration of the contract.

Shop Drawings – Synonymous with Working Drawings.

Solicitation Document – Synonymous with Bid Documents.

Standard Drawings – The Agency-prepared detailed drawings for Work or methods of construction that normally do not change from project to project. The Standard Drawings include the ODOT Standard Drawings.

Standard Specifications - "Oregon Standard Specifications for Construction", current edition, published by the Oregon Department of Transportation and as amended by **the Agency.**

State - Where the term “State” or “State of Oregon” or “ODOT” appears in the contract documents it shall mean “Clackamas County”, “State of Oregon”, or “ODOT” as applicable because of context.

Work Day - Any and every calendar day from January 1 to December 31 of every year, excluding Saturdays, Sundays and Legal Holidays.

END OF SECTION

SECTION 00120 – BIDDING REQUIREMENTS AND PROCEDURES

Comply with Section 00120 of the General Conditions for Construction for Clackamas County modified as follows:

00120.00 Prequalification of Bidders - Delete and replace with the following:

See Instructions to Bidders.

00120.01 General Bidding Requirements – Delete and replace with the following:

See Instructions to Bidders.

00120.05 Request for Plans, Special Provisions, and Bid Booklets: – Delete and replace with the following:

See Notice of Public Improvement Contract and Instructions to Bidders.

Copies of the 2021 Oregon Standard Specifications for Construction and Supplements might be found on the Oregon Department of Transportation website at:

http://www.oregon.gov/ODOT/Business/Pages/Standard_Specifications.aspx

00120.15 Examination of Work Site and Solicitation Documents; Consideration of Conditions to be Encountered – Delete the third paragraph.

00120.25 Subsurface Investigations - Replace the first two sentences of the first paragraph with the following:

The Agency or its consultant has conducted subsurface or geologic investigations of the Project Site, and the results of these investigations are included in the Bid Documents and available at the Engineer's office.

00120.30 Changes to Plans, Specifications, or Quantities before Opening of Bids - Delete and replace with the following:

See Instructions to Bidders.

00120.40 Preparation of Bids – Delete and replace this section with the following:

See Instructions to Bidders.

00120.45 Submittal of Bids - Delete and replace with:

See Instructions to Bidders.

00120.50 Submitting Bids for More than One Contract – Delete this subsection.

00120.60 Revision or Withdrawal of Bids - Delete and replace with the following:

See Instructions to Bidders.

00120.70 Rejection of Nonresponsive Bids – Delete and replace with the following:

See Instructions to Bidders.

00120.95 Opportunity for Cooperative Arrangement – Delete this section**.**

END OF SECTION

SECTION 00130 - AWARD AND EXECUTION OF CONTRACT

Comply with Section 00130 of the Standard Specifications supplemented and/or modified as follows:

00130.00 Consideration of Bids - Delete third paragraph.

00130.10 Award of Contract - Delete and replace with the following:

See Instructions to Bidders.

00130.15 Right to Protest Award – Delete and replace with the following:

See Instructions to Bidders.

00130.30 Contract Booklet – Add the following:

Other documents are part of the contract documents by reference. These include, but are not limited to:

- The "Oregon Standard Specifications for Construction", 2021 Edition, as published by the Oregon Department of Transportation (ODOT).
- “Oregon Standard Drawings” latest edition, as published by ODOT.
- Clackamas County Service District No. 1 "Surface Water Standard Specifications", latest edition.

00130.40 Contract Submittals - Delete and replace with the following:

See Instructions to Bidders.

00130.70 Release of Bid Guaranties – Delete and replace with the following:

See Instructions to Bidders.

END OF SECTION

SECTION 00140 - SCOPE OF WORK

Comply with Section 00140 of the Standard Specifications supplemented and/or modified as follows:

00140.30 Agency-Required Changes in the Work – Replace the last paragraph with the following:

Upon receipt of an Engineer's written order modifying the Work, the Contractor shall perform the Work as modified via Change Order, which may be subject to approval as an Amendment.

If an Amendment incorporating changes to the Work increases the Contract amount, the Contractor shall notify its Surety of the increase and shall provide the Agency with a copy of any resulting modification to bond documents. The Contractor's performance of Work pursuant to Amendments shall neither invalidate the Contract nor release the Surety. Payment for changes in the Work shall be made in accordance with 00195.20. Contract Time adjustments shall be made in accordance with 00180.80.

00140.31 "As-Built" Records - Add the following section:

Maintain a current and accurate record of the work completed during the course of this contract. This may be in the form of "as-built" drawings kept by accurately marking a designated set of the contract plans with the specified information as the Work proceeds. Accurate, complete and current "as-built" drawings are a specified requirement for full partial payment of the work completed. At project completion and as a condition of final payment, the Contractor shall deliver to the Project Manager a complete and legible set of "as-built" drawings.

The "as-built" drawings must show the information listed below. Where the term "locate" or "location" is used, it shall mean record of position with respect to both the construction vertical datum and either construction horizontal datum or a nearby permanent improvement.

1) Record location of underground services and utilities as installed.

2) Record location of existing underground utilities and services that are to remain and that are encountered during the course of the work.

3) Record changes in dimension, location, grade or detail to that shown on the plans.

4) Record changes made by change order.

5) Record details not in the original plans.

6) Provide fully completed shop drawings reflecting all revisions.

END OF SECTION

SECTION 00150 - CONTROL OF WORK

Comply with Section 00150 of the General Conditions for Construction for Clackamas County, modified as follows:

00150.00 Authority of the Engineer – Delete and replace the first sentence with the following:

Except as indicated elsewhere in the Contract (e.g. Amendment approval by the BCC), the Engineer has full authority over the Work and its suspension.

00150.05 Cooperative Arrangements – Delete this section**.**

00150.10 Coordination of Contract Documents

(a) Order of Precedence – Delete this section and replace with the following:

The Engineer will resolve any discrepancies between these documents in the following order of precedence:

- Approved Amendments;
- Approved Change Orders
- Bid Schedule with Schedule of Prices;
- Permits from governmental agencies
- Special Provisions;
- Agency-prepared drawings specifically applicable to the Project and bearing the Project title;
- Reviewed and accepted, stamped Working Drawings;
- Agreement Form;
- Standard Drawings;
- Approved Unstamped Working Drawings;
- Standard Specifications;
- All other Contract Documents not listed above.

Notes on a drawing shall take precedence over drawing details.

Dimensions shown on the drawings, or that can be computed, shall take precedence over scaled dimensions.

00150.15(b) Agency Responsibilities - Replace this subsection, except for the subsection number and title, with the following:

The Engineer will perform the Agency responsibilities described in the Construction Surveying Manual for Contractors, Chapter 1.5 (see Section 00305).

00150.15(c) Contractor Responsibilities - Replace this subsection, except for the subsection number and title, with the following:

The Contractor shall perform the Contractor responsibilities described in the Construction Surveying Manual for Contractors, Chapter 1.6 (see Section 00305) and the following:

- Perform earthwork slope staking including intersections and matchlines and set stakes defining limits for clearing which approximate right-of-way and easements.
- Inform the Engineer of any property corners monuments and/or survey markers that are not shown on the plans and are found during construction activities prior to disturbing the monuments. Allow the Agency 2 Work days for referencing all found markers before they are removed. Monuments that are noted on the plans to be protected and are disturbed by the Contractor's activities shall be replaced by the Contractor's surveyor at the Contractor's expense.

Add the following subsection:

00150.50(g) Utility Information (Anticipated Relocations):

The following organizations may be adjusting Utilities within the limits of the Project during the period of the Contract with relocation Work estimated to be completed by the following dates and times:

Subsection	Utility	Contact Person's Name, Address, Email, and Phone Number	Estimated Completion Date
00150.50(g)(1)	NW Natural Gas	Darrell Hammond 3087 Broadway St NE, Salem, OR 97303 Darrell.Hammond@nwnatural.com Mobile: 541-981-0164	November 12, 2021

The Contractor shall contact the Engineer to view the approved Utility Relocation Plans.

The Contractor shall notify, in writing, the Utilities listed above, with a copy to the Engineer, at least 14 Calendar Days before beginning Work on the Project.

(1) (NW Natural Gas) - "Gas Utility":

The Contractor shall notify the Gas Utility in writing, with a copy to the Engineer, at least 14 Calendar Days before beginning Work within 10 feet of the gas pipeline.

In the event of an emergency, and in addition to the calls required by the Utilities notification system, the Contractor shall call:

- Northwest Natural Gas 1-800-882-3377

00150.60(a) Load and Speed Restrictions for Construction Vehicles and Equipment - Add the following bullet to the end of the bullet list:

- The Contractor shall restrict the combined weights of construction vehicles, Equipment, and Materials on Bridges according to 00220.45.

00150.70 Detrimental Operations – Add the following:

Portions of this project might be constructed in close proximity to existing private improvements. All private improvements disturbed by the Contractor's operations shall be repaired or replaced to equal or better condition at the Contractor's expense. The Engineer may withhold from future payments to the Contractor, an amount equal to the costs reasonably estimated by the Engineer to repair or replace, as the case may be, those private improvements disturbed by the Contractor's operations. Engineer shall release the retained amount once Engineer has determined that the Contractor has completed the repair consistent with the requirements of this provision. In addition, prior to construction, the Contractor shall provide to the Engineer videotape showing private property, if any, which may be disturbed during construction.

END OF SECTION

SECTION 00160 - SOURCE OF MATERIALS

Comply with Section 00160 of the Standard Specifications supplemented and/or modified as follows:

00160.20(a) Buy America – Delete this section and replace with the following: Federal highway funds are NOT involved on this Project.

END OF SECTION

SECTION 00165 - QUALITY OF MATERIALS

Comply with Section 00165 of the Standard Specifications modified as follows:

00165.04 Costs of Testing – Replace this section with the following sentence: All testing required to be performed by the Contractor will be at the Contractor's expense.

00165.10(a) Field-Tested Materials – Add the following sentence: The County follows the MFTP on its projects:

00165.10(b) Nonfield-Tested Materials - Add the following sentence:

The County follows the NTMAG on its projects.

END OF SECTION

SECTION 00170 - LEGAL RELATIONS AND RESPONSIBILITIES

Comply with Section 00170 of the Standard Specifications modified as follows:

00170.02 Permits, Licenses, and Taxes – Add the following:

This project is to be constructed in Clackamas County road right of way and streets. There are no separate road opening permits required from Clackamas County to perform the work required under this contract.

Add the following subsection:

00170.67 Fees - The fee required by ORS 279C.825(1) will be paid by the Agency to the Commissioner of the Oregon Bureau of Labor and Industries under the administrative rules of the Commissioner.

00170.61(a) Workers' Compensation - In the paragraph, replace "00170.70(d)" with "the Agreement".

00170.70(a) Insurance Coverages - Add the following to the end of this subsection:

The following insurance coverages and dollar amounts are required pursuant to this subsection:

Insurance Coverages	Combined Single Limit per Occurrence	Annual Aggregate Limit
Commercial General Liability	$1,000,000.00	$2,000,000.00
Commercial Automobile Liability	$1,000,000.00	(aggregate limit not required)
Pollution Liability	$1,000,000.00	$2,000,000.00
Commercial Automobile Liability with Pollution Coverage	$1,000,000.00	(aggregate limit not required)

00170.70(d) Additional Insured - Add the following paragraph and bullets to the end of this subsection:

Add the following as Additional Insureds under the Contract:

- Clackamas County and its officers, agents, and employees
- Oregon Department of Transportation and its officers, agents, and employees
- David Evans and Associates, Inc.
- Shannon & Wilson, Inc.
- Mary Kerr

00170.72 Indemnity/Hold Harmless - Add the following paragraph and bullets to the end of this subsection:

Extend indemnity, defense and hold harmless to the Agency and the following:

- Clackamas County and its officers, agents, and employees
- Oregon Department of Transportation and its officers, agents, and employees
- David Evans and Associates, Inc.
- Shannon & Wilson, Inc.
- Mary Kerr

00170.79 Third Party Beneficiary – Replace the text of this section with the following:

- Third-party beneficiaries to the Contract include the Oregon Department of Transportation and its officers, agents, and employees.

00170.85(b-1) Contractor Warranty for Specific Items – This subsection does not apply:

END OF SECTION

SECTION 00180 - PROSECUTION AND PROGRESS

Comply with Section 00180 of the General Conditions for Construction for Clackamas County modified as follows:

00180.06 Assignment of Funds Due Under the Contract - Delete first bulleted item.

00180.21 Subcontracting - Add the following to subsection (a):

All contracts with subcontractors or suppliers shall have provisions making the contract assignable to the County, at the option of the County, if the Contractor terminates, goes out of business, declares bankruptcy, or otherwise is unable to perform provided that the County gives the subcontractor notice of assignment within fourteen (14) days of learning of the inability of the Contractor to perform.

The Engineer may revoke consent to subcontract. If the Engineer revokes consent to subcontract, the subcontractor shall be immediately removed from the Project Site.

00180.40 Limitation of Operations - Add the following to subsection (a):

The Contractor must provide, at a minimum, a 48-hour notice to the Clackamas County Project Manager in order to perform any work on Saturdays.

Add the following subsection:

00180.40(c) Specific Limitations - Limitations of operations specified in these Special Provisions include, but are not limited to, the following:

Limitations	**Subsection**
Cooperation with Utilities	00150.50
On-Site Work	00180.40(b)
Contract Time	00180.50(h)
Right-of-Way and Access Delays	00180.65
Regulated Work Areas	00290.34(a)
Opening Sections to Traffic	00744.51

The Contractor shall be aware of and subject to schedule limitations in the Standard Specifications that are not listed in this subsection.

00180.41 Project Work Schedules - After the paragraph that begins "One of the following Type…" add the following paragraph:

In addition to the "look ahead" Project Work schedule, a Type “B” schedule as detailed in the Standard Specifications is required on this Contract.

00180.42 Preconstruction Conference - Add the following to the end of this subsection:

Submit the following during the preconstruction conference unless otherwise directed:

- The names, addresses, and telephone numbers of two or more persons employed by the Contractor who can be reached day or night to handle emergency matters.

- Subcontractor's list including contact list for each subcontractor with phone numbers and addresses and work to be performed.

- List of personnel authorized to sign change orders and receive progress payment warrants.

- Videotape of private properties affected by construction per 00150.70.

The Contractor shall conduct a group Utilities scheduling meeting with representatives from the Utility companies involved with this Project and the Engineer before the preconstruction conference. The Contractor shall incorporate the Utilities time needs into the Contractor's schedule submitted at the preconstruction conference.

00180.43 Commencement and Performance of Work - Add the following bullet item:

- Conduct the work at all times in a manner and sequence that will insure minimal interference with traffic. The Contractor shall not begin work that will interfere with work already started. If it is in the County's best interest to do so, the County may require the Contractor to finish a portion or unit of the project on which work is in progress or to finish a construction operation before work is started on an additional portion or unit of the project.

Add the following subsection:

00180.50(h) Contract Time - There are two Contract Times on this Project as follows:

(1) The Contractor shall complete all Work to be done under the Contract, except for final lift paving, permanent striping, seed establishment and plant establishment, not later than October 31, 2022.

(2) The Contractor shall complete all Work to be done under the Contract, except for plant establishment, not later than April 30, 2023.

00180.65 Right-of-Way and Access Delays - Add the following paragraph and bullet to the end of this subsection:

The Contractor shall provide 72-hour advance notification to the following property before access to the property owner’s gate is needed to coordinate access and installation of new and temporary fence prior to removal of existing fence, and prior to removal of temporary fence upon completion of the project:

- File 1, Mary Kerr, 503-651-3134. This property contains livestock.

00180.70(b) Contractor’s Responsibility during and after Suspension - Replace the paragraph that begins "During periods of suspension of the Work …" with the following paragraph:

During periods of suspension of the Work, the Contractor shall continue to be responsible for protecting and repairing the Work according to 00170.80, and for ensuring that a single designated representative responsible for the Project remains available according to 00150.40.

00180.85(b) Liquidated Damages - Add the following to the end of this subsection:

The liquidated damages for failure to complete the Work on time required by 00180.50(h) will be $800 per Calendar Day *.

* Calendar Day amounts are applicable when the Contract time is expressed on the Calendar Day or fixed date basis.

Add the following subsection:

00180.85(e) Traffic Delays Beyond 20 Minutes - Stopping or holding vehicles beyond the limits specified will inconvenience the traveling public and will be a cost to the Agency.

It is impractical to determine the actual damages the Agency will sustain in the event traffic is stopped or held longer than the 20-minute limit listed in 00220.02. Therefore, the Contractor shall pay to the Agency, not as a penalty, but as liquidated damages, $500 per 20 minutes, or for a portion of 20 minutes, for stopping or holding traffic longer than 20 minutes. In addition to the liquidated damages, any added cost for traffic control measures, including flagging, required to stop or hold traffic beyond the 20-minute time limit, will be at no additional cost to the Agency. The required traffic control measures will be as determined by the Engineer.

Assessment of liquidated damages will stop when the Engineer determines that traffic is no longer stopped or held beyond the 20-minute limit. Any liquidated damages assessed under these provisions will be in addition to those listed in 00180.85(b).

Add the following subsections:

00180.88 Workplace Harassment Prevention Plan – Submit a workplace harassment prevention plan for review 10 days before the preconstruction conference:

- A Contractor-developed workplace harassment prevention plan to ensure all workers, regardless of their identity or status, are guaranteed a safe and respectful work environment. The plan applies, but is not limited to, a worker's race, ethnicity, color, national origin, gender identity, gender expression, sex, sexual orientation, religion, marital or familial status, age, mental or physical disability (as defined by the Americans with Disabilities Act and state law), former incarceration, immigrant status, or veteran status.
- A description of how the plan will be implemented and monitored during the project duration.
- A list of the in-person training that will be conducted for workers of all ranks working on the project.
- A list of meaningful policies including procedures for aggrieved workers in need of recourse.
- How incidents involving bullying or harassment will be investigated and resolved in a prompt, thorough, and impartial manner.

Post on the jobsite and make available that rights of workers on the site for:

a) participation in positive jobsite trainings and
b) copies of policies about hate, intimidation, or harassment including how to report and how to receive support. Materials will be provided in languages inclusive of the workforce.

00180.89 Measurement – No measurement of quantities will be made for workplace harassment prevention plan.

00180.95 Payment – Payment for workplace harassment prevention plan will be for developing and implementing the plan during construction of the project, in-person training, developing meaningful policies, and investigating incidents.

END OF SECTION

SECTION 00190 - MEASUREMENT OF PAY QUANTITIES

Comply with Section 00190 of the General Conditions for Construction for Clackamas County modified as follows:

00190.20(f)(2) Scale Without Automatic Printer - Add the following paragraph after the paragraph that begins " If the scales require manual entry…":

Pay costs for the weigh witness at $35.00 per hour.

00190.20(g) Agency-Provided Weigh Technician: Delete and replace subsection (g) with the following:

The Contractor must provide a weigh technician. The Agency will not provide one for the Contractor.

END OF SECTION

SECTION 00195 - PAYMENT

Comply with Section 00195 of the General Conditions for Construction for Clackamas County, modified as follows:

00195.10 Payment for Changes in Material Costs - Delete and replace with the following:

No asphalt cement cost adjustment shall be used on this project

Add the following subsection:

00195.11 Fuel Cost Price Escalation/De-escalation - A fuel escalation/de-escalation clause will be in effect during the life of the Contract.

The Agency reserves all of its rights under the Contract, including, but not limited to, its rights for suspension of the Work under 00180.70 and its rights for termination of the Contract under 00180.90, and this escalation/de-escalation provision shall not limit those rights.

(a) Monthly Fuel Price (MFP) - A Monthly Fuel Price (MFP) will be established by the Agency each month. For the actual MFP, go to the Agency website at:

https://www.oregon.gov/ODOT/Business/Pages/Asphalt-Fuel-Price.aspx

The MFP for a given month will be the average weekly price obtained from the OPIS weekly listing dated the first Monday of that month for No. 2 diesel fuel for Portland, Oregon. Prices are based solely on rack and resellers' prices exclusive of freight, taxes, and special discounts. If the average weekly price is not posted by OPIS or is otherwise not available to the Agency for the first Monday of any month for any reason, the Agency may use the average weekly price posted by OPIS immediately before or after the first Monday of that month. If the average weekly prices cease to be available from OPIS for any reason, the Agency in its discretion will select and begin using a substitute price source or index to establish the MFP each month. The Agency does not guarantee that fuel will be available at the MFP.

(d) Fuel Price Adjustment - A fuel price adjustment for fluctuations in the cost of fuel will apply only to the major fuel usage Pay Items shown in the following list and at the respective fuel factors listed:

All Pay Items associated with the following Bridges and Structures:

Bridge No. 24051	10 Gal/$1000

The Contractor is cautioned to consider that its operations may require more or less fuel.

A price adjustment (±) to the Contractor for fuel cost changes will be made monthly if the Monthly Fuel Price differs 25% or more from the Base Fuel Price. This adjustment will be the product of the Monthly Fuel Adjustment Factor and the estimated Monthly Fuel Used. The Monthly Fuel Used will be determined by multiplying the quantities of Work accomplished during the month for subject Pay Items, by the appropriate Fuel Factors.

Fuel cost adjustments will continue to be made as specified and will not be revised for any reason, including the Contractor's election to use an alternative fuel (natural gas, wood pellets, propane, or other).

00195.12(d) Steel Materials Pay Item Selection - Add the following to the end of this subsection:

If the Contractor elects not to participate in the steel escalation/de-escalation program for this Project, no response from the Contractor is required.

The Contractor may elect to participate in the steel escalation/de-escalation program for this Project under 00195.12 through 00195.12(d) by marking each check box for each Pay Item in the list below the Contractor is selecting for participation in the program. The completed list must be submitted in writing, signed and dated by the Contractor, to the Project Manager before or within seven Calendar Days after the date of the preconstruction conference.

PARTICIPATE	PAY ITEM DESCRIPTION	COST BASIS (CB)
☐	Furnish PP 16 X 0.5 Steel Piles	90%
☐	Reinforced Pile Tips	90%
☐	Reinforcement, Grade 60	27%
☐	Guardrail, Type 2A	11%
☐	Guardrail, Type 3	11%

Regardless of the number of Pay Items listed by the Agency or selected by the Contractor, or if no Pay Items qualify for the steel escalation/de-escalation program for this Project or the Contractor elects not to participate in the steel escalation/de-escalation program for this Project, the steel price escalation/de-escalation clause (and program) contained in 00195.12 through 00195.12(d) are included in this Contract and are the only steel price escalation/de-escalation clause (and program) that apply to this Contract.

_____ _____

Contractor's Signature Date

00195.20(b) Significant Changed Work – Add the following:

Significant is defined as:

a) An increase or decrease of more than 25 percent of the total cost of the Work calculated from the original proposal quantities and the unit contract prices; or,
b) An increase or decrease of more than 25 percent in the quantity of any one major contract item.

For condition b) above, a major item is defined as any item that amounts to 10 percent or more of the original total contract price.

00195.50 Progress Payments and Retained Amounts - Modify as follows:

00195.50(a) Progress Payments - Modify as follows:

(1) Progress Estimates - Delete the first sentence and replace with the following:

At a regular period each month to be determined at the Preconstruction Conference, the Contractor will make an estimate of the amount and value of pay item work completed and in place. This estimate will be submitted to the Project Manager for review and approval.

(2) Value of Material on Hand - Delete the section and replace with the following:

(2) Value of Material on Hand - The Contractor will make an estimate of the amount and value of acceptable material to be incorporated in the completed work which has been delivered and stored as given in 00195.60(a) for review and approval.

(4) Limitations on Value of Work Accomplished - In the first sentence, change "Engineer's estimate" to “Contractor’s reviewed estimate”.

00195.50 (b) Retainage - Delete the first paragraph and replace with:

The amount to be retained from progress payments will be 5.0% of the value of payments made, and will be retained in one of the forms specified in Subsection (c) below. The County will withhold Retainage from all force account and change order work.

00195.50(c) Forms of Retainage – Delete first paragraph and replace with:

Forms of acceptable retainage are set forth below in Subsections (1) through (3). “Cash, Alternate A” or “Cash, Alternate B” (Retainage Surety Bond) are the Agency-preferred forms of retainage. Unless the Contractor notifies the County otherwise in writing, the County will automatically hold retainage per paragraph (2) “Cash, Alternate B (No Interest Earned). If the Agency incurs additional costs as a result of the Contractor’s election to use “Bonds and Securities”, the Agency may recover such costs from the Contractor by a reduction of the final payment.

Delete and replace paragraph (2) with the following:

> **(2) Cash, Alternate B (No Interest Earned)** – Retainage will be deducted from progress payments and held by the Agency until final payment is made in accordance with 00195.90, unless otherwise specified in the Contract.

00195.50(d) Release of Retainage – Delete this section and replace with the following:

(d) Release of Retainage - As the Work progresses, release of the amounts to be retained under (b) of this Subsection will only be considered for Pay Items that have been satisfactorily completed. For purposes of this Subsection, a Pay Item will be considered satisfactorily completed only if all of the Work for the Pay Item is complete and all contractual requirements pertaining to the Pay Item and Work have been satisfied. Work not included in a Pay Item, or which constitutes part of an uncompleted Pay Item, will not be regarded as satisfactorily completed Work for the purposes of this Subsection.

When the Work is 50% completed and upon written application of the Contractor and written approval of the Surety, the Engineer or Project Manager may reduce or eliminate retainage on remaining progress payments if the Work is progressing satisfactorily.

END OF SECTION

SECTION 00196 - PAYMENT FOR EXTRA WORK

Comply with Section 00196 of the Standard Specifications: supplemented and/or modified as follows:

00196.91 Extra Work Allowance – Add the following new section:

The Bid schedule of prices contains a bid item for a pre-determined amount of Engineer ordered extra work. All Bidders shall reflect this same amount in their total Bid. No Bidder shall presume in the preparation of the bid or in the course of contract work that there will be a certain payment under that item or a certain order for extra work.

END OF SECTION

SECTION 00197 - PAYMENT FOR FORCE ACCOUNT WORK

Comply with Section 00197 of the Standard Specifications.

END OF SECTION

SECTION 00199 - DISAGREEMENTS, PROTESTS, AND CLAIMS

Comply with Section 00199 of the Standard Specifications supplemented and/or modified as follows:

00199.40 Claim Decision; Review; Exhaustion of Administrative Remedies - Delete the entire section and replace with the following:

The Contractor must properly submit a claim as detailed in 00199.30.

(a) Engineer Claim Review - The Engineer or Project Manager will, as soon as practicable, consider and investigate a Contractor's properly submitted claim for additional compensation, Contract Time, or for a combination of additional compensation and Contract Time. Once the Engineer or Project Manager determines the Agency is in receipt of a properly submitted claim, the Engineer or Project Manager will arrange a meeting, within 28 Calendar Days, or as otherwise 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.

If the Engineer or Project Manager determines that the Contractor must furnish additional information, records, or documentation to allow proper evaluation of the claim, the Engineer will schedule a second meeting, to be held within 14 calendar days, or as otherwise agreed by the parties, at which the Contractor shall present the requested information, records and documentation.

The Engineer or Project Manager will advise the Contractor of the decision to accept or reject the claim. If the Engineer or Project Manager finds the claim has merit, an equitable adjustment will be offered. If the Engineer or Project Manager finds the claim has no merit, no offer of adjustment will be made and the claim will be denied. The County intends to resolve claims at the lowest possible level.

If, at any step in the claim decision or review process, the Contractor fails to promptly submit requested information or documentation that the Agency 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.

If the Engineer or Project Manager has denied a claim, in full or in part, for Contract Time only according to 00180.80, or has denied a claim, in full or in part, for correction of final compensation according to 00195.95, those disputed claims may then be resolved, in full or in part, at either of the two progressive steps of claim review procedure as specified in this Subsection. For all claims, all of the actions and review under each step of the review process shall occur before the review can be advanced to the next higher step.

(b) Director Claim Review - Upon request by the Contractor, the Department Director will review the Engineer or Project Manager’s decision on the claim and advise the Contractor of the decision in writing. If the Director finds the claim has merit, and equitable adjustment will be offered. If the Director finds the claim has no merit, no offer of adjustment will be made and the claim will be denied.

Once the Engineer determines the Agency is in receipt of a properly submitted claim, the Engineer will arrange a meeting, within 21 Calendar Days or as otherwise agreed by the parties, with the Contractor in order to present the claim for formal review and discussion.

If the Engineer determines that the Contractor must furnish additional information, records or documentation to allow proper evaluation of the claim, the Engineer will schedule a second meeting, to be held within 14 Calendar Days or as otherwise agreed by the parties, at which the Contractor shall present the requested information, records and documentation.

The Director shall evaluate the claim based on the information provided by the Contractor to the Engineer or Project Manager. However, if the Department Director (or designee) determines that the Contractor must furnish additional information, records or documentation to allow proper evaluation of the claim, the Department Director (or designee) will schedule a meeting, to be held within 14 Calendar Days, or as otherwise agreed by the parties, at which the Contractor shall present the requested information, records and documentation.

The claim is subject to records review, if not all of the records requested by the Department Director (or designee) were furnished. If applicable, advancement of the claim is subject to the provisions regarding waiver and dismissal of the claim or portions of the claim.

The decision of the Department Director shall be the final decision of the Agency.

(c) Commencement of Litigation - If the Contractor does not accept the Director's decision, then the Contractor shall commence any suit or action to collect or enforce any claim filed in accordance with 00199.30 within a period of one (1) year following the mailing of the decision or within one (1) year following the date of "Second Notification", whichever is later. If said suit or action is not commenced in said one (1) year period, the Contractor expressly waives any **and** all claims for additional compensation and any and all causes of suit or action for the enforcement thereof that he might have had.

The Contractor must follow each step in order, and exhaust all available administrative remedies before resorting to litigation. Litigation of a claim that cannot be resolved through the process described above shall be initiated by filing a complaint in the Clackamas County Circuit Court for the State of Oregon.

In any litigation, the entire text of any order or permit issued by the County or any other governmental or regulatory authority, as well as any documents referenced or incorporated therein by reference, shall be admissible for purposes of Contract interpretation.

The Contract shall not be construed against either party regardless of which party drafted it. Other than as modified by the Contract, the applicable rules of contract construction and evidence shall apply. This Contract shall be governed by and construed according to the laws of the State of Oregon without regard to principles of conflict of laws.

The Contractor shall comply with 00170.00.

00199.50 Mediation - Delete the entire section.

00199.60 Review of Determination Regarding Records - Delete the entire section.

END OF SECTION

SECTION 00210 - MOBILIZATION

Comply with Section 00210 of the Standard Specifications.

SECTION 00220 - ACCOMMODATIONS FOR PUBLIC TRAFFIC

Comply with Section 00220 of the Standard Specifications modified as follows:

00220.40(e)(2)(b) Special Events - Add the following to the end of this subsection:

The following special events will occur during this Project:

- Wedding - July 15 – 16, 2022
- Wedding - August 12 – 13, 2022
- Wedding - August 26 – 27, 2022 .

Add the following subsection:

00220.42 Bridge Site Road Closure - Close the road to traffic at the Bridge site during reconstruction of the Bridge. Do not close the road until all Materials and Equipment are on hand or guaranteed to be delivered so that the Work can be done in an efficient manner with a minimum period of road closure.

The road closure will not be allowed until the area and the detour route are signed according to the TCP and the requirements of Section 00221 and Section 00222.

00220.45 Load Restrictions on Bridges - Structure No. 06027 is on the Restricted Bridge List or has a condition rating of 4 or less. If the Contractor plans to park vehicles or Equipment on the Bridge or store Materials on the Bridge submit, 30 Calendar Days before loading, stamped loading calculations and data according to 00150.35.

SECTION 00221 - COMMON PROVISIONS FOR WORK ZONE TRAFFIC CONTROL

Comply with Section 00221 of the Standard Specifications modified as follows:

00221.90(b) Temporary Protection and Direction of Traffic - Delete the bullet that begins “Moving temporary barrier to and from Contractor’s stockpile areas”.

SECTION 00222 – TEMPORARY TRAFFIC CONTROL SIGNS

Comply with Section 00222 of the Standard Specifications modified as follows:

00222.40(e) Temporary Sign Placement - Add the following to the end of the bullet list:

- At least ten Calendar Days before closing the roadway, place a “NO PEDESTRIAN ACCESS” sign in advance of each future closure point. Locate the sign so it is legible from the nearest alternate pedestrian pathway facing incoming pedestrian traffic. The sign may be mounted between the panels of a Type II barricade or on a single-post TSS. Do not place the sign or sign support such that it narrows the pedestrian pathway to a width of less than 4 feet.
- Install "ROAD WORK AHEAD" (W20-1-48) signs with a 36 by 24-inch "FINES DOUBLE" (R2-6aP) rider on the Canby Marquam Highway, according to the "TCD Spacing Table" shown on the Standard Drawings or as modified by the Plans except do not install the "FINES DOUBLE" rider on concrete barrier mounted signs.
- Install beyond each end of the Project, facing outgoing traffic, an "END ROAD WORK" (CG20-2A-24) sign a distance of (A ÷ 2) according to the "TCD Spacing Table" shown on the Standard Drawings or as modified by the Plans.
- Install two sign flag boards, as shown on the Standard Drawings, above the following detour and road closed advance warning signs, where applicable:
    - "DETOUR AHEAD", "DETOUR XXXX FT", "DETOUR X/X MILE" (W20-2) signs.
    - "ROAD CLOSED AHEAD", "ROAD CLOSED XXXX FT", "ROAD CLOSED X/X MILE" (W20-3) signs.

At least seven Calendar Days before the road closure, place one or more PCMS displaying the following message as shown, or as directed:

Panel 1	**Panel 2**
(Name/# of highway)	CLOSURE
(Location)	(Time Frame)
CLOSURE	(Time Frame)

SECTION 00223 - WORK ZONE TRAFFIC CONTROL LABOR AND VEHICLES

Comply with Section 00223 of the Standard Specifications modified as follows:

00223.31(b) Traffic Control Inspection Without TCS - Replace the bullet that begins “Prepares and signs a daily “Traffic Control Inspection Report”…” with the following bullet:

- Prepares and signs a “Traffic Control Inspection Report” (Form No. 734-2474) upon the initial installation of TCM and each working day when any modification, removal, or reinstallation of TCM are made, or as directed by the Engineer. Submit completed reports to the Engineer no later than the end of the next working day.

SECTION 00245 - TEMPORARY WATER MANAGEMENT

Section 00245, which is not a Standard Specification, is included in this Project by Special Provision.

Description

00245.00 Scope - This Work consists of furnishing, installing, operating, maintaining, and removing temporary water management facilities in regulated Work areas.

00245.01 Abbreviations:

TWM - Temporary Water Management
TWMF - Temporary Water Management Facility
TWMP - Temporary Water Management Plan

00245.02 Definitions:

Temporary Water Management Facility - A TWMF that conveys water around or through Work areas, removes water from Work areas, and treats and discharges water at locations outside Work areas.

00245.03 Temporary Water Management Plan - The Agency TWMP is a concept plan. 28 Calendar Days before beginning work in regulated Work areas, submit stamped Working Drawings of a Contractor-developed TWMP, according to 00150.35, based on either the Agency's concept plan or an independent plan that meets water quality and environmental guideline requirements and does not negatively affect neighboring properties or water rights.

Include the following minimum information in the TWMP:

- The sequence and schedule for dewatering and re-watering. This sequence and schedule must include when to contact the Engineer prior to dewatering and re-watering.
- How the Work area is isolated from the active stream flow upstream, through, and downstream.
- How the stream flow is routed and conveyed around or through the isolated Work area.
- How fish passage is provided around the Work area, if required.
- How the isolated Work area is de-watered.
- How the pumped water is treated, if necessary, before it is discharged downstream.
- Description of all construction stages, including appropriate contact points for each stage.
- A list of on-site backup Materials and Equipment.

- Provide the name of the TWM Subcontractor (if applicable) and Contractor's superintendent, and their 24-hour contact phone number 10 Days before the pre-Work meeting. If changes in the appointment of the TWM Subcontractor or Contractor's superintendent occur during the term of the Contract, provide written notice to the Engineer within 5 Calendar Days of the change.
- Calculations of water withdraw pump's capacity.
- Details of the proposed water intake screen used to isolate in-water Work area and how it meets the requirements of 00290.34(c)(3).

Any change to the TWMP during construction requires approval prior to implementation.

Obtain the Engineer's written approval before beginning Work in in-water Work areas.

00245.04 Pre-Work Meeting - Before beginning any TWM Work, attend a pre-work meeting at the Project Site with the Engineer no more than 8 Calendar Days prior to implementation of TWM. Required meeting attendees include:

- Engineer
- Contractor
- TWM Subcontractor (if applicable)
- Agency Environmental Coordinator or their appointed representative

The pre-Work meeting agenda typically includes the method of TWM, the TWMP, fish salvage plan and strategy, describe environmental risks, turbidity monitoring, energy dissipation, dewatering and re-watering plan and strategy, site clean-up expectations, and the circumstances under which contacting the Engineer is required.

Materials

00245.10 Materials - Furnish Materials meeting the following requirements:

Plastic Sheeting ..... 00280.14(a)
Sandbags..... 00280.15(a)
Water Intake Screening..... 00290.34(c)

Furnish pumps that are:

- Self-priming.
- Equipped with a variable speed governor.
- Equipped with a power source.
- Able to pump water that contains soft and hard solid.

Construction

00245.40 Fish Removal - Qualified Agency, ODFW, or ODOT consultant biologists will remove fish and other aquatic organisms from the isolation Work areas. Coordinate fish removal with the Engineer at least 28 Calendar Days before beginning Work in regulated

Work areas. Allow access into the isolation Work areas before, during and after installation of the TWMF to perform the specified tasks as follows:

- **Before Installation of TWMF** - Before any in-water Work, including installing TWMF, qualified personnel will remove fish and other native aquatic organisms from within the proposed isolated Work area.

- **After Installation of TWMF** - After installing TWMF and the reduction of the water level through the isolated Work area has begun, qualified personnel will remove all fish and aquatic organisms as the water level is reduced. Do not completely de-water the isolation area until all fish and aquatic organisms have been removed.

00245.41 Installation - During installation of the temporary water management facility, maintain a downstream water flow rate of at least 50 percent of the upstream water flow rate.

00245.42 Operation - Operate temporary water management as follows:

- Protect fish and fish habitat according to 00290.34.
- Maintain and control water flow downstream of the isolated Work area for the duration of the diversion to prevent downstream de-watering.
- Clean, maintain and repair water intake screening to ensure adequate flows and protection of aquatic organisms.
- In the event of containment failure immediately notify the Engineer so arrangements can be made to remove fish and aquatic organisms from the isolation Work areas prior to the continuation of Work within the ordinary high water limits.

Maintenance

00245.60 Maintenance - Monitor water turbidity according to 00290.30(a)(8).

Finishing and Cleaning Up

00245.70 Removal - Prior to removal of the TWMF, obtain approval from the Engineer after completion of all Work within ordinary high water limits. Remove the TWMF and re-water and restore the stream flow. Maintain downstream water flow during removal of the facility. Staged or metered re-watering may be required and will be determined by the Engineer.

Measurement

00245.80 Measurement - No measurement of quantities will be made for temporary water management facilities.

The estimated quantities of Materials required for the temporary water management facility are:

Temporary Water Management Facility at Station 17+00 :

Plastic Sheeting ..... _____ Square Yard
Sandbags..... _____ Each

Turbidity monitoring will be measured according to 00290.80.

Payment

00245.90 Payment - The accepted quantities of temporary water management facilities will be paid for at the Contract lump sum amount for the item "Temporary Water Management Facility at Station _____ ".

The location of the facility will be inserted in the blank.

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

Turbidity monitoring will be paid for according to 00290.90.

No separate or additional payment will be made for TWMP, maintaining, operating, monitoring, moving, or removing the facility.

SECTION 00253 - TEMPORARY WORK ACCESS AND CONTAINMENT

Comply with Section 00253 of the Standard Specifications modified as follows:

00253.00 Scope - Add the following paragraph to the end of this subsection:

For the replacement of Structure No. 06027, provide temporary rigid containment across Bear Creek installed above OHW, without supports from within OHW, during demolition of the existing superstructure.

Add the following subsection:

00253.09 Work Platform, Scaffolding and Containment Structural Design Requirements -

Design work platforms, scaffolding, and containment structures for dead load, live load, and wind load with a basic wind speed of 72 mph, applied in the most critical direction. For structures with fundamental frequency less than 1 Hz, design for wind loads accounting for structural dynamic effects.

Provide designs with a factor of safety of at least six for wire ropes and connecting hardware and at least four for all other components for containment structure and work platform components.

Verify structural adequacy of the bridge with added loading from containment structures and work platforms using AASHTO *Standard Specifications for Highway Bridges*, Group II, III, V, and VI load combinations.

SECTION 00280 - EROSION AND SEDIMENT CONTROL

Comply with Section 00280 of the Standard Specifications modified as follows:

00280.00 Scope - Add the following paragraph to the end of this subsection:

The Agency's NPDES 1200-C Permit is applicable to the Project and is available upon request.

00280.48 Emergency Materials - Add the following paragraphs after the paragraph that begins "Provide, stockpile, and protect...":

Provide and stockpile the following emergency materials on the Project site:

Item	Quantity
Sediment Barrier, Type 3	200 LF
Check Dam, Type 3	4 EA
Straw Bale	4 EA

SECTION 00290 - ENVIRONMENTAL PROTECTION

Comply with Section 00290 of the Standard Specifications modified as follows:

00290.20(c)(2) Clean Fill - Add the following paragraph to the end of this subsection:

Manage all excavated soil that does not meet the definition of clean fill according to Section 00294.

Add the following subsection:

00290.30(a)(7) Water Quality:

- Do not discharge contaminated or sediment-laden water, including drilling fluids and waste, or water contained within a work area isolation, directly into any waters of the State or U.S. until it has been satisfactorily treated (using a best management practice such as a filter, settlement pond, bio-bag, dirt-bag, or pumping to a vegetated upland location).
- Do not use permanent stormwater quality treatment facilities to treat construction runoff unless prescribed by an ESCP approved under Section 00280
- If construction discharge water is released using an outfall or diffuser port, do not exceed velocities more than 4 feet per second, and do not exceed an aperture size of 1 inch.
- Do not use explosives under water.

- Implement containment measures adequate to prevent pollutants or construction and demolition materials, such as waste spoils, fuel or petroleum products, concrete cure water, silt, welding slag and grindings, concrete saw cutting by-products and sandblasting abrasives, from entering waters of the State or U.S.
- Implement containment measures adequate to prevent flowing stream water from coming into contact with concrete or grout within the first 24 hours after placement.
- Do not end-dump riprap into the waters of the State or U.S. Place riprap from above the ordinary high water line.
- Cease Project operations under high flow conditions that may result in inundation of the Project area, except for efforts to avoid or minimize resource damage.
- The Engineer retains the authority to temporarily halt or modify the Work in case of excessive turbidity or damage to natural resources.
- If Work activities violate permit conditions or any requirement of this subsection, stop all in-water work activities and notify the Engineer.
- Do not cause a visible sediment plume in waters of the State or U.S.

00290.30(a)(8) Meter Turbidity Monitoring - In addition to any turbidity monitoring required by 00280.62(c) to comply with NPDES 1200 series requirements, monitor turbidity using a turbidity meter every two hours during in-water work according to the following:

- Use a turbidity meter that has been maintained and calibrated according to the manufacturer's specifications.
- Measure stream turbidity before beginning each day's in-water work to establish pre-construction turbidity levels.
- Measure upcurrent and downcurrent turbidity at two-hour intervals during in-water work and perform work based on turbidity measurements according to the following:
- Take upcurrent samples at a location representative of background turbidity approximately 100 feet from the in-water work area.
- Take downcurrent samples at a location approximately 100 feet from the in-water work area at approximately mid-depth of the water body and within any visible turbidity plume.
- If the downcurrent reading is less than 5 nephelometric turbidity units (NTU) higher than the upcurrent reading, continue to work and take readings every two hours.
- If the downcurrent reading is greater than or equal to 5 and less than 30 NTU higher than the upcurrent reading, modify work procedures and repair or implement best management practices (BMP), continue work, and continue to take readings every two hours. If after four hours the downcurrent reading is still greater than or equal to 5 NTU higher than the upcurrent reading, stop all in-water work and repair or implement additional BMP. Resume in-water work activities only after the downcurrent reading is less than 5 NTU above the upcurrent reading.
- If the downcurrent reading is greater than or equal to 30 and less than 50 NTU higher than the upcurrent reading, modify work procedures, repair or implement

BMP and continue work. If, at the subsequent two-hour reading, the downcurrent reading is still more than 30 NTU higher than the upcurrent reading, stop all in-water work and repair or implement additional BMP. Resume in-water work activities only after the downcurrent reading is less than 5 NTU above the upcurrent NTU reading.

- If the downcurrent reading is 50 NTU or more higher than the upcurrent reading, stop all in-water work, repair or implement additional BMP, and inform the Agency. Resume in-water work activities only after the downcurrent reading is less than 5 NTU above the upcurrent NTU, as determined by continued readings made at least every two hours, or the next day's initial turbidity reading.
- Document all turbidity monitoring observations on form 734-2755, “Turbidity Monitoring Report”, or another form approved by the Agency. Submit reports to the Engineer weekly during in-water work and keep copies of the reports at the Project Site.

00290.34 Protection of Fish and Fish Habitat - Add the following paragraph:

Meet with the Agency Biologist, Resource Representative, Engineer, and inspector on site, before moving equipment on-site or beginning any work, to ensure that all parties understand the locations of sensitive biological sites and the measures that are required to be taken to protect them.

00290.34(a) Regulated Work Areas - Add the following to the end of this subsection:

The regulated work area is the area at or below the ordinary high water (OHW) elevation shown on the plans.

Perform work within the regulated work area only during the in-water work period. The in-water work period is from June 1 to September 30

The total volume of material filled or discharged into waters of the State and waters of the U.S. shall not exceed 21 cubic yards.

The total volume of material excavated from the waters of the State and waters of the U.S. shall not exceed 11 cubic yards.

Submit a schedule to complete all work within the regulated work area within the in-water work period at least 10 days prior to the preconstruction conference.

00290.34(b) Prohibited Operations - Add the following to the end of this subsection:

Add the following subsection:

00290.34(c) Aquatic Species Protection Measures Required by Environmental Permits:

(1) General Requirements:

- Do not install fish ladders (for example: pool and weirs, vertical slots, fishways) or fish trapping systems.

- Do not apply surface fertilizer within 50 feet of any stream channel.

Use heavy equipment as follows:

- Choice of equipment must have the least adverse effects on the environment (for example: minimally sized, low ground pressure).
- Secure absorbent material around all stationary power equipment (for example: generators, cranes, drilling equipment) operated within 150 feet of wetlands, waters of the State, waters of the U. S., drainage ditches, or water quality facilities to prevent leaks, unless suitable containment is provided to prevent spills from entering waters of the State or waters of the U.S.
- Do not cross directly through a stream for construction access, unless shown or approved. If shown or approved, cross perpendicular to the stream and do not block stream flow. When a crossing is no longer needed, completely remove the crossing and restore the soils and vegetation to the original condition.
- Store fuel and maintain all equipment in staging areas that are at least 150 feet away from any waters of the State, waters of the U.S., or storm inlet or on an impervious surface that is isolated from any waters of the State, waters of the U.S., or storm inlet.
- If temporary access roads are needed within 150 feet of any body of water, use existing routes unless new routes are shown or approved.
- Before beginning work on temporary access routes that are not shown, submit a proposal to the Engineer for approval.

(2) Work Area Isolation - Provide work isolation according to Section 00245. Provide safe passage around or through the isolated work area for adult and juvenile migratory fish unless passage did not previously exist.

(3) Water Intake Screening - Install, operate, and maintain fish screens on each water intake used for project construction, including pumps used to isolate an in-water work area. When drawing or pumping water from any stream, protect fish by equipping intakes with screens having a minimum 27 percent open area and meeting the following requirements:

- Perforated plate openings shall be 3/32 inch or smaller.
- Mesh or woven wire screen openings shall be 3/32 inch or smaller in the narrowest direction.
- Profile bar screen or wedge wire openings shall be 1/16 inch or smaller in the narrow direction.

Choose size and position of screens to meet the following criteria in Table 00290-1:

Table 00290-1

Type	Approach Velocity [1] (Ft./Sec.)	Sweeping Velocity [2] (Ft./Sec.)	Wetted Area of Screen (Sq. Ft.)	Comments
Ditch Screen	≤ 0.4	Shall exceed approach velocity	Divide max. water flow rate (cfs) by 0.4 fps	If screen is longer than 4 feet, angle 45° or less to stream flow
Screen with proven self-cleaning system	≤ 0.4	–	Divide max. water flow rate (cfs) by 0.4 fps	–
Screen with no cleaning system other than manual	≤ 0.2	–	Divide max. water flow rate (cfs) by 0.2 fps	Pump rate 1 cfs or less
[1] Velocity perpendicular to screen face at a distance of approximately 3 inches [2] Velocity parallel to screen				

Provide ditch screens with a bypass system to transport fish safely and rapidly back to the stream.

(4) Special Aquatic Habitats - The following exploration or construction activities are not allowed in special aquatic habitats:

- Use of pesticides and herbicides, unless allowed according to Section 01030.
- Use of short pieces of plastic ribbon to determine flow patterns.
- Temporary roads or drilling pads built on steep slopes, where grade, soil type, or other features suggest a likelihood of excessive erosion or slope failure.
- Exploratory drilling in estuaries that cannot be conducted from a work barge, or an existing bridge, dock, or wharf.
- Installation of a fish screen on any permanent water diversion or intake that is not already screened.
- Drilling or sampling in an EPA-designated Superfund Site, a state-designated clean-up area, or the likely impact zone of a significant contaminant source, as identified by historical information, U. S. Army Corps of Engineers representative, or the Agency.

(5) Site Restoration - Restore damaged streambanks to a natural slope, pattern, and profile suitable for establishment of permanent woody vegetation unless precluded by pre-project conditions (for example: natural rock substrate):

- Replant all damaged streambanks before the first April 15 following construction.

- If use of large wood, native topsoil, or native channel material is required for the site restoration according to the roadside development plans, stockpile all large wood, native vegetation, weed-free topsoil, and native channel material displaced by construction. Cut trees or large wood and trees into pieces of no less than 20 feet in length, or as shown on the roadside development plans or as directed. Stockpiled native wood and vegetation remain the property of the Agency.
- Stabilize all disturbed soils, including obliteration of temporary access roads, following any break in work unless construction will resume in 4 Calendar Days.

(6) Surface Water Diversions - Surface water may be diverted to meet construction needs other than work area isolation, consistent with Oregon law, only if water from sources that are already developed, such as municipal supplies, small ponds, reservoirs, or tank trucks, is unavailable or inadequate, and meeting the following conditions:

- When alternative surface sources are available, divert from the stream with the greatest flow.
- Install, operate, and maintain a temporary fish screen.
- Do not exceed a pumping rate and volume of 10 percent of the available flow. For streams with less than 5 cubic feet per second, do not exceed drafting of 18,000 gallons per day. Do not use more than one pump for each site.

(8) Drilling, Boring, or Jacking - If drilling, boring, or jacking is used, the following conditions apply:

- Design, build, and maintain facilities to collect and treat all construction and drilling discharge water using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals, and other pollutants likely to be present. An alternate to treatment is collection and proper disposal offsite.
- Isolate drilling operations from wetted stream to prevent drilling fluids from contacting waters of the State or waters of the U.S.
- Use casing to prevent loss of drilling fluid to the subsurface formation. Do not drill without a containment method to keep drilling fluids and slurry isolated.
- If it is necessary to drill through an over-water bridge deck, use containment measures to prevent drilling debris from entering the stream channel.
- If drilling fluid or waste is released to surface water, wetland or other sensitive environment, cease all drilling pending written approval from appropriate regulatory agencies through the Engineer to resume drilling.
- Recover all waste and spoils if precipitation is falling or imminent. Recover, recycle, or dispose of all drilling fluids and waste to prevent entry into flowing water.

- Recycle drilling fluids using a tank instead of drill recovery/recycling pits, whenever feasible.
- When drilling is completed, make attempts to remove the remaining drilling fluid from the sleeve (for example: by pumping) to reduce turbidity when the sleeve is removed.

(9) Treated Wood - Treated wood includes any wood treated with any pesticide or wood preservatives. Do not use lumber, pilings, or other wood products that are treated or preserved with pesticidal compounds below the ordinary high water (OHW) or as part of an in-water or over-water structure, except as described below:

- Store treated wood shipped to the Project out of contact with standing water and wet soil, and protected from precipitation.
- Visually inspect each load and piece of treated wood. Reject for use in or above aquatic environments if visible residues, bleeding of preservative, preservative-saturated sawdust, contaminated soil, or other matter is present.
- Use pre-fabrication to the extent feasible. When field fabrication is necessary, all cutting and drilling of treated wood, and field preservative treatment of wood exposed by cutting and drilling, shall occur above the OHW. Use tarps, plastic tubs, or similar devices to contain the bulk of any fabrication debris, and wipe off any excess field preservative.
- All treated wood structures, including pilings, shall have design features to avoid or minimize impacts and abrasion by livestock, pedestrians, vehicles, vessels, and floats.
- Treated wood may be used to construct a bridge, over-water structure or an in-water structure, with the exception of the work containment system, provided that all surfaces exposed to leaching by precipitation, overtopping waves, or submersion are coated with a water-proof seal or barrier are maintained. Apply and contain coatings and paint-on field treatment to prevent contamination. Surfaces that are not exposed to precipitation or wave attack, such as parts of a timber bridge completely covered by the bridge deck, are exempt from this requirement.
- During demolition of treated wood, ensure that no treated wood debris falls into the water. If treated wood debris does fall into the water, remove it immediately.
- Store removed treated wood debris in appropriate dry storage areas, at least 150 feet away from the regulated work area.

(13) Temporary Power, Communication and Water Lines - Before installing temporary power, communication, or water lines across streams or bodies of water, submit a proposed plan to the Engineer for approval. Do not begin installation before receiving approval from the Engineer. Proposed plans for installation of temporary power, communication, and water lines and stream crossings shall utilize the following design methods in the listed order of priority:

1. Aerial lines, including lines hung from existing bridges.

2. Directional drilling, boring and jacking that spans the channel migration zone and any associated wetland.

3. Trenching, which is restricted to intermittent streams and may only be used when the stream is naturally dry. For all sections of trenches below the ordinary high water line, backfill with native material and cap with clean gravel suitable for fish use in the project area.

Align each crossing as perpendicular to the watercourse as possible. For drilled, bored, or jacked crossings, ensure that the line is below the total scour prism. Return any large wood displaced by trenching or plowing as nearly as possible to its original position, or otherwise arranged to restore habitat functions.

(14) Injured Fish Notification - If a dead or injured fish is found in the project area, immediately notify the Agency. If the injured fish is in a location where further injury or stress may take place, attempt to move the fish to a safer location, if one is available, near the capture site while keeping the fish in the water and reducing its stress as much as possible. Do not disturb the fish after it has been moved. If the fish is dead or dies while being captured or moved, save the fish and any tags. The Agency will notify appropriate regulatory agencies about the injured or dead fish and provide additional direction to the Contractor.

00290.36(a) Migratory Birds - Add the following to the end of this subsection:

(1) Bird Management - Submit a migratory bird protection plan and implementation schedule for review and approval at least 10 Calendar Days before the pre-construction conference. Do not begin Work until the migratory bird protection plan and implementation schedule are approved.

The migratory bird protection plan shall include the following elements:

(a) The name of the individual who will oversee bird management activities for the project and a summary of their qualifications. This individual must have a biology or related natural resources degree and a minimum of 2 years of work experience identifying nesting birds, preferably in the Pacific Northwest.

(b) A description of measures to prevent birds from nesting on structures or vegetation at the project site, from March 1 to September 1 of each calendar year, that could result in project conflicts; include the timing, intensity and location of the activities. If exclusionary devices will be used (e.g., netting), install them prior to March 1 and remove them at the completion of the project or by September 1 each calendar year, whichever comes first. Include how exclusionary devices will be installed and document their inspection schedule. Exclusionary devices must be inspected daily to ensure their functionality. Repair damaged exclusionary devices as soon as the damage is discovered. Document inspections and maintain documentation on site.

(c) A description of measures to avoid disturbing active migratory bird nests if they are encountered. The typical avoidance measure is to move project activities away from the active nest until the young have left the nest.

00290.41 Protection of Waters of the U.S. or State - Add the following to the end of this subsection:

Permits have been obtained for this project from the US Army Corps of Engineers (Corps). Keep a copy of Corps permit at the project site during construction. Changes to the project that may increase the amount of fill placed or material removed in waters of the U.S. or State, or the acreage of waters impacted are not authorized. The following waters of the U.S. or State are present and have been determined to be unavoidable as indicated in Table 00290-2:

Table 00290-2

Impact Waters of the US or State	Removal Volume (cu yds.)	Fill Volume (Cu yds)	Station	Duration of Impact (Temporary or Permanent)	Area of impact (Acres)
Roadside Ditch	0	2.5	17+00 to 18+00	Permanent	130 square feet
Bear Creek	11	11	16+50 to 17+00	Permanent	99 square feet
Bear Creek		10	16+50 to 17+00	Temporary sandbag cofferdam	120 square feet

Add the following subsection:

00290.42 Work Containment Plan - A Work Containment Plan (WCP) is required on this Project for over water activity(ies).

Develop and submit a WCP for approval at least 28 Calendar Days prior to mobilization for over water demolition and construction activity(ies). Maintain a copy of the WCP on the Project Site at all times during construction, readily available to employees and inspectors. Ensure that all employees comply with the provisions of the WCP. Design the WCP to avoid or minimize disturbance to protected features (sensitive cultural or natural resources, regulated work areas, aquatic life or habitat in regulated work areas) related to Contractor operations.

Before developing the WCP, meet with Agency to review the Contractor's activities that require the WCP to ensure that all parties understand the locations of protected features to be avoided and the measures needed to avoid and protect them.

Notify the Engineer at least 10 Calendar Days before beginning work access or containment construction activities.

The Agency reserves the right to stop Work and require the Contractor to change the WCP methods and Equipment before any additional Contract Work, at no additional cost to the Agency, if and when, in the opinion of the Agency, such methods jeopardize sensitive cultural or natural resources, regulated work areas, or aquatic life or habitat in regulated work areas.

The WCP shall identify how the Contractor's construction operations will protect regulated features during mobilization, construction, maintenance, and demolition. Include a narrative describing compliance with Section 00290 as related to construction, operation, and demolition activities specified in Section 00253.

Design, construct, maintain, and remove temporary work access and containment systems according to Section 00253.

00290.90 Payment - Add the following paragraph(s) to the end of this subsection:

The work containment plan will be paid for at the Contract lump sum amount for the item "Work Containment Plan".

Payment will be payment in full for furnishing all Materials, Equipment, labor, and Incidentals necessary to complete the Work as specified. Payment includes providing and updating the Work Containment Plan.

The accepted quantities of turbidity monitoring will be paid for at the Contract lump sum amount for the item "Turbidity Monitoring".

Payment for turbidity monitoring will be payment in full for furnishing and placing all Materials and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

SECTION 00294 - CONTAMINATED MEDIA

Section 00294, which is not a Standard Specification, is included in this Project by Special Provision.

Description

00294.00 Scope - In addition to the requirements of Section 00290 and the Specifications, this Work consists of the following:

- Excavate, segregate, stockpile, transport, and dispose of contaminated Soils, as defined by 00294.01, from the following locations:

Contaminated Soil Location Table 00294-1

From Location/Station to Location/Station	Depth below grade (feet)	Approximate Quantity (cy)	Known Contaminants
14+62 to18+76	1.5	200	
Existing Abutments	10	20	
Approximate Total Quantity		220 cy	
Quantity to be reused on Project		200 cy	
Quantity to be disposed at landfill		25 tons	

- In areas where excavation is not required, leave contaminated material and clearing and grubbing material in place.

- Prepare a written lead compliance plan for work within contaminated areas of the Project.

00294.01 Definitions:

Contaminated Soil - Soil that does not meet the DEQ definition of "Clean Fill", as defined by OAR 340-093-0030(18). This contaminated Soil is a regulated waste, subject to OAR 340-093-0005 through OAR 340-093-0290. If the grubbing material has been determined to be contaminated, it will be considered and treated as contaminated Soil for the purposes of this Section.

Shoulder Soil - Soil outside of the existing Highway Pavement and within Highway Right-of-Way generated during Highway maintenance or construction activities. This definition applies to excess Soil generated to a maximum depth of 1.5 feet below ground surface. This definition does not apply to Soil that is covered by existing impervious surfaces, including but not limited to curbs, sidewalks and parking lots constructed of asphalt or concrete.

ODOT Beneficial Use Determination (ODOT BUD) - The statewide ODOT Beneficial Use Determination (ODOT BUD), approved by DEQ (No. BUD-20181204), outlines a series of pre-approved non-residential reuse options for excess Soil materials that do not meet DEQ's Clean Fill Standards in some circumstances. These options may vary based on project scope and location, and documentation may vary, as directed by the Engineer.

00294.02 Testing of Contaminated Soil and Groundwater - When additional testing of contaminated Soil or groundwater is required to characterize the material for reuse, recycle, or disposal, conduct the tests according to 00290.20(c).

Use analytical methods meeting DEQ's Clean Fill Guidance Screening Levels for each analyte. Contaminated Soil and groundwater sampling must be conducted by an Oregon Registered Geologist or Professional Engineer who has experience characterizing contaminated media.
Collect at least 3 composite Soil samples and submit for the following required testing:

- TPH-Dx by Northwest method.

- Semi-volatile organic compounds (SVOCs) by EPA Method 8270.
- Total metals (RCRA 8) by EPA 6000 and 7000 series.
- Followup TCLP metals by using EPA Method 1311/6000/7000.

00294.03 Submittals - Submit the following documents:

- A Project-specific written lead compliance plan, meeting the project applicable requirements of 29 CFR 1926.62(e)(2), at least 10 Calendar Days before the pre-construction conference. When applicable, include compliance procedures for cadmium and chromium VI, according to 29 CFR 1926.1127 and 29 CFR 1926.1126.
- Modifications to the written lead compliance plan that are requested by the Engineer within 7 Calendar Days of the request.
- Current employee training certificates and medical surveillance information before beginning Work within the contaminated areas.

Submit the following documents within 48 hours of removal of contaminated media:

- Permits, permit applications, and documentation of compliance.
- All reuse, recycled, and disposal receipts.
- Final quantities of Soil reused, recycled, and disposed and their final location.
- All analytical test results.
- Documentation of final disposition of any reused Soil material that is reused under ODOT's Beneficial Use Determination.

Labor

00294.30 Personnel Qualifications - Provide employees meeting the following requirements:

- For removal of contaminated Soil, provide employees trained in:
  - Lead awareness according to 29 CFR 1926.62(l).
  - Chromium according to 29 CFR 1926.1126(j)(2).
  - Cadmium according to 29 CFR 1926.1127(m)(4).

Construction

00294.40 Contaminated Soil Excavation - Excavate and handle contaminated Soil from Project excavations according to the following:

- Notify the Engineer 3 Calendar Days before beginning excavation activities within contaminated areas.
- Allow the Agency to collect Soil samples during excavation activities.
- Field screen Soil using a portable photo ionization detector, portable flame ionization detector, field test kits, or other instrumentation capable of detecting the contaminants identified for this Soil.

- Segregate non-contaminated Soil from contaminated Soil during excavation activities, based on the field screening and the provided contaminated Soil location information. Load contaminated Soil directly into trucks and transport directly to the recycling or disposal facility, or on-site reuse areas or, when approved by the Engineer, temporarily store contaminated Soil on-site.
- Store contaminated Soil from within 1 foot behind existing treated-timber abutments in covered water tight containers or place contaminated Soil on minimum 6 mil thick polyethylene sheeting that has an impermeable berm around the edge. Cover the contaminated Soil with minimum 6 mil thick polyethylene sheeting. Do not allow precipitation run-off to enter the excavated contaminated Soil. Label all stored material with the type of material, the contaminants, and the dates of accumulation.
- Remove contaminated media from the exterior of all vehicles before they leave the Project Site
- Cover trucks transporting contaminated materials to prevent spillage during transit to the disposal facility according to OAR 340-093-0220.
- Where over excavation is required, backfill the excavation according to 00330.42.

00294.41 Contaminated Soil Management - Reuse, recycle, or dispose of contaminated Soil according to any of the following:

(a) Landfill Disposal:

- Obtain the Engineer's approval of the disposal facility before disposing of the contaminated Soil.
- Transport the contaminated Soil to a DEQ permitted municipal solid waste landfill or a permitted construction and demolition landfill for disposal. Dispose of temporarily stored contaminated Soils within 30 Days of beginning excavation work or before Second Notification, whichever occurs first.
- Complete and sign all manifests and bill-of-lading forms for handling, loading, transporting, and disposing of the contaminated Soil.
- Pay all filing and permit fees.

(c) Reuse On-Site:

- Temporarily stockpile the contaminated Soil from within 1 foot behind existing treated-timber abutments .
- Reuse the contaminated Soil on the Project between Station 14+62 and Station 18+76 as shown. Place the contaminated Soil above the high groundwater elevation.
- Within 30 Calendar Days of completing on-site reuse or before Second Notification, whichever occurs first, transport all contaminated Soil that is not reused on the Project to a DEQ permitted municipal solid waste landfill or a permitted construction and demolition landfill (or a permitted recycling facility).

Measurement

00294.80 Measurement - Work performed under this Section will be measured according to the following:

No measurement of quantities will be made for the following:

- Lead compliance plan.
- Segregate and stockpile contaminated Soil.

Soil sample and analytical testing will be measured on the unit basis for each sample submitted and tested according to 00294.02 when test results are submitted according to 00294.03.The quantities of contaminated Soil disposed will be measured on the weight basis, based on weigh tickets from the recycling or disposal facility.

Clearing and grubbing will be measured according to 00320.80.

Payment

00294.90 Payment - The accepted quantities of Work performed under this Section will be paid for at the Contract unit price, per unit of measurement, for the following items:

Pay Item	Unit of Measurement
(b) Lead Compliance Plan	Lump Sum
(c) Segregate and Stockpile Contaminated Soil	Lump Sum
(d) Soil Sample Collection and Analytical Testing	Each
(e) Contaminated Soil Disposal	Ton

Item (c) includes segregating, handling, and stockpiling contaminated Soil within the Project Site for the purpose of analytical testing, on-site reuse, or disposal.
Item (d) includes mobilization, Soil sampling, testing, analyses, and preparation of reports for tests required in 00294.02. Additional testing beyond that listed in 00294.02 will only be paid if authorized by the Engineer.

Item (e) includes all costs involved with the disposal of contaminated Soil at a recycling or disposal facility.

No separate or additional payment will be made for the excavation or reuse of contaminated Soil or contaminated shoulder soil. Payment will be included in payment made for the appropriate items under which the excavation or reuse of contaminated Soils or contaminated shoulder soil is required.

Clearing and grubbing will be paid for according to 00320.90.

Payment will be payment in full for removing and disposing of all Materials, and for furnishing all Equipment, labor, Plans, test results, and Incidentals necessary to complete the Work as specified.

SECTION 00305 - CONSTRUCTION SURVEY WORK

Comply with Section 00305 of the Standard Specifications modified as follows:

00305.00 Scope – Add the following to the end of this subsection:

In addition to the requirements of the ODOT *Construction Surveying Manual for Contractors*, establish Engineering Stationing at 50 foot intervals for the length of the project along the shoulder of the highway. Maintain the stationing so it is visible throughout construction of the project.

SECTION 00310 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Comply with Section 00310 of the Standard Specifications modified as follows:

00310.01 Areas of Work – Add the following paragraph:

Existing PCC section to be removed in full, if exposed by excavation work.

00310.90 Payment - Add the following to the end of this subsection:

No separate or additional payment will be made for removal or disposal Work included in Section 00330 according to 00310.02.

SECTION 00320 - CLEARING AND GRUBBING

Comply with Section 00320 of the Standard Specifications modified as follows:

00320.02(a) – Add the following bullet**:**

- Removal of furniture from southeast quadrant of the structure.

SECTION 00330 - EARTHWORK

Comply with Section 00330 of the Standard Specifications modified as follows:

00330.03 Basis of Performance - Add the following paragraph to the end of this subsection:

Perform all earthwork under this Section on the embankment basis.

00330.14 Selected Granular Backfill - Delete the sentence that begins “Reclaimed glass meeting the requirements of Section 02695…”

00330.15 Selected Stone Backfill - Delete the sentence that begins “Reclaimed glass meeting the requirements of Section 02695…”

00330.41(a)(9) Excavation Below Grade - Delete subsection 00330.41(a)(9)(c).

00330.91(d) General Excavation - Delete the bullet that begins "Includes Unsuitable Material…".

00330.94 Embankment Basis Payment - Delete the paragraph that begins "Excavation of unstable…".

SECTION 00331 - SUBGRADE STABILIZATION

Comply with Section 00331 of the Standard Specifications.

SECTION 00350 - GEOSYNTHETIC INSTALLATION

Comply with Section 00350 of the Standard Specifications.

SECTION 00390 - RIPRAP PROTECTION

Comply with Section 00390 of the Standard Specifications.

SECTION 00445 - SANITARY, STORM, CULVERT, SIPHON, AND IRRIGATION PIPE

Comply with Section 00445 of the Standard Specifications.

SECTION 00501 - BRIDGE REMOVAL

Comply with Section 00501 of the Standard Specifications modified as follows:

00501.00 Scope - Add the following paragraph(s) to the end of this subsection:

Remove the existing bridge over Bear Creek.

Add the following subsection:

00501.03 Submittals - Submit unstamped bridge removal plans according to 00150.35 21 Calendar Days before beginning removal work.

Include the following information in the submittal:

- Removal sequence, including contractor staging and traffic staging.
- Detailed schedule of bridge removal work.
- Type of equipment that will be used, including size and capacity.
- Equipment location during removal operations.

Do not begin bridge removal work until the bridge removal plans have been approved.

Add the following subsection:

00501.80(a) Estimated Quantity - The estimated quantity of Bridge Removal Work is 1,340 square feet.

SECTION 00510 - STRUCTURE EXCAVATION AND BACKFILL

Comply with Section 00510 of the Standard Specifications modified as follows:

00510.04(a) Defined Shoring Systems - Add the following to the end of this subsection:

Construct shoring at the location(s) listed below:

Beginning Station	Ending Station	Shoring System Type(s) Allowed
Station “P” 16+00 Rt.	Station ”P” 16+50 Rt.	All

00510.80(a)(1) Lump Sum - Add the following to the end of this subsection:

The estimated quantity of Shoring, Cribbing and Cofferdams is:

Location	Shoring (Square Yard)

Station “P” 16+00 – 16+50 Rt.	20

00510.80(b)(1) Lump Sum - Add the following to the end of this subsection:

The estimated quantity of structure excavation is:

Location	Structure Excavation (Cubic Yard)
BR. 24051	251

00510.80(d)(1) Lump Sum - Add the following to the end of this subsection::

The estimated quantity of granular wall backfill is:

Location	Granular Wall Backfill (Cubic Yard)
BR 24051	60

SHORING DESIGN CHECKLIST

Instructions - This shoring design checklist was developed to facilitate the design, review, and erection of shoring to be used for ODOT construction projects. This checklist is intended to act as a reminder to design or check for specific important aspects of this construction. It is not a substitute for plan and/or design criteria or specification requirements.

The Checklist is to be completed by the shoring design engineer. Answer every question. Attach to the Checklist an explanation of any negative responses.

Submit this Shoring Design Checklist for each stage and phase of the project, along with the shoring design summary, Working Drawings and calculations according to 00510.04.

	YES	NO	N/A
A. General			
1. Are the shoring Working Drawings and supporting calculations prepared, stamped, and signed by an engineer registered to practice in the state of Oregon?	____	____	____
2. Are the temporary shoring installation plans, construction sequence, and removal plan compatible with the project construction staging/phasing?	____	____	____
B. Design Standards			
1. Does the shoring design comply with standards identified in ODOT GDM 15.3.26.3 and related sections?	____	____	____
2. Is the design standard and edition identified in the shoring design calculations?	____	____	____
C. Loading			
1. Have the design loads, including special loading conditions (e.g. cranes, stockpiles, etc.), used for shoring design of all members been noted in the design calculations?	____	____	____
2. Have the appropriate load and resistance factors or factors of safety on the shoring system been identified, for all applicable load combinations or load cases?	____	____	____
3. If public traffic is near or directly above the shoring system, has a minimum traffic live load surcharge of 250 psf been applied?	____	____	____
4. Have the loads from actual construction equipment and not less than 250 psf been included in the shoring system design?	____	____	____

5. Have the construction loads for different stages of construction been considered and included in the calculations? ____ ____ ____

6. Have the effects of any construction activities adjacent to the shoring system on the stability/performance of the shoring system been addressed in the shoring design (e.g., excavation or soil disturbance in front of the wall or slope, excavation dewatering, vibrations and soil loosening due to soil modification/construction activities)? ____ ____ ____

7. Have earth pressure diagrams been included? ____ ____ ____

8. Does the shoring design consider the effect of water saturated soil pressure acting on the full height of the shoring? ____ ____ ____

D. Geotechnical and Structural Analysis

1. Has internal stability been evaluated? ____ ____ ____

2. Has eccentricity/overturning stability been evaluated? ____ ____ ____

3. Has sliding been evaluated? ____ ____ ____

4. Has overall/global stability been evaluated? ____ ____ ____

5. Has bearing capacity been evaluated? ____ ____ ____

6. Have displacement constraints or other performance objectives of the shoring system been identified and evaluated? ____ ____ ____

7. Has each stage of the shoring system construction been evaluated to carry traffic and construction loads and ensure internal and external stability through the construction and loading sequence? ____ ____ ____

8. Are the allowable stress and the calculated stress listed in the summary for each different shoring member? ____ ____ ____

9. Have steel beams been checked for bending, shear, web crippling and buckling of the compression flange? ____ ____ ____

10. Have connections for all phases of construction and removal been designed for all interim loading? ____ ____ ____

11. Has buckling, bracing strength, and stiffness been evaluated for all compression members? ____ ____ ____

E. Materials

1. Are all soil, rock, and other material properties used for the design of the shoring system provided and consistent with GDM and the subsurface field and lab data? ____ ____ ____

2. Are timber grades noted on shoring drawings and in accompanying calculations? ____ ____ ____

3. Are the minimum lumber dimensions shown in the calculations and noted on the Working Drawings? ____ ____ ____

4. Are steel structural shapes, bolts, connections, and plates identified by ASTM number on the shoring Working Drawings and in the calculations? ____ ____ ____

F. Shoring Working Drawings

1. Is the field verified ground topography above and below the shoring wall shown? ____ ____ ____

2. Are all existing, adjusted or new utilities, structures, and “no work zones” in proximity to the proposed shoring shown on the shoring Working Drawings and is protection of these items addressed? ____ ____ ____

3. Are horizontal and vertical clearance requirements identified and shown on the shoring Working Drawings? ____ ____ ____

4. Are plan view, elevation and cross sections drawn to scale, with dimensions defining location and size of the temporary shoring, components, and excavation limits? ____ ____ ____

5. Are the magnitude and location of all loads, equipment and personnel that will be supported by the shoring shown or noted on the shoring Working Drawings? ____ ____ ____

6. Has a dewatering plan been shown? ____ ____ ____

7. Have all connections been detailed? ____ ____ ____

8. Has bracing been detailed? ____ ____ ____

G. Testing and Monitoring

1. If a “yes” response to No. D-6, is a monitoring plan provided to verify adequate performance of the shoring system throughout the design life of the system? ____ ____ ____

2. Has a load testing program been provided for soil nails, tiebacks, or other applicable elements of the shoring system ____ ____ ____

_____ _____

Design Engineer of Record Signature Date

SECTION 00520 - DRIVEN PILES

Comply with Section 00520 of the Standard Specifications modified as follows:

00520.11 Engineer's Estimated Length List - Add the following to the end of this subsection:

The Engineer's estimated lengths of steel piling are:

Location	Number	Length (feet)	Type and Size	Coating Top Elevation[1]	Coating Bottom Elevation[1]
Bent 1	8	54	PP16 x 0.5”	n/a	n/a
Bent 2	8	52	PP16 x 0.5”	n/a	n/a

[1] Protective coating system and color requirements according to 00594.10.

00520.20(c)(4) Followers - Add the following to the end of this subsection:

Followers are permitted.

00520.20(d)(3) Wave Equation Method - Add the following paragraph and tables to the end of this subsection:

The input values for the wave equation analyses are:

Bent	Pile Type	Pile Length * (Feet)	Quake (Inches)		Damping (sec./ft.)		% skin (ITYS)	R_n (kips)
			Skin	Toe	Skin	Toe		
1	PP 16 x 0.5”	54	0.10	0.10	0.15	0.15	75	356
2	PP 16 x 0.5”	52	0.10	0.10	0.15	0.15	75	356

* These pile lengths are based on the top of the pile being at the finished cutoff elevation. All additional pile length above the cutoff elevation, that may be required to accommodate the Contractor’s pile installation method or site conditions, shall be added to the lengths listed above and appropriate changes made to the skin friction distribution input listed below.

Use triangular skin friction distribution.

00520.42(d) Set Period and Redriving -

Replace the sentence that begins “The “set period” shall be…” with the following sentence:

The “set period” shall be a minimum of 72 hours unless otherwise approved by the Engineer.

Add the following sentence to the end of this subsection:

Piles are required to set before redriving.

00520.43(c) End Treatment - Add the following sentence to the end of this subsection:

Drive steel pipe piles open-ended with tip treatment as shown.

00520.43(d) Reinforced Pile Tips - Add the following sentence to the end of this subsection:

For steel pipe piling, provide inside fit, open end cutting shoes meeting the requirements of 02520.10(e).

SECTION 00530 - STEEL REINFORCEMENT FOR CONCRETE

Comply with Section 00530 of the Standard Specifications modified as follows:

00530.80(a) Lump Sum - Add the following to the end of this subsection:

The estimated quantity of reinforcement is:

Structure Number	Grade 60	Grade 80	Grade 100
24051	25,100		

The weight of miscellaneous metal, based on weights listed in 00530.80(b) and Project quantities, is included in the estimated quantity of uncoated reinforcement.

SECTION 00540 - STRUCTURAL CONCRETE

Comply with Section 00540 of the Standard Specifications modified as follows:

00540.80(a)(1) Lump Sum - Add the following to the end of this subsection:

The estimated quantity of concrete is:

Bridge No. 24051

Type and Class	Quantity (Cu. Yd.)
Deck Concrete, Class HPC4500	69
General Structural Concrete, Class 3300	115

SECTION 00545 - REINFORCED CONCRETE BRIDGE END PANELS

Comply with Section 00545 of the Standard Specifications modified as follows:

Add the following subsection:

00545.01 Terminology - According to 00110.05(a), for the purposes of this Contract, the terms “end panel” and “end panels” shall respectively refer to and shall be read to mean “approach slab” and “approach slabs”.

SECTION 00550 - PRECAST PRESTRESSED CONCRETE MEMBERS

Comply with Section 00550 of the Standard Specifications modified as follows:

00550.80 Measurement - Add the following paragraph to the end of this subsection:

Stirrup extension reinforcement will be measured according to 00530.80. Estimated quantities of reinforcement for the lump sum method will be listed in 00530.80(a).

00550.90 Payment - Add the following paragraph to the end of this subsection:

Stirrup extension reinforcement, as shown, will be paid for according to 00530.90.

SECTION 00584 - ELASTOMERIC CONCRETE NOSING

Comply with Section 00584 of the Standard Specifications.

SECTION 00585 - EXPANSION JOINTS

Comply with Section 00585 of the Standard Specifications modified as follows:

00585.01 Definitions -

Replace the sentence that begins “**Asphaltic Plug Joint Seal -** A sealed joint composed of Aggregate**.**…” with the following sentence:

Asphaltic Plug Joint Seal - A closed joint composed of Aggregate and flexible binder material placed over a steel bridging plate.

Replace the sentence that begins “**Closed Joint** - A sealed or filled joint designed…” with the following sentence:

Closed Joint - A sealed joint designed to prevent water and debris from passing through the joint.

Add the following definition:

Control Joint - A joint created by sawing a groove in a surface to create a weakened vertical plane and filled with a poured material.

Replace the sentence that begins "**Filled Joint** - A joint using a preformed …" with the following sentence:

Filled Joint - A joint using a preformed joint filler placed prior to concrete pour.

Delete the definition for **Sealed Joint**

Replace the sentence that begins "**Strip Seal** - A sealed joint with an extruded**.**…" with the following sentence:

Strip Seal - A closed joint with an extruded elastomeric seal retained by edgebeams that are anchored to the structural elements.

Add the following subsection:

00585.02 Submittals:

(a) Materials - At least 21 Calendar Days before starting Work, submit QPL listed products to the Engineer for approval.

(b) Personnel Qualifications - At the pre-construction conference, submit joint installer personnel certifications(s) from the manufacturer affirming that the installers have been trained in application methods of materials and health and safety to install Closed Joints as detailed.

(c) Working Drawings - At least 21 Calendar Days before starting Work, submit unstamped Working Drawings from the manufacturer for each Closed Joint according to 00150.35. Include the following:

- Plan, elevation and section of the joint system with dimensions and tolerances.
- Complete details of all joint materials with all ASTM, AASHTO or other material designations.
- Method of installation including sequence and installation details at traffic barriers, roadway surfaces, curbs and sidewalks.
- Joint details to include the following:
  - Prevent the entrance of water and debris into the joint.
  - Accommodate the required structure movements shown.

00585.11 Approval of Materials - Delete this subsection.

00585.12 Concrete for Blockout Opening - Replace the sentence that begins "Fill blockout openings with the …" with the following sentence:

Fill blockout openings with the same class and type of concrete used in the deck, unless otherwise shown.

00585.30 Closed Joint Installers - Replace this subsection with the following subsection:

00585.30 Joint Installers - Provide trained personnel to install the Closed Joints.

00585.31 Sealed Joint Manufacturer's Representative - Replace this subsection with the following subsection:

00585.31 Expansion Joint Seal Manufacturer's Representative - Provide a manufacturer's representative on-site during the installation of expansion joint device. Discuss with the representative regarding the Work to be done, the methods of installation, installation procedures, and the required Equipment to assure correct installation of expansion joints

00585.42(a) Submittals - Replace this subsection with the following subsection:

00585.42(a) Notification - Notify the Engineer in writing at least 7 Calendar Days before installing the Closed Joint. Include the Contract number, bridge number, joint seal material, product name, and the approximate date of installation.

00585.42(c) Joint Preparation - Replace the sentence that begins “Prepare the joint surfaces as directed…” with the following sentence:

Prepare the joint surfaces as shown or directed in this Section and according to the joint material manufacturer's recommendations.

00585.42(d) Weather Conditions at Time of Installation - Replace this subsection, except for the subsection number and title, with the following:

Install joint seals when the weather conditions are suitable for joint installation according to the manufacturer's recommendations.

00585.42(e) Leakage Check - Replace this subsection, except for the subsection number and title, with the following:

After joint installation is complete, check joints for leakage by flooding the joint with water. Maintain ponding of water in the roadway shoulders or 3 feet from the gutter line, whichever is greater, for 2 hours. Use an unnozzled water hose delivering one gallon of water per minute to the inside face of railing. Verify no leaking of joints. If leakage is observed, repair the joints using a method recommended by the manufacturer and approved by the Engineer prior to starting Work at no additional cost to the Agency. Perform additional leakage check at no additional cost to the Agency. Additional leakage checks have the same requirements.

Add the following subsection:

00585.50 Control Joint - Construct Control Joints as shown. If details of the control joint are not shown, sawcut the surface 1 1/2 inches deep and 1/2 inch wide and fill it with hot applied joint sealant.

00585.80 Measurement - Add the following to the end of the subsection:

The estimated quantities of joints are:

Structure	Joint Type	Quantity (Foot)
Bridge No. 24051	Poured Joint Seal	78

00585.90 Payment - Add the following to the pay item list:

Replace the bullet that begins “preformed expansion joint filler…” with the following bullet:

- preformed joint filler, hot applied joint sealant, or sawcutting to construct Filled Joint

Replace the bullet that begins “providing the manufacturer's…” with the following bullet:

- providing the expansion joint seal manufacturer's representative

Add the following to the end of this subsection:

When the Contract Schedule of Items does not indicate payment for control joints performed under this Section, no separate or additional payment will be made for the control joint. Payment will be included in payment made for the appropriate items under which the control joint is required.

SECTION 00587 - BRIDGE RAILS

Comply with Section 00587 of the Standard Specifications modified as follows:

00587.80 Measurement - Add the following to the end of this subsection:

The estimated quantity of bridge rail is:

Structure	Rail Type	Quantity (Foot)
Bridge No. 20451	Type “F” Concrete Rail, 42”	250

SECTION 00640 - AGGREGATE BASE AND SHOULDERS

Comply with Section 00640 of the Standard Specifications.

SECTION 00730 - EMULSIFIED ASPHALT TACK COAT

Comply with Section 00730 of the Standard Specifications modified as follows:

00730.11 Emulsified Asphalt - In the paragraph that begins "Obtain samples according to AASHTO T 40…" replace the words “AASHTO T 40” with the words “AASHTO R 66”.

00730.90 Payment - Replace this subsection, except for the subsection number and title, with the following:

No separate or additional payment will be made for Emulsified Asphalt tack coat. Approximately 2 Tons of Emulsified Asphalt in tack coat will be required on this Project.

SECTION 00744 - ASPHALT CONCRETE PAVEMENT

Comply with Section 00744 of the Standard Specifications modified as follows:

00744.11(a) Asphalt Cement - Add the following to the end of this subsection:

Provide 64-22 grade asphalt cement for this Project.

Add the following subsection:

00744.51 Opening Sections to Traffic - Schedule work so that, during the same shift, the surfaces being paved are paved full width and length through the top Base Course before opening to traffic. Traffic will be allowed on the top Base Course up to 200 Calendar Days.

Before beginning wearing Course paving operations, make repairs to the existing surface as directed. Payment for the repairs will be made according to 00195.20.

SECTION 00749 - MISCELLANEOUS ASPHALT CONCRETE STRUCTURES

Comply with Section 00749 of the Standard Specifications.

SECTION 00810 - METAL GUARDRAIL

Comply with Section 00810 of the Standard Specifications.

SECTION 00850 - COMMON PROVISIONS FOR PAVEMENT MARKINGS

Comply with Section 00850 of the Standard Specifications.

SECTION 00865 - LONGITUDINAL PAVEMENT MARKINGS - DURABLE

Comply with Section 0865 of the Standard Specifications.

SECTION 00940 - SIGNS

Comply with Section 00940 of the Standard Specifications.

SECTION 01012 - STORMWATER CONTROL, WATER QUALITY BIOFILTRATION SWALE

Section 01012, which is not a Standard Specification, is included for this Project by Special Provision.

Description

01012.00 Scope - This Work consists of furnishing and installing a water quality biofiltration swale as shown.

Materials

01012.10 Materials - Furnish Material meeting the following requirements:

Check Dam, Type 2 ..... 00280.15(a)
Drainage Geotextile, Type 1..... 02320
Slope and Channel Liner Matting ..... 00280.14(e)
Riprap 00390.11
Riprap Geotextile, Type 1 02320

01012.11 Porous Pavers - Furnish medium duty porous pavers from the QPL.

01012.12 Water Quality Mixture - Furnish medium compost meeting the requirements of Section 03020. Furnish soil meeting the following gradation requirements:

Sieve Size	Percent Passing (by Weight)
No. 4	100
No 10	95 - 100
No. 40	40 - 60
No. 100	10 - 25
No. 200	5 - 10

Sample soil according to AASHTO R 90. Determine sieve analysis according to AASHTO T 27 and AASHTO T 11.

Blend the medium compost and soil so that the mixture:

- Is composed of between 20 percent and 25 percent medium compost material and between 75 percent and 80 percent soil material.
- Has a pH between 5.5 and 8.0.
- Does not have clumps greater than 3 inches in any direction.

01012.14 Stone Embankment Material - Furnish stone embankment material meeting the requirements of 00330.16 except:

- Provide a maximum size between 9 inches and 3 inches.

- No large rock fragments are allowed.

01012.15 Slope and Channel Liner Matting - Furnish channel liner matting meeting the requirements of 00280.14(e) for resistance to shear stresses calculated for a 10-year storm event.

Construction

01012.40 General - Construct water quality biofiltration swale facility as shown. Perform excavation, fine grading, and placement work only when the facility area is dry and only from the top of the swale area. Do not stockpile excavated material in the facility area. Perform work in sequence as follows:

(a) Scarify - Scarify the subsoil area a minimum 12 inches deep.

(b) Placement of Water Quality Mixture - Place the water quality mixture in maximum 12 inch Lifts. Compact each Lift with a water filled landscape roller.

(c) Pervious Porous Pavers - Install pervious porous pavers for full length of swale and full width of channel bottom. Fasten adjoining paver panels together.

(d) Seeding - Seed according to 01030.13.

(e) Slope and Channel Liner Matting - After seeding install slope and channel liner matting as shown or directed.

(f) Check Dams - Install permanent/ check dams spaced as shown or directed.

(g) Stone Embankment - Key and embed permanent check dams and rock basin flow Spreaders constructed with stone embankment horizontally into side slopes of swale to a depth not less than 12 inches. Where rock basin flow spreaders embed into side slopes, extend stone embankment 6 inches higher on side slope.

01012.41 Facility Field Markers - Install field markers as shown and according to Section 00842.

Maintenance

01012.70 Cleaning - If a stormwater control facility is used for erosion and sediment control, remove all accumulated sediment and debris before completing the facility.

01012.71 Removal - Remove temporary erosion and sediment control features according to 00280.70 only after water quality vegetation has met the establishment requirements of 01030.60.

Measurement

01012.80 Measurement - No measurement of quantities will be made for Work performed under this Section. The estimated quantities of Materials are:

Water Quality Swale (Sta. "P" 16+50 to 15+50 DFI) Quantities:

Item	Quantity
Excavation	74 Cu. Yd.
Drainage Geotextile, Type 1	52 Sq. Yd.
Riprap Geotextile, Type 1	8.5 Sq. Yd.
Loose Riprap, Class 50	2.8 Cu. Yd.
Water Quality Mixture	15 Cu. Yd.
Matting, Type B	136 Sq. Yd.
Check Dam, Type 1	2 Each
Porous Pavers	400 Sq. Ft.

Payment

01012.90 Payment - The accepted quantities of Work performed under this Section will be paid for at the Contract lump sum amount for the item "Water Quality Swale, _____".

The drainage facility identification number will be inserted in the blank.

Excavation will be paid according to 00330.90.

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

SECTION 01014 - STORMWATER CONTROL, WATER QUALITY FILTER STRIP

Section 01014, which is not a Standard Specification, is included for this Project by Special Provision.

Description

01014.00 Scope - This Work consists of furnishing and installing a water quality filter strip as shown.

Materials

01014.10 Water Quality Mixture - Furnish medium compost meeting the requirements of Section 03020. Furnish soil meeting the following gradation requirements:

Sieve Size	Percent Passing (by Weight)
No. 4	100
No 10	95 - 100
No. 40	40 - 60
No. 100	10 - 25
No. 200	5 - 10

Sample soil according to AASHTO R 90. Determine sieve analysis according to AASHTO T 27 and AASHTO T 11.

Blend the medium compost and soil so that the mixture:

- Is composed of between 20 percent and 25 percent medium compost material and between 75 percent and 80 percent soil material.
- Has a pH between 5.5 and 8.0.
- Does not have clumps greater than 3 inches in any direction.

Construction

01014.40 General - Construct water quality filter strip facility as shown. Perform excavation, fine grading, and placement work only when the facility area is dry and only from the perimeter of the filter strip area. Do not stockpile excavated material in the facility area. Scarify the subsoil area a minimum 12 inches deep. After scarification, place the water quality mixture in maximum 12 inch Lifts. Compact each Lift with a water filled landscape roller.

Maintenance

01014.70 Cleaning - If a stormwater control facility is used for erosion and sediment control, remove all accumulated sediment and debris before completing the facility.

Measurement

01014.80 Measurement - No measurement of quantities will be made for Work performed under this Section. The estimated quantities of Materials are:

Filter Strip Sta "P" 17+22 to 19+40Quantities:

Item	Quantity
Excavation	27 Cu. Yd.
Water Quality Mixture	27 Cu. Yd.
Matting, Type B	154 Sq. Yd.

Filter Strip Sta "P" 18+12 to 19+33 Quantities:

Item	Quantity
Excavation	15 Cu. Yd.
Water Quality Mixture	15 Cu. Yd.
Matting, Type B	88 Sq. Yd.

Payment

01014.90 Payment - The accepted quantities of Work performed under this Section will be paid for at the Contract lump sum amount for the item "Water Quality Filter Strip, ____".

The drainage facility identification number will be inserted in the blank.

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and Incidentals necessary to complete the Work as specified.

SECTION 01030 - SEEDING

Comply with Section 01030 of the Standard Specifications modified as follows:

01030.13(c) Pure Live Seed - Replace this subsection, except subsection number and title, with the following subsection:

Use the PLS specified rate listed in 01030.13(f) for determining PLS application rates. Ensure the PLS application rate meets the PLS specified rate. Apply pre blended seed mixes, with multiple species, at a PLS application rate ensuring all species meet or exceed the PLS specified rate for each species in the seed mix.

PLS application rate for an individual seed species is determined as follows:

- PLS specified rate is listed in 01030.13(f)
- PLS factor is obtained by multiplying the seed label germination percentage times the seed label purity percentage. Use the purity and germination percentages from the label on actual bags of seed to be used on the Project.
- PLS application rate is obtained by dividing the PLS specified rate by the PLS factor.

For a seed mix, make this calculation for each seed species in the mix and then adjust as follows:

- Using the seed tag, determine the weight of each seed species in the bag and use this information to find the percentage, by weight, of each seed species is in 1 pound for the pre-blended mix.
- Divide the percentage by weight of each seed species, per pound, for the pre-blended mix, by the PLS application rate for that specific seed species.

Determine the highest application rate in the seed mix and apply the seed mix at that application rate.

01030.13(f) Types of Seed Mixes - Add the following to the end of this subsection:

Provide the following seed mix formulas:

- **Permanent Seeding, Mix No. 1**

Botanical Name (Common Name)	**PLS Specified Rate (lb/acre)**
Elymus glaucus (blue wildrye)	26.1
Hordeum brachyantherum (meadow barley)	13.0
Bromus carinatus (California brome)	4.3
Lupinus rivularis (riverbank lupine)	1.0

* Oregon Certified Seed

- **Water Quality Seeding, Mix No. 1**

Botanical Name (Common Name)	**PLS Specified Rate (lb/acre)**
Elymus glaucus (blue wildrye)	20.0
Festuca rubra rubra (native red fescue)	16.5
Deschampsia caespitosa (tufted hairgrass)	5.2
Glyceria occidentalis (western mannagrass)	0.9
Beckmania syzigachne (American sloughgrass)	0.9

01030.13(g) Availability - Add the following sentence to the end of this subsection:

Submit the seed and seed mixes to be used on the project according to 00150.37.

01030.40 General - Add the following sentence after the sentence beginning “Notify the Agency…”:

Notify the Agency of the acreage to be seeded at least 7 Days before seeding begins.

Add the following subsection:

01030.60 General - Add the following sentence after the last bullet:

The minimum living plant coverage for native plant seeding is 85 percent of ground surface.

SECTION 01040 - PLANTING

Comply with Section 01040 of the Standard Specifications modified as follows:

001040.02 Definitions - Add the following definition:

Weed Free - See 01030.02 for weed free definition

01040.48 Planting Area Preparation - Replace the sentence that begins ”Identify, kill, and remove…” with the following sentence:

Identify, kill, and remove Weeds according to 01030.62(b)(3).

01040.71 Plant Care and Success Criteria - Add the following to the end of this subsection:

The following watering frequencies are required:

- Conifer trees that are over 4 feet tall, water at a frequency of 4 inches per week between May 15 and September 30, or as climatic conditions require during the establishment period.
- All shrubs and deciduous trees, water at a frequency of 3 inches per week between May 15 and September 30 or as climatic conditions require during the establishment period.

SECTION 01050 - FENCES

Comply with Section 01050 of the Standard Specifications.

SECTION 02001 - CONCRETE

Comply with Section 02001 of the Standard Specifications modified as follows:

02001.02 Abbreviations and Definitions: Replace the sentence that begins "**Pozzolans** - Fly ash, silica fume…" with the following sentence:

Pozzolans - Fly ash, natural pozzolans, silica fume, and high-reactivity pozzolans.

Replace the sentence that begins "**Supplementary Cementitious Materials** - Fly ash, silica fume…" with the following sentence:

Supplementary Cementitious Materials - Pozzolans and ground granulated blast furnace slag.

02001.20(a) Strength - Replace Table 2001-1 with the following Table 2001-1:

Table 02001-1

Concrete Strength and Water/Cementitious Material (w/cm) Ratio

Type of Concrete	Strength f'_c (psi)	Maximum w/cm Ratio
Structural	3300	0.50
	3300 (Seal)	0.45
	4000	0.48
	4000 (Drilled Shaft)	
	HPC4500	0.40
	HPC(IC)4500	
Paving	5000 + 4000	0.44
PPCM's (with cast-in-place decks and no entrained air)	5000	0.48
	5500	0.44
	6000 +	0.42

02001.30(e)(1) HPC Coarse Aggregate Content - Delete the paragraph that begins "Two or more Aggregate products or sources…"

SECTION 02030 – SUPPLEMENTARY CEMENTITIOUS MATERIALS

Comply with Section 02030, of the Standard Specifications modified as follows:

02030.00 Scope - Replace this subsection, except for the subsection number and title, with the following:

This Section includes the requirements for fly ash, natural pozzolans, silica fume, ground granulated blast furnace slag and high reactivity pozzolans used in portland cement concrete.

02030.10 Fly Ash - Replace this subsection, except for the subsection number and title, with the following:

Furnish Class C and Class F fly ash from the QPL and conforming to AASHTO M 295 (ASTM C618).

Add the following subsection:

02030.15 Natural Pozzolans - Furnish Class N natural pozzolans from the QPL and conforming to AASHTO M 295 (ASTM C618).

02030.50 Metakaolin - Replace this subsection with the following:

02030.50 High Reactivity Pozzolans - Furnish high-reactivity pozzolans from the QPL and conforming to AASHTO M 321.

SECTION 02690 - PCC AGGREGATES

Comply with Section 02690 of the Standard Specifications modified as follows:

02690.20(e) Grading and Separation by Sizes for Prestressed Concrete - Replace this subsection with the following subsection:

02690.20(e) Grading and Separation by Sizes - Sampling shall be according to AASHTO R 90. Sieve analysis shall be according to AASHTO T 27 and AASHTO T 11. Provide aggregates meeting the gradation requirements of Table 02690-1 for structural concrete. Provide a CAgT to perform sampling and testing when required.

Table 02690-1
Gradation of Coarse Aggregates
Percent passing (by Weight)

		Sieve Size											
Size Number	Nominal Size Square Openings	(2½ in.)	(2 in.)	(1½ in.)	(1 in.)	(¾ in.)	(½ in.)	(⅜ in.)	(No. 4)	(No. 8)	(No. 16)	(No. 50)	(No. 200)
3	(2 to 1 in.)	100	90 to 100	35 to 70	0 to 15	—	0 to 5	—	—	—	—	—	**
357*	(2 in. to No. 4)	100	95 to 100	—	35 to 70	—	10 to 30	—	0 to 5	—	—	—	**
4	(1½ to ¾ in.)	—	100	90 to 100	20 to 55	0 to 15	—	0 to 5	—	—	—	—	**
467*	(1½ to No. 4)	—	100	95 to 100	—	35 to 70	—	10 to 30	0 to 5	—	—	—	**
5	(1 to ½ in.)	—	—	100	90 to 100	20 to 55	0 to 10	0 to 5	—	—	—	—	**
56	(1 to ⅜ in.)	—	—	100	90 to 100	40 to 85	10 to 40	0 to 15	0 to 5	—	—	—	**
57	(1 to No. 4)	—	—	100	95 to 100	—	25 to 60	—	0 to 10	0 to 5	—	—	**
6	(¾ to ⅜ in.)	—	—	—	100	90 to 100	20 to 55	0 to 15	0 to 5	—	—	—	**
67	(¾ to No. 4)	—	—	—	100	90 to 100	—	20 to 55	0 to 10	0 to 5	—	—	**
68	(¾ to No. 8)	—	—	—	100	90 to 100	—	30 to 65	5 to 25	0 to 10	0 to 5	—	**
7	(½ to No. 4)	—	—	—	—	100	90 to 100	40 to 70	0 to 15	0 to 5	—	—	**
78	(½ to No. 8)	—	—	—	—	100	90 to 100	40 to 75	5 to 25	0 to 10	0 to 5	—	**
8	(⅜ to No. 8)	—	—	—	—	—	100	85 to 100	10 to 30	0 to 10	0 to 5	—	**
89	(⅜ to No. 16)	—	—	—	—	—	100	90 to 100	20 to 55	5 to 30	0 to 10	0 to 5	**

* Use two or more seperated sizes which when combined meet these gradation limits.

** See 02690.20(a). Do Not evaluate material passing the No. 200 sieve according to 00165.40.

02690.20(f) Grading and Separation by Sizes for Other Concrete - Delete this subsection.

02690.30(g) Grading - In the paragraph that begins “Sampling shall be according to…”, replace the words “AASHTO T 2” with the words “AASHTO R 90”.

*****

FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST

CLACKAMAS COUNTY
DEPARTMENT OF TRANSPORTATION AND DEVELOPMENT

100% PLANS FOR PROPOSED PROJECT
STRUCTURES, PAVING, STORM SEWER, AND GRADING

CANBY MARQUAM HWY: BEAR CREEK BRIDGE

CLACKAMAS COUNTY OREGON

REGISTERED PROFESSIONAL ENGINEER
72845PE
OREGON
JULY 15, 2003
JOEL BRANDON TUBBS
RENEWS: 6/30/2022

COVER SHEET
CANBY MARQUAM HWY: BEAR CREEK BRIDGE
DATE: OCTOBER 2021 PROJECT NO.: 22257

STANDARD DRAWINGS:

OREGON DEPARTMENT OF TRANSPORTATION

BR140 – POURED JOINT SEAL
BR165 – BRIDGE END PANEL

BR290 – 3'–6" TYPE "F" RAIL
BR291 – TRANSITION 3'–6" CONCRETE BRIDGE RAIL TO RAIL

BR422 – 30" PRECAST PRESTRESSED SLAB
BR445 – PRECAST PRESTRESSED BOXES AND SLAB DETAILS

RD300 – TRENCH BACKFILL BEDDING, PIPE ZONE AND MULTIPLE INSTALLATIONS
RD317 – CULVERT EMBANKMENT PROTECTION and RIPRAP PADS
RD386 – FILL HEIGHT TABLE FOR CIRCULAR CONCRETE PIPE

RD402 – MIDWEST GUARDRAIL SYSTEM TYPES
RD403 – MIDWEST GUARDRAIL SYSTEM WOOD POST AND BLOCK
RD404 – MIDWEST GUARDRAIL SYSTEM STEEL POST AND BLOCK
RD407 – MIDWEST GUARDRAIL SYSTEM (W–BEAM)
RD416 – MIDWEST GUARDRAIL SYSTEM STANDARD HARDWARE (NUTS, BOLTS, WASHERS AND MISC.)
RD419 – MIDWEST GUARDRAIL SYSTEM GRADING FOR TERMINALS
RD420 – MIDWEST GUARDRAIL SYSTEM NON–FLARED ENERGY–ABSORBING TERMINAL

RD715 – APPROACHES AND NON–SIDEWALK DRIVEWAYS

RD810 – BARBED AND WOVEN WIRE FENCES
RD820 – FENCE GATES

RD1033 – SEDIMENT BARRIER TYPE 9
RD1040 – SEDIMENT FENCE

TM200 – SIGN INSTALLATION DETAILS
TM201 – MISCELLANEOUS SIGN PLACEMENT DETAILS

TM500 – PAVEMENT MARKING STANDARD DETAIL BLOCKS
TM570 – TRAFFIC DELINEATORS
TM571 – TRAFFIC DELINEATORS STEEL POST DETAILS

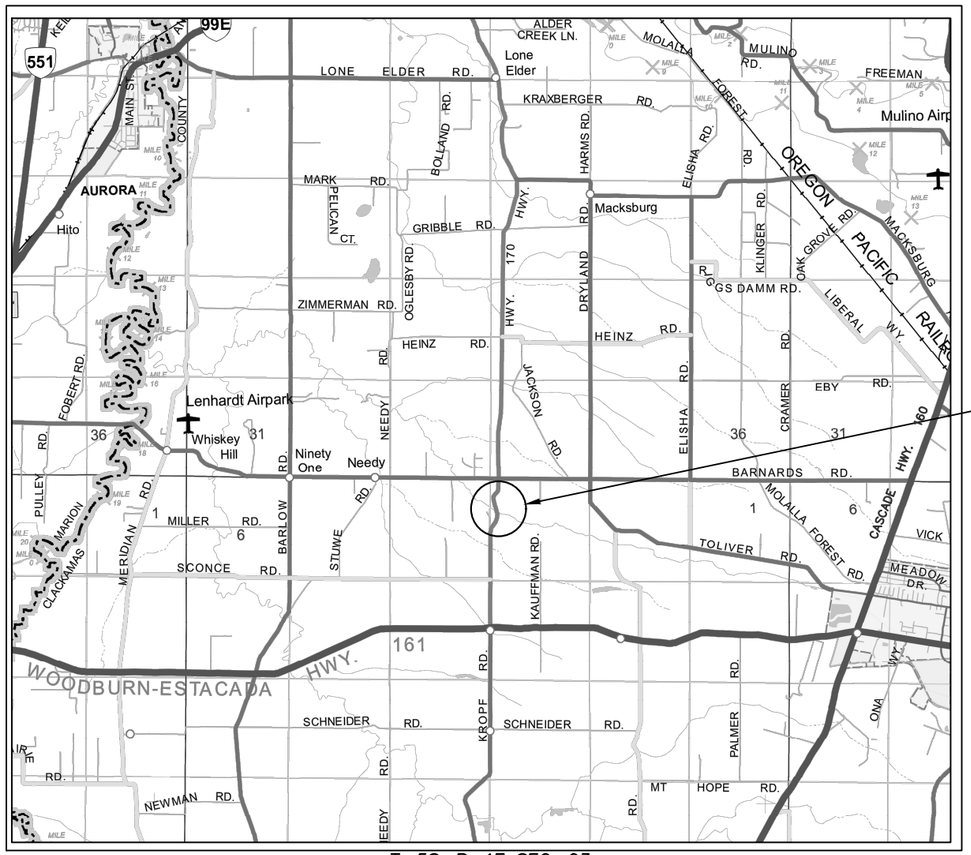
TM670 – WOOD POST SIGN SUPPORTS

TM800 – TABLES, ABRUPT EDGE AND PCMS DETAILS
TM820 – TEMPORARY BARRICADES
TM821 – TEMPORARY SIGN SUPPORTS
TM822 – TEMPORARY SIGN SUPPORTS
TM840 – CLOSURE DETAILS

CLACKAMAS COUNTY

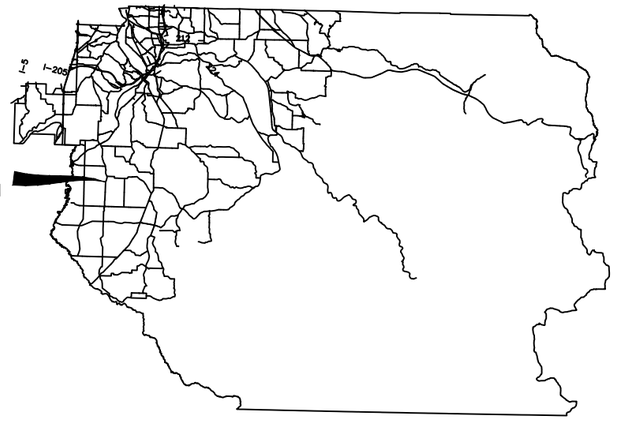
DETAIL DRAWING 4–5 – CHECK DAM – BIO–FILTER BAGS
DETAIL DRAWING 4–13 – CONSTRUCTION ENTRANCE
DETAIL DRAWING 4–27 – WATTLES

STANDARD DRAWING T150 – SIGN MOUNTING AND ATTACHMENTS



T. 5S, R. 1E SEC. 03

VICINITY MAP
NOT TO SCALE



PROJECT LOCATION

INDEX OF SHEETS	
1	COVER SHEET
2	TYPICAL SECTION
3	PLAN AND PROFILE
4	CONSTRUCTION NOTES
5	DRAINAGE DETAILS
6	SWALE SW1 PLAN AND PROFILE
7	EROSION CONTROL PLAN
8	EROSION CONTROL NOTES
9	REVEGETATION PLAN
J01	PLAN AND ELEVATION
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J07	BENT 2 PLAN AND ELEVATION
J08	BENT DETAILS
J09	WINGWALL DETAILS
J10	RIPRAP DETAILS
TC01	TRAFFIC CONTROL PLAN
TC02	DETOUR PLAN

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 952–001–0100. YOU MAY OBTAIN COPIES OF THE RULES FROM THE CENTER OR ANSWERS TO QUESTIONS ABOUT THE RULES BY CALLING (503) 232–1987.

NOTE:
PROJECT DATUM ELEVATION IS BASED ON NAVD 1988 DERIVED FROM RTK GPS OBSERVATIONS
COORDINATES ARE ORN–83 SPC(FTi)

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
DIRECTOR
DAN JOHNSON

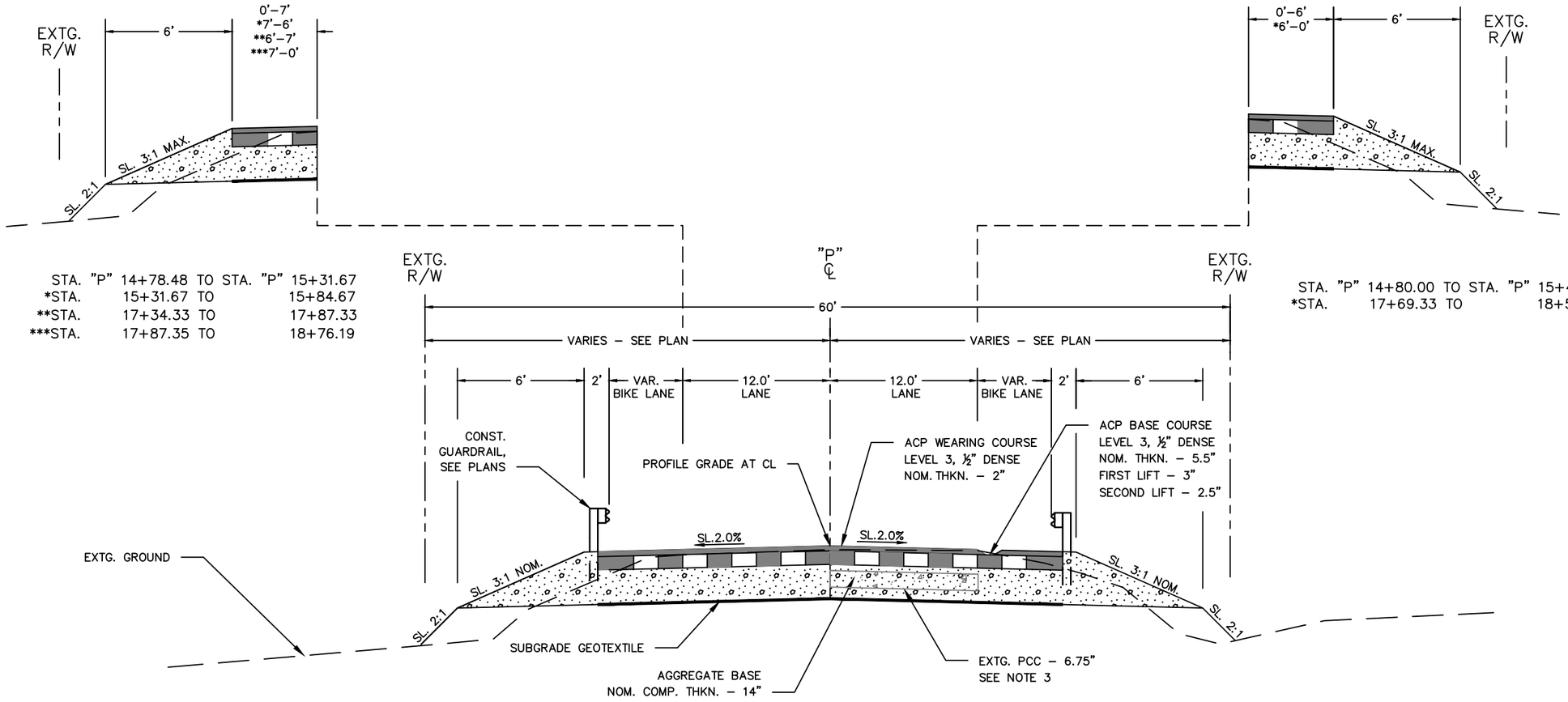
DESIGNED BY: PPR
DRAFTED BY: PPR
CHECKED BY: TAWH

REVISIONS
NO. DATE:

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No. 1

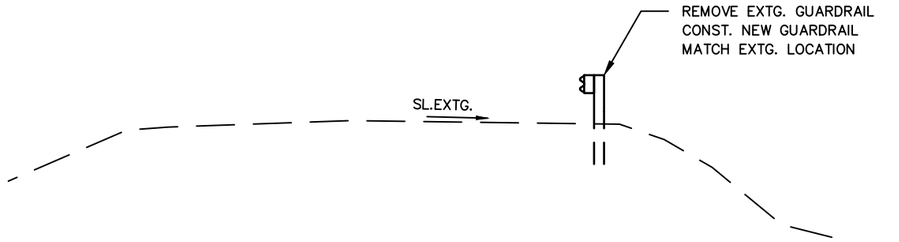
FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST



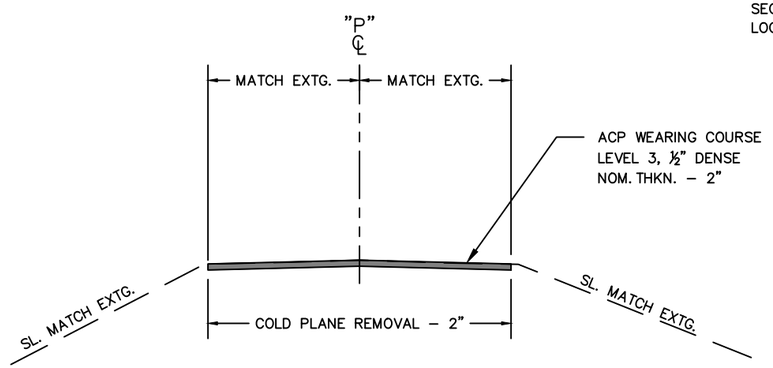
CANBY–MARQUAM HWY ("P" LINE)
STA. "P" 14+62.00 TO STA. "P" 15+97.17
STA. "P" 15+97.17 TO STA. "P" 17+21.83 (BRIDGE)
STA. "P" 17+21.83 TO STA. "P" 18+76.19

NOTES:

1. PLACE AGGREGATE BASE IN ALL CONSTRUCTED PAVEMENT AREAS. EVALUATE FOR SUBGRADE STABILIZATION PRIOR TO PLACEMENT OF GEOTEXTILE.
2. SIDE SLOPES ARE SHOWN AS HORIZONTAL: VERTICAL
3. EXTG. PCC SECTION (NB), TO BE REMOVED PER SECTION 00310 OF THE SPECIAL PROVISIONS, LOCATION IS APPROXIMATE



STA. "P" 12+37.07 TO STA. "P" 14+62.00



STA. "P" 18+76.19 TO STA. "P" 20+60

REGISTERED PROFESSIONAL ENGINEER
85994PE
OREGON
JULY 10, 2018
PRISCILIANO PERALTA-RAMIREZ
EXPIRES: 12–31–2022

TYPICAL SECTION

CANBY MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: OCTOBER 2021 | PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION
AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: PPR
DRAFTED BY: PPR
CHECKED BY: TAWH

REVISIONS

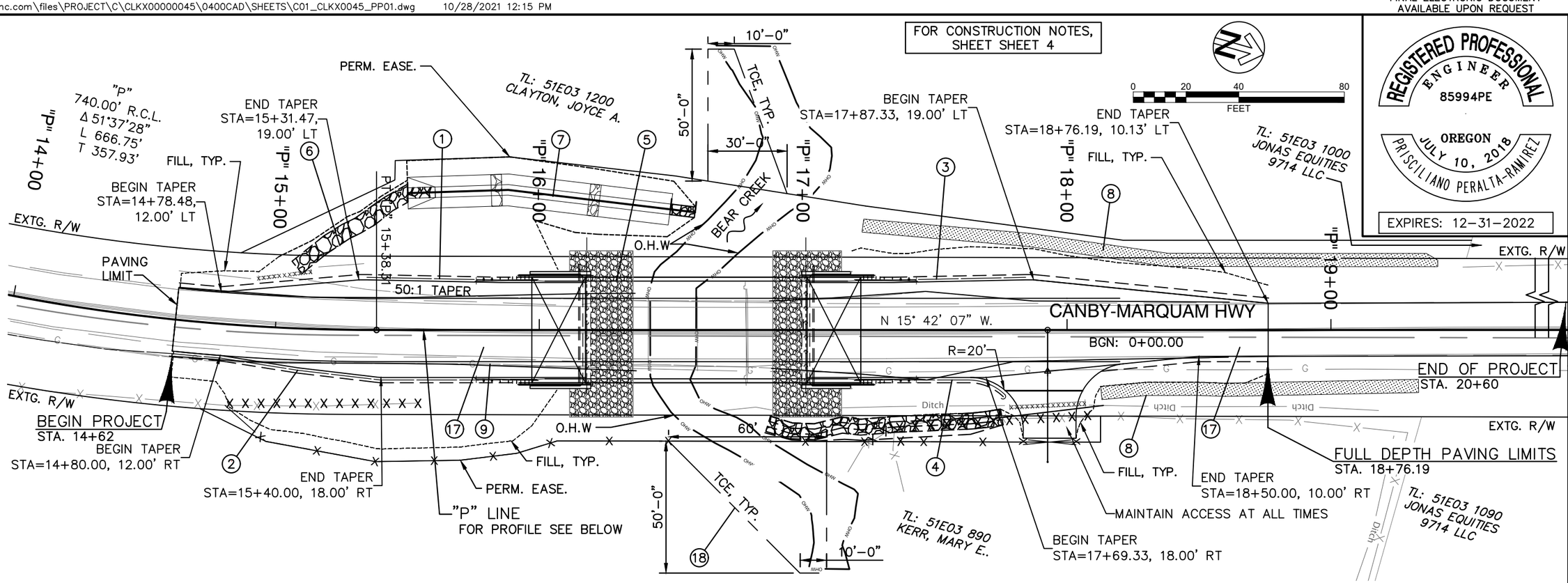
NO.	DATE:

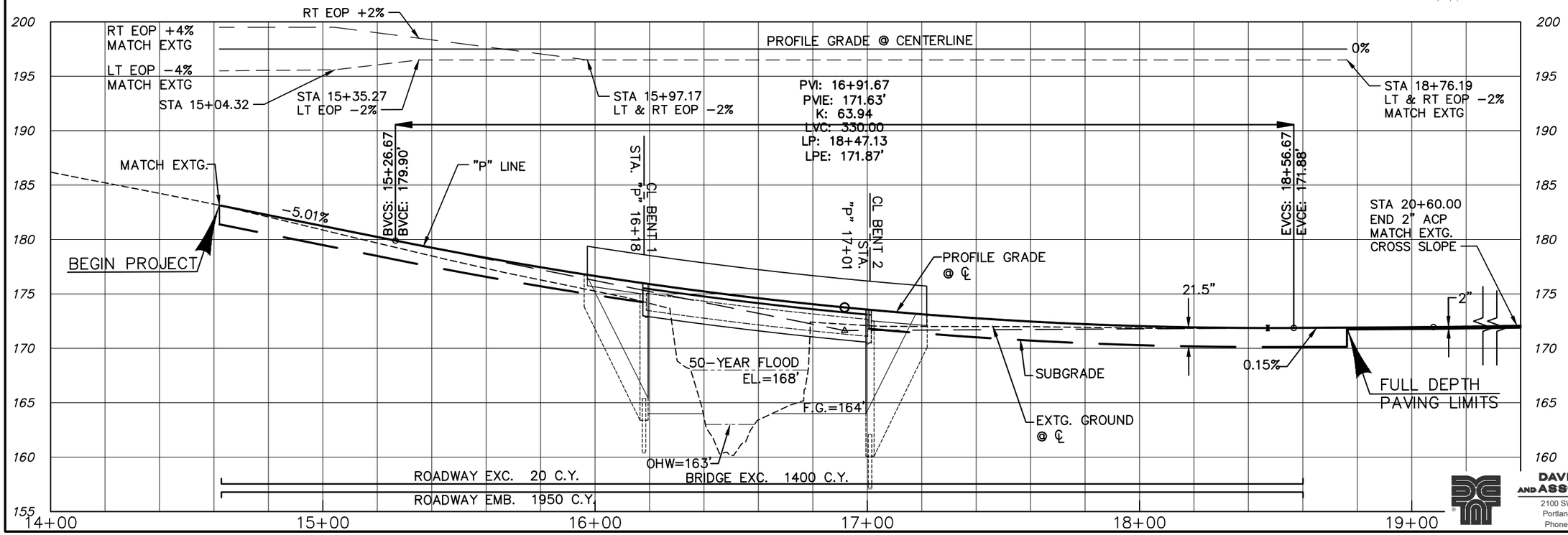
DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No.
2

FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST

FOR CONSTRUCTION NOTES,
SHEET SHEET 4





REGISTERED PROFESSIONAL ENGINEER
85994PE
OREGON
JULY 10, 2018
PRISCILIANO PERALTA-RAMIREZ
EXPIRES: 12-31-2022

PLAN AND PROFILE
CANBY MARQUAM HWY: BEAR CREEK BRIDGE

PROJECT NO.: 22257
DATE: OCTOBER 2021

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION
AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: RPR
DRAFTED BY: RPR
CHECKED BY: TAWH

REVISIONS
NO. DATE:

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No.
3

FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST

① STA. "P" 15+34.67 TO "P" 15+97.17, LT
CONST. GUARDRAIL – 12.5' (TYPE 3)
W=1', E=0'
CONST. GUARDRAIL TERMINAL, NON–FLARED
TEST LEVEL – 3, L=50'
CONST. GUARDRAIL TO BRIDGE TRANSITION
(SEE DWG. NOS. BR291, RD401, RD402, RD403, RD404, RD407, RD416, RD419, & RD420)

② STA. "P" 12+35.60, 19.30' RT TO "P" 15+97.17, RT
CONST. GUARDRAIL – 12.5' (TYPE 3)
CONST. GUARDRAIL – 300' (TYPE 2A)
W=1', E=0'
CONST. GUARDRAIL TERMINAL, NON–FLARED
TEST LEVEL – 3, L=50'
MATCH EXTG. LOCATION
CONST. GUARDRAIL TO BRIDGE TRANSITION

③ STA. "P" 17+21.83 TO "P" 17+84.33, LT
CONST. GUARDRAIL (TYPE 3) – 12.5'
W=1', E=0'
CONST. GUARDRAIL TERMINAL, NON–FLARED
TEST LEVEL – 3, L=50'
CONST. GUARDRAIL TO BRIDGE TRANSITION

④ STA. "P" 17+21.83 TO "P" 17+79.31, RT
CONST. GUARDRAIL (TYPE 3) – 12.5'
CONST. GUARDRAIL (TYPE 2A) – 62.5'
E=0'
CONST. ANCHOR (TYPE 1, MOD) – 2
INSTALL END PIECE (TYPE B)
CONST. GUARDRAIL TO BRIDGE TRANSITION
(SEE DWG. NOS. RD417 & RD450)

⑤ REMOVE EXISTING STRUCTURE (06027)
CONST. STRUCTURE – 84'
36' WIDTH
AND REINF. PANEL AT BRIDGE ENDS
(FOR SHT. NOS. SEE J SHEETS)

⑥ STA. "P" 15+12.84, 21.67' LT TO
STA. "P" 15+50.16, 51.85' LT.
CONST. RIPRAP CLASS 50
(FOR DETAILS, SEE SHEET 6).

⑦ CONST. WATER QUALITY BIOSWALE
(FOR DETAILS, SEE SHEET 5).

⑧ CONST. WATER QUALITY FILTER STRIP
(FOR DETAILS, SEE SHEET 5).

⑨ ABANDON EXTG. GAS LINE (BY OTHERS)

⑩ CONST. GRAVEL APPROACH
(FOR DETAILS, SEE SHEET 5 & DWG. NO. RD715)

⑪ REMOVE EXISTING GUARDRAIL – 758'

⑫ REMOVE FENCE AND GATE AFTER INSTALLATION OF NEW FENCE AND GATE – 148'

⑬ STA. "P" 14+83.14, 30.72' RT TO
STA. "P" 16+65.46, 42.16' RT.
INST. TYPE 2 FENCE – 192'
(SEE DWG. NO. RD810)

⑭ STA. "P" 16+87.00, 42.21' RT TO
STA. "P" 18+12.68, 32.61' RT.
INST. TYPE 2 FENCE – 117'
INST. 20' DOUBLE GATE
(SEE DWG. NO. RD820)

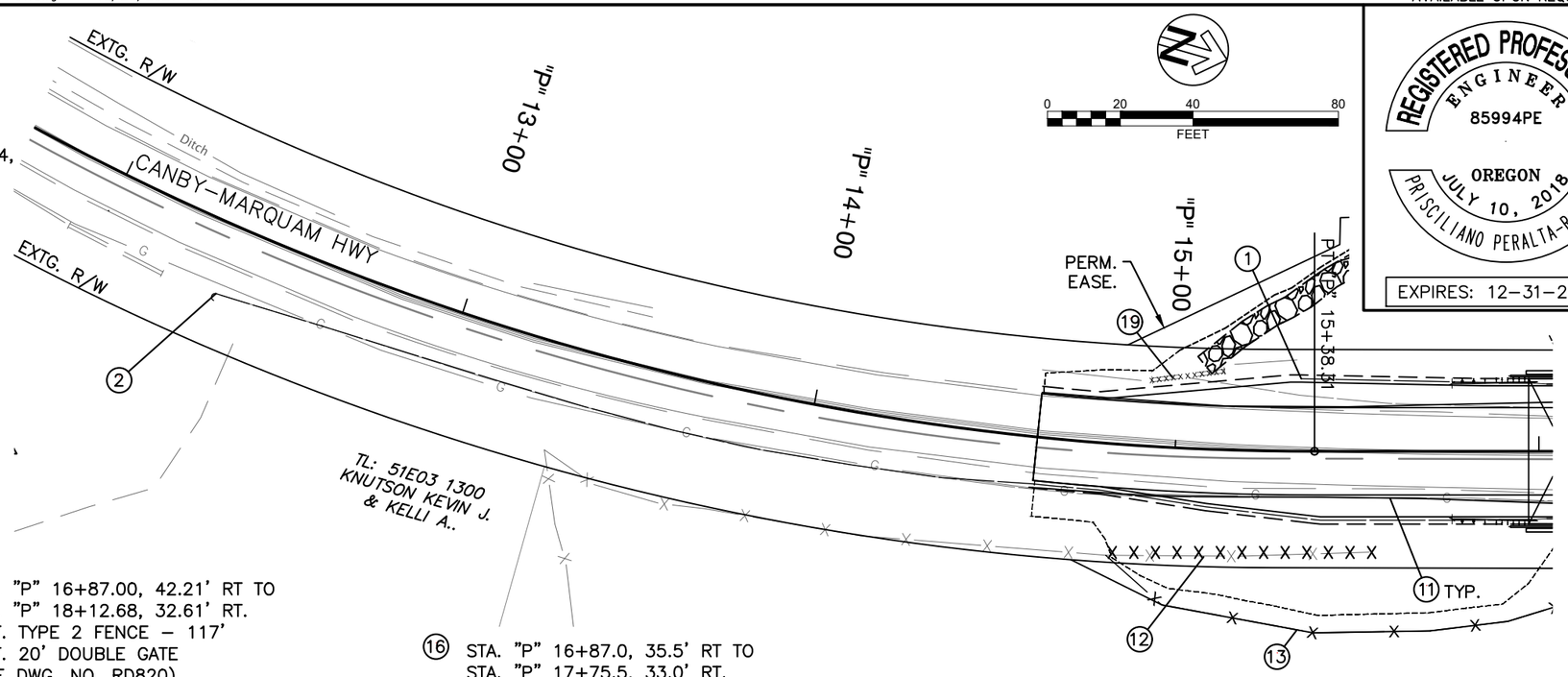
⑮ STA. "P" 17+74.00, 33.33' RT (I.E. 167.36') TO
STA. "P" 18+13.80, 28.60' RT (I.E. EXTG.)
REMOVE EXTG. PIPE – 29'
INST. 12" CULV. PIPE – 40'
5' DEPTH, CLASS III RCP
(SEE DWG. NOS. RD300, RD317 & RD386)

⑯ STA. "P" 16+87.0, 35.5' RT TO
STA. "P" 17+75.5, 33.0' RT.
CONST. RIPRAP CLASS 50
(FOR DETAILS, SEE SHEET 6)

⑰ REMOVE EXTG. PCC SECTION (NB) – 415'

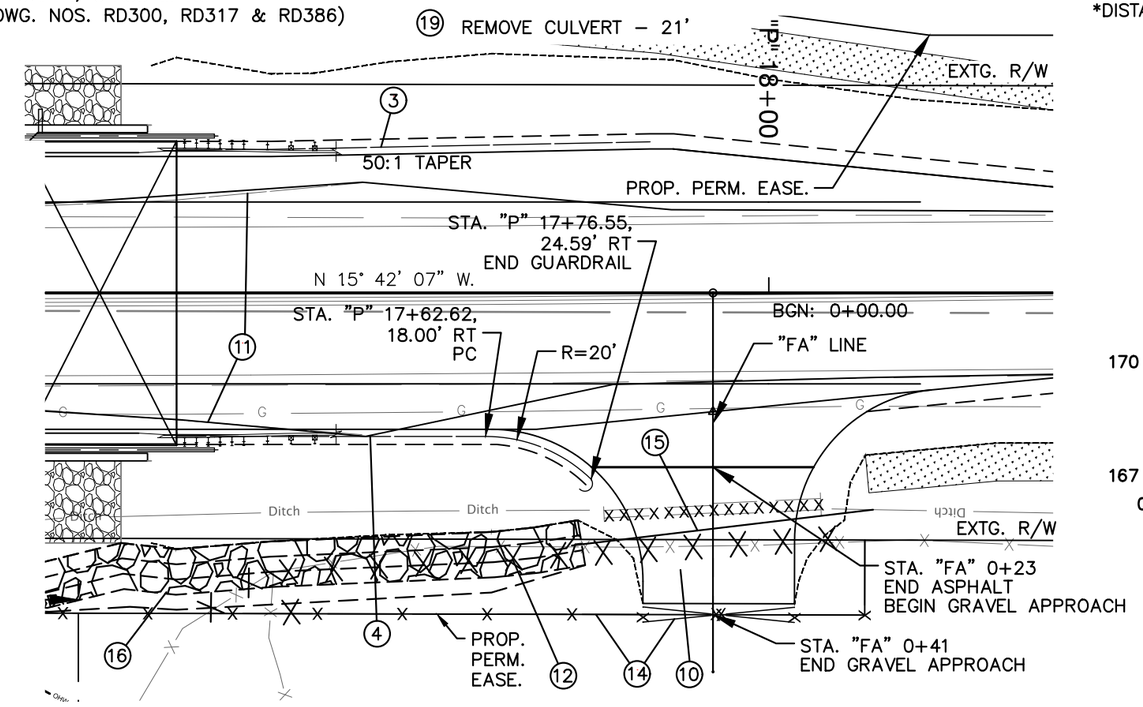
⑱ CONST. TEMP. TYPE 2 FENCE – 131'
REMOVE AFTER WORK IS COMPLETED

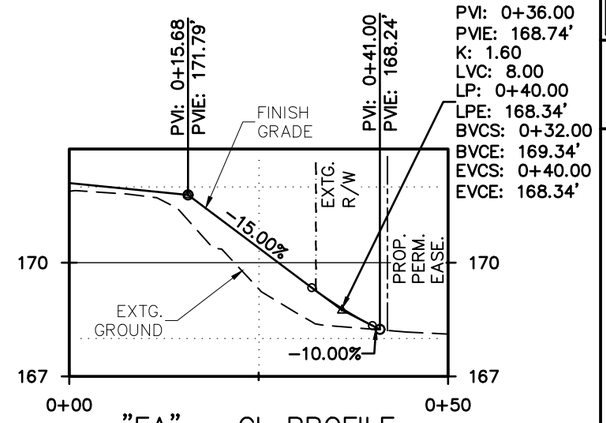
⑲ REMOVE CULVERT – 21'



DRIVEWAY CONSTRUCTION TABLE							
CENTERLINE STATION	TYPE	WIDTH AT THROAT (FT)	LENGTH* (FT)	FINISHED SURFACE	ESTIMATED AREA (FT^2)	FINISHED SURFACE	ESTIMATED AREA (FT^2)
"P" 17+92.63	FIELD ACCESS	20	25.3'	ASPHALT	275	GRAVEL	400

*DISTANCE FROM EOP TO MATCH EXISTING





CONSTRUCTION NOTES

CANBY MARQUAM HWY:
BEAR CREEK BRIDGE

REGISTERED PROFESSIONAL ENGINEER
85994PE
OREGON
JULY 10, 2018
PRISCILIANO PERALTA-RAMIREZ
EXPIRES: 12–31–2022

DATE: OCTOBER 2021 | PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: RPR
DRAFTED BY: RPR
CHECKED BY: ŦAWH

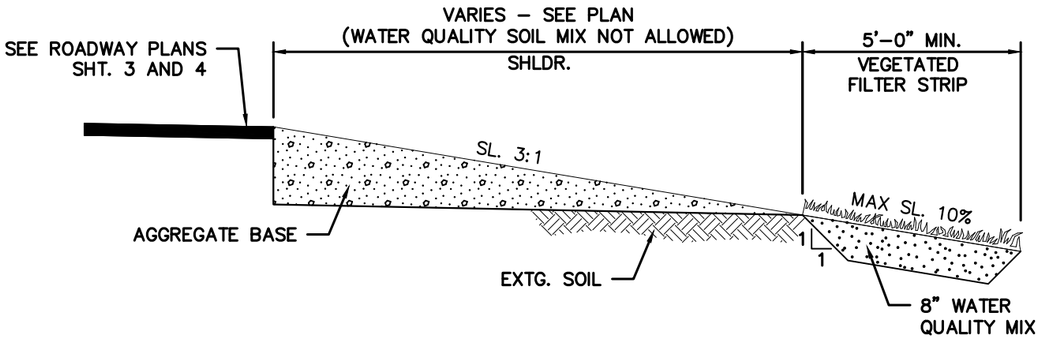
REVISIONS

NO.	DATE:

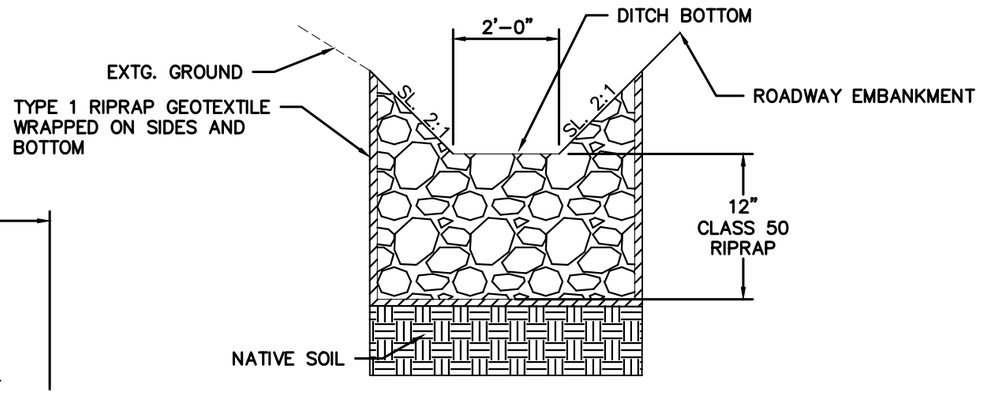
DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No.
4

FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST



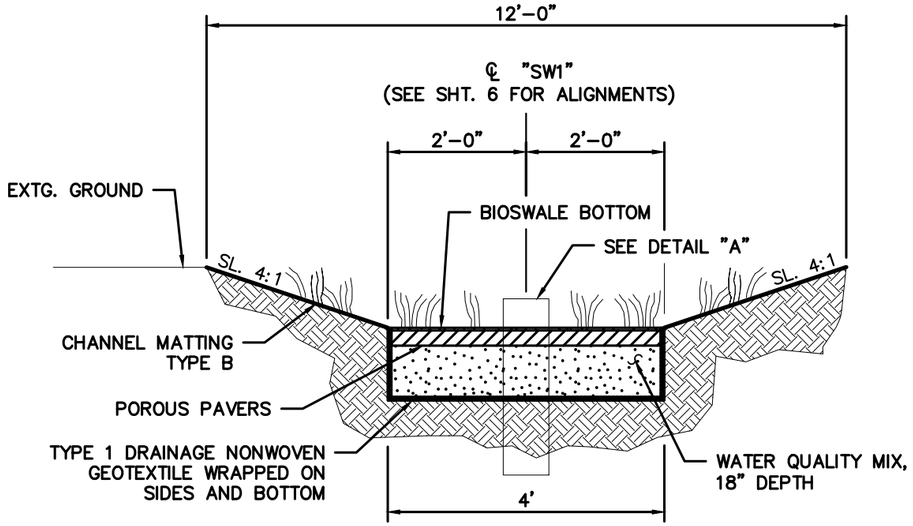
WATER QUALITY FILTER STRIP SECTION A-A
STA. "P" 17+22.62, 39.55, LT. TO STA. "P" 19+40.47, 26.50, LT.
STA. "P" 18+12.99, 23.89, RT. TO STA. "P" 19+33.20, 21.20, RT.
N.T.S.



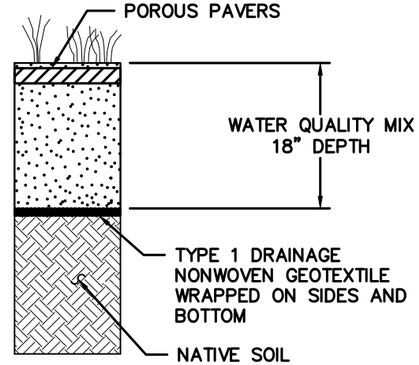
DITCH DETAIL

NOTES:

1. CONTRACTOR TO POTHOLE TO DETERMINE EXACT LOCATION OF UTILITIES PER OAR 952–001–0090–21(c) AND RELOCATE UTILITIES AS NECESSARY.
2. SEE SHT 3 FOR ALIGNMENT.
3. CONTRACTOR TO GRADE ENDS OF BIO–SLOPES TO MATCH EXTG. GRADE AT SL. 1:4 MAX., AS NECESSARY

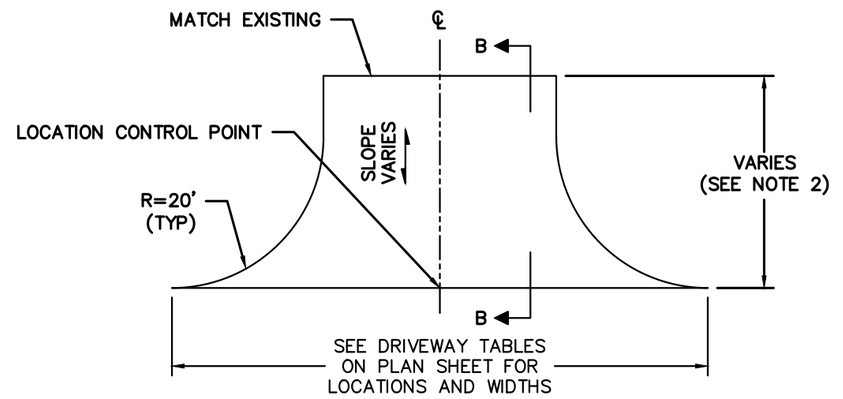


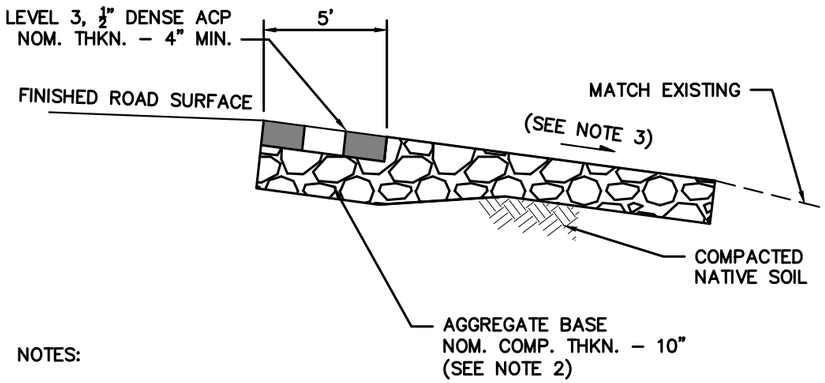
BIOSWALE "SW1" CROSS SECTION A-A
STA. "P" 15+50.16, 51.86 LT TO 16+49.70, 45.72 LT
N.T.S.



DETAIL "A"
N.T.S.

DRAINAGE DETAILS





NOTES:

1. FOR CONSTRUCTION LIMITS, SEE PLAN SHEETS.
2. COMPACT AGGREGATE BASE TO 95% OF AASHTO T–99.
3. FOR PROFILE, SEE PLAN SHEET 4, AND DWG. NO. RD715.

SECTION B–B

DRIVEWAY DETAILS

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

REGISTERED PROFESSIONAL ENGINEER
74328PE
OREGON
SEPT. 9, 2008
ATALIA SAMPSON RASKIN
EXPIRES: 12–31–2022

DETAILS

CANBY MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: OCTOBER 2021 | PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION
AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: RPR
DRAFTED BY: RPR
CHECKED BY: ATAWH

REVISIONS

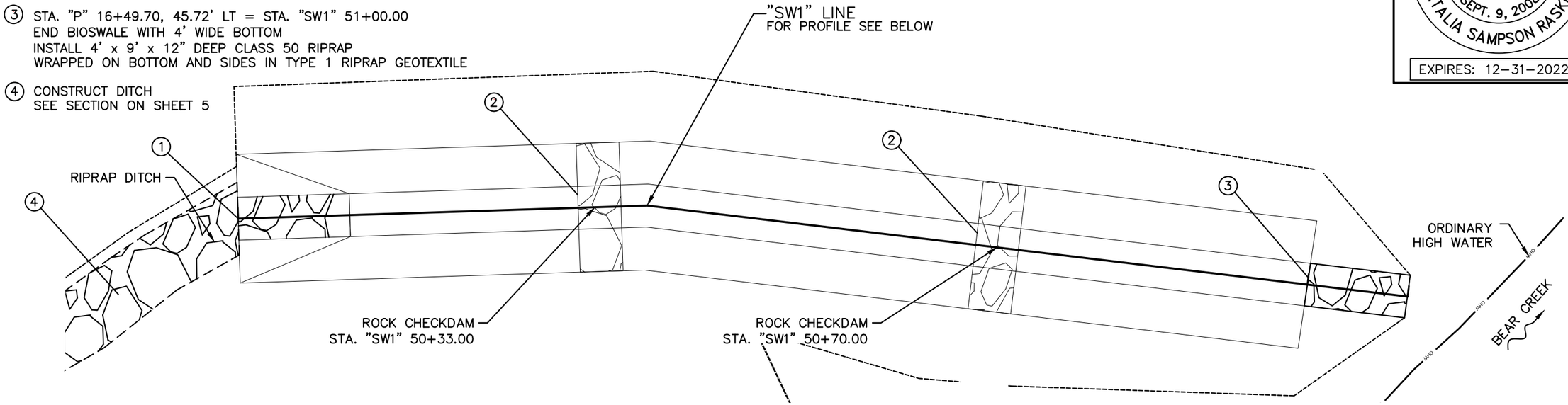
NO.	DATE:

Sheet No.
5

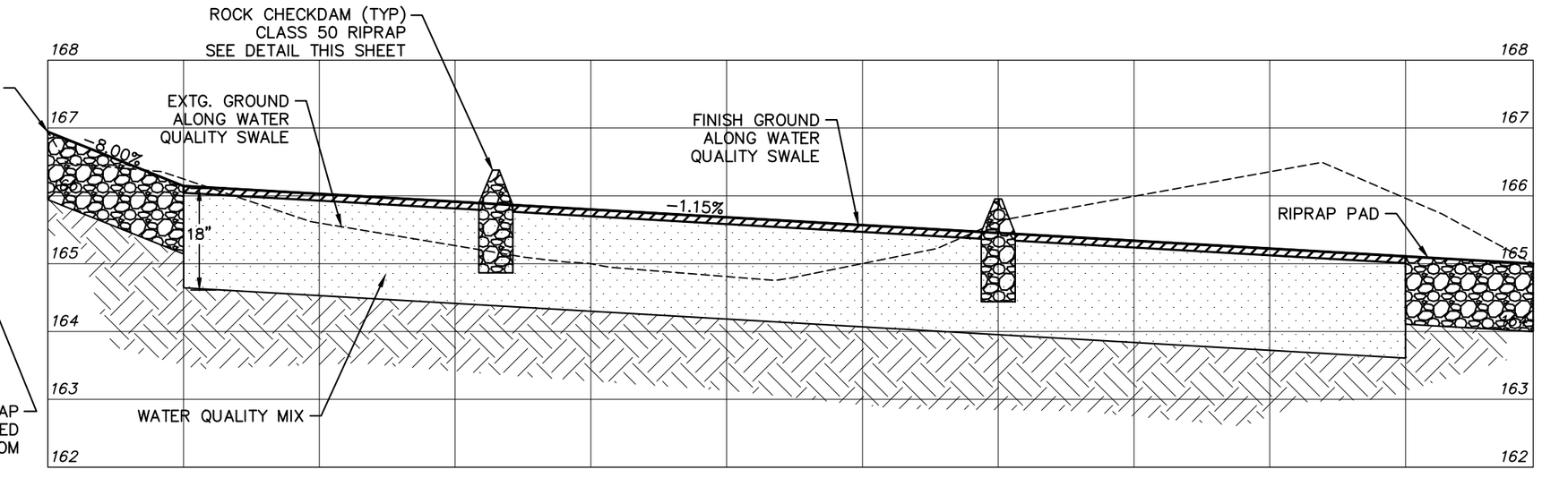
FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST

BIOSWALE "SW1" PLAN

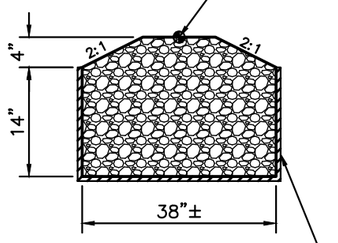
1. STA. "P" 15+50.16, 51.86' LT = STA. "SW1" 50+00.00
   BEGIN SWALE WITH 4' WIDE BOTTOM
   SEE SECTION ON SHEET 5
   INSTALL 4' x 10' x 12" DEEP CLASS 50 RIPRAP
   WRAPPED ON BOTTOM AND SIDES IN TYPE 1 RIPRAP GEOTEXTILE
2. CONSTRUCT BIOSWALE CHECK DAM – 2
3. STA. "P" 16+49.70, 45.72' LT = STA. "SW1" 51+00.00
   END BIOSWALE WITH 4' WIDE BOTTOM
   INSTALL 4' x 9' x 12" DEEP CLASS 50 RIPRAP
   WRAPPED ON BOTTOM AND SIDES IN TYPE 1 RIPRAP GEOTEXTILE
4. CONSTRUCT DITCH
   SEE SECTION ON SHEET 5



BIOSWALE "SW1" PROFILE



CHECK DAM DETAIL
N.T.S.



REGISTERED PROFESSIONAL ENGINEER
74328PE
OREGON
SEPT. 9, 2008
ATALIA SAMPSON RASKIN
EXPIRES: 12-31-2022

SWALE SW1 PLAN AND PROFILE

CANBY MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: OCTOBER 2021

PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION
AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: RPR
DRAFTED BY: RPR
CHECKED BY: TAWH

REVISIONS
NO. DATE:

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No.
6

FINAL ELECTRONIC DOCUMENT
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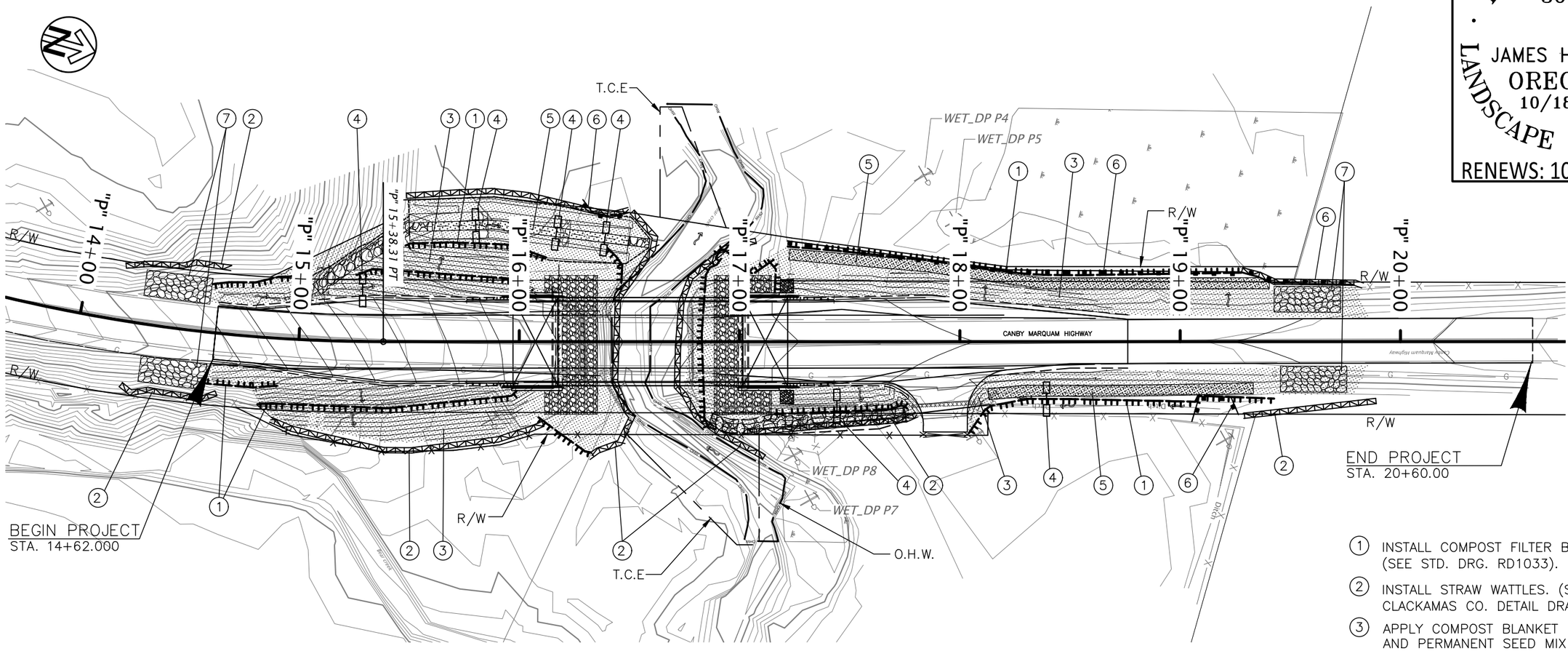

1. INSTALL COMPOST FILTER BERM. (SEE STD. DRG. RD1033).
2. INSTALL STRAW WATTLES. (SEE CLACKAMAS CO. DETAIL DRAWING 4–27).
3. APPLY COMPOST BLANKET AND PERMANENT SEED MIX NO. 1 TO GRADED SLOPES.
4. INSTALL 6 CHECK DAMS (SEE CLACKAMAS CO. DETAIL DRAWING 4–5).
5. APPLY PERMANENT WATER QUALITY SEEDING.
6. INSTALL SEDIMENT FENCE (SEE STD. DRG. RD1040)
7. CONSTRUCT 2 CONSTRUCTION ENTRANCES. (SEE CLACKAMAS CO. DETAIL DRAWING 4–13). CONTRACTOR TO FIELD LOCATE.

REGISTERED
306
JAMES HENCKE
OREGON
10/18/93
LANDSCAPE ARCHITECT
RENEWS: 10/31/2022

EROSION CONTROL PLAN

CANBY MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: OCTOBER 2021 | PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION
AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: BAR
DRAFTED BY: RPR
CHECKED BY: SBW

REVISIONS

NO.	DATE:

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No.
7

FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST

CLACKAMAS COUNTY STANDARD EROSION AND SEDIMENT CONTROL PLAN DRAWING NOTES;

1. WHEN RAINFALL AND RUNOFF OCCURS DAILY INSPECTIONS OF THE EROSION AND SEDIMENT CONTROLS AND DISCHARGE OUTFALLS MUST BE PROVIDED BY SOME ONE KNOWLEDGEABLE AND EXPERIENCED IN THE PRINCIPLES, PRACTICES, INSTALLATION, AND MAINTENANCE OF EROSION AND SEDIMENT CONTROLS WHO WORKS FOR THE PERMITTEE.
2. CONSTRUCTION ACTIVITIES MUST AVOID OR MINIMIZE EXCAVATION AND CREATION OF BARE GROUND FROM OCTOBER 1 THROUGH MAY 31 EACH YEAR.
3. DURING WET WEATHER PERIOD, TEMPORARY STABILIZATION OF THE SITE MUST OCCUR AT THE END OF EACH WORK DAY.
4. SEDIMENT CONTROLS MUST BE INSTALLED AND MAINTAINED ON ALL DOWN GRADIENT SIDES OF THE CONSTRUCTION SITE AT ALL TIMES DURING CONSTRUCTION. THEY MUST REMAIN IN PLACE UNTIL PERMANENT VEGETATION OR OTHER PERMANENT COVERING OF EXPOSED SOIL IS ESTABLISHED.
5. ALL ACTIVE INLETS MUST HAVE SEDIMENT CONTROLS INSTALLED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION. UNLESS OTHERWISE APPROVED, A SURFACE MOUNTED AND ATTACHABLE, U-SHAPED FILTER BAG IS REQUIRED FOR ALL CURB INLET CATCH BASINS.
6. SIGNIFICANT AMOUNTS OF SEDIMENT WHICH LEAVES THE SITE MUST BE CLEANED UP WITHIN 24 HOURS AND PLACED BACK ON THE SITE AND STABILIZED OR PROPERLY DISPOSED. THE CAUSE OF THE SEDIMENT RELEASE MUST BE FOUND AND PREVENTED FROM CAUSING A RECURRENCE OF THE DISCHARGE WITHIN THE SAME 24 HOURS. ANY IN-STREAM CLEAN UP OF SEDIMENT SHALL BE PREFORMED ACCORDING TO THE OREGON DEPARTMENT OF STATE LANDS REQUIRED TIME FRAME.
7. SEDIMENT MUST NOT BE INTENTIONALLY WASHED INTO STORM SEWERS, DRAINAGE WAYS, OR WATER BODIES.
8. SEDIMENT MUST BE REMOVED FROM BEHIND ALL SEDIMENT CONTROL MEASURES WHEN IT HAS REACHED A HEIGHT OF 1/3RD THE BARRIER HEIGHT, AND PRIOR TO THE CONTROL MEASURES REMOVAL.
9. CLEANING OF ALL STRUCTURES WITH SUMPS MUST OCCUR WHEN THE SEDIMENT RETENTION CAPACITY HAS BEEN REDUCED BY 50% AND AT COMPLETION OF PROJECT.
10. ANY USE OF TOXIC OR OTHER HAZARDOUS MATERIALS MUST INCLUDE PROPER STORAGE, APPLICATION, AND DISPOSAL.
11. THE PERMITTEE MUST PROPERLY MANAGE HAZARDOUS WASTES, USED OILS, CONTAMINATED SOILS, CONCRETE WASTE, SANITARY WASTE, LIQUID WASTE, OR OTHER TOXIC SUBSTANCES DISCOVERED OR GENERATED DURING CONSTRUCTION.
12. THE APPLICATION RATE OF FERTILIZERS USED TO REESTABLISH VEGETATION MUST FOLLOW MANUFACTURER'S RECOMMENDATIONS. NUTRIENT RELEASES FROM FERTILIZERS TO SURFACE WATERS MUST BE MINIMIZED. TIME RELEASE FERTILIZERS SHOULD BE USED AND CARE SHOULD BE MADE IN APPLICATION OF FERTILIZERS WITHIN ANY WATER WAY RIPARIAN ZONE.
13. OWNER OR DESIGNATED PERSON SHALL BE RESPONSIBLE FOR PROPER INSTALLATION AND MAINTENANCE OF ALL EROSION AND SEDIMENT CONTROL MEASURES, IN ACCORDANCE WITH CURRENT CLEAN WATER SERVICES STANDARDS AND STATE, AND FEDERAL REGULATIONS.
14. PRIOR TO ANY LAND DISTURBING ACTIVITIES, THE BOUNDARIES OF THE CLEARING LIMITS, VEGETATED BUFFERS, AND ANY SENSITIVE AREAS SHOWN ON THIS PLAN SHALL BE CLEARLY DELINEATED IN THE FIELD. UNLESS OTHERWISE APPROVED, NO DISTURBANCE IS PERMITTED BEYOND THE CLEARING LIMITS. THE OWNER/PERMITTEE MUST MAINTAIN THE DELINEATION FOR THE DURATION OF THE PROJECT. VEGETATED CORRIDORS TO BE DELINEATED WITH ORANGE CONSTRUCTION FENCE OR APPROVED EQUAL.
15. PRIOR TO ANY LAND DISTURBING ACTIVITIES, THE BMPS THAT MUST BE INSTALLED ARE GRAVEL CONSTRUCTION ENTRANCE, PERIMETER SEDIMENT CONTROL, AND INLET PROTECTION. THESE BMPS MUST BE MAINTAINED FOR THE DURATION OF THE PROJECT.
16. IF VEGETATIVE SEED MIXES ARE SPECIFIED, SEEDING MUST TAKE PLACE NO LATER THAN SEPTEMBER 1ST; THE TYPE AND PERCENTAGES OF SEED IN THE MIX ARE AS IDENTIFIED ON THE PLANS OR AS SPECIFIED BY THE DESIGN ENGINEER.
17. WATER-TIGHT TRUCKS MUST BE USED TO TRANSPORT SATURATED SOILS FROM THE CONSTRUCTION SITE. AN APPROVED EQUIVALENT IS TO DRAIN THE SOIL ON SITE AT A DESIGNATED LOCATION USING APPROPRIATE BMPS; SOIL MUST BE DRAINED SUFFICIENTLY FOR MINIMAL SPILLAGE.
18. ALL PUMPING OF SEDIMENT LADEN WATER MUST BE DISCHARGED OVER AN UNDISTURBED, PREFERABLY VEGETATED AREA, AND THROUGH A SEDIMENT CONTROL BMP (I.E. FILTER BAG).
19. THE ESC PLAN MUST BE KEPT ONSITE. ALL MEASURES SHOWN ON THE PLAN MUST BE INSTALLED PROPERLY TO ENSURE THAT SEDIMENT LADEN WATER DOES NOT ENTER A SURFACE WATER SYSTEM, ROADWAY, OR OTHER PROPERTIES.
20. THE ESC MEASURES SHOWN ON THIS PLAN ARE THE MINIMUM REQUIREMENTS FOR ANTICIPATED SITE CONDITIONS. DURING THE CONSTRUCTION PERIOD, THESE MEASURES SHALL BE UPGRADED AS NEEDED TO MAINTAIN COMPLIANCE WITH ALL REGULATIONS.
21. WRITTEN ESC LOGS ARE SUGGESTED TO BE MAINTAINED ONSITE AND AVAILABLE TO DISTRICT INSPECTORS UPON REQUEST.
22. IN AREAS SUBJECT TO WIND EROSION, APPROPRIATE BMPS MUST BE USED WHICH MAY INCLUDE THE APPLICATION OF FINE WATER SPRAYING, PLASTIC SHEETING, MULCHING, OR OTHER APPROVED MEASURES.
23. ALL EXPOSED SOILS MUST BE COVERED DURING WET WEATHER PERIOD.

REGISTERED
306
JAMES HENCKE
OREGON
10/18/93
LANDSCAPE ARCHITECT
RENEWS: 10/31/2022

EROSION CONTROL NOTES

CANBY MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: OCTOBER 2021 PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION
AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: BAR
DRAFTED BY: RPR
CHECKED BY: SBW

REVISIONS

NO.	DATE:

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No.
8

FINAL ELECTRONIC DOCUMENT
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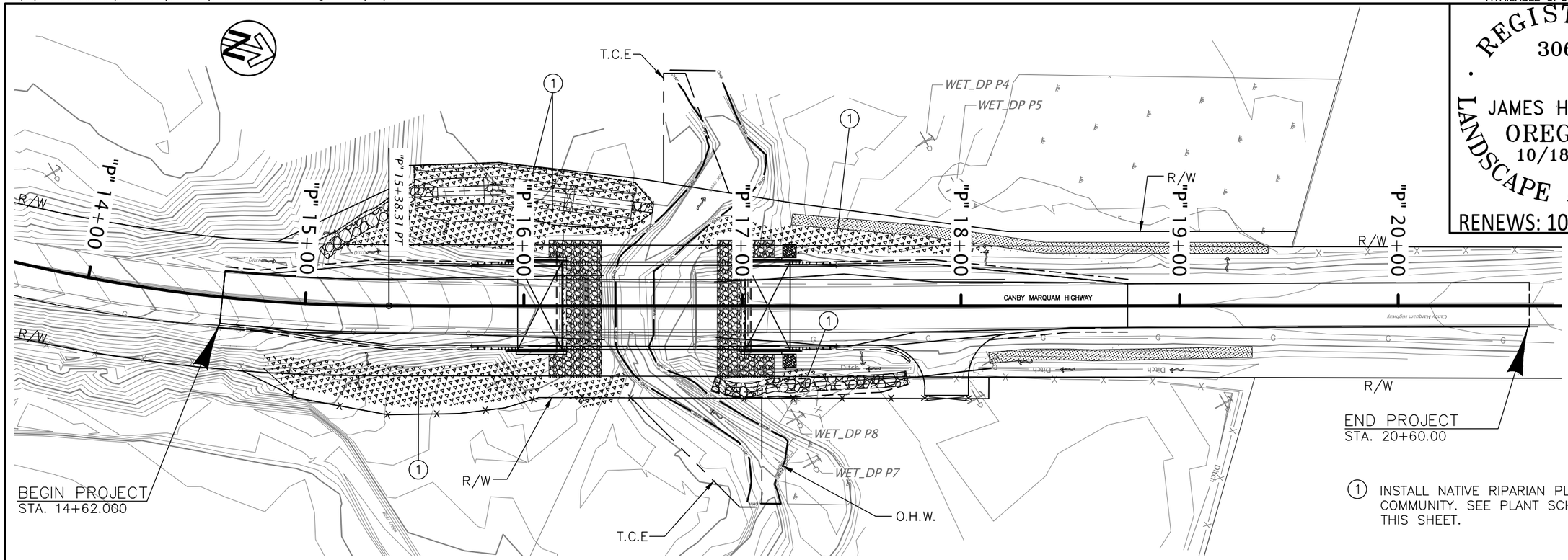
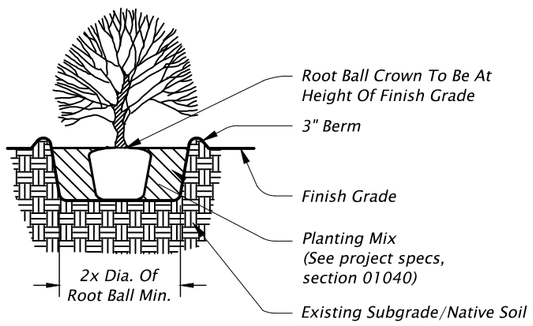
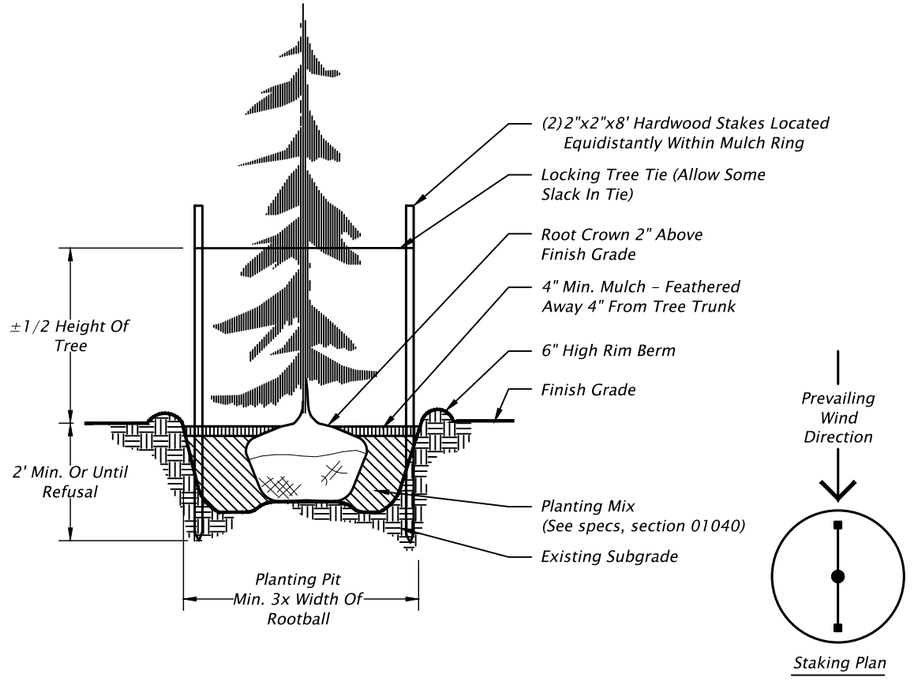


PLANTING SCHEDULE

BOTANICAL NAME	COMMON NAME	SIZE/CONDITION	QUANTITY	SPACING
ACER CIRCINATUM	VINE MAPLE	NO. 1 CONT.	67	
ACER MACROPHYLLUM	BIGLEAF MAPLE	NO. 1 CONT.	67	MIX AND SPACE EQUALLY THROUGHOUT THE HATCHED AREA
ALNUS RUBRA	RED ALDER	NO. 1 CONT.	67	
AMELANCHIER ALNIFOLIA	SERVICEBERRY	NO. 1 CONT.	67	
THUJA PLICATA	WESTERN RED CEDAR	6 FT. HT., B&B	67	
VACCINIUM OVATUM	EVERGREEN HUCKLEBERRY	NO. 1 CONT.	67	



CONTAINER STOCK PLANTING



CONIFER TREE PLANTING

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

REGISTERED
306
JAMES HENCKE
OREGON
10/18/93
LANDSCAPE ARCHITECT
RENEWS: 10/31/2022

RE VEGETATION PLAN
CANBY MARQUAM HWY:
BEAR CREEK BRIDGE
DATE: OCTOBER 2021
PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
DIRECTOR
DAN JOHNSON

DESIGNED BY: BAR
DRAFTED BY: RPR
CHECKED BY: SDW

REVISIONS
NO. DATE:

Sheet No.
9

FINAL ELECTRONIC DOCUMENT
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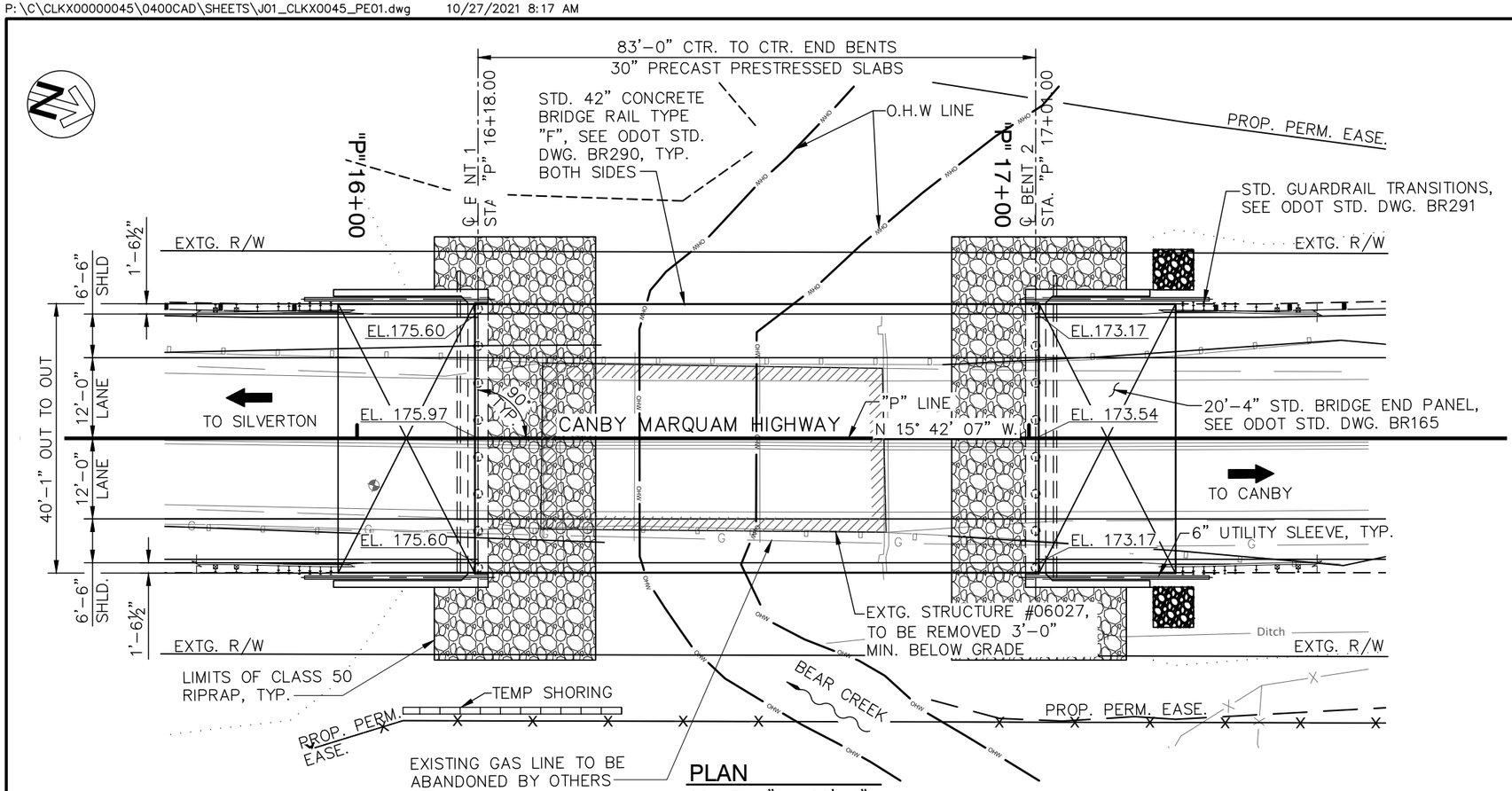
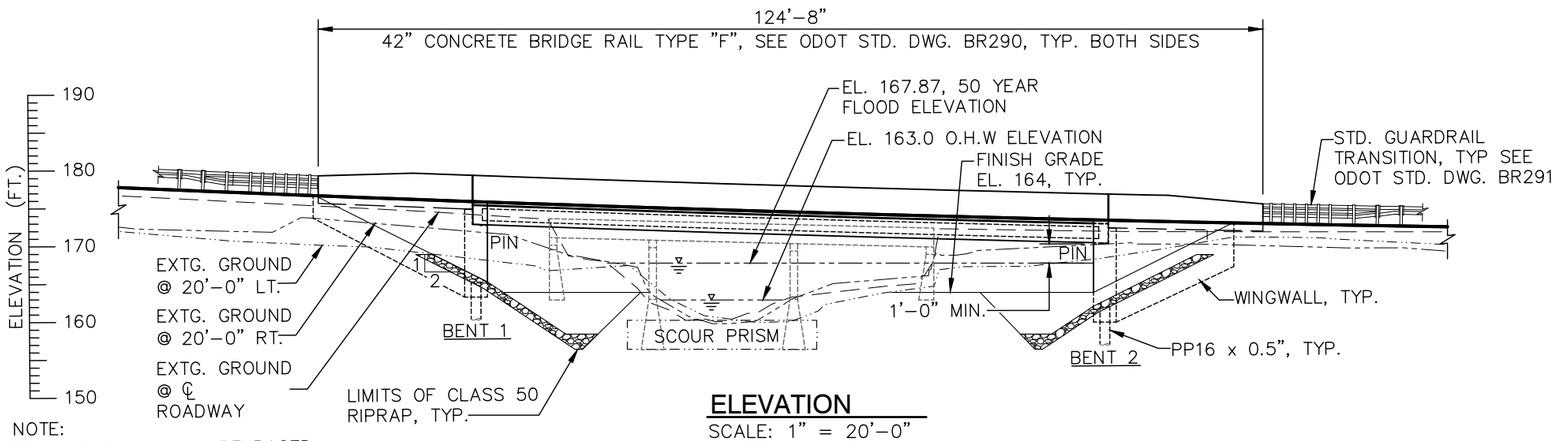
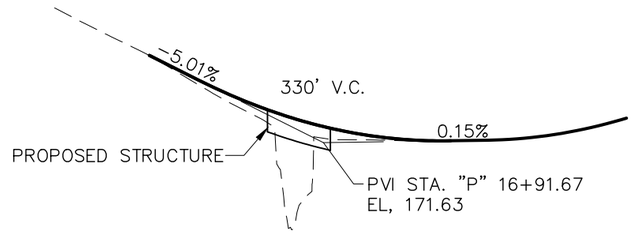


PLAN
SCALE: 1" = 20'-0"



NOTE:
ELEVATIONS SHOWN ARE BASED ON NORTH AMERICAN VERTICAL DATUM (NAVD88)

ELEVATION
SCALE: 1" = 20'-0"



GRADELINE DIAGRAM
NO SCALE

HYDRAULIC DATA				
ITEMS	UNITS	DESIGN FLOOD	BASE FLOOD	MAXIMUM PROBABLE FLOOD
DISCHARGE	ft.^{3}/s	752	878	1200
RECURRENCE INTERVAL	years	50	100	500
HIGH WATER ELEVATION AT UPSTREAM FACE OF BRIDGE ALONG EMBANKMENT	FEET	167.87	168.32	169.19
BACKWATER	FEET	0.60	0.72	0.94
SCOUR DEPTH	FEET	1.8	2.2	3.2

REGISTERED PROFESSIONAL ENGINEER
78886PE
OREGON
JUNE 2, 2010
ANTHONY J. CALCAGNO
RENEWS: 12-31-2021

STRUCTURE NO. 24051
ODOT BDS NO. 106417

PLAN AND ELEVATION
CANBY-MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: SEPTEMBER 2021 | PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: STAFF
DRAFTED BY: STAFF
CHECKED BY: STAFF

REVISIONS

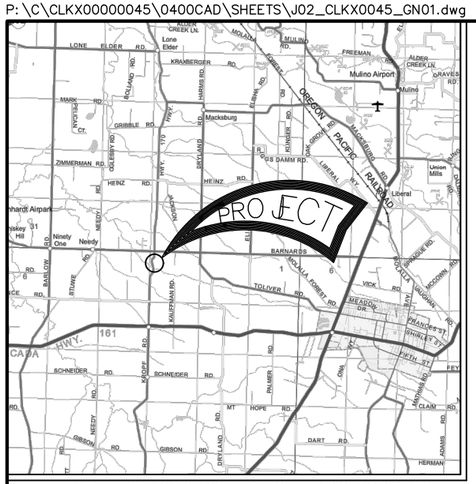
NO.	DATE:

ACCOMPANIED BY DWGS.:
ODOT Std. Dwgs. BR140, BR165 BR290, BR291, BR422, and BR445

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No.
J01



LAT. 45.168240°, LONG. −122.680343°
SEC. 03, T. 5 S., R. 1 W., W.M.

LOCATION MAP

TRUCK LOADING DIAGRAM

NO SCALE

GENERAL NOTES:

PROVIDE ALL MATERIALS AND PERFORM ALL WORK ACCORDING TO THE OREGON STANDARD SPECIFICATIONS FOR CONSTRUCTION 2021.

BRIDGE IS DESIGNED IN ACCORDANCE WITH THE 2017 8TH EDITION OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS (INCLUDING 2018 THRU 2019 INTERIM REVISIONS) WITH AN ALLOWANCE OF 100PLF FOR UTILITIES, 40 PSF FOR FUTURE WEARING SURFACE AND ALL OF THE FOLLOWING LIVE LOADS :

SERVICE AND STRENGTH I LIMIT STATES:
HL-93: DESIGN TRUCK OR THE DESIGN TANDEMS AND THE DESIGN LANE LOAD.

STRENGTH II LIMIT STATE:
ODOT TYPE STP-5BW PERMIT TRUCK
ODOT TYPE STP-4E PERMIT TRUCK

SEISMIC DESIGN IS PERFORMED IN ACCORDANCE WITH THE "AASHTO GUIDE SPECIFICATIONS FOR LRFD SEISMIC BRIDGE DESIGN" AS MODIFIED BY THE "ODOT BRIDGE DESIGN & DRAFTING MANUAL". THE HORIZONTAL PEAK GROUND ACCELERATION COEFFICIENTS (PGA) FOR 1000-YEAR RETURN (LIFE SAFETY) AND CASCADIA SUBDUCTION ZONE EARTHQUAKE (OPERATIONAL) ARE 0.24G AND 0.14G RESPECTIVELY, BASED ON 2014 USGS SEISMIC HAZARD MAPS. THE BRIDGE SITE IS DEFINED AS A SITE CLASS D WITH SITE FACTOR (FPGA) OF 1.36.

PROVIDE CLASS HPC4500 − 1½" CONCRETE IN DECK AND CONCRETE END PANELS.

PROVIDE CLASS 3300 − 1½", 1 OR ¾" CONCRETE FOR ALL OTHER CONCRETE.

PROVIDE PRESTRESSING STEEL ACCORDING TO DETAIL PLANS.

FOR FOUNDATION GENERAL NOTES SEE SHT. J04

REMOVE ALL EXISTING BRIDGE ELEMENTS TO THE LIMITS ENCOUNTERED FOR NEW BRIDGE AND RIPRAP EXCAVATION. AT INTERIOR PIERS NEAR THE WATER, REMOVE THE EXISTING CONCRETE FOOTINGS A MINIMUM OF 3 FEET BELOW GROUND.

GENERAL NOTES CONTINUED:

PROVIDE ALL REINFORCING STEEL ACCORDING TO ASTM SPECIFICATION A706, OR AASHTO M31 (ASTM A615) GRADE 60. PROVIDE FIELD BENT STIRRUPS ACCORDING TO ASTM SPECIFICATION A706. USE THE FOLLOWING SPLICE LENGTHS (UNLESS SHOWN OTHERWISE):

REINFORCING SPLICE LENGTHS (CLASS B) GRADE 60 F'C = 3.3 KSI, λ_{RC} = 0.4, 2" MIN. CL. COVER											
BAR SIZE	#3	#4	#5	#6	#7	#8	#9	#10	#11	#14	#18
UNCOATED	1'−4"	1'−9"	2'−2"	2'−7"	3'−0"	3'−5"	3'−10"	4'−4"	4'−10"	NOT PERMITTED	
COATED (1)	1'−7"	2'−1"	2'−7"	3'−2"	3'−8"	4'−2"	4'−8"	5'−3"	5'−10"	NOT PERMITTED	
COATED (2)	1'−9"	2'−3"	2'−10"	3'−5"	4'−0"	4'−6"	5'−1"	5'−9"	6'−4"	NOT PERMITTED	

USE COATED (1) FOR EPOXY COATED BARS WITH COVER AT LEAST 3*DB AND CLEAR SPACING BETWEEN BARS AT LEAST 6*DB.

USE COATED (2) FOR EPOXY COATED BARS WITH COVER LESS THAN 3*DB OR CLEAR SPACING BETWEEN BARS LESS THAN 6*DB.

INCREASE ALL SPLICE LENGTHS 30% FOR HORIZONTAL OR NEARLY HORIZONTAL BARS SO PLACED THAT MORE THAN 12" OF FRESH CONCRETE IS CAST BELOW THE BAR.

SUPPORT THE BOTTOM MAT REINFORCING STEEL FROM THE FORMS WITH PRECAST MORTAR BLOCKS AT 24" MAXIMUM CENTERS EACH WAY.

USE UNCOATED REINFORCING STEEL IN THE DECK AND BRIDGE END PANELS. THIS INCLUDES TOP AND BOTTOM LONGITUDINAL BARS, AND TOP AND BOTTOM TRANSVERSE BARS.

EPOXY COAT REINFORCING STEEL, EXCEPT PRESTRESSING STEEL, IN PRECAST SLABS. THIS INCLUDES BARS EXTENDING FROM THE PRECAST SLAB INTO THE BRIDGE RAIL.

PLACE BARS 2" CLEAR OF THE NEAREST FACE OF CONCRETE UNLESS SHOWN OTHERWISE. THE TOP BENDS OF STIRRUPS EXTENDING FROM PRESTRESSED PRECAST UNITS MAY BE SHOP OR FIELD BENT.

EXCAVATION / BACKFILL DIAGRAM

NO SCALE

REGISTERED PROFESSIONAL ENGINEER
78886PE
OREGON
JUNE 2, 2010
ANTHONY J. CALCAGNO
RENEWS: 12-31-2021

STRUCTURE NO. 24051
ODOT BDS NO. 106418

GENERAL NOTES

CANBY-MARQUAM HWY:
BEAR CREEK BRIDGE

PROJECT NO.: 22257

DATE: SEPTEMBER 2021

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION
AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DAN JOHNSON
DIRECTOR

DESIGNED BY: AJC
DRAFTED BY: DJA
CHECKED BY: XXX

REVISIONS

NO.	DATE:	

SCALE WARNING
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DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

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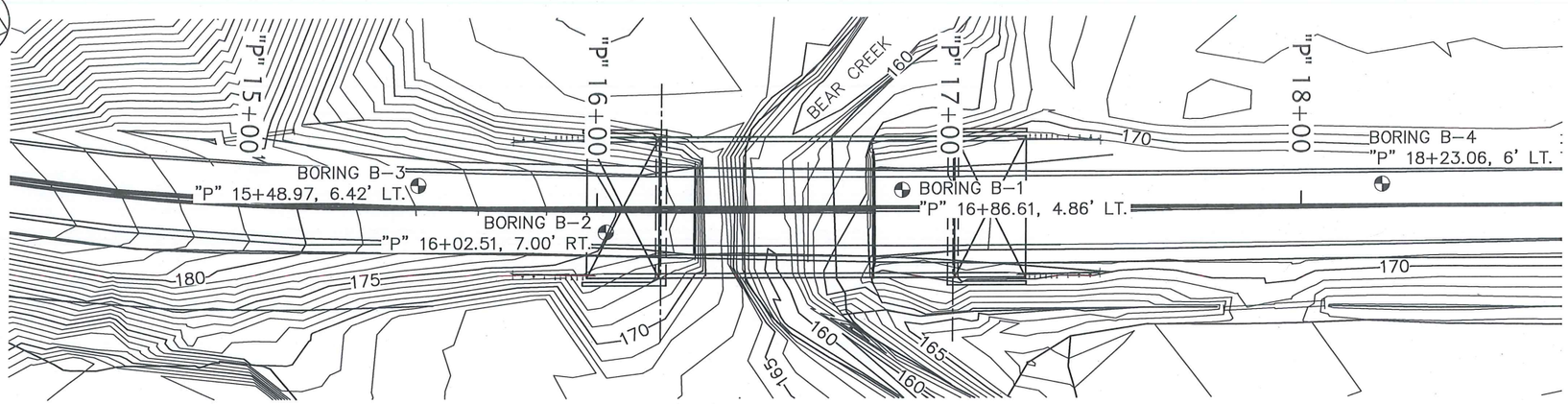
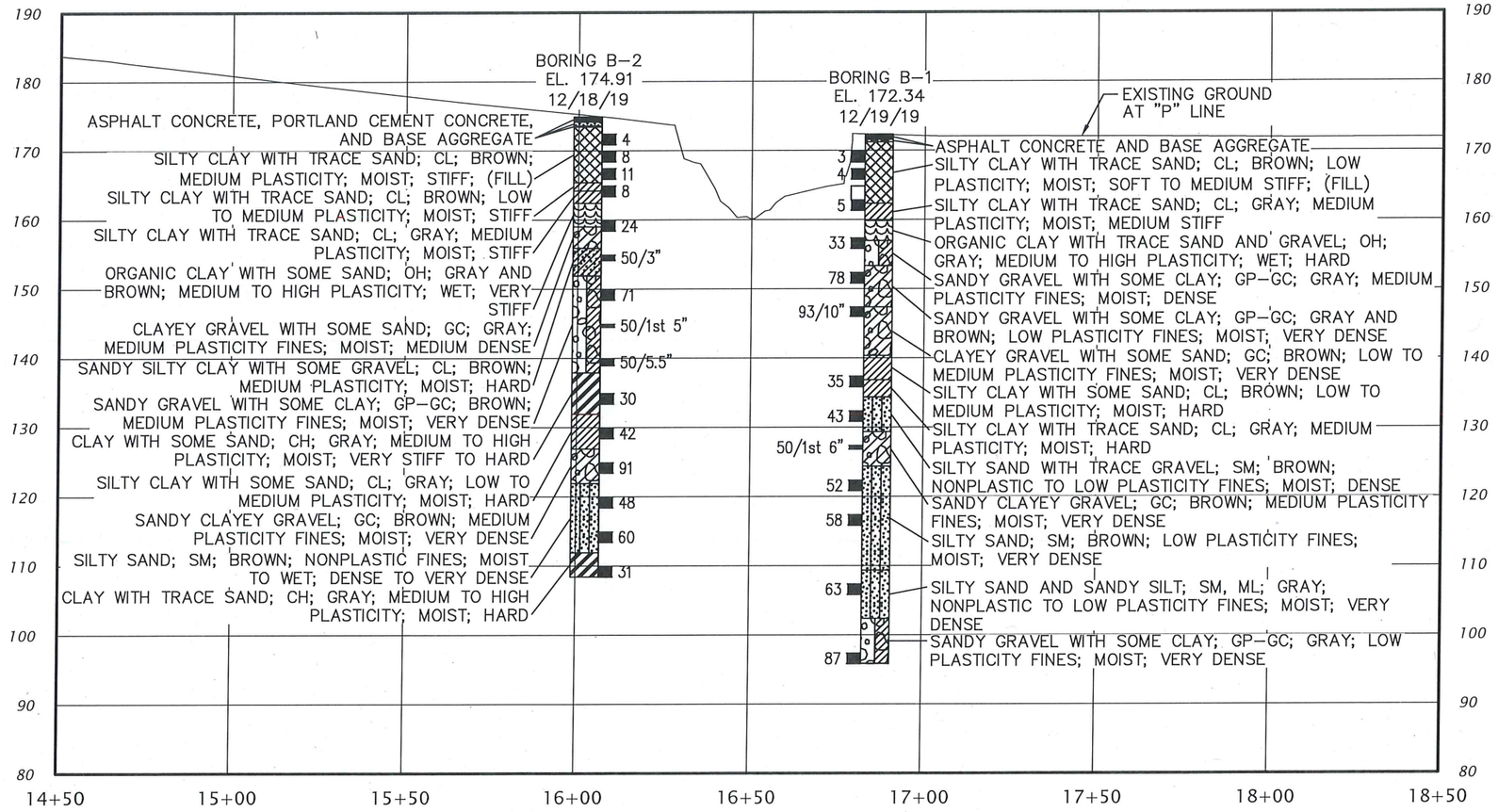
AVAILABLE UPON REQUEST



PLAN
SCALE: 1" = 40'-0"



ELEVATION
HORIZONTAL SCALE: 1" = 40'-0"
VERTICAL SCALE: 1" = 20'-0"

LEGEND OF SYMBOLS

- BOREHOLE LOCATION (SEE NOTE 3)
- 13 — 'N'-VALUE; UNCORRECTED (RAW) STANDARD PENETRATION RESISTANCE (ASTM D1586, SEE NOTE 2)
- UNDISTURBED SAMPLE (ASTM D1587)

NOTES:

1. ELEVATIONS ARE BASED ON NORTH AMERICAN VERTICAL DATUM (1988).
2. BORINGS WERE SAMPLED WITH A HAMMER EFFICIENCY OF 86.5%.
3. LOCATIONS OF BORINGS B-3 AND B-4 ARE SHOWN FOR REFERENCE ONLY. THE DRILL LOGS ARE AVAILABLE UPON REQUEST.
4. GEOTECHNICAL DATA SHOWN ON THIS DRAWING ARE A CONSOLIDATION OF INFORMATION AND/OR REVISION IN TERMINOLOGY FROM DRILL LOGS. THE DRILL LOGS AND ANY OTHER EXPLORATION DATA USED IN COMPILING THIS DRAWING ARE AVAILABLE UPON REQUEST FROM THE COUNTY OR THE ENGINEER.
5. REFER TO THE ODOT SOIL AND ROCK CLASSIFICATION MANUAL (1987) FOR A DESCRIPTION OF THE TERMS USED IN THIS DRAWING.
6. BOREHOLES WERE DRILLED USING MUD ROTARY TECHNIQUES, WHICH MAKE IT DIFFICULT TO DISCERN DEPTH TO GROUNDWATER DURING DRILLING, IF IT IS ENCOUNTERED, DUE TO THE USE OF DRILLING FLUID IN THE BOREHOLE.

REGISTERED PROFESSIONAL ENGINEER
19263PE
OREGON
JULY 15, 1997
TRAVIS T. NGUYEN
EXPIRES: 12/31/2022

STRUCTURE NO. 24051
ODOT BDS NO. 106419

FOUNDATION DATA
CANBY-MARQUAM HWY:
BEAR CREEK BRIDGE
DATE: SEPTEMBER 2021 PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
DIRECTOR
DAN JOHNSON

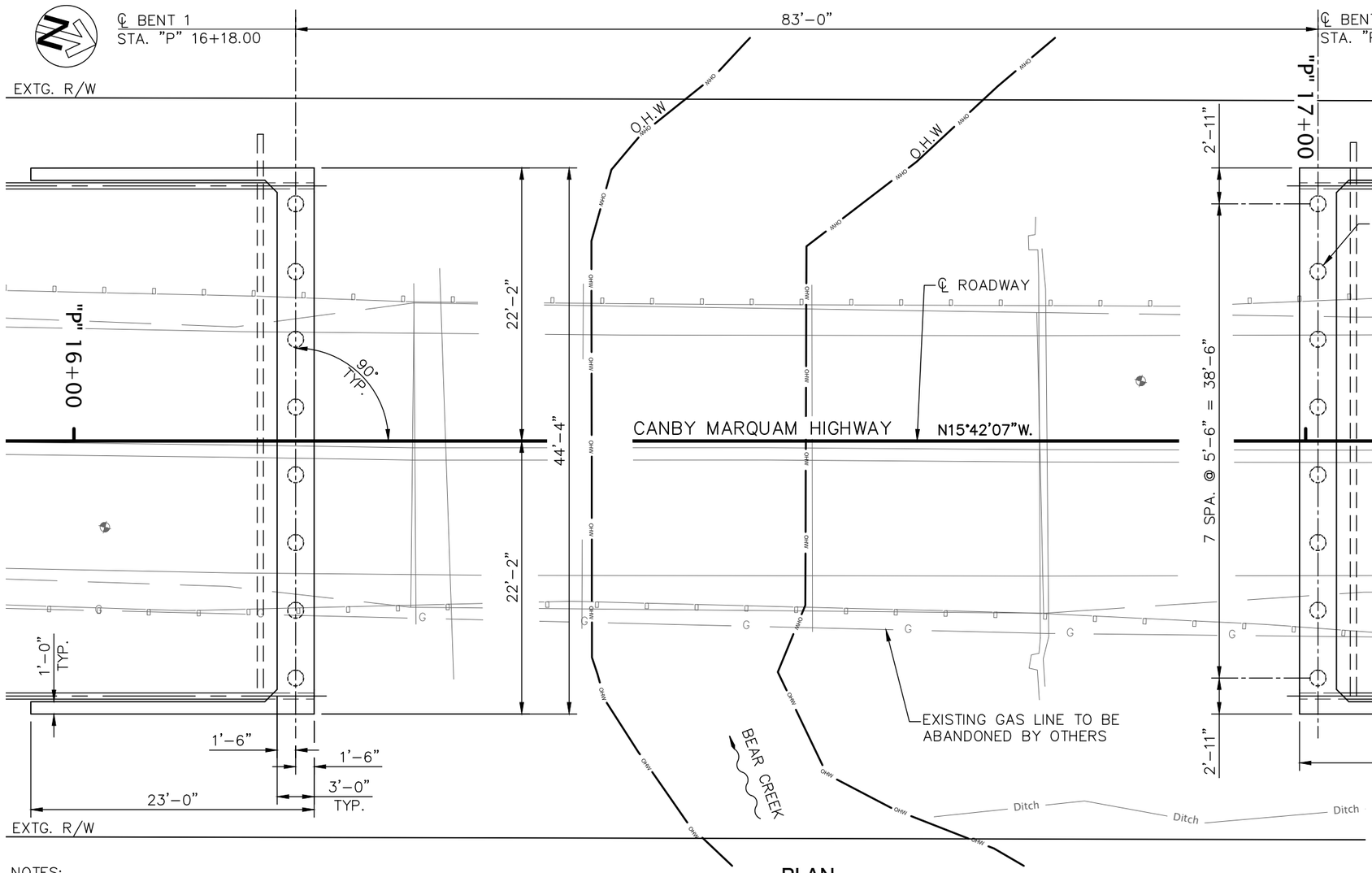
DESIGNED BY: TTN
DRAFTED BY: AEH
CHECKED BY: CKS

REVISIONS
NO. DATE:

Sheet No.
J03

SHANNON & WILSON, INC.
GEOTECHNICAL AND ENVIRONMENTAL CONSULTANTS
3990 Collins Way, Suite 100
Lake Oswego, Oregon 97035
(503) 210-4750 FAX: (206) 695-6777
www.shannonwilson.com

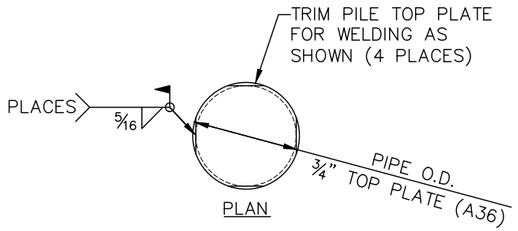
FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST



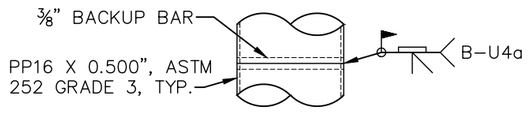
NOTES:
BENT1 AND BENT 2 ARE PARALLEL.

SEE SHT. J09 FOR WINGWALL DETAILS.

PLAN
SCALE: 1" = 10'-0"



PIPE PILE DETAIL
NO SCALE



PILE SPLICE DETAIL
NO SCALE

PILE PENETRATION TABLE				
LOCATION	MINIMUM TIP EL.	ESTIMATED TIP EL.	AS CONST. TIP EL.	CUT OFF EL.
BENT 1	131.40	111.40	–	165.40
BENT 2	128.10	110.10	–	162.10

GENERAL FOUNDATION NOTES:
ALL BENT(S), PROVIDE PP 16" X 0.500", ASTM A252, GRADE 3 PILING, DRIVEN OPEN-ENDED TO A NOMINAL RESISTANCE OF 356 KIPS PER PILE AT BENTS 1 AND 2.

DRIVE PILES TO THE SPECIFIED NOMINAL RESISTANCE USING DRIVING CRITERIA DEVELOPED FROM THE WAVE EQUATION ANALYSIS AND VERIFIED USING A PILE DRIVING ANALYZER AND CAPWAP ANALYSIS AS SPECIFIED IN THE SPECIAL PROVISIONS.

ELEVATIONS SHOWN ARE BASED ON NORTH AMERICAN VERTICAL DATUM (NAVD88)

ALL PILES SHALL BE EQUIPTED WITH INSIDE FITTING DRIVING SHOES.

REGISTERED PROFESSIONAL ENGINEER
78886PE
OREGON
JUNE 2, 2010
ANTHONY J. CALCAGNO
RENEWS: 12-31-2021

STRUCTURE NO. 24051
ODOT BDS NO. 106420

FOUNDATON PLAN

CANBY-MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: SEPTEMBER 2021 | PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: AJC | DRAFTED BY: DJA | CHECKED BY: XXX

REVISIONS

NO.	DATE:

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Sheet No.
J04

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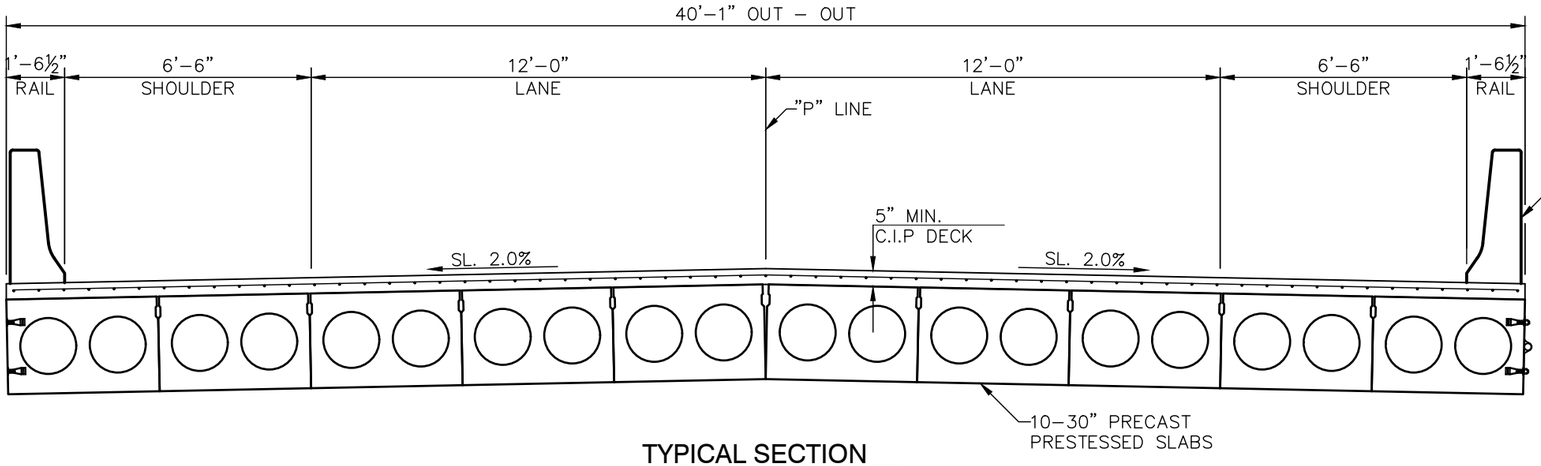
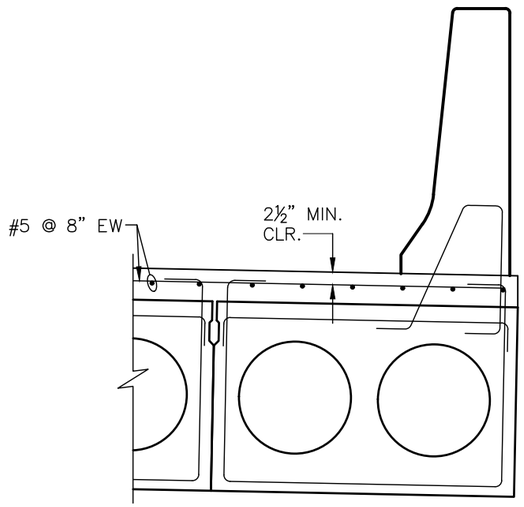


TYPICAL SECTION
1/4" = 1'-0"



CIP DECK REINFORCING DETAIL
1/2" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
78886PE
OREGON
JUNE 2, 2010
ANTHONY J. CALCAGNO
RENEWS: 12-31-2021

STRUCTURE NO. 24051
ODOT BDS NO. 106421

TYPICAL SECTION

CANBY-MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: SEPTEMBER 2021 PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION
AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: AJC
DRAFTED BY: DJA
CHECKED BY: XXX

REVISIONS

NO	DATE:

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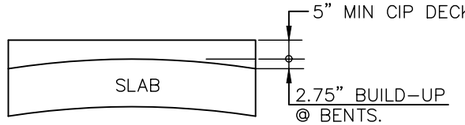
30" STANDARD PRECAST PRESTRESSED SLABS

NUMBER REQUIRED	HORIZONTAL LENGTH O-O AT SLAB ℄, FT. (AFTER SHORTENING)	SKEW ANGLE BACK	SKEW ANGLE AHEAD	NUMBER OF STRANDS	DEBONDED STRANDS	DISTANCE "YC" TO C.G. STRAND AT MIDSPAN, IN.	DISTANCE "YU" TO C.G.S. AT MIDSPAN SUBTRACTING TOP STRAND, IN.	CONCRETE STRENGTH @ 28 DAYS, KSI	CONCRETE STRENGTH @ RELEASE, KSI	INITIAL TENSION PER STRAND, KIPS	ESTIMATED MIDSPAN DEFLECTION, IN. UPWARD AT RELEASE	ESTIMATED MIDSPAN DEFLECTION, IN. UPWARD 3 MONTHS AFTER RELEASE	ESTIMATED MIDSPAN DEFLECTION, IN. DOWNWARD DUE TO SIDL	ESTIMATED SHORTENING 2 WEEKS AFTER RELEASE, IN.
10	83'-10"	0	0	48	12	5.14	3.15	7.0	6.0	31	0.981	1.709	0.831	0.36

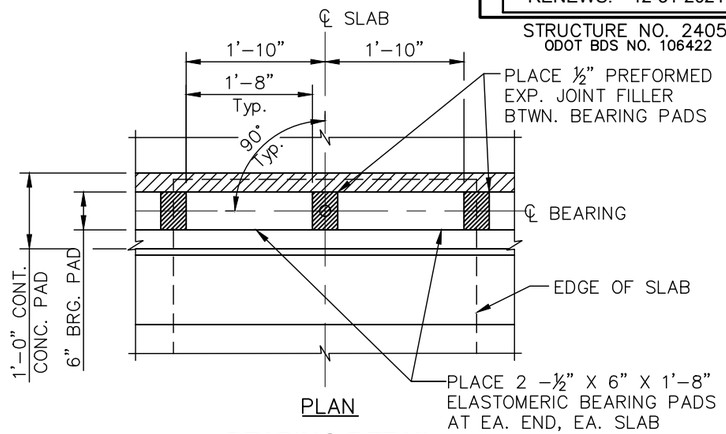
FOR GENERAL NOTES AND DETAILS NOT SHOWN, SEE ODOT STD. DWGS. BR422 & BR445.

THE SUPERIMPOSED DEAD LOAD (SIDL) IS 103 LBS./FT², WHICH INCLUDES THE BRIDGE RAILS, UTILITIES AND CIP DECK. UTILITY DEAD LOAD OF 100 LBS/FT EQUALLY DISTRIBUTED TO ALL GIRDERS.

ANTICIPATED CAMBER @ 3 MOS._____1.531"
DOWNWARD DUE TO SIDL _____-0.836"
VERTICAL CURVE CORRECTION_____1.56"
CONSTRUCTION TOLERANCE_____0.5"
CIP DECK THICKNESS @ BENTS_____7.75"

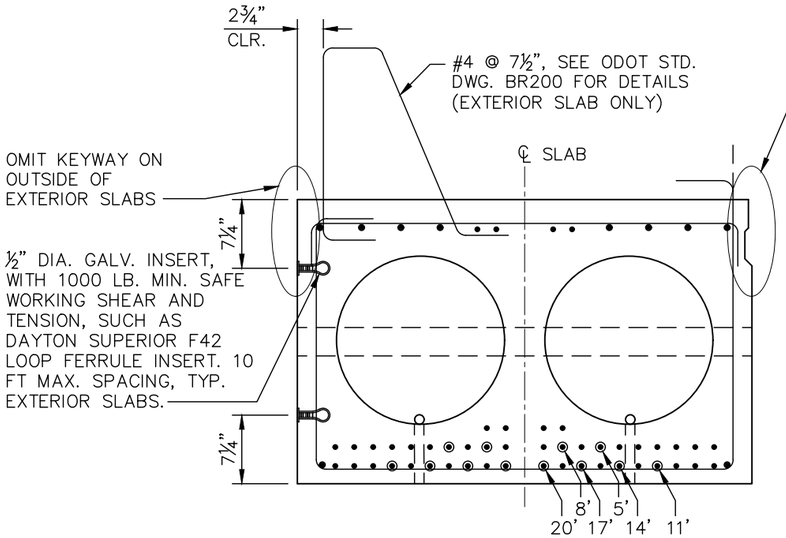


DECK BUILD-UP DETAIL
NO SCALE

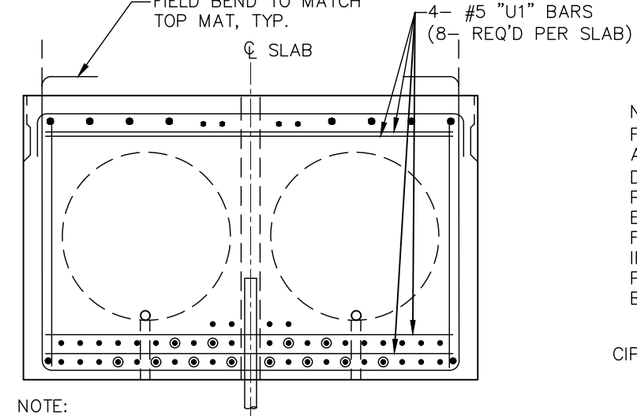


BEARING DETAIL
SCALE: 1/2" = 1'-0"

NOTE:
FORM 1½" CONCRETE PAD INTEGRALLY WITH SUPPORTING MEMBER. ALLOW CONCRETE TO CURE 3 DAYS OR UNTIL CONCRETE OBTAINS DESIGN STRENGTH. PLACE ½" GROUT LAYER IMMEDIATELY BEFORE PLACING SLABS. PLACE ELASTOMERIC BEARING PADS, PREFORMED EXPANSION JOINT FILLER AND PRESTRESSED SLABS BEFORE GROUT IS FULLY SET TO ENSURE UNIFORM BEARING ACROSS FULL WIDTH OF SLAB. IF UNIFORM BEARING IS NOT ACHIEVED, LIFT SLAB AND REPEAT PROCEDURE. ANY EXCESS GROUT PROTRUDING ABOVE BOTTOM OF BEARING PADS SHALL BE REMOVED IMMEDIATELY AFTER PLACING SLABS.

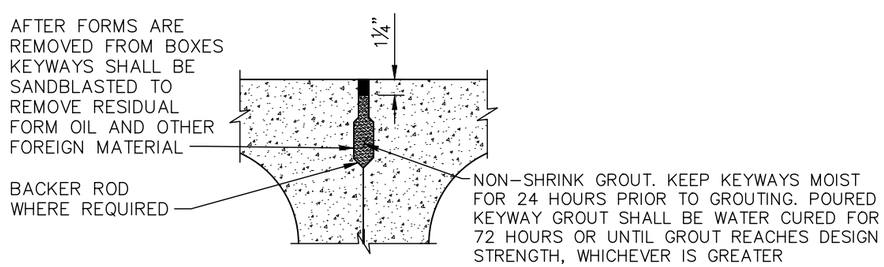


TYPICAL 30" SLAB SECTION
NO SCALE

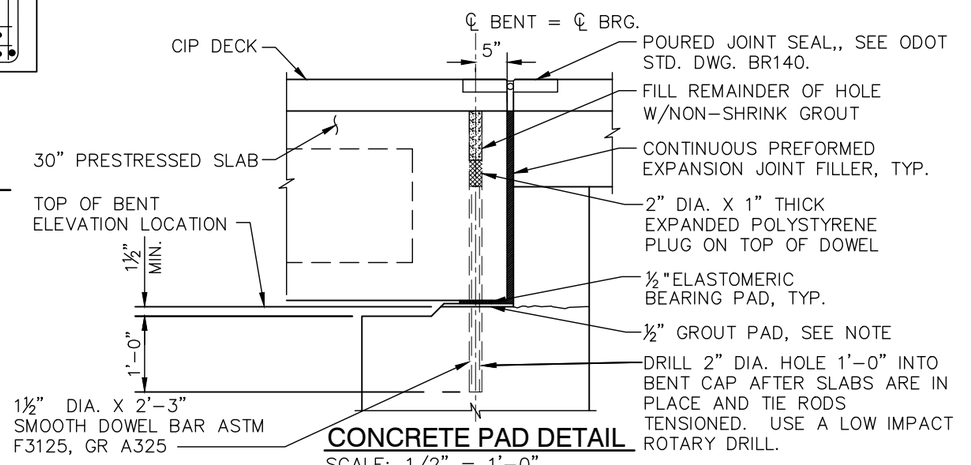


NOTE:
FOR REINFORCING DETAILS NOT SHOWN, SEE ODOT STD. DWG. BR422.

30" SLAB END ELEVATION
NO SCALE



KEYWAY GROUT DETAIL
No Scale



CONCRETE PAD DETAIL
SCALE: 1/2" = 1'-0"

REGISTERED PROFESSIONAL ENGINEER
78886PE
OREGON
JUNE 2, 2010
ANTHONY J. CALCAGNO
RENEWS: 12-31-2021

STRUCTURE NO. 24051
ODOT BDS NO. 106422

PRESTRESSED SLAB DETAILS
CANBY-MARQUAM HWY:
BEAR CREEK BRIDGE
DATE: SEPTEMBER 2021 PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
DIRECTOR DAN JOHNSON

DESIGNED BY: AJC
DRAFTED BY: DJA
CHECKED BY: XXX

REVISIONS
NO. DATE:

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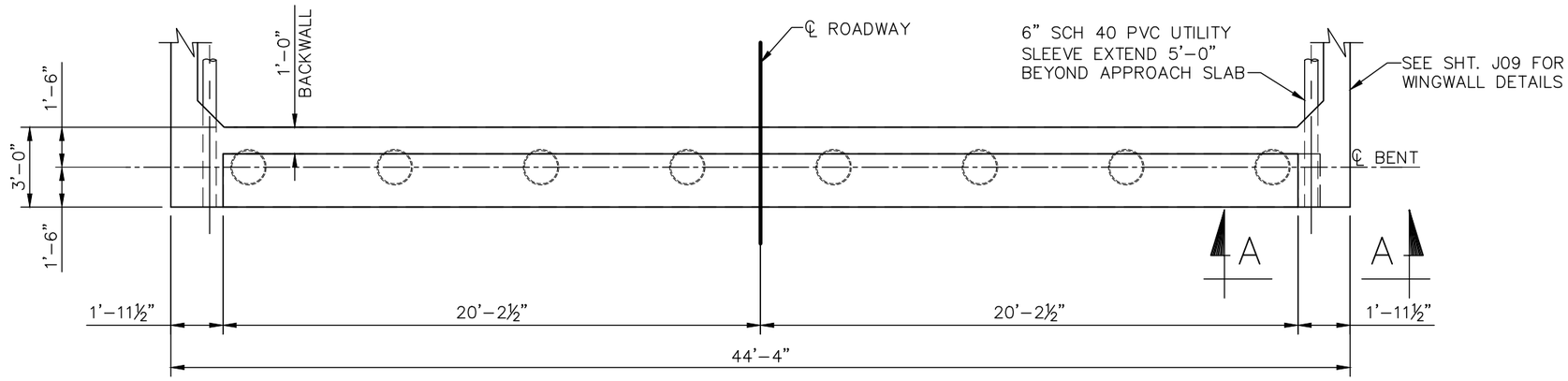
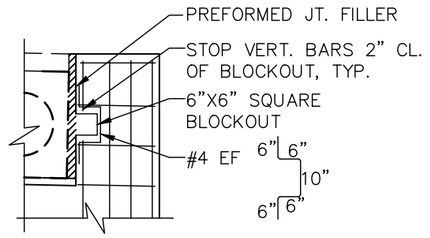


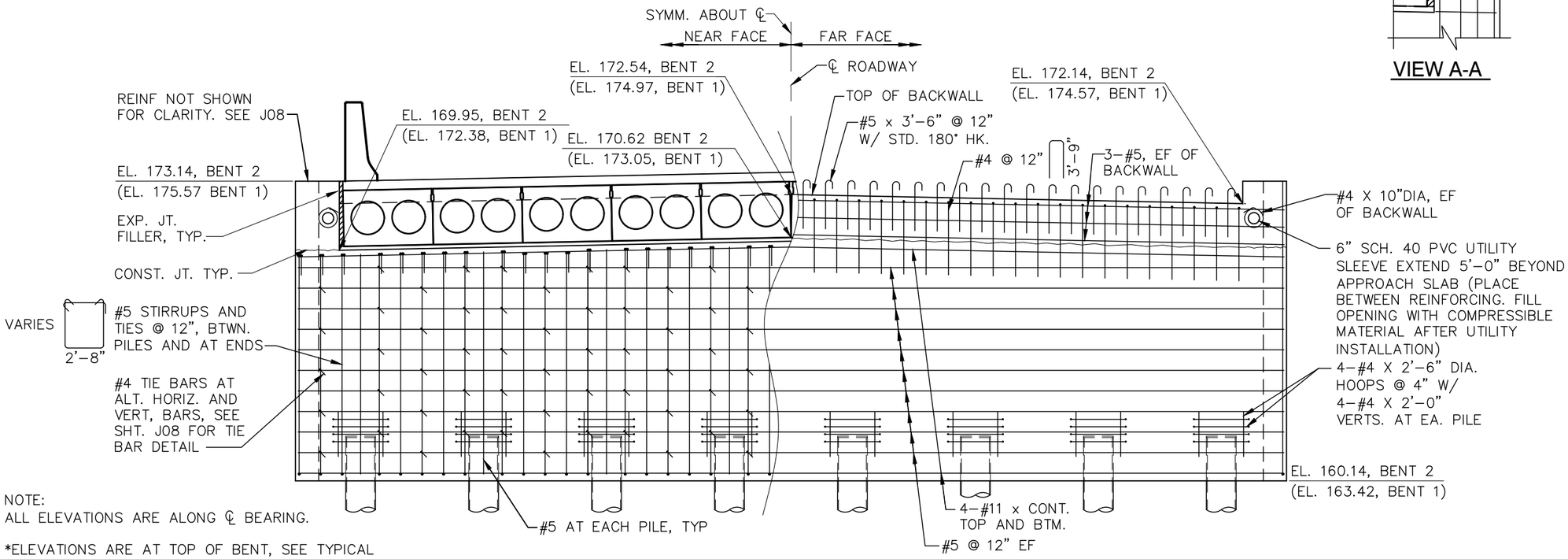
NOTE:
END PANEL, SLABS, AND RAILS
OMITTED FOR CLARITY.

BENT 2 PLAN

SCALE: 3/16" = 1'-0"
(BENT 1 SIMILAR, OPPOSITE HAND)



VIEW A-A



NOTE:
ALL ELEVATIONS ARE ALONG ℄ BEARING.

*ELEVATIONS ARE AT TOP OF BENT, SEE TYPICAL BENT SECTION ON SHT. J08.

DO NOT BACKFILL BENTS UNTIL SLAB DOWELS HAVE BEEN PLACED AND BACKWALL HAS BEEN POURED. BACKFILL MAY BE PLACED AROUND THE BENT PRIOR TO SLAB PLACEMENT, PROVIDED IT IS DEPOSITED SIMULTANEOUSLY ON BOTH SIDES WITH NO MORE THAN 2'-0" DIFFERENCE IN FILL HEIGHT AT ANY TIME.

BENT 2 ELEVATION

SCALE: 3/16" = 1'-0"
(BENT 1 SIMILAR, OPPOSITE HAND)

REGISTERED PROFESSIONAL ENGINEER
78886PE
OREGON
JUNE 2, 2010
ANTHONY J. CALCAGNO
RENEWS: 12-31-2021

STRUCTURE NO. 24051
ODOT BDS NO. 106423

BENT 2 PLAN AND ELEVATION

CANBY-MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: SEPTEMBER 2021 | PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: AJC
DRAFTED BY: DJA
CHECKED BY: XXX

REVISIONS

NO	DATE:

SCALE WARNING
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Portland Oregon 97201
Phone: 503.223.6663

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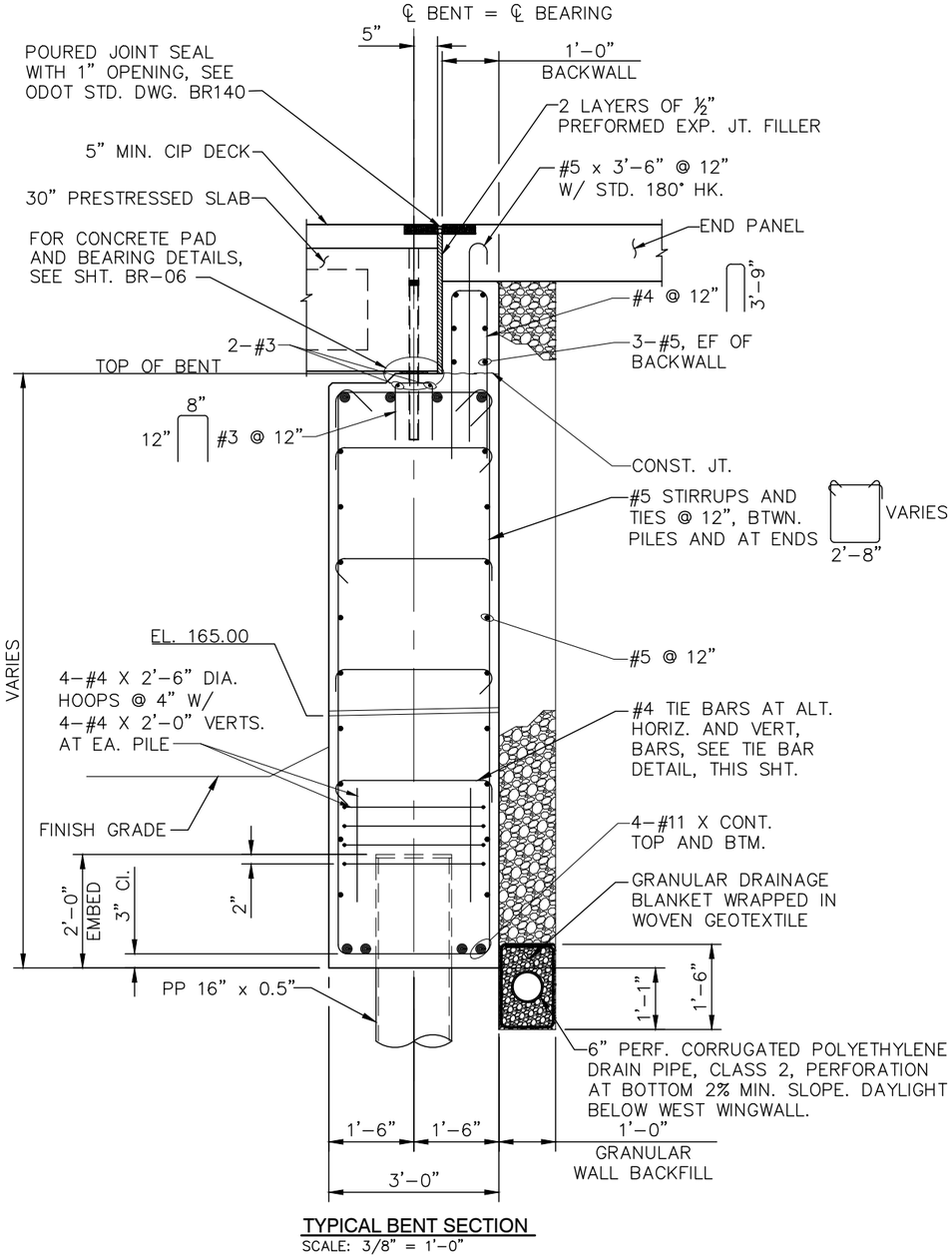
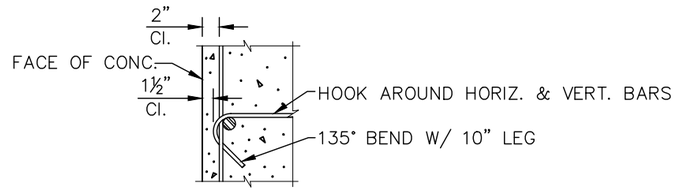
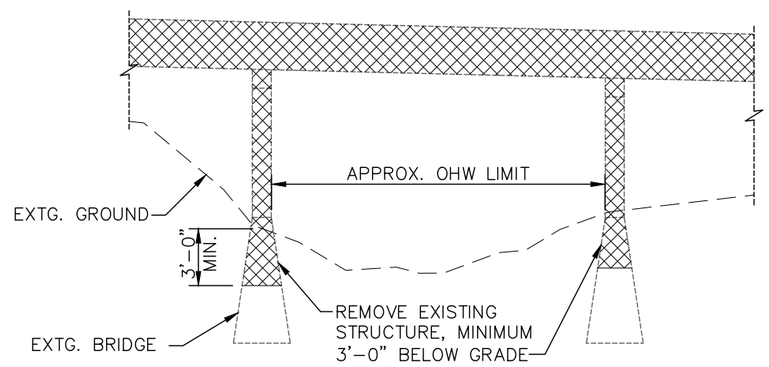


TYPICAL BENT SECTION
SCALE: 3/8" = 1'–0"



TIE BAR DETAIL
NO SCALE



BRIDGE REMOVAL DIAGRAM
NO SCALE

REGISTERED PROFESSIONAL ENGINEER
78886PE
OREGON
JUNE 2, 2010
ANTHONY J. CALCAGNO
RENEWS: 12-31-2021

STRUCTURE NO. 24051
ODOT BDS NO. 106242

BENT DETAILS

CANBY-MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: SEPTEMBER 2021 | PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION
AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR
DAN JOHNSON

DESIGNED BY: AJC
DRAFTED BY: DJA
CHECKED BY: XXX

REVISIONS

NO	DATE:

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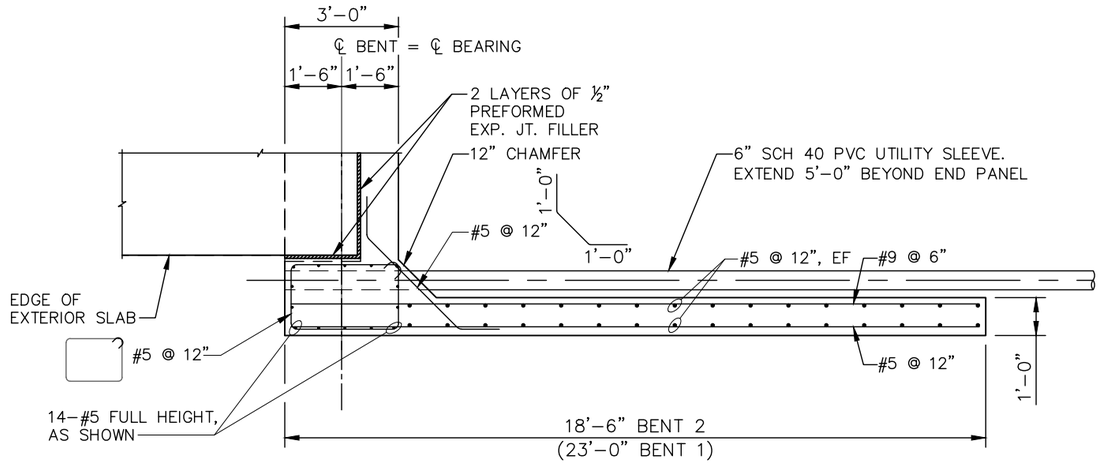
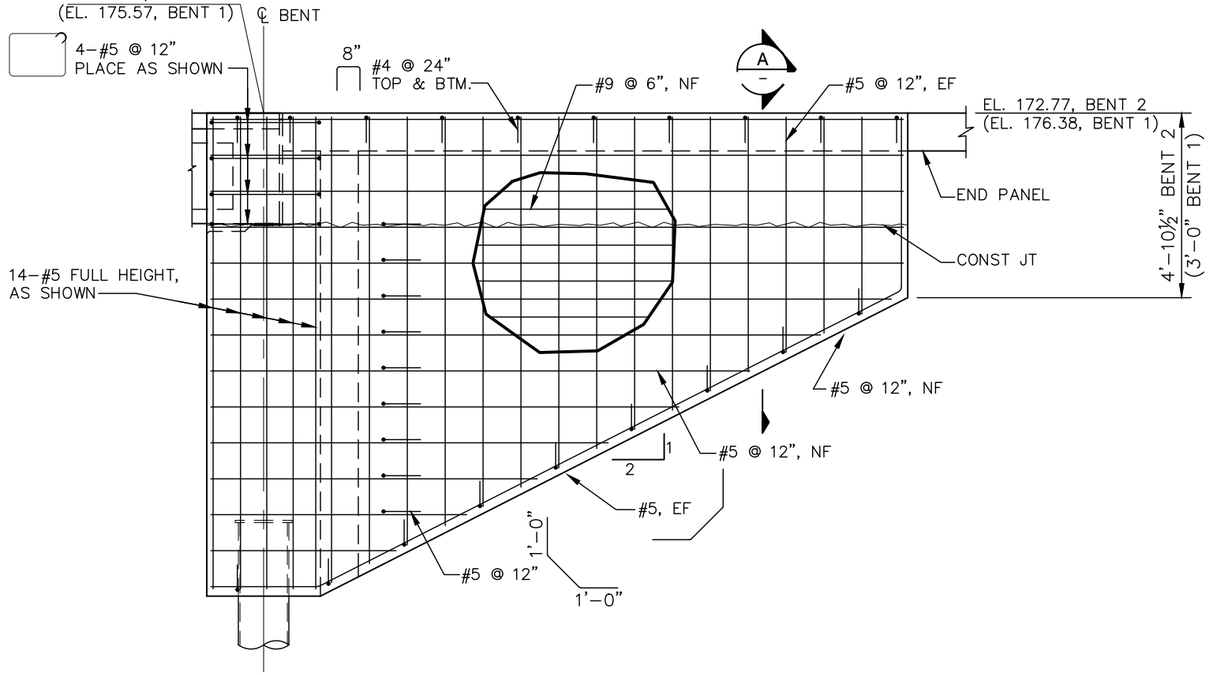
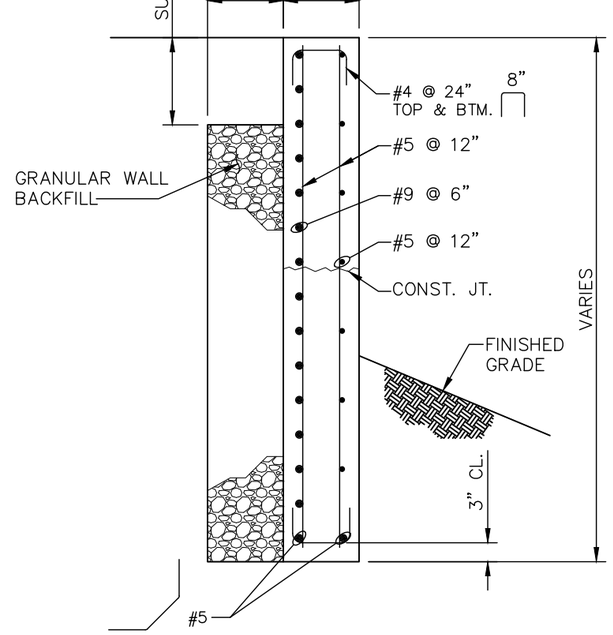


TYPICAL WINGWALL PLAN
SCALE: 1/4" = 1'–0"



TYPICAL WINGWALL ELEVATION
SCALE: 1/4" = 1'–0"
(BENT 1 SHOWN, BENT 2 SIMILAR)



A SECTION
SCALE: 1/2" = 1'–0"

REGISTERED PROFESSIONAL ENGINEER
78886PE
OREGON
JUNE 2, 2010
ANTHONY J. CALCAGNO
RENEWS: 12-31-2021

STRUCTURE NO. 24051
ODOT BDS NO. 106425

WINGWALL DETAILS
CANBY-MARQUAM HWY:
BEAR CREEK BRIDGE
DATE: SEPTEMBER 2021
PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
DIRECTOR
DAN JOHNSON

DESIGNED BY: AJC
DRAFTED BY: DJA
CHECKED BY: XXX

REVISIONS

NO.	DATE:

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No.
J09

FINAL ELECTRONIC DOCUMENT
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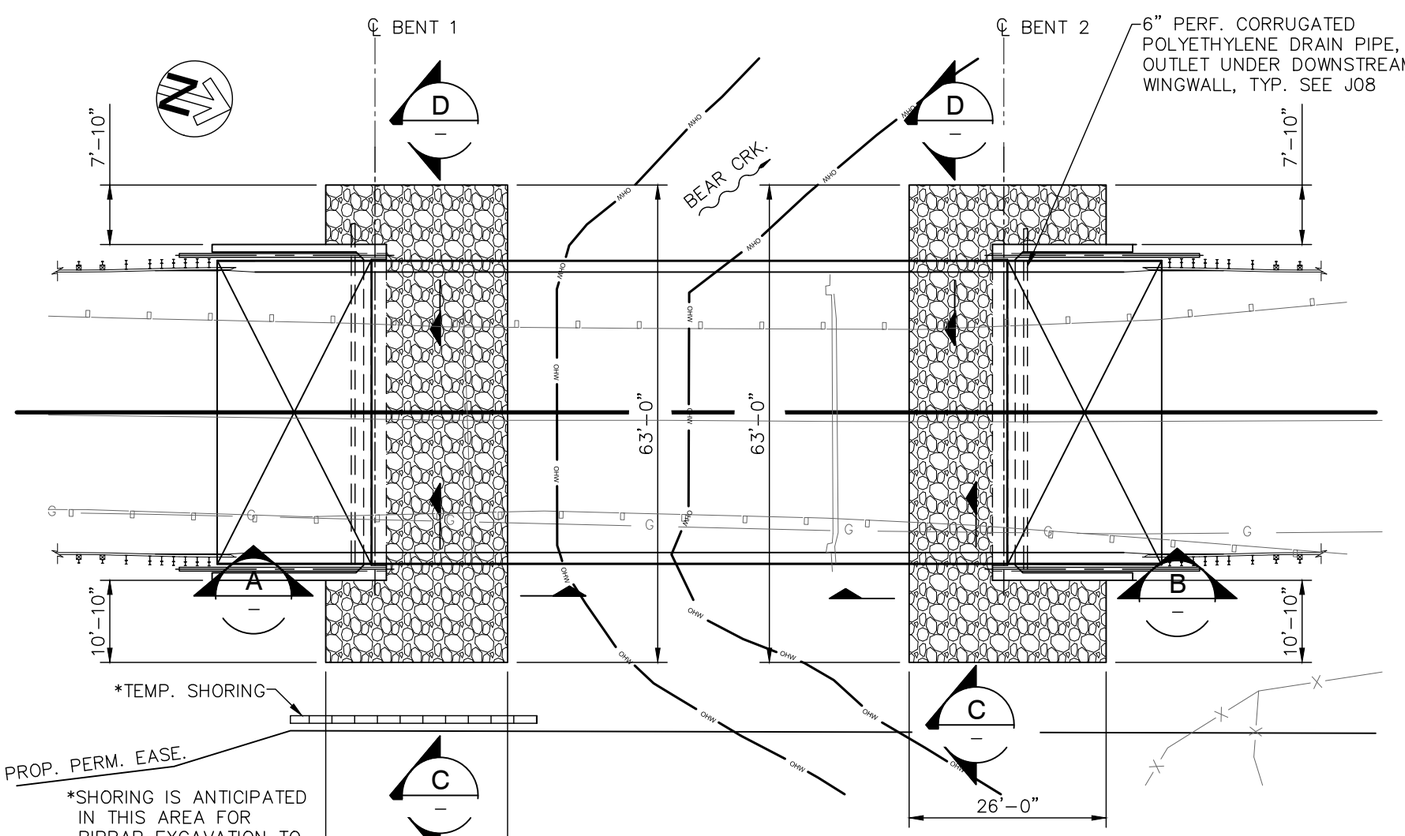
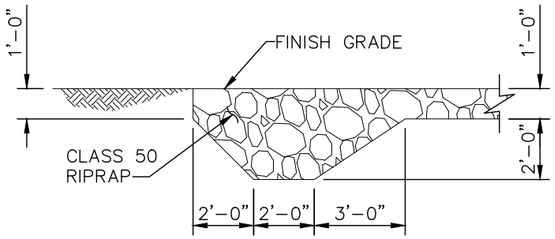
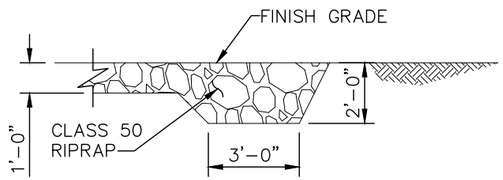


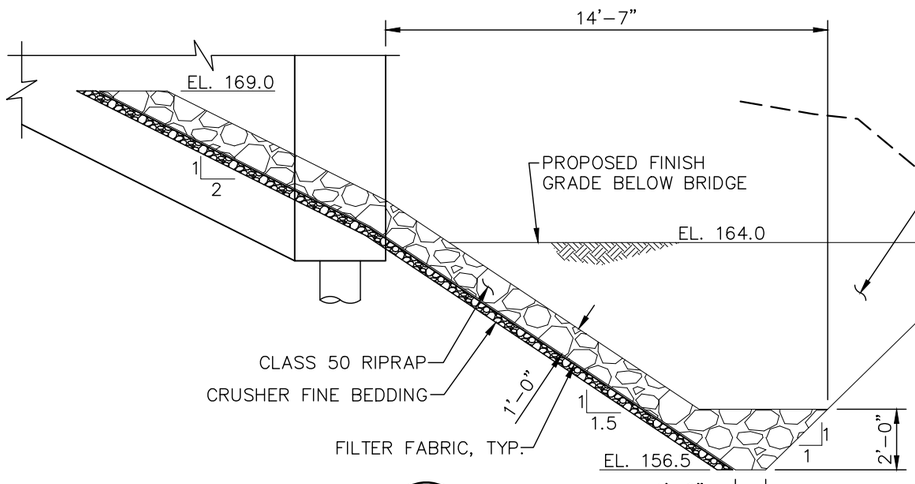
RIPRAP PLAN
SCALE: 1" = 20'-0"



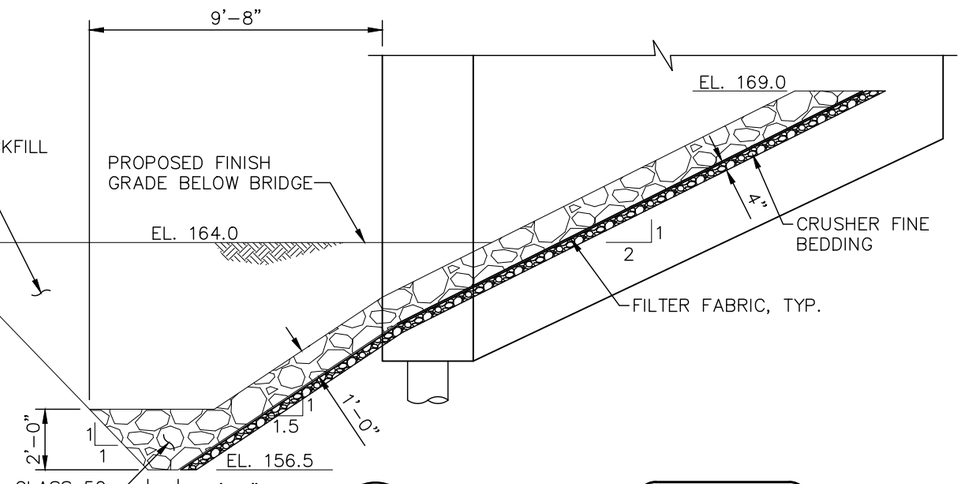
C RIPRAP LEADING EDGE
SCALE: 1" = 5'-0"



D RIPRAP TRAILING EDGE
SCALE: 1" = 5'-0"



A BENT 1
SCALE: 1" = 5'-0"



B BENT 2
SCALE: 1" = 5'-0"

SCALE WARNING
IF THIS SCALE LINE DOES NOT MEASURE ONE INCH, THEN DRAWING IS NOT TO SCALE

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

REGISTERED PROFESSIONAL ENGINEER
78886PE
OREGON
JUNE 2, 2010
ANTHONY J. CALCAGNO
RENEWS: 12-31-2021

STRUCTURE NO. 24051
ODOT BDS NO. 106426

RIPRAP DETAILS
CANBY-MARQUAM HWY: BEAR CREEK BRIDGE

DATE: SEPTEMBER 2021 | PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

DIRECTOR DAN JOHNSON

DESIGNED BY: AJC | DRAFTED BY: DJA | CHECKED BY: XXX

REVISIONS

NO	DATE:

Sheet No. J10

FINAL ELECTRONIC DOCUMENT
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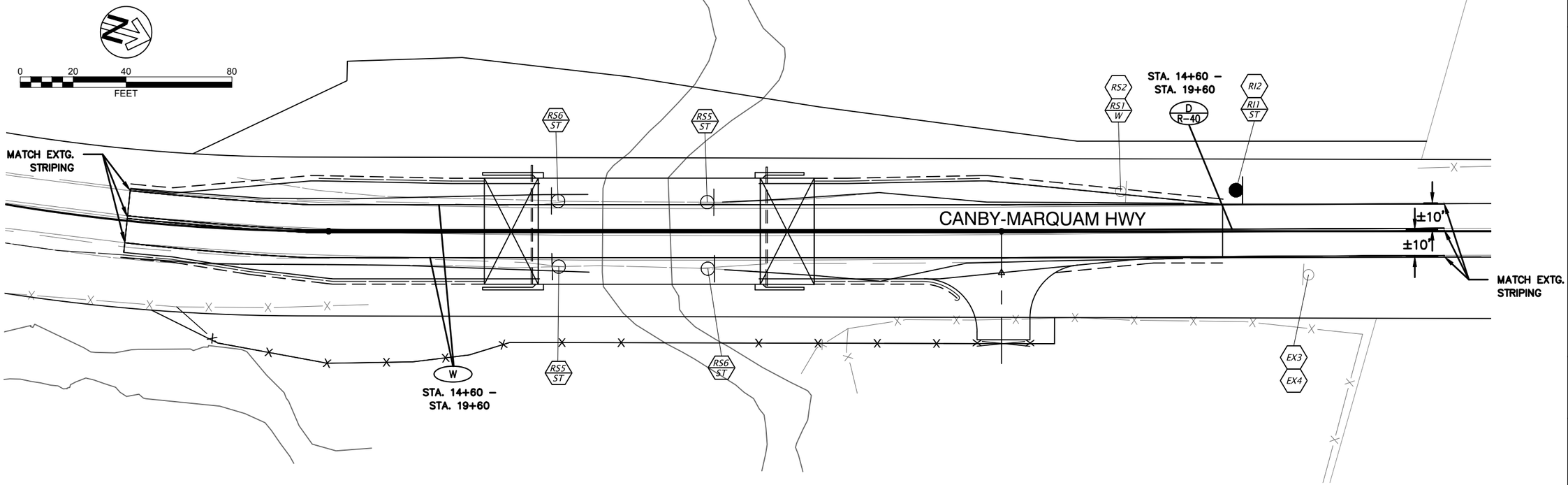
SIGN POST DATA TABLE

SIGN NO.	SIGN LOCATION	SIGN DIMENSION		SUBSTRATE		COLOR					LEGEND TYPE		TYPE OF SUPPORT	POST		REMARKS
						BACKGROUND		LEGEND						SIZE	LENGTH	
		WIDTH	HEIGHT	SHEET ALUMINUM	EXTRUDED ALUMINUM	ASTM TYPE III OR TYPE IV	ASTM TYPE IX	ASTM TYPE III OR TYPE IV	ASTM TYPE IX	NON-REFLECTIVE	PERMANENT	REMOVABLE		(BASED ON ESTIMATED LENGTH)	(MUST BE FIELD VERIFIED)	
1	STA 18+81, OFF 15' LT	(30")	(30")										SQ. TUBE SIGN SUPPORT (CLACKAMAS CO. DETAIL DRAWING T150)	2" X 2" 12 GA.	13"	REINSTALL SIGN ON NEW SUPPORT
2	STA 18+81, OFF 15' LT	(18")	(18")													REINSTALL SIGN BELOW SIGN NO. 1
5	LOCATION TBD	(12")	(36")										SQ. TUBE SIGN SUPPORT (CLACKAMAS CO. DETAIL DRAWING T150)	2" X 2" 12 GA.	9"	REINSTALL SIGN ON NEW SUPPORT
	LOCATION TBD	(12")	(36")										SQ. TUBE SIGN SUPPORT (CLACKAMAS CO. DETAIL DRAWING T150)	2" X 2" 12 GA.	9"	REINSTALL SIGN ON NEW SUPPORT
6	LOCATION TBD	(12")	(36")										SQ. TUBE SIGN SUPPORT (CLACKAMAS CO. DETAIL DRAWING T150)	2" X 2" 12 GA.	9"	REINSTALL SIGN ON NEW SUPPORT
	LOCATION TBD	(12")	(36")										SQ. TUBE SIGN SUPPORT (CLACKAMAS CO. DETAIL DRAWING T150)	2" X 2" 12 GA.	9"	REINSTALL SIGN ON NEW SUPPORT



LEGEND

- D R-40 — *Inst. double no-pass with 4" yellow bi-directional type 1 reflector, recessed*
- W — *Inst. 4" white line*
- RSN — *Remove and save existing sign (N)*
- RSN / M — *Remove and save existing sign (N) and remove (M) sign support*
- EXN — *Maintain and protect existing sign (N) and support*
- RIN — *Reinstall existing sign (N)*
- RIN / M — *Reinstall existing sign (N) on new (M) sign support*

N=Sign Number
M=Material
Material options are:
W = Wood
ST = Square Tube


W1-4
SIGN NO. 1

W13-1P
SIGN NO. 2


W1-3
SIGN NO. 3

W13-1P
SIGN NO. 4


OM3-R
SIGN NO. 5


OM3-L
SIGN NO. 6

NOTE:
The locations of sign installations shown are approx. with exact locations to be determined in the field.

REGISTERED PROFESSIONAL ENGINEER
85994PE
OREGON
JULY 10, 2018
PRISCILIANO PERALTA-RAMIREZ
EXPIRES: 12-31-2022

SIGNING & STRIPING PLAN

CANBY MARQUAM HWY:
BEAR CREEK BRIDGE

DATE: OCTOBER 2021 PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045

CLACKAMAS COUNTY

DAN JOHNSON
DIRECTOR

DESIGNED BY: PPR
DRAFTED BY: PPR
CHECKED BY: TAWH

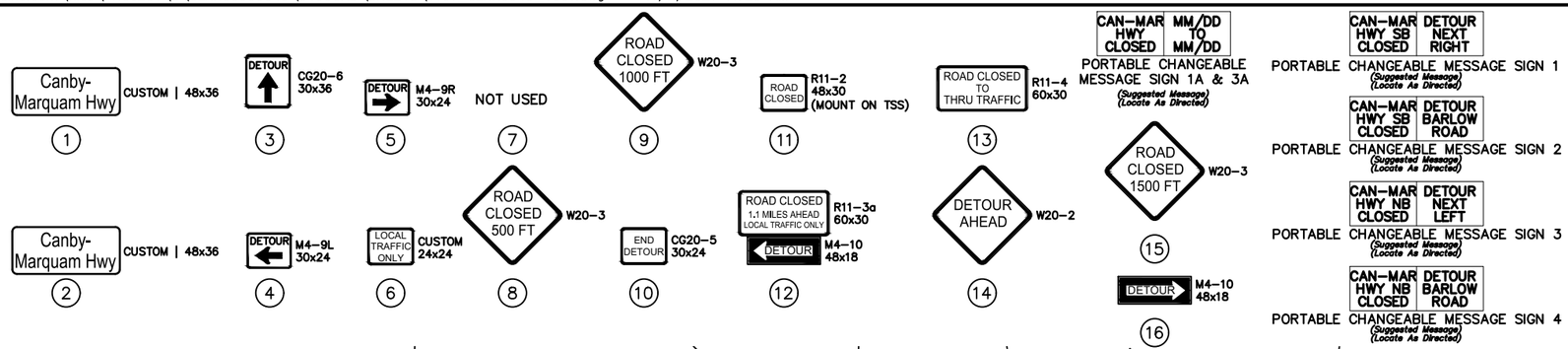
REVISIONS

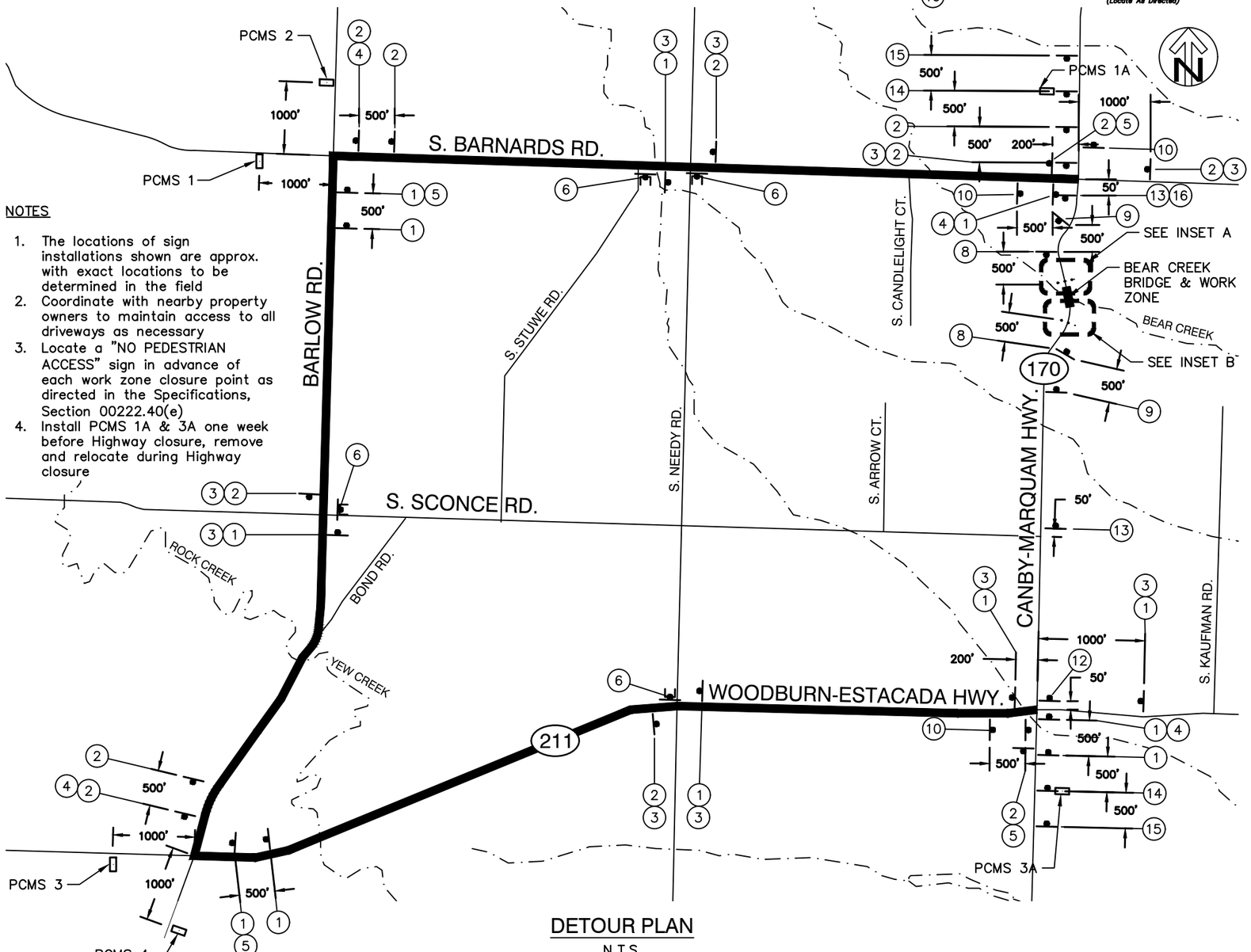
NO.	DATE:

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No.
TC01

FINAL ELECTRONIC DOCUMENT
AVAILABLE UPON REQUEST

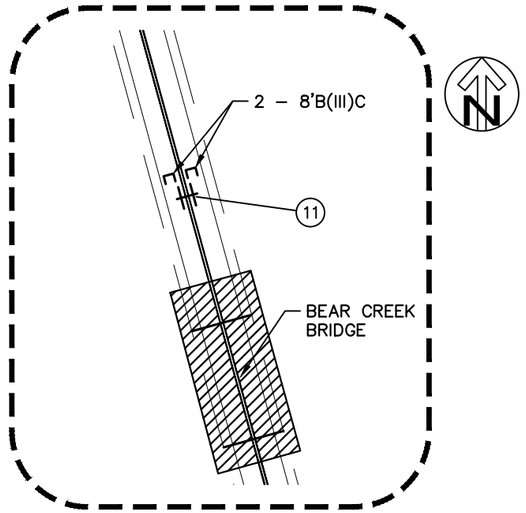




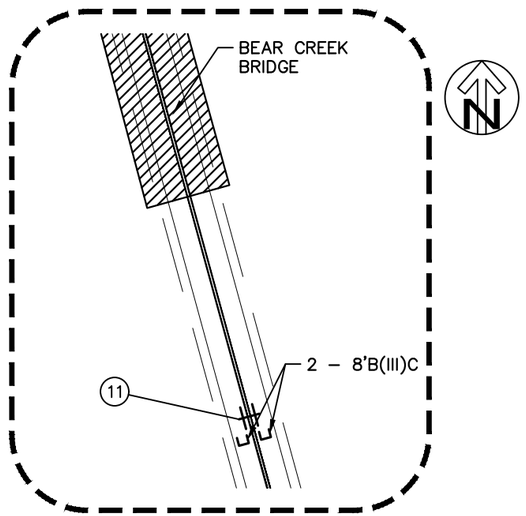
NOTES

1. The locations of sign installations shown are approx. with exact locations to be determined in the field
2. Coordinate with nearby property owners to maintain access to all driveways as necessary
3. Locate a "NO PEDESTRIAN ACCESS" sign in advance of each work zone closure point as directed in the Specifications, Section 00222.40(e)
4. Install PCMS 1A & 3A one week before Highway closure, remove and relocate during Highway closure

DETOUR PLAN
N.T.S.



INSET A
N.T.S.



INSET B
N.T.S.

REGISTERED PROFESSIONAL ENGINEER
85994PE
OREGON
JULY 10, 2018
PRISCILIANO PERALTA-RAMIREZ
EXPIRES: 12-31-2022

DETOUR PLAN
CANBY MARQUAM HWY: BEAR CREEK BRIDGE
DATE: OCTOBER 2021
PROJECT NO.: 22257

CLACKAMAS COUNTY
DEPT. OF TRANSPORTATION AND DEVELOPMENT
150 BEAVERCREEK ROAD
OREGON CITY, OR 97045
DIRECTOR
DAN JOHNSON

DESIGNED BY: PPR
DRAFTED BY: PPR
CHECKED BY: TAWH

REVISIONS
NO. DATE:

DAVID EVANS AND ASSOCIATES INC.
2100 SW River Parkway
Portland Oregon 97201
Phone: 503.223.6663

Sheet No.
TC02

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY): 3/22/2022

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	CONTACT NAME: Nick Rusow	
AG Sadowski Company 1605 Liberty Street S.E. Salem OR 97302	PHONE (A/C, No, Ext): (503) 362-2711	FAX (A/C, No):
	E-MAIL ADDRESS: nick@agsadowski.com	
	INSURER(S) AFFORDING COVERAGE	NAIC #
	INSURER A: The Phoenix Insurance Company	25623
INSURED Carter & Company, Inc. 4676 Commercial Street SE PMB 203 Salem OR 97302	INSURER B: Travelers Property Casualty Co of Am.	25674
	INSURER C: SAIF Corporation	36196
	INSURER D: Westchester Surplus Lines Insurance Co	10172
	INSURER E:	
	INSURER F:	

COVERAGES **CERTIFICATE NUMBER:** 2021-22 PROJECTS **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 INSD	SUBR WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	X COMMERCIAL GENERAL LIABILITY [ ] CLAIMS-MADE [X] OCCUR GEN'L AGGREGATE LIMIT APPLIES PER: [ ] POLICY [X] PRO-JECT [ ] LOC [ ] OTHER:	X		DT-CO-1B271009-PHX-21	12/5/2021	12/5/2022	EACH OCCURRENCE DAMAGE TO RENTED PREMISES (Ea occurrence) MED EXP (Any one person) PERSONAL & ADV INJURY GENERAL AGGREGATE PRODUCTS - COMP/OP AGG WA STOP GAP	$ 1,000,000 $ 300,000 $ 5,000 $ 1,000,000 $ 2,000,000 $ 2,000,000 $ 1,000,000
A	AUTOMOBILE LIABILITY [X] ANY AUTO [ ] ALL OWNED AUTOS [ ] SCHEDULED AUTOS [ ] HIRED AUTOS [ ] NON-OWNED AUTOS			810-1L308494-21-26-G	12/5/2021	12/5/2022	COMBINED SINGLE LIMIT (Ea accident) BODILY INJURY (Per person) BODILY INJURY (Per accident) PROPERTY DAMAGE (Per accident)	$ 1,000,000 $ $ $
B	[X] UMBRELLA LIAB [X] OCCUR [ ] EXCESS LIAB [ ] CLAIMS-MADE [ ] DED [X] RETENTION $ 10,000			CUP-9J070943-21-26	12/5/2021	12/5/2022	EACH OCCURRENCE AGGREGATE	$ 8,000,000 $ 8,000,000
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		515698	10/1/2021	10/1/2022	[X] PER STATUTE [ ] OTH-ER E.L. EACH ACCIDENT E.L. DISEASE - EA EMPLOYEE E.L. DISEASE - POLICY LIMIT	$ 500,000 $ 500,000 $ 500,000
D	POLLUTION LIABILITY			G28192368 006	12/5/2021	12/5/2022	EACH CONDITION OCCURRENCE	$2,000,000 $2,000,000

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)

RE: Canby Marquam Highway, Bear Creek Bridge

Certificate Holder and all required entites are Additional Insured when required by written contract and by the terms/conditions of the above policies. Endorsements attached: CG D3 16 11 11; CG D2 46 08 05; CG D2 11 01 04; CA T3 53 03 10; CA T4 74 02 16.

Waiver of Subrogation is applicable when required by written contract and allowable by law.

CERTIFICATE HOLDER

Clackamas County
150 Beavercreek RD
Oregon City, OR 97045

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

Nicholas Rusow/NICK

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

XTEND ENDORSEMENT FOR CONTRACTORS

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

GENERAL DESCRIPTION OF COVERAGE – This endorsement broadens coverage. However, coverage for any injury, damage or medical expenses described in any of the provisions of this endorsement may be excluded or limited by another endorsement to this Coverage Part, and these coverage broadening provisions do not apply to the extent that coverage is excluded or limited by such an endorsement. The following listing is a general coverage description only. Read all the provisions of this endorsement and the rest of your policy carefully to determine rights, duties, and what is and is not covered.

A. Who Is An Insured – Unnamed Subsidiaries

B. Blanket Additional Insured – Governmental Entities – Permits Or Authorizations Relating To Operations

C. Incidental Medical Malpractice

D. Blanket Waiver Of Subrogation

E. Contractual Liability – Railroads

F. Damage To Premises Rented To You

PROVISIONS

A. WHO IS AN INSURED – UNNAMED SUBSIDIARIES

The following is added to **SECTION II – WHO IS AN INSURED**:

Any of your subsidiaries, other than a partnership, joint venture or limited liability company, that is not shown as a Named Insured in the Declarations is a Named Insured if:

a. You are the sole owner of, or maintain an ownership interest of more than 50% in, such subsidiary on the first day of the policy period; and

b. Such subsidiary is not an insured under similar other insurance.

No such subsidiary is an insured for "bodily injury" or "property damage" that occurred, or "personal and advertising injury" caused by an offense committed:

a. Before you maintained an ownership interest of more than 50% in such subsidiary; or

b. After the date, if any, during the policy period that you no longer maintain an ownership interest of more than 50% in such subsidiary.

For purposes of Paragraph **1.** of Section **II** – Who Is An Insured, each such subsidiary will be deemed to be designated in the Declarations as:

a. An organization other than a partnership, joint venture or limited liability company; or

b. A trust;

as indicated in its name or the documents that govern its structure.

B. BLANKET ADDITIONAL INSURED – GOVERNMENTAL ENTITIES – PERMITS OR AUTHORIZATIONS RELATING TO OPERATIONS

The following is added to **SECTION II – WHO IS AN INSURED**:

Any governmental entity that has issued a permit or authorization with respect to operations performed by you or on your behalf and that you are required by any ordinance, law, building code or written contract or agreement to include as an additional insured on this Coverage Part is an insured, but only with respect to liability for "bodily injury", "property damage" or "personal and advertising injury" arising out of such operations.

The insurance provided to such governmental entity does not apply to:

a. Any "bodily injury", "property damage" or "personal and advertising injury" arising out of operations performed for the governmental entity; or

b. Any "bodily injury" or "property damage" included in the "products-completed operations hazard".

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C. INCIDENTAL MEDICAL MALPRACTICE

1. The following replaces Paragraph **b.** of the definition of "occurrence" in the **DEFINITIONS** Section:

   b. An act or omission committed in providing or failing to provide "incidental medical services", first aid or "Good Samaritan services" to a person, unless you are in the business or occupation of providing professional health care services.

2. The following replaces the last paragraph of Paragraph **2.a.(1)** of **SECTION II – WHO IS AN INSURED**:

   Unless you are in the business or occupation of providing professional health care services, Paragraphs **(1)(a)**, **(b)**, **(c)** and **(d)** above do not apply to "bodily injury" arising out of providing or failing to provide:

   (a) "Incidental medical services" by any of your "employees" who is a nurse, nurse assistant, emergency medical technician or paramedic; or

   (b) First aid or "Good Samaritan services" by any of your "employees" or "volunteer workers", other than an employed or volunteer doctor. Any such "employees" or "volunteer workers" providing or failing to provide first aid or "Good Samaritan services" during their work hours for you will be deemed to be acting within the scope of their employment by you or performing duties related to the conduct of your business.

3. The following replaces the last sentence of Paragraph **5.** of **SECTION III – LIMITS OF INSURANCE**:

   For the purposes of determining the applicable Each Occurrence Limit, all related acts or omissions committed in providing or failing to provide "incidental medical services", first aid or "Good Samaritan services" to any one person will be deemed to be one "occurrence".

4. The following exclusion is added to Paragraph **2.**, **Exclusions**, of **SECTION I – COVERAGES – COVERAGE A – BODILY INJURY AND PROPERTY DAMAGE LIABILITY**:

   Sale Of Pharmaceuticals

   "Bodily injury" or "property damage" arising out of the violation of a penal statute or ordinance relating to the sale of pharmaceuticals committed by, or with the knowledge or consent of, the insured.

5. The following is added to the **DEFINITIONS** Section:

   "Incidental medical services" means:

   a. Medical, surgical, dental, laboratory, x-ray or nursing service or treatment, advice or instruction, or the related furnishing of food or beverages; or

   b. The furnishing or dispensing of drugs or medical, dental, or surgical supplies or appliances.

6. The following is added to Paragraph **4.b.**, **Excess Insurance**, of **SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS**:

   This insurance is excess over any valid and collectible other insurance, whether primary, excess, contingent or on any other basis, that is available to any of your "employees" for "bodily injury" that arises out of providing or failing to provide "incidental medical services" to any person to the extent not subject to Paragraph **2.a.(1)** of Section **II** – Who Is An Insured.

D. BLANKET WAIVER OF SUBROGATION

The following is added to Paragraph **8.**, **Transfer Of Rights Of Recovery Against Others To Us**, of **SECTION IV – COMMERCIAL GENERAL LIABILITY CONDITIONS**:

If the insured has agreed in a contract or agreement to waive that insured's right of recovery against any person or organization, we waive our right of recovery against such person or organization, but only for payments we make because of:

a. "Bodily injury" or "property damage" that occurs; or

b. "Personal and advertising injury" caused by an offense that is committed;

subsequent to the execution of the contract or agreement.

E. CONTRACTUAL LIABILITY – RAILROADS

1. The following replaces Paragraph **c.** of the definition of "insured contract" in the **DEFINITIONS** Section:

   c. Any easement or license agreement;

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2. Paragraph **f.(1)** of the definition of "insured contract" in the **DEFINITIONS** Section is deleted.

F. DAMAGE TO PREMISES RENTED TO YOU

The following replaces the definition of "premises damage" in the **DEFINITIONS** Section:

"Premises damage" means "property damage" to:

a. Any premises while rented to you or temporarily occupied by you with permission of the owner; or

b. The contents of any premises while such premises is rented to you, if you rent such premises for a period of seven or fewer consecutive days.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

BLANKET ADDITIONAL INSURED
(Includes Products-Completed Operations If Required By Contract)

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

PROVISIONS

The following is added to **SECTION II – WHO IS AN INSURED**:

Any person or organization that you agree in a written contract or agreement to include as an additional insured on this Coverage Part is an insured, but only:

a. With respect to liability for "bodily injury" or "property damage" that occurs, or for "personal injury" caused by an offense that is committed, subsequent to the signing of that contract or agreement and while that part of the contract or agreement is in effect; and

b. If, and only to the extent that, such injury or damage is caused by acts or omissions of you or your subcontractor in the performance of "your work" to which the written contract or agreement applies. Such person or organization does not qualify as an additional insured with respect to the independent acts or omissions of such person or organization.

The insurance provided to such additional insured is subject to the following provisions:

a. If the Limits of Insurance of this Coverage Part shown in the Declarations exceed the minimum limits required by the written contract or agreement, the insurance provided to the additional insured will be limited to such minimum required limits. For the purposes of determining whether this limitation applies, the minimum limits required by the written contract or agreement will be considered to include the minimum limits of any Umbrella or Excess liability coverage required for the additional insured by that written contract or agreement. This provision will not increase the limits of insurance described in Section **III** – Limits Of Insurance.

b. The insurance provided to such additional insured does not apply to:

(1) Any "bodily injury", "property damage" or "personal injury" arising out of the providing, or failure to provide, any professional architectural, engineering or surveying services, including:

(a) The preparing, approving, or failing to prepare or approve, maps, shop drawings, opinions, reports, surveys, field orders or change orders, or the preparing, approving, or failing to prepare or approve, drawings and specifications; and

(b) Supervisory, inspection, architectural or engineering activities.

(2) Any "bodily injury" or "property damage" caused by "your work" and included in the "products-completed operations hazard" unless the written contract or agreement specifically requires you to provide such coverage for that additional insured during the policy period.

c. The additional insured must comply with the following duties:

(1) Give us written notice as soon as practicable of an "occurrence" or an offense which may result in a claim. To the extent possible, such notice should include:

(a) How, when and where the "occurrence" or offense took place;

(b) The names and addresses of any injured persons and witnesses; and

(c) The nature and location of any injury or damage arising out of the "occurrence" or offense.

(2) If a claim is made or "suit" is brought against the additional insured:

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(a) Immediately record the specifics of the claim or "suit" and the date received; and

(b) Notify us as soon as practicable and see to it that we receive written notice of the claim or "suit" as soon as practicable.

(3) Immediately send us copies of all legal papers received in connection with the claim or "suit", cooperate with us in the investigation or settlement of the claim or defense against the "suit", and otherwise comply with all policy conditions.

(4) Tender the defense and indemnity of any claim or "suit" to any provider of other insurance which would cover such additional insured for a loss we cover. However, this condition does not affect whether the insurance provided to such additional insured is primary to other insurance available to such additional insured which covers that person or organization as a named insured as described in Paragraph **4.**, Other Insurance, of Section **IV** – Commercial General Liability Conditions.

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COMMERCIAL GENERAL LIABILITY

POLICY NUMBER: DT-CO-1B271009-PHX-19 ISSUE DATE: 12-16-19

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY

DESIGNATED PROJECT(S) GENERAL AGGREGATE LIMIT

This endorsement modifies insurance provided under the following:

COMMERCIAL GENERAL LIABILITY COVERAGE PART

SCHEDULE

Designated Project(s):	Designated Project General Aggregate(s):
Each "project" for which you have agreed in a written contract that is in effect during this policy period, to provide a separate General Aggregate Limit, provided that the contract is signed by you before the "bodily injury" or "property damage" occurs.	GENERAL AGGREGATE LIMIT SHOWN ON THE DECLARATIONS.

A. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under **COVERAGE A. (SECTION I)**, and for all medical expenses caused by accidents under **COVERAGE C (SECTION I)**, which can be attributed only to operations at a single designated "project" shown in the Schedule above:

1. A separate Designated Project General Aggregate Limit applies to each designated "project", and that limit is equal to the amount of the General Aggregate Limit shown in the Declarations, unless separate **Designated Project General Aggregate(s)** are scheduled above.
2. The Designated Project General Aggregate Limit is the most we will pay for the sum of all damages under **COVERAGE A.**, except damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard", and for medical expenses under **COVERAGE C**, regardless of the number of:
   - **a.** Insureds;
   - **b.** Claims made or "suits" brought; or
   - **c.** Persons or organizations making claims or bringing "suits".
3. Any payments made under **COVERAGE A.** for damages or under **COVERAGE C.** for medical expenses shall reduce the Designated Project General Aggregate Limit for that designated "project". Such payments shall not reduce the General Aggregate Limit shown in the Declarations nor shall they reduce any other Designated Project General Aggregate Limit for any other designated "project" shown in the Schedule above.
4. The limits shown in the Declarations for **Each Occurrence, Damage To Premises Rented To You and Medical Expense** continue to apply. However, instead of being subject to the General Aggregate Limit shown in the Declarations, such limits will be subject to the applicable Designated Project General Aggregate Limit.

B. For all sums which the insured becomes legally obligated to pay as damages caused by "occurrences" under **COVERAGE A. (SECTION I)**, and for all medical expenses caused by accidents under **COVERAGE C. (SECTION I)**, which cannot be attributed only to operations at a single designated "project" shown in the Schedule above:

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1. Any payments made under **COVERAGE A.** for damages or under **COVERAGE C.** for medical expenses shall reduce the amount available under the General Aggregate Limit or the Products-Completed Operations Aggregate Limit, whichever is applicable; and
2. Such payments shall not reduce any Designated Project General Aggregate Limit.

C. Part **2.** of **SECTION III – LIMITS OF INSURANCE** is deleted and replaced by the following:

2. The General Aggregate Limit is the most we will pay for the sum of:
   a. Damages under **Coverage B**; and
   b. Damages from "occurrences" under **COVERAGE A (SECTION I)** and for all medical expenses caused by accidents under **COVERAGE C (SECTION I)** which cannot be attributed only to operations at a single designated "project" shown in the **SCHEDULE** above.

D. When coverage for liability arising out of the "products-completed operations hazard" is provided, any payments for damages because of "bodily injury" or "property damage" included in the "products-completed operations hazard" will reduce the Products-Completed Operations Aggregate Limit, and not reduce the General Aggregate Limit nor the Designated Project General Aggregate Limit.

E. For the purposes of this endorsement the **Definitions Section** is amended by the addition of the following definition:

"Project" means an area away from premises owned by or rented to you at which you are performing operations pursuant to a contract or agreement. For the purposes of determining the applicable aggregate limit of insurance, each "project" that includes premises involving the same or connecting lots, or premises whose connection is interrupted only by a street, roadway, waterway or right-of-way of a railroad shall be considered a single "project".

F. The provisions of **SECTION III – LIMITS OF INSURANCE** not otherwise modified by this endorsement shall continue to apply as stipulated.

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c. Method Of Sharing

If all of the other insurance permits contribution by equal shares, we will follow this method also. Under this approach each insurer contributes equal amounts until it has paid its applicable limit of insurance or none of the loss remains, whichever comes first.

If any of the other insurance does not permit contribution by equal shares, we will contribute by limits. Under this method, each insurer's share is based on the ratio of its applicable limit of insurance to the total applicable limits of insurance of all insurers.

d. Primary And Non-Contributory Insurance If Required By Written Contract

If you specifically agree in a written contract or agreement that the insurance afforded to an insured under this Coverage Part must apply on a primary basis, or a primary and non-contributory basis, this insurance is primary to other insurance that is available to such insured which covers such insured as a named insured, and we will not share with that other insurance, provided that:

(1) The "bodily injury" or "property damage" for which coverage is sought occurs; and

(2) The "personal and advertising injury" for which coverage is sought is caused by an offense that is committed;

subsequent to the signing of that contract or agreement by you.

5. Premium Audit

a. We will compute all premiums for this Coverage Part in accordance with our rules and rates.

b. Premium shown in this Coverage Part as advance premium is a deposit premium only. At the close of each audit period we will compute the earned premium for that period and send notice to the first Named Insured. The due date for audit and retrospective premiums is the date shown as the due date on the bill. If the sum of the advance and audit premiums paid for the policy period is greater than the earned premium, we will return the excess to the first Named Insured.

c. The first Named Insured must keep records of the information we need for premium computation, and send us copies at such times as we may request.

6. Representations

By accepting this policy, you agree:

a. The statements in the Declarations are accurate and complete;

b. Those statements are based upon representations you made to us; and

c. We have issued this policy in reliance upon your representations.

The unintentional omission of, or unintentional error in, any information provided by you which we relied upon in issuing this policy will not prejudice your rights under this insurance. However, this provision does not affect our right to collect additional premium or to exercise our rights of cancellation or nonrenewal in accordance with applicable insurance laws or regulations.

7. Separation Of Insureds

Except with respect to the Limits of Insurance, and any rights or duties specifically assigned in this Coverage Part to the first Named Insured, this insurance applies:

a. As if each Named Insured were the only Named Insured; and

b. Separately to each insured against whom claim is made or "suit" is brought.

8. Transfer Of Rights Of Recovery Against Others To Us

If the insured has rights to recover all or part of any payment we have made under this Coverage Part, those rights are transferred to us. The insured must do nothing after loss to impair them. At our request, the insured will bring "suit" or transfer those rights to us and help us enforce them.

9. When We Do Not Renew

If we decide not to renew this Coverage Part, we will mail or deliver to the first Named Insured shown in the Declarations written notice of the nonrenewal not less than 30 days before the expiration date.

If notice is mailed, proof of mailing will be sufficient proof of notice.

SECTION V – DEFINITIONS

1. "Advertisement" means a notice that is broadcast or published to the general public or specific market segments about your goods, products or services for the purpose of attracting customers or supporters. For the purposes of this definition:

a. Notices that are published include material placed on the Internet or on similar electronic means of communication; and

b. Regarding websites, only that part of a website that is about your goods, products or services for the purposes of attracting customers or supporters is considered an advertisement.

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Policy Number: DT-810-1B271009-PHX-19

COMMERCIAL AUTO

THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

BUSINESS AUTO EXTENSION ENDORSEMENT

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

With respect to coverage provided by this endorsement, the provisions of the Coverage Form apply unless modified by the endorsement.

GENERAL DESCRIPTION OF COVERAGE – This endorsement broadens coverage. However, coverage for any injury, damage or medical expenses described in any of the provisions of this endorsement may be excluded or limited by another endorsement to the Coverage Part, and these coverage broadening provisions do not apply to the extent that coverage is excluded or limited by such an endorsement. The following listing is a general coverage description only. Limitations and exclusions may apply to these coverages. Read all the provisions of this endorsement and the rest of your policy carefully to determine rights, duties, and what is and is not covered.

A. BROAD FORM NAMED INSURED

B. BLANKET ADDITIONAL INSURED

C. EMPLOYEE HIRED AUTO

D. EMPLOYEES AS INSURED

E. SUPPLEMENTARY PAYMENTS – INCREASED LIMITS

F. HIRED AUTO – LIMITED WORLDWIDE COVERAGE – INDEMNITY BASIS

G. WAIVER OF DEDUCTIBLE – GLASS

H. HIRED AUTO PHYSICAL DAMAGE – LOSS OF USE – INCREASED LIMIT

I. PHYSICAL DAMAGE – TRANSPORTATION EXPENSES – INCREASED LIMIT

J. PERSONAL EFFECTS

K. AIRBAGS

L. NOTICE AND KNOWLEDGE OF ACCIDENT OR LOSS

M. BLANKET WAIVER OF SUBROGATION

N. UNINTENTIONAL ERRORS OR OMISSIONS

PROVISIONS

A. BROAD FORM NAMED INSURED

The following is added to Paragraph **A.1., Who Is An Insured**, of **SECTION II – LIABILITY COVERAGE**:

Any organization you newly acquire or form during the policy period over which you maintain 50% or more ownership interest and that is not separately insured for Business Auto Coverage. Coverage under this provision is afforded only until the 180th day after you acquire or form the organization or the end of the policy period, whichever is earlier.

B. BLANKET ADDITIONAL INSURED

The following is added to Paragraph **c.** in **A.1., Who Is An Insured**, of **SECTION II – LIABILITY COVERAGE**:

Any person or organization who is required under a written contract or agreement between you and that person or organization, that is signed and executed by you before the "bodily injury" or "property damage" occurs and that is in effect during the policy period, to be named as an additional insured is an "insured" for Liability Coverage, but only for damages to which this insurance applies and only to the extent that person or organization qualifies as an "insured" under the Who Is An Insured provision contained in Section II.

C. EMPLOYEE HIRED AUTO

1. The following is added to Paragraph **A.1., Who Is An Insured**, of **SECTION II – LIABILITY COVERAGE**:

An "employee" of yours is an "insured" while operating an "auto" hired or rented under a contract or agreement in that "employee's" name, with your permission, while performing duties related to the conduct of your business.

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2. The following replaces Paragraph **b.** in **B.5., Other Insurance**, of **SECTION IV – BUSINESS AUTO CONDITIONS**:

   b. For Hired Auto Physical Damage Coverage, the following are deemed to be covered "autos" you own:

   (1) Any covered "auto" you lease, hire, rent or borrow; and

   (2) Any covered "auto" hired or rented by your "employee" under a contract in that individual "employee's" name, with your permission, while performing duties related to the conduct of your business.

   However, any "auto" that is leased, hired, rented or borrowed with a driver is not a covered "auto".

D. EMPLOYEES AS INSURED

The following is added to Paragraph **A.1., Who Is An Insured**, of **SECTION II – LIABILITY COVERAGE**:

Any "employee" of yours is an "insured" while using a covered "auto" you don't own, hire or borrow in your business or your personal affairs.

E. SUPPLEMENTARY PAYMENTS – INCREASED LIMITS

1. The following replaces Paragraph **A.2.a.(2)**, of **SECTION II – LIABILITY COVERAGE**:

   (2) Up to $3,000 for cost of bail bonds (including bonds for related traffic law violations) required because of an "accident" we cover. We do not have to furnish these bonds.

2. The following replaces Paragraph **A.2.a.(4)**, of **SECTION II – LIABILITY COVERAGE**:

   (4) All reasonable expenses incurred by the "insured" at our request, including actual loss of earnings up to $500 a day because of time off from work.

F. HIRED AUTO – LIMITED WORLDWIDE COVERAGE – INDEMNITY BASIS

The following replaces Subparagraph **(5)** in Paragraph **B.7., Policy Period, Coverage Territory**, of **SECTION IV – BUSINESS AUTO CONDITIONS**:

(5) Anywhere in the world, except any country or jurisdiction while any trade sanction, embargo, or similar regulation imposed by the United States of America applies to and prohibits the transaction of business with or within such country or jurisdiction, for Liability Coverage for any covered "auto" that you lease, hire, rent or borrow without a driver for a period of 30 days or less and that is not an "auto" you lease, hire, rent or borrow from any of your "employees", partners (if you are a partnership), members (if you are a limited liability company) or members of their households.

(a) With respect to any claim made or "suit" brought outside the United States of America, the territories and possessions of the United States of America, Puerto Rico and Canada:

(i) You must arrange to defend the "insured" against, and investigate or settle any such claim or "suit" and keep us advised of all proceedings and actions.

(ii) Neither you nor any other involved "insured" will make any settlement without our consent.

(iii) We may, at our discretion, participate in defending the "insured" against, or in the settlement of, any claim or "suit".

(iv) We will reimburse the "insured" for sums that the "insured" legally must pay as damages because of "bodily injury" or "property damage" to which this insurance applies, that the "insured" pays with our consent, but only up to the limit described in Paragraph **C.**, Limit Of Insurance, of SECTION II – LIABILITY COVERAGE.

(v) We will reimburse the "insured" for the reasonable expenses incurred with our consent for your investigation of such claims and your defense of the "insured" against any such "suit", but only up to and included within the limit described in Paragraph **C.**, Limit Of Insurance, of SECTION II – LIABILITY COVERAGE, and not in addition to such limit. Our duty to make such payments ends when we have used up the applicable limit of insurance in payments for damages, settlements or defense expenses.

(b) This insurance is excess over any valid and collectible other insurance available

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to the "insured" whether primary, excess contingent or on any other basis.

(c) This insurance is not a substitute for required or compulsory insurance in any country outside the United States, its territories and possessions, Puerto Rico and Canada.

You agree to maintain all required or compulsory insurance in any such country up to the minimum limits required by local law. Your failure to comply with compulsory insurance requirements will not invalidate the coverage afforded by this policy, but we will only be liable to the same extent we would have been liable had you complied with the compulsory insurance requirements.

(d) It is understood that we are not an admitted or authorized insurer outside the United States of America, its territories and possessions, Puerto Rico and Canada. We assume no responsibility for the furnishing of certificates of insurance, or for compliance in any way with the laws of other countries relating to insurance.

G. **WAIVER OF DEDUCTIBLE – GLASS**

The following is added to Paragraph **D., Deductible**, of **SECTION III – PHYSICAL DAMAGE COVERAGE**:

No deductible for a covered "auto" will apply to glass damage if the glass is repaired rather than replaced.

H. **HIRED AUTO PHYSICAL DAMAGE – LOSS OF USE – INCREASED LIMIT**

The following replaces the last sentence of Paragraph **A.4.b., Loss Of Use Expenses**, of **SECTION III – PHYSICAL DAMAGE COVERAGE**:

However, the most we will pay for any expenses for loss of use is $65 per day, to a maximum of $750 for any one "accident".

I. **PHYSICAL DAMAGE – TRANSPORTATION EXPENSES – INCREASED LIMIT**

The following replaces the first sentence in Paragraph **A.4.a., Transportation Expenses**, of **SECTION III – PHYSICAL DAMAGE COVERAGE**:

We will pay up to $50 per day to a maximum of $1,500 for temporary transportation expense incurred by you because of the total theft of a covered "auto" of the private passenger type.

J. **PERSONAL EFFECTS**

The following is added to Paragraph **A.4., Coverage Extensions**, of **SECTION III – PHYSICAL DAMAGE COVERAGE**:

Personal Effects

We will pay up to $400 for "loss" to wearing apparel and other personal effects which are:

(1) Owned by an "insured"; and

(2) In or on your covered "auto".

This coverage applies only in the event of a total theft of your covered "auto".

No deductibles apply to this Personal Effects coverage.

K. **AIRBAGS**

The following is added to Paragraph **B.3., Exclusions**, of **SECTION III – PHYSICAL DAMAGE COVERAGE**:

Exclusion **3.a.** does not apply to "loss" to one or more airbags in a covered "auto" you own that inflate due to a cause other than a cause of "loss" set forth in Paragraphs **A.1.b.** and **A.1.c.**, but only:

a. If that "auto" is a covered "auto" for Comprehensive Coverage under this policy;

b. The airbags are not covered under any warranty; and

c. The airbags were not intentionally inflated.

We will pay up to a maximum of $1,000 for any one "loss".

L. **NOTICE AND KNOWLEDGE OF ACCIDENT OR LOSS**

The following is added to Paragraph **A.2.a.**, of **SECTION IV – BUSINESS AUTO CONDITIONS**:

Your duty to give us or our authorized representative prompt notice of the "accident" or "loss" applies only when the "accident" or "loss" is known to:

(a) You (if you are an individual);

(b) A partner (if you are a partnership);

(c) A member (if you are a limited liability company);

(d) An executive officer, director or insurance manager (if you are a corporation or other organization); or

(e) Any "employee" authorized by you to give notice of the "accident" or "loss".

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M. BLANKET WAIVER OF SUBROGATION

The following replaces Paragraph **A.5., Transfer Of Rights Of Recovery Against Others To Us**, of **SECTION IV – BUSINESS AUTO CONDITIONS**:

5. Transfer Of Rights Of Recovery Against Others To Us

We waive any right of recovery we may have against any person or organization to the extent required of you by a written contract signed and executed prior to any "accident" or "loss", provided that the "accident" or "loss" arises out of operations contemplated by such contract. The waiver applies only to the person or organization designated in such contract.

N. UNINTENTIONAL ERRORS OR OMISSIONS

The following is added to Paragraph **B.2., Concealment, Misrepresentation, Or Fraud**, of **SECTION IV – BUSINESS AUTO CONDITIONS**:

The unintentional omission of, or unintentional error in, any information given by you shall not prejudice your rights under this insurance. However this provision does not affect our right to collect additional premium or exercise our right of cancellation or non-renewal.

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THIS ENDORSEMENT CHANGES THE POLICY. PLEASE READ IT CAREFULLY.

BLANKET ADDITIONAL INSURED – PRIMARY AND NON-CONTRIBUTORY WITH OTHER INSURANCE

This endorsement modifies insurance provided under the following:

BUSINESS AUTO COVERAGE FORM

PROVISIONS

1. The following is added to Paragraph **A.1.c.**, **Who Is An Insured**, of **SECTION II – COVERED AUTOS LIABILITY COVERAGE**:

   This includes any person or organization who you are required under a written contract or agreement between you and that person or organization, that is signed by you before the "bodily injury" or "property damage" occurs and that is in effect during the policy period, to name as an additional insured for Covered Autos Liability Coverage, but only for damages to which this insurance applies and only to the extent of that person's or organization's liability for the conduct of another "insured".

2. The following is added to Paragraph **B.5.**, **Other Insurance** of **SECTION IV – BUSINESS AUTO CONDITIONS**:

   Regardless of the provisions of paragraph a. and paragraph **d.** of this part **5. Other Insurance,** this insurance is primary to and non-contributory with applicable other insurance under which an additional insured person or organization is the first named insured when the written contract or agreement between you and that person or organization, that is signed by you before the "bodily injury" or "property damage" occurs and that is in effect during the policy period, requires this insurance to be primary and non-contributory.

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