

TECHNICAL SPECIFICATIONS



CONWAY I-5 CROSSING PROJECT

Project No. 3707

ISSUED FOR RE-BIDDING

February 27, 2019

DISTRICT OFFICE

1415 Freeway Drive
Post Office Box 1436
Mount Vernon, WA 98273
(360) 424-7104 -- Telephone
(360) 424-8764 -- Facsimile

DISTRICT OFFICIALS

Commission

Eron Berg, President
Al Littlefield, Vice President
Joe Lindquist, Secretary

General Manager

George Sidhu, P.E.

Engineering Manager

Mark C. Handzlik, P.E.

Operations Manager

Mike Fox

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TECHNICAL SPECIFICATIONS

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Conway I-5 Crossing Project

CERTIFICATION

These specifications and design drawings for the **Conway I-5 Crossing Project** have been prepared under the direction of the following Registered Professional Engineer.



INVITATION TO BID

INVITATION TO BID

Notice is hereby given that Public Utility District No. 1 of Skagit County (District) will receive sealed Bids for the **Conway I-5 Crossing Project**. Each bid shall be placed in a sealed envelope and shall be mailed or delivered to the District office, 1415 Freeway Drive, Mount Vernon, Washington 98273, to arrive no later than 10:00 AM, March 12, 2019. All complete bids will be opened and publicly read aloud at 10:01 AM on the same day.

Conway I-5 Crossing Project

Installation of a 24-inch fused C900 PVC casing pipe using horizontal directional drilling technique under Interstate 5 north of the Conway/State Route 534 Interchange. Installation of a 12-inch fused C900 PVC potable water pipeline and a 3-inch HDPE fiber conduit, including fittings, casing spacers, end seals, grouting, appurtenances and incidentals, dewatering, guardrail removal and reinstallation, temporary traffic control, temporary erosion control, disinfection, and pressure testing, in estimated quantities identified in the Bid Proposal.

The location of the proposed work is across Interstate 5 at WSDOT Mile Post 221.2, approximately 750 feet north of the Conway/SR 534 interchange.

A Pre-Bid Meeting will be held at 9:30 AM on March 7, 2019 in the District's conference room. This pre-bid meeting is not mandatory but encouraged for all bidders to attend.

Construction plans, specifications, and contract documents may be viewed at the District office located at 1415 Freeway Drive, Mount Vernon, Washington 98273. Construction plans, specifications, addenda, and plan holders list for this project can be viewed or purchased on-line through Builders Exchange of Washington, Inc., at <http://www/bxwa.com>; 2607 Wetmore Avenue, Everett, WA 98201-2929, (425) 258-1303, Fax (425) 259-3832. Click on: "bxwa.com"; "Posted Projects"; "Public Works", "PUD #1 of Skagit County" and "Projects Bidding". *(Note: Bidders are encouraged to "Register as a Bidder" in order to receive automatic e-mail notification of future addenda and to be placed on the "Bidders List". This service is provided free of charge to Prime Bidders, Subcontractors and Vendors bidding this project. Contact Builders Exchange of Washington at (425) 258-1303, should you require further assistance.)* Contract documents will be available on or after February 27, 2019.

Point of Contact: Doug McConnell, Contract Administrator

PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY


George Sidhu, P.E., General Manager

Published: February 27, 2019 and March 6, 2019 (Skagit Valley Herald)
February 27, 2019 (Daily Journal of Commerce)

INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

1.01 GENERAL

The Conway I-5 Crossing Project consists of the following:

Installation of a 24-inch fused C900 PVC casing pipe using horizontal directional drilling technique under Interstate 5 north of the Conway/State Route 534 Interchange. Also, installation of a 12-inch fused C900 PVC potable water pipeline and a 3-inch HDPE fiber conduit, including fittings, casing spacers, end seals, grouting, appurtenances and incidentals, dewatering, guardrail removal and reinstallation, temporary traffic control, temporary erosion control, disinfection, and pressure testing, in estimated quantities identified in the Bid Proposal.

Construction plans, specifications, and contract documents may be viewed at the District office located at 1415 Freeway Drive, Mount Vernon, Washington 98273. Construction plans, specifications, addenda, and planholders list for this project can be viewed or purchased on-line through Builders Exchange of Washington, Inc., at <http://www.bxwa.com>; 2607 Wetmore Avenue, Everett, WA 98201-2929, (425) 258-1303, Fax (425) 259-3832. Click on: "bxwa.com"; "Posted Projects"; "Public Works", "PUD #1 of Skagit County" and "Projects Bidding". (*Note: Bidders are encouraged to "Register as a Bidder" in order to receive automatic e-mail notification of future addenda and to be placed on the "Bidders List". This service is provided free of charge to Prime Bidders, Subcontractors and Vendors bidding this project. Contact Builders Exchange of Washington at (425) 258-1303, should you require further assistance.*) Addenda will be sent out to those who "Register as a Bidder" on Builders Exchange of Washington, Inc., at <http://www.bxwa.com>. Contract documents will be available on or after February 27, 2019.

2.01 LOCATION

The location for the project is between the Conway Frontage Road and Cedardale Road north of the Conway/State Route 534/Interstate 5 Interchange at Mile Post 221.2 within the County of Skagit, State of Washington as shown on the Contract Drawings.

3.01 EXAMINATION OF PLANS, SPECIFICATIONS, AND SITE

Bidders shall satisfy themselves as to construction conditions by personal examination of the Plans, Specifications and other Bid Documents. Bidders shall carefully correlate their observations with the requirements of the Contract Documents and shall otherwise satisfy themselves regarding the expense and difficulties associated with performing the Work and shall fully account for it in their bids. The submission of a bid shall constitute a representation of compliance by the Bidder with this requirement.

3.02 BID DOCUMENTS

The Bid Documents for the Project include the following:

Project Manual including general and technical specifications and appendices
Washington State Department of Transportation Standard Specifications
Contract Drawings
Skagit PUD Design Standards and Details

4.01 BIDS

The project will be awarded based on the lowest responsive responsible Bidder.

Bids shall be made on the forms included herewith and shall be addressed to the Public Utility District No. 1 of Skagit County, Post Office Box 1436, 1415 Freeway Drive, Mount Vernon, Washington 98273. Each Bid shall be placed in a sealed envelope and shall be mailed or delivered to the Public Utility District No. 1 of Skagit County, to arrive no later than 10:00 AM on March 12, 2019. All complete Bids will be opened and publicly read aloud at 10:01 AM the same day. No Bid may be withdrawn after the time set for the Bid opening or before award and execution of the contract unless the Owner does not award the contract within sixty (60) calendar days after the opening of Bids.

5.01 BID DEPOSIT

As a guarantee of good faith and as required by law, each Bid shall be accompanied by a Bid Deposit in the form of certified check, cashier's check, postal money order, or surety bond payable to the order of the "Public Utility District No. 1 of Skagit County" for an amount not less than 5 percent of the total amount of the Bid, including all potential additions and alternatives, but not including sales tax. If a surety bond is to be used as the bid deposit, the document included with the bid submission must have original signatures. The Bid Deposits of the three lowest Bidders will be retained until the Contract between the successful Bidder and the Owner have been entered into and a Performance and Payment Bond in an amount of one-hundred percent (100%) of the contract price has been filed as required under these Contract Documents. The Bid Deposits of each other Bidder will be returned as soon as it is determined that they are not one of the three lowest Bidders.

6.01 EVALUATION OF BIDS AND AWARD OF CONTRACT

The Owner will award the Bid to the lowest responsive, responsible Bidder based on the Total Bid Amount as stated on the Bid Proposal Form. In the case of a conflict between the Total Bid Amount as stated numerically and as stated in words, the words shall take precedence.

In the case of a conflict between the quantity, unit price and unit price extension for a given bid item, the Owner will make adjustments to the unit price extensions based on the unit price. If the Bidder does not provide a unit price or a unit price extension for every bid item, the bid will be considered non-responsive.

The right is reserved by the Owner to waive any and all informality in the Bids, to reject any or all Bids, including nonresponsive, unbalanced, or conditional bids, to reject any or all schedules, to re-advertise for new bids, or to otherwise carry out the Work. The Owner reserves the right to reject any bid that is materially unbalanced to the Owner's potential detriment. The Owner further reserves the right to delete portions of the Work.

Bids which are incomplete, or which are conditioned in any way, or which contain erasures, alterations, or items not called for in the Bid Form, or which are not in conformity with the law or these Instructions, may be rejected as non-responsive.

6.02 RESPONSIBILITY CRITERIA

Before the Owner awards the contract, state law is used to determine that responsible contractors and subcontractors perform the work. Bidder responsibility is determined by the Bidder successfully demonstrating its ability to satisfy the mandatory responsibility criteria and any project specific criteria established by the Owner.

To comply with the responsibility criteria for this bid, a Bidder must provide sufficient information as required. If the Bidder fails to provide the requested information within the time and manner specified in these bid documents, the Owner reserves the option to determine responsibility upon any available

information related to any supplemental criteria and/or may find the Bidder not responsible. If the lowest Bidder is found not responsible, the Owner reserves the right to award to the next low Bidder without re-advertising or rebidding the project.

6.03 MANDATORY RESPONSIBILITY CRITERIA

It is the intent of Owner to award a contract to the low responsible bidder. Before award, the bidder must meet the following Bidder responsibility criteria to be considered a responsible bidder. The Bidder may be required by the Owner to submit documentation demonstrating compliance with the criteria. The Bidder must:

1. Have a current certificate of registration as a contractor in compliance with chapter 18.27 RCW, which must have been in effect at the time of bid submittal;
2. Have a current Washington Unified Business Identifier (UBI) number;
3. If applicable:
 - a) Have Industrial Insurance (workers' compensation) coverage for the bidder's employees working in Washington, as required in Title 51 RCW;
 - b) Have a Washington Employment Security Department number, as required in Title 50 RCW;
 - c) Have a Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;
4. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3).
5. Until December 31, 2013, not have violated more than one time the off-site, prefabricated, non-standard, project specific items reporting requirements of RCW 39.04.370.
6. For public works projects subject to the apprenticeship utilization requirements of RCW 3.0.04.320, not have been found out of compliance by the Washington state apprenticeship and training council for working apprentices out of ratio, without appropriate supervision, or outside their approved work processes as outlined in their standards of apprenticeship under chapter 49.04 RCW for the one-year period immediately preceding the first date of advertising for the project.

6.04 SUBCONTRACTOR RESPONSIBILITY CRITERIA

Before award, the Bidder shall verify responsibility criteria for each first-tier subcontractor the Contractor hires and a subcontractor of any tier subcontractor that hires other subcontractors must verify responsibility criteria for each of its subcontractors. Verification shall occur at the time of subcontract execution and shall include that each subcontractor meets the responsibility criteria listed in Section 6.03 and possesses an electrical contractor license (if required by RCW Chapter 19.28) or an elevator contractor license (if required by RCW Chapter 70.87). These verification requirements, as well as the responsibility criteria, shall be included in each of the Contractor's subcontracts of any tier. The Contractor shall certify that this verification is complete prior to contract close-out.

6.05 PROTESTS

Any Bidders wanting to file a bid protest shall submit a formal protest consisting of a written letter signed by an authorized official of the company within 48 hours of the bid opening. The protest will be reviewed by the Owner and if warranted, a meeting will be held with the Owner, the low Bidder and the Bidder filing the protest within 4 Calendar days to review the protest. A decision on the protest will be made by the Owner within 7 Calendar days.

6.06 CONTRACT TIME

The Contract completion date is an essential part of the Contract, and it will be necessary for each Bidder to satisfy the Owner of its ability to complete the Work within the time allowed. Bidders shall base their bids on utilizing the full Contract Time of 90 Calendar Days for the Work, as specified.

7.01 FAILURE TO EXECUTE CONTRACT AND FURNISH BOND

In the event the successful Bidder fails to furnish a Payment and Performance Bond complying with this Invitation for Bids, and fails to sign the contract within ten (10) calendar days after notification by the Owner, an amount equal to 5 percent of the amount of the Bid shall be forfeited to the Owner as liquidated damages, and it is agreed that this said sum is a fair estimate of the amount of damages the Owner would sustain in the event that the Bidder failed to enter into the Contract or furnish the required Bond. Said liquidated damages shall be paid from the Bid Deposit submitted with the Bid. Other Bids will then be reconsidered for award by the Owner.

8.01 CORRECTIONS, INTERPRETATIONS, AND ADDENDA

If Bidders find or observe any omissions, discrepancies, or need for interpretations of the Bid Documents, they shall bring such facts in writing to the attention of the Owner. Written addenda to clarify questions which arise will then be issued. Interpretations or explanations of the Contract Documents will be in the form of written addenda only. Oral statements by the Owner, Engineer, or other representative of the Owner whether made before or after award of the Contract shall in no way modify the Contract Documents.

Any requests for information or interpretation of the Bid Documents shall be made by phone or email to Doug McConnell, Contract Administrator (360) 424-7104 or mcconnell@skagitpub.org. All such requests shall be received no later than three (3) days prior to Bid opening.

10.01 SUBCONTRACTORS & SUPPLIERS

In compliance with RCW 39.30.060 for all projects estimated to cost \$1 million or more, all Bidders must complete and submit the Subcontractors List form provided in the Bid Proposal Forms. The Subcontractors List form must be submitted with the Bid. The failure of a Bidder to submit the names of such subcontractors, or to name itself to perform such work, or the naming of two or more firms (subcontractors or Bidders) to perform the same work shall render the Bidder's bid non-responsive and, therefore, void.

11.01 BIDDER QUALIFICATIONS

All Bidders shall submit with their bids evidence of sufficient qualifications and experience for the work as specified in Bid Proposal Forms. The Owner will utilize the information submitted for the purpose of determining the responsibility of the low Bidder for determining eligibility for award.

12.01 PERMITS

The Owner has obtained or will obtain the permits and approvals required for the Work as listed below. The Contractor shall comply with the provisions of all permits, approvals and easements. All other required permits or licenses (i.e. right of way permits) shall be the responsibility of the Contractor. Below is a list of the Owner-obtained permits and approvals, which are included for reference in Appendix B.

Washington State Department of Transportation Utility Permit
Washington State Department of Fish and Wildlife Hydraulic Project Approval
Skagit County Right of Way Permit

Should the Contractor procure additional formal or informal access easements, rights of entry, Work or storage areas, or enter private property, he/she shall obtain and file all such private property agreements with the Owner prior to such access. The Contractor shall provide to the Owner property release forms for all Work or access on private property.

13.01 PRE-BID MEETING

A Pre-Bid Meeting will be held at 9:30 AM on March 7, 2019 in the District's conference room. This pre-bid meeting is not mandatory but encouraged for all bidders to attend.

END OF SECTION

MANDATORY BIDDER RESPONSIBILITY CHECKLIST

The following checklist may be used by Owners in documenting that a Bidder meets the mandatory bidder responsibility criteria. It is suggested that Owners print a copy of documentation from the appropriate website to include with this checklist in the contract file.

General Information	
Project Name: Conway I-5 Crossing Project	Project Number: 3707
Bidder's Business Name:	Bid Submittal Deadline:
Contractor Registration – https://fortress.wa.gov/lni/bbip/	
License Number:	Status: Active: Yes <input type="checkbox"/> No <input type="checkbox"/>
Effective Date (must be effective on or before Bid Submittal Deadline):	Expiration Date:
Is Bidder on Infraction List? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Current UBI Number – http://dor.wa.gov/content/doingbusiness/registermybusiness/brd/	
UBI Number:	Account Closed: Open <input type="checkbox"/> Closed <input type="checkbox"/>
Industrial Insurance Coverage – https://fortress.wa.gov/lni/crpsi/MainMenu.aspx	
Account Number:	Account Current: Yes <input type="checkbox"/> No <input type="checkbox"/>
Employment Security Department Number –	
Employment Security Department Number:	
<ul style="list-style-type: none"> • Has Bidder provided account number on the Bid Form? Yes <input type="checkbox"/> No <input type="checkbox"/> • And/or have you asked the Bidder for documentation from Employment Security Department on account number? Yes <input type="checkbox"/> No <input type="checkbox"/> 	
State Excise Tax Registration Number – http://dor.wa.gov/content/doingbusiness/registermybusiness/brd/	
Tax Registration Number:	Account Closed: Open <input type="checkbox"/> Closed <input type="checkbox"/>
Not Disqualified from Bidding – http://www.lni.wa.gov/TradesLicensing/PrevWage/AwardingAgencies/DebarredContractors/default.asp	
Is the Bidder listed on the "Contractors Not Allowed to Bid" list of the Department of Labor and Industries? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Checked by:	
Name of Employee:	Date:

SUBCONTRACTOR RESPONSIBILITY CHECKLIST

The following checklist may be used by Contractors and Subcontractors in documenting that a subcontractor of any tier meets the subcontractor responsibility criteria. It is suggested that Contractors and Subcontractors print a copy of documentation from the appropriate website to include with this checklist in their contract file.

General Information	
Project Name: Conway I-5 Crossing Project	Project Number: 3707
Subcontractor's Business Name:	Subcontract Execution Date:
Contractor Registration – https://fortress.wa.gov/lni/bbip/	
License Number:	Status: Active: Yes <input type="checkbox"/> No <input type="checkbox"/>
Effective Date (must be effective on or before Subcontract Bid Submittal Deadline):	Expiration Date:
Current UBI Number – http://dor.wa.gov/content/doingbusiness/registermybusiness/brd/	
UBI Number:	Account Closed: Open <input type="checkbox"/> Closed <input type="checkbox"/>
Industrial Insurance Coverage – https://fortress.wa.gov/lni/crpsi/MainMenu.aspx	
Account Number:	Account Current: Yes <input type="checkbox"/> No <input type="checkbox"/>
Employment Security Department Number –	
Employment Security Department Number:	
<ul style="list-style-type: none"> • Has Subcontractor provided account number on the Bid Form? Yes <input type="checkbox"/> No <input type="checkbox"/> • And/or have you asked the Subcontractor for documentation from Employment Security Department on account number? Yes <input type="checkbox"/> No <input type="checkbox"/> 	
State Excise Tax Registration Number – http://dor.wa.gov/content/doingbusiness/registermybusiness/brd/	
Tax Registration Number:	Account Closed: Open <input type="checkbox"/> Closed <input type="checkbox"/>
Not Disqualified from Bidding – http://www.lni.wa.gov/TradesLicensing/PrevWage/AwardingAgencies/DebarredContractors/default.asp	
Is the Subcontractor listed on the "Contractors Not Allowed to Bid" list of the Department of Labor and Industries? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Contractor Licenses – https://fortress.wa.gov/lni/bbip/	
<u>Electrical</u> : If required by Chapter 19.28 RCW, does the Subcontractor have an Electrical Contractor's License? Yes <input type="checkbox"/> No <input type="checkbox"/>	<u>Elevator</u> : If required by Chapter 70.87 RCW, does the Subcontractor have an Elevator Contractor's License? Yes <input type="checkbox"/> No <input type="checkbox"/>
Checked by:	
Name of Employee:	Date:

BID PROPOSAL FORMS

BID PROPOSAL FORM

BIDDER'S CHECKLIST

This Checklist has been prepared and furnished to aid Bidders in including all necessary supporting information with their Bid. Bidder's submittals shall include, but not be limited to, the following:

ITEM	CHECKED
1. Bid to Commission	_____
2. Bid Schedule	_____
3. Proposal Signature, Addenda Acknowledgement and Non-Collusion Declaration Sheet	_____
4. Subcontractor List	_____
5. Statement of Bidder's Qualifications	_____
6. Bid Form and Deposit	_____

BID TO COMMISSION

TO: Board of Commissioners
Public Utility District No. 1 of Skagit County, Washington

Gentlemen:

The undersigned has examined the site, specifications, plans, laws and ordinances covering the improvements contemplated. In accordance with the terms, provisions and requirements of the foregoing, the following lump sums and unit prices are tendered as an offer to perform the Work and furnish the labor, tools, equipment, materials, appurtenances, incidentals, and guarantees, where required, complete in place, in good working order.

As a guarantee of good faith and as required by law, a Bid Deposit in the form of a certified check, cashier's check, postal money order or surety bond made payable to the order of Public Utility District No. 1 of Skagit County ("District") is attached hereto. The undersigned understands and hereby agrees that, should this offer be accepted and the undersigned fail or refuse to enter into a Contract, furnish the required Payment and Performance Bond and required liability insurance, the undersigned shall forfeit to the District an amount equal to five percent (5%) of the amount Bid as liquidated damages, all as provided for in this Invitation for Bids.

The undersigned hereby proposes to undertake and complete the work embraced in this improvement, in accordance with the terms of the Specifications and Contract Documents, at the following lump sum and unit prices:

CONCWAY I-5 CROSSING PROJECT

BID SCHEDULE

Item No.	Bid Schedule Description	Estimated Quantity	Unit	Unit Price	Total
1	Mobilization	1	LS	\$	\$
2	Install and Maintain Temporary Erosion Control and Water Pollution Control Measures	1	LS	\$	\$
3	Spill Prevention Control and Countermeasure (SPCC) Plan	1	LS	\$	\$
4	Trench Shoring and Safety Systems	1	LS	\$	\$
5	Furnish and Install 24-Inch Diam. DIPS DR18, Fused AWWA C-900 PVC Casing Pipe by Horizontal Directional Drilling	580	LF	\$	\$
6	Furnish and Install 12-inch Diam. DIPS DR18, Fused AWWA C-900 PVC Water Pipe Through Casing	580	LF	\$	\$
7	Furnish and Install 3-inch Diam. HDPE Communication Duct, Orange DR11, for Fiber Optic Conduit Through Casing	580	LF	\$	\$
8	Waterline Flushing, Pressure Testing, and Disinfection and Bacterial Testing	1	LS	\$	\$
9	Traffic Control	1	LS	\$	\$
10	Removal and Reinstall Beam Guardrail and Signs	1	LS	\$	\$

Sub-Total Base Bid \$ _____

Sales Tax (8.1%) \$ _____

Total Bid Amount \$ _____

DOLLARS

Total Bid Amount (written in words)

PROPOSAL SIGNATURE, ADDENDUM ACKNOWLEDGEMENT AND NON-COLLUSION DECLARATION

The bidder is hereby advised that by signature of this proposal he/she is deemed to have acknowledged all requirements and signed all certificates contained herein. The undersigned hereby agrees to pay to labor not less than the prevailing rates of wages or less than the hourly minimum rate of wages as specified in the Specifications and Conditions for this project. A proposal guarantee in an amount of five percent (5%) of the total bid not including sales tax, based upon the approximate estimate of quantities at the above prices and in the form as indicated below, is attached hereto:

CASH	\$ _____	CASHIER'S CHECK	\$ _____
BID BOND	\$ _____	CERTIFIED CHECK	\$ _____

Receipt is hereby acknowledged of addendums(s) No(s). _____, _____, and _____

I, by signing the proposal, hereby declare, under penalty of perjury under the laws of the United States that the undersigned person(s), firm, association or corporation has (have) not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in connection with the project for which this proposal is submitted.

SIGNATURE OF AUTHORIZED OFFICIAL(S)

NOTE: Proposal must be signed

Signature _____
Firm Name _____
Address _____

Washington State Contractor's License Number

Sworn to before me this _____ day of _____, 20____

(SEAL) NOTARY PUBLIC

SUBCONTRACTORS LIST – RCW 39.30.060 FORM

In compliance with RCW 39.30.060 for all projects estimated to cost \$1 million or more, all Bidders must complete and submit this Subcontractors List form with their Bid Proposal.

List of Subcontractors: The Bidder shall indicate on the Subcontractors List the names of the subcontractors with whom the Bidder, if awarded the contract, will subcontract for performance of the work of heating, ventilation and air conditioning, plumbing as described in Chapter 18.106 RCW, and electrical as described in Chapter 19.28 RCW.

List Bidder if Bidder Performing Work: If the Bidder will perform the work in any of the three areas required, the Bidder shall name itself for the work on the Subcontractors List.

Name Only One Form for Each Category of Work: The Bidder shall not list more than one firm (subcontractor or Bidder) for each category of work identified, unless subcontractors vary with bid alternates or additive, in which case the Bidder must indicate which firm will be used for which alternate or additive.

Substitution of Subcontractors: Substitution of any listed subcontractor may only be according to the procedure and parameters set forth in RCW 39.30.060.

Factors relating to Non-Responsiveness: Failure of the Bidder to submit the names of such subcontractors, or to name itself to perform such work, or the naming of two or more firms (subcontractor or Bidder) to perform the same work shall render the Bidder’s bid non-responsive and, therefore, void.

Applicable to Direct Subcontractors: The requirement of this section to name the Bidders’ proposed heating, ventilation and air conditioning, plumbing and electrical subcontractors applies only to proposed heating, ventilation and air conditioning, plumbing and electrical subcontractors who will contract directly with the Bidder.

Submission Requirements: The Subcontractors List must be submitted with the Bid Proposal.

Trade	Bidder must check one box for each Trade. If subcontracting the work, Bidder must name the subcontractor.
HVAC (Heating, Ventilation and Air Conditioning)	<input type="checkbox"/> N/A (this project does not include this work) <input type="checkbox"/> Bidder will self-perform this work <input type="checkbox"/> Name and address of subcontractor <hr/> <hr/>
Plumbing	<input type="checkbox"/> N/A (this project does not include this work) <input type="checkbox"/> Bidder will self-perform this work <input type="checkbox"/> Name and address of subcontractor <hr/> <hr/>
Electrical	<input type="checkbox"/> N/A (this project does not include this work) <input type="checkbox"/> Bidder will self-perform this work <input type="checkbox"/> Name and address of subcontractor <hr/> <hr/>

STATEMENT OF BIDDER'S QUALIFICATIONS

COMPARABLE CONTRACT HISTORY

The following is a partial list of the last five jobs our organization completed which are similar in character to this project:

Year	Project Name	Casing Diameter	Lineal Feet	Owner Rep.	Phone No.

Name of Company: _____

Address: _____

Telephone: _____

Date

Signature

Title

Contractor's License Number

BID BOND

KNOW ALL MEN BY THESE PRESENTS, that we, _____

of _____
hereinafter called the Contractor (Principal), and _____

_____ a corporation duly organized and existing under and by virtue of the laws of the State of _____ hereinafter called the Surety, and authorized to transact business within the State of Washington as Surety, are held and firmly bound unto Public Utility District No. 1 of Skagit County, Washington (Obligee) in the full and penal sum of five percent (5%) of the total bid amount appearing on the bid proposal of said principal for the work hereinafter described, for the payment of which, well and truly be made to the Owner, the Contractor and the Surety bind themselves and each of their heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITIONS OF THE ABOVE OBLIGATION ARE SUCH THAT WHEREAS, the Principal herein is herewith submitting his or its bid proposal for the **CONWAY I-5 CROSSING PROJECT**

NOW THEREFORE, if the bid proposal submitted by the Principal is accepted, and the contract is awarded to said Principal, and if said Principal shall duly make and enter into and execute said contract and shall furnish the Performance and Payment Bond as required by the bidding and contract documents within a period of ten (10) days from and after said award, exclusive of the day of such award, then its obligation to pay the above-mentioned penal sum as liquidated damages shall be null and void, otherwise it shall remain and be in full force and effect.

Signed and sealed this _____ day of _____, 20____.

Contractor

Surety

By _____

By _____

Attorney-In-Fact

Title _____

Corporate Seal

Corporate Seal

The Attorney-In-Fact who executes this bond on behalf of the Surety must attach a copy of his Power of Attorney as evidence of his authority.

AGREEMENT

CONTRACT NO. CP4994-3707-_____

THIS CONTRACT is made and entered into by and between the **PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY** (District/Owner) and _____ (Contractor) whose names are subscribed hereto.

WITNESSETH:

WHEREAS the Owner has caused the preparation of certain Contract Documents entitled **CONWAY I-5 CROSSING PROJECT**.

WHEREAS the Owner has invited proposals, has received and analyzed said proposals, and has duly given notice of Acceptance of Proposal to the Contractor herein set forth and as stated more in detail in the Contract Documents which are defined in Section II General Conditions, all of which Contract Documents are made a part hereof and which constitute the whole Contract between the Owner and the Contractor.

NOW, THEREFORE, it is hereby agreed that:

1. The Contractor shall furnish the work, pay all costs, and perform all requirements of this Contract in the manner specified in the Contract Documents, and;
2. The Proposal calls for unit prices and lump sums in the Bid Schedule(s) set forth in (1) above. The Owner shall pay to the Contractor a corrected Total Contract Amount computed from the unit prices and lump sums in said Bid Schedule(s) set forth in the Contractor's Proposal and the actual quantities of units furnished. Based upon the lump sum and unit prices in said Bid Schedule(s) set forth in the Contractor's Proposal and upon the quantities estimated from the Contract Drawings for bidding purposes, the estimated Total Contract Amount is \$ _____ (\$ _____ .00), and;
3. In Washington State the Owner is required to pay state or local sales or use taxes included in the Total Contract Amount and the Contractor is required to receive the said taxes for payment to the state, the amount payable to the Contractor by the Owner shall be the Total Contract Amount as above specified including the amount of the said taxes, and;
4. It is further agreed that the Contractor will start work within ten (10) Calendar days after the date specified in the Owner's Notice to Proceed and shall be substantially complete within 90 Calendar Days from the date of Notice to Proceed is issued, and;
5. In the event that the Contractor fails to substantially complete the Project by the date of substantial completion as specified above or as modified by Change Order, the Contractor shall be liable for liquidated damages of One Thousand Five Hundred Dollars (\$1,500.00) per calendar day thereafter until the Owner determines the Project to be substantially complete, and;
6. The attached Indemnification Agreement is hereby made part of this agreement.

IN WITNESS WHEREOF, two (2) identical counterparts of this Contract, each of which shall for all purposes be deemed an original hereof, have been duly executed by the parties hereto.

(Contractor)

PUBLIC UTILITY DISTRICT NO. 1
OF SKAGIT COUNTY, WASHINGTON

By _____

By _____
George Sidhu, P.E., General Manager

Title _____

Date _____

Date _____

INDEMNIFICATION AGREEMENT

The Contractor agrees to defend, indemnify, and hold the District harmless from any and all claims, demands, losses, and liabilities to or by third parties arising from, resulting from, or connected with work performed or to be performed under this Contract by the Contractor, its agents, employees, and subcontractors, even though such claims may prove to be false, groundless or fraudulent, to the fullest extent permitted by law and subject to the limitations provided below.

The Contractor's duty to indemnify the District shall not apply to liability for damages arising out of bodily injury to persons or damage to property caused by or resulting from the sole negligence of the District or the District's agents or employees. The Contractor's duty to indemnify the District for liability for damages arising out of bodily injury to persons or damage to property caused by or resulting from the concurrent negligence of Contractor, its agents, employees, or subcontractors and/or the District or the District's agents or employees, shall apply only to the extent of negligence of Contractor, its agents, employees, or subcontractors.

With respect to claims against Contractor by the District pursuant to this Contract only, Contractor expressly waives any immunity that may be granted it under the Workers' Compensation, Industrial Insurance or like statutes and/or any administrative regulations issued pursuant thereto. This waiver does not include or extend to any claims by Contractor's employees directly against Contractor.

Further, Contractor's defense and indemnification obligations under this Contract shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable to or for any third party under Workers' Compensation, Industrial Insurance or like statutes and/or any administrative regulations issued pursuant thereto.

Contractor's duty to indemnify the District for liabilities or losses, other than for bodily injury to persons or damage to property caused by or resulting from negligence, shall apply only to the extent of the fault of Contractor, its agents, employees, or subcontractors, except in situations where fault is not a requirement for liability, in which case indemnity will be provided to the extent the liability or loss was caused by Contractor or its agents, employees, or subcontractors.

Contractor's duty to defend, indemnify and hold the District harmless shall include, as to all claims, demands, losses and liabilities to which it applies, the District's actual attorneys' fees and costs incurred in connection with defending such claim(s) including, without limitation, consultant and expert witness fees and expenses and personnel-related costs in addition to costs otherwise recoverable by statute or court rule.

THE UNDERSIGNED HEREBY CERTIFY THAT THIS AGREEMENT WAS MUTUALLY NEGOTIATED.

CONTRACTOR	PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY
By: _____ Name, Title	By: _____ George Sidhu, P.E., General Manager
Dated: _____	Dated: _____

The Contractor shall cause each of its subcontractors (and suppliers to the extent any perform any work on the Project site) to execute an Indemnification Contract substantially in the form of the foregoing by which each such entity or person assumes to the District all obligations Contractor assumes to the District as set forth above.

PERFORMANCE AND PAYMENT BOND

Bond No. _____
Amount: \$ _____

KNOW ALL MEN BY THESE PRESENTS, that

Of _____
Hereinafter called the Contractor (Principal), and _____

a corporation duly organized and existing under and by virtue of the laws of the State of _____
hereinafter called the Surety, and authorized to transact business within the State of Washington as Surety, are held
and firmly bound unto Public Utility District No. 1 of Skagit County, Washington as Owner (Obligee), in the sum
of

_____ Dollars (\$ _____),
lawful money of the United States of America, for the payment of which, well and truly be made to the Owner, the
Contractor and the Surety bind themselves and each of their heirs, executors, administrators, successors, and
assigns, jointly and severally, firmly by these presents as follows:

THE CONDITIONS OF THE ABOVE OBLIGATION ARE SUCH THAT:

WHEREAS, the Contractor has executed and entered into a certain Contract hereto attached, with the Owner, dated
_____, 20____.

For: _____
_____.

IN WITNESS: NOW THEREFORE, if Contractor, its heirs, executors, administrators, successors, or assigns, shall in
all things stand to and abide by, and well and truly keep and perform the covenants, conditions and agreements in the
said Contract for the duration thereof, including the one-year warranty period, and shall also well and truly perform
and fulfill all the undertakings, covenants, terms, conditions and agreements of any and all duly authorized
modifications of said Contract that may hereafter be made, at the time and in the manner therein specified and shall
pay all laborers, mechanics, subcontractors or lower tier subcontractors, and material persons, and all persons who
shall supply such person or persons, or subcontractors or lower tier subcontractors, with provisions and supplies for
the carrying on of such work, on his or their part, and shall indemnify and save harmless Owner, its officers and
agents, then this obligation shall become null and void; otherwise, it shall be and remain in full force and effect.

And Surety, for value received, hereby further stipulates and agrees that no change, extension of time,
alteration or addition to the terms of Contract or to the work to be performed thereunder or the plans or
specifications accompanying the same shall in any way affect its obligation of this Bond, and it does hereby waive
notice of any change, extension of time, alterations or additions to the terms of the Contract, the plans or the
specifications.

Surety hereby agrees that modifications and changes may be made in the terms and provisions of the
Contract without notice to Surety, and any such modifications or changes increasing the total amount to be paid the
Contractor shall automatically increase the obligation of the Surety on this Bond in a like amount.

The Surety expressly acknowledges that it shall be liable, under this Bond, for any liquidated damages
assessed against the Contractor in accordance with the provisions of the Contract.

Any claim(s) relating to or against this Bond shall be subject to and decided by arbitration in accordance
with the provisions of the Revised Code of Washington Chapter 7.04.

Any dispute relating to the performance or enforcement of the provisions of this Bond shall be governed by
Washington State Law. Jurisdiction and venue shall be Skagit County Courts. If non-binding arbitration or
mediation is conducted involving the Owner, the Contractor, the Surety, or any other party concerning or in any
way relating the work required or alleged to be required by the Contract, the Contractor and Surety expressly

consent to a consolidated or joint arbitration if and as called for by the Owner. The prevailing party in each such litigation shall be entitled to recover its attorneys' fees, in addition to any other relief granted.

IN WITNESS WHEREOF, the Contractor and the Surety have caused this bond and two (2) counterparts thereof to be signed and sealed by their duly authorized officers.

Signed and sealed this _____ day of _____, 20____.

Contractor

Surety

By _____

By _____

Attorney-In-Fact

Title _____

Corporate Seal

Corporate Seal

Address of local office and agent of Surety
Company:

APPROVED AS TO FORM:

PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY, Owner, _____, 20____

This Bond is executed in pursuance of Chapter 39.08, Revised Code of Washington.

NOTE: The Surety named on this Bond shall be one which is licensed to conduct business in the state where the project is located, and named in the current list of Companies Holding Certificates of Authority as Acceptable Sureties on Federal Bonds and as Acceptable Reinsuring Companies, as published in Circular 570 (amended) by the Audit Staff Bureau of Accounts, U.S. Treasury Department. All Bonds signed by an agent must be accompanied by a certified copy of the authority to act for the Surety at the time of the signing of this Bond.

Corporate Seal:

CERTIFICATE AS TO CORPORATE SEAL

I hereby certify that I am the (Assistant) Secretary of the Corporation named as Principal in the within Bond; that _____ who signed the said Bond on behalf of the Principal, was _____ of said Corporation; that I know his signature thereto is genuine, and that said Bond was duly signed, sealed, and attested for and in behalf of said Corporation by authority of its government body.

Secretary or Assistant Secretary

A copy of this bond shall be filed with the County Auditor.

ATTACH POWER OF ATTORNEY

CERTIFICATE OF OWNER'S ATTORNEY

I, the undersigned, **Peter Gilbert**, the duly authorized and acting legal representative of Public Utility District No. 1 of Skagit County, do hereby certify as follows

I have examined the attached contract(s) and the manner of execution thereof, and I am of the opinion that each of the aforesaid agreements are adequate and have been duly executed by the proper parties thereto acting through their duly authorized representatives; that said representatives have full power and authority to execute said agreements on behalf of the respective parties named thereon; and that the foregoing agreements constitute valid and legally binding obligations upon the parties executing the same in accordance with terms, conditions, and provisions thereof.

Peter Gilbert, Attorney

Date: _____

GENERAL CONDITIONS

GENERAL CONDITIONS

NOTICE OF DISCLAIMER

TAKE NOTICE, that the General Conditions are the 2018 Edition of the Washington State Department of Transportation Standard Specifications for Road, Bridge and Municipal Construction.

TAKE NOTICE, that these General Conditions have been materially amended by certain additions, deletions or other modifications to meet the needs of the Public Utility District No.1 of Skagit County. These amendments are contained in the Supplementary General Conditions.

END SECTION

**SUPPLEMENTARY GENERAL
CONDITIONS**

SUPPLEMENTARY GENERAL CONDITIONS

The following provisions of the Washington State 2018 Standard Specifications for Road, Bridge, and Municipal Construction (WSDOT) Division 1 General Requirements is hereby amended, changed, or supplemented and superseded as follows. All other provisions which are not amended, changed, or supplemented remain in full force.

1	Order of Precedence	
2	Section 1-01.3	Definitions
3	Section 1-03	Award and Execution of Contract
3.1	Section 1-03.4	Contract Bond
3.2	Section 1-03.8	Award and Execution of Contract
4	Section 1-05	Control of Work
4.1	Section 1.05.0	General
4.2	Section 1-05.4	Conformance With and Deviations from Plans and Stakes
4.3	Section 1-05.10	Guarantees
5	Section 1-07	Legal Relations and Responsibilities to the Public
5.1	Section 1-07.1(1)	Laws to be Observed
5.2	Section 1-07.6	Permits and Licenses
5.3	Section 1-07.9	Wages
5.4	Section 1-07.18(1)	Public Liability and Property Damage Insurance
5.5	Section 1-07.26	Personal Liability of Public Officers
6	Section 1-08	Prosecution and Progress
6.1	Section 1-08.5	Time for Completion (Contract Time)
6.2	Section 1.08.9	Liquidated Damages
6.3	Section 1.08.10(2)	Termination for Public Convenience
7	Section 1-09	Measurement and Payment
7.1	Section 1-09.4	Equitable Adjustment
7.2	Section 1-09.6	Force Account
7.3	Section 1-09.11(3)	Time Limitations and Jurisdiction
7.4	Section 1-09.13(3)	Claims Resolution
7.5	Section 1-09.14	Claims Against Contractor's Retainage and/or Public Contract Bond
8	Section 1-10	Temporary Traffic Control
8.1	Section 1-10.2(2)	Traffic Control Plans

1 ORDER OF PRECEDENCE. THE ORDER OF PRECEDENCE OF THE CONDITIONS OF THE CONTRACT ARE AS LISTED BELOW - FIRST IS THE HIGHEST AND LAST IS THE LOWEST:

Addenda
Bid Forms
Technical Specifications
Drawings
Special Provisions
Supplementary General Conditions
Division 1 General Requirements (WSDOT) 2018 Edition

2 SECTION 1-01.3 DEFINITIONS IS SUPPLEMENTED BY ADDING THE FOLLOWING DEFINITIONS:

Whenever these words are used in the Contract Documents, they shall have the following meanings:

"COMMISSION": Redefined to mean the three elected Commissioners of the District; substitute for "Commission" and "Washington State Transportation Commission" whenever cited.

"CONTRACTING AGENCY", "DISTRICT" or "OWNER": Public Utility District No. 1 of Skagit, Washington; substitute for "State," "Department," and "Department of Transportation" whenever cited.

"GENERAL MANAGER": The person appointed by the Commission per RCW 54.16.100 as the chief administrative officer of the District; substitute for "Secretary" and "Secretary of Transportation" whenever cited.

"ENGINEER": Public Utility District No. 1 of Skagit County and its sub consultants.

"STANDARD PLANS": Redefined to refer to the Standard Detail Sheets included with the Plans and Specifications as well as the 2018 WSDOT Standard Plans. The requirements of the Standard Detail Sheets shall be controlling in the case of any discrepancy between the Standard Details and the 2018 WSDOT Standard Plans.

3 SECTION 1-03 AWARD AND EXECUTION OF CONTRACT IS SUPPLEMENTED BY ADDING THE FOLLOWING:

3.1 Add the following to Section 1-03.4, Contract Bond:

Upon substantial completion of the Project, the Contractor shall provide a Utility Maintenance Bond for 25% of the Total Contract Amount on the form specified by the District that warrants all equipment, materials, and labor it furnishes or performs under

the Agreement against defects in design, materials, and workmanship for one (1) year after final acceptance as described in Section 1-05.10.

3.2 Add the following new Section 1-03.8 Award and Execution of Contract:

1-03.8 Award and Execution of Contract

1-03.8(1) The Contract for the Project shall be awarded to the responsible Bidder submitting the lowest responsive Bid. The lowest responsive Bid shall be determined by the total of the amount of the base Bid and the amount(s) Bid for any alternate(s) which the Owner, in its discretion, elects to include in the Contract.

4 SECTION 1-05 CONTROL OF WORK IS REVISED AS FOLLOWS:

4.1 Insert the following new Section 1-05.0 General:

1-05.0 General

Where the Specifications, the Owner's instructions, laws, ordinances, or any government authority require any work to be specially tested, or inspected, the Contractor shall give the Owner timely notice that such test of completed work is ready for inspection. If the inspection is by another authority than the Owner, the Contractor shall give the Owner timely notice of the date fixed for such inspection. Required certificates of inspection by other authority than the Owner shall be secured by the Contractor.

4.2 Revise Section 1-05.4, Conformance With And Deviation From Plans And Stakes, as follows:

Delete the word "Engineer" and replace with "Contractor" throughout this section with reference to setting stakes, marks, lines, etc. for the layout and prosecution of the Work. All surveying and layout required for this Project shall be performed by the Contractor. The Engineer retains final authority for determination of conformity of the Work and shall be notified immediately of any errors found to cause deviations in the Work.

4.3 Delete Section 1-05.10, Guarantees, and replace with the following:

1-05.10 Guarantees

The Contractor shall furnish to the Contracting Agency any guarantee or warranty furnished as a normal trade practice in connection with the purchase of any equipment, materials, or items used in the construction of the project.

The Contractor shall be responsible for correcting all defects in workmanship and materials incurred within one year (365 days) after the date of final acceptance of the project. When corrections of defects are made, the Contractor shall be responsible for correcting all defects in workmanship and/or materials in the corrected Work for one year

after acceptance of the correction by the Owner. The Contractor shall commence remedying such defects within seven (7) days of receipt of notice of discovery thereof from the Owner and shall complete such Work within a reasonable time. In emergencies, where damage may result from delay or where loss of service may result, such corrections may be made by the Owner, in which case the cost shall be borne by the Contractor. In the event the Contractor does not complete corrections within a reasonable time, the Work shall be otherwise accomplished and the cost of same shall be paid by the Contractor.

The Contractor shall be liable for any costs, losses, expenses, or damages, including consequential damages, suffered by the Owner resulting from defects in the Contractor's Work including but not limited to costs, labor, materials, equipment and administration incurred by Owner in making emergency repairs of such defective Work and associated costs of engineering, inspection, and supervision by the Owner or Engineer. The Contractor shall defend, indemnify and hold the Owner harmless from any and all claims which may be made against the Owner as a result of Contractor's defective Work.

5 SECTION 1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC IS SUPPLEMENTED BY ADDING THE FOLLOWING:

5.1 Add the following Section 1-07.1(1) Owner Safe Access:

1-07.1(1) Owner Safe Access.

The Contractor shall provide safe access for the Owner and its inspectors to adequately inspect the quality of work and the conformance with Contract Documents. The Contractor shall provide adequate lighting, ventilation, ladders, and other protective facilities as may be necessary for the safe performance of inspections.

5.2 Add the following to Section 1-07.6, Permits And Licenses:

The Contractor shall comply with all requirements of all permits provided by the Owner for this project.

5.3 Add the following to Section 1-07.9, Wages, 1-07.9(1), General:

Current Washington State Department of Labor and Industries prevailing wage rates are available at:

<http://www.lni.wa.gov/tradeslicensing/prevwage/wagerates/>

Wage rates applicable for this project are those for Skagit County with an effective date of this Contract Bid Date.

5.3 Revise Section 1-07.18, Public Liability and Property Damage Insurance as follows:

All reference to the State or Department of Transportation shall be supplanted with Public Utility District No. 1 of Skagit County.

5.5 Revise Section 1-07.26, Personal Liability of Public Officers, as follows:

Neither the Owner nor any elected official, officer, or its employees shall be personally liable for any acts or failure to act in connection with the Contract, it being understood that in such manners, they are acting solely as agents of the Owner.

No right of action shall accrue upon or by reason of this Contract to or for the use or benefit of anyone other than the parties to this Contract. The parties to this Contract are the Contractor and the Owner.

6 SECTION 1-08, PROSECUTION AND PROGRESS, IS REVISED AS FOLLOWS:

6.1 Supplement Section 1-08.5, Time For Completion (Contract Time), with the following:

Contractor shall complete all work associated with the Bid Schedule within 90 Calendar Days after the issuance of the Notice to Proceed.

6.2 Section 1-08.9, Liquidated Damages replaced numbered paragraphs 1 and 2 with the following:

1. To pay liquidated damages for each working day beyond the number of days established for substantial completion, to authorize the Owner to deduct these liquidated damages from any money due or coming due to the Contractor.

6.3 Revise Section 1-08.10(2), Termination For Public Convenience, as follows:

Substitute "Resolution" for "Executive Order", substitute "Commission" for "President", and delete "or Governor".

7 SECTION 1-09, MEASUREMENT AND PAYMENT, IS REVISED AS FOLLOWS:

7.1 Supplement Section 1-09.4, Equitable Adjustment, with the following:

All bilateral agreements shall constitute a full accord and satisfaction and represent payment in full as to adjustments in both Contract price and time of completion for all costs, whether direct or indirect, arising out of, or incidental to, or otherwise attributable to, the changed work including any and all delays and impacts resulting from the change to the contract. Acceptance of payment by Contractor pursuant to such bilateral

agreement shall constitute a waiver of any and all claims, known or unknown, arising out of, or incidental to, or otherwise attributable to the changed work.

7.2 Revise Section 1-09.6, Force Account, as follows:

Revise Item No. 1 as follows: Substitute “21 Percent” for “29 percent” for Contractor’s allowance for overhead and profit.

7.3 Revise Section 1-09.11(3), TIME LIMITATIONS AND JURISDICTION

Revise as follows: Substitute Public Utility District No.1 of Skagit County for State of Washington (six times). Substitute Superior Court of Skagit County for Superior Court of Thurston County.

7.4 Replace Sections 1-09.13(3), (3)A, (3)B and (4), Claims Resolution, with the following:

CLAIMS 1-09.13(3)

The Contractor and Contracting agency mutually agree that claims submitted in accordance with Section 1-09.11 and not resolved by nonbinding ADR process, shall be resolved by litigation unless the Contracting agency elects to resolve the claim through binding arbitration.

Venue. The venue of any Dispute Resolution Proceedings between the parties to this Agreement shall be Mount Vernon, Washington unless otherwise mutually agreed in writing.

Injunctive Proceedings. Notwithstanding any other provisions of these Dispute Resolution Procedures, any Disputes otherwise subject to submission to these Dispute Resolution Procedures may instead be first submitted, by any party having a legal interest therein, to the jurisdiction of the Superior Court for Skagit County, State of Washington, if and only to the extent necessary to secure injunctive relief reasonably necessary under the circumstances.

7.5 Add the following new Section 1-09.14 Claims Against Contractor’s Retainage and/or Public Contract Bond:

1-09.14 Claims Against Contractor’s Retainage and/or Public Contract Bond

The Contractor shall be liable for all costs incurred by the Owner, including, but not limited to, legal fees, salary/wage costs of Owner’s employees and litigation costs (whether or not recoverable by statute or court rule) arising out of claims against the retainage or the Contractor’s Public Contract Bond. Owner may deduct any such costs from funds otherwise due the Contractor, including the retention, by unilateral Change Order.

8 SECTION 1-10, TEMPORARY TRAFFIC CONTROL, IS REVISED AS FOLLOWS:

8.1 Revise Section 1-10.2(2), Traffic Control Plans, as follows:

Delete the first sentence of Section 1-10.2(2) and replace with the following:

The District is providing an approved traffic control plan for the project that the Contractor will implement to handle traffic safety during construction.

END OF SECTION

D I V I S I O N 0 1

GENERAL REQUIREMENTS

**SECTION 01 11 00
SUMMARY OF WORK**

PART 1 - GENERAL

1.01 SUMMARY

- A. The Work to be performed under this Contract shall consist of furnishing tools, equipment, materials, supplies, and manufactured articles, and furnishing all labor, transportation, and services, including fuel, power, water, and essential communications, and performing all work or other operations required for the fulfillment of the Contract in strict accordance with the Contract Documents. The Work shall be complete, and all work, materials, and services not expressly indicated or called for in the Contract Documents which may be necessary for the complete and proper construction of the Work in good faith shall be provided by the Contractor as though originally so indicated, at no increase in cost to the Owner.

1.02 RELATED SECTIONS

- A. Section 01 31 00 – Project Management and Coordination

1.03 SCOPE OF WORK

- A. Work Included:
1. The Contractor shall perform all the Work required (including the furnishing of all supervision, labor, tools, materials and equipment as well as the coordination and performance of all operations and incidentals necessary) for the complete installation of approximately 560 lineal feet (LF) of 24-inch fusible AWWA C900 PVC casing pipe, 12-inch fusible AWWA C900 PVC water pipe, and 3-inch HDPE fiber optic conduit via horizontal directional drilling methods under Interstate 5 and Cedardale Road.
 2. Horizontal Directional Drilling is considered Specialty Work under this Contract.
 3. In addition to installing the PVC pipes and conduit, this scope of work will include all labor, material and equipment associated with pressure testing the casing pipe and water pipeline and disinfecting the water pipeline.
 4. Other activities include guardrail removal and reinstallation, temporary traffic control, and temporary erosion control.
 5. Incidental work includes fittings, casing spacers, end seals, grouting, appurtenances and dewatering.
- B. Work not included:
1. District crews will:
 - a. Provide customer notifications of water shut-off,
 - b. Final connection to existing piping systems,
 - c. Thrust restraints, and
 - d. Abandonment of existing valves in place.
 2. In-place material density testing will be performed by an outside testing agency.

1.04 CONTRACTOR USE OF SITE

- A. The Contractor's use of the Site shall be limited to its construction operations, including on-site storage of materials, and equipment.

- B. All work shall be contained within existing District easements, State and County rights-of-way, temporary easements, and any easements or permissible land encumbrances negotiated by the Contractor.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END SECTION

**SECTION 01 22 00
MEASUREMENT AND PAYMENT**

PART 1 - GENERAL

1.01 SUMMARY

- A. Payment for the various items in the Proposal, as further specified herein, shall include all compensation to be received by the CONTRACTOR for furnishing all tools, equipment, supplies, and manufactured articles, and for all labor, operations, and incidentals appurtenant to the items of work being described, as necessary to complete the various items of the WORK all in accordance with the requirements of the Contract Documents, including all appurtenances thereto, and including all costs of permits and cost of compliance with the regulations of public agencies having jurisdiction, including Safety and Health Requirements of the Occupational Safety and Health Administration of the U.S. Department of Labor (OSHA) and the State of Washington, Division of Industrial Safety and Health (WISHA). No separate payment will be made for any item that is not specifically set forth in the Proposal or in this Section, and all costs therefore shall be included in the prices named in the Proposal for the various appurtenant items of work.
- B. Payment shall only be made for items listed in the Proposal or as listed in executed change orders. References in the Contract Documents to the 2018 Standard Specifications (of the Washington State Department of Transportation) are for purposes of defining products or execution of the WORK, but payment provisions of the 2018 Standard Specifications do not apply unless specifically incorporated by reference in these Contract Documents.

1.02 BID ITEMS

ITEM 1 - MOBILIZATION

- 1. Unit of Measurement: Lump Sum [LS]
- 2. Payment for mobilization shall be in accordance with Section 1-09.7 of the Standard Specifications.

ITEM 2 - INSTALL AND MAINTAIN TEMPORARY EROSION CONTROL AND WATER POLLUTION CONTROL MEASURES

- 1. Unit of Measurement: Lump Sum [LS]
- 2. Install and Maintain Temporary Erosion Control & Water Pollution Control Measures shall be paid at the lump sum price named in the Proposal, which shall constitute full compensation for furnishing all labor, material & equipment necessary to ensure compliance with all State and Federal regulatory and permitting agencies.

ITEM 3 - SPILL PREVENTION, CONTROL AND COUNTERMEASURE (SPCC) PLAN

- 1. Unit of Measurement: Lump Sum [LS]
- 2. Payment for SPCC Plan shall be based on the lump sum unit price named in the Proposal, which payment be considered full compensation for all tools, equipment, labor, materials, and incidentals necessary to complete this work as specified herein.

3. Payment will be made at 60 percent of the lump sum price after receipt of plan and the remaining 40 percent of the lump sum price will be paid after at Substantial Completion.

ITEM 4 - TRENCH SHORING AND SAFETY SYSTEMS

1. Unit of Measurement: Lump Sum [LS]
2. Trench Shoring and Safety Systems shall be paid at the lump sum price named in the Proposal, which shall constitute full compensation for furnishing all labor, material & equipment necessary to provide, install, and remove all trench shoring and safety systems to ensure compliance with all State and Federal regulations.

ITEM 5 - FURNISH AND INSTALL 24-INCH DIAM. DIPS DR18, FUSED AWWA C-900 PVC CASING PIPE BY HORIZONTAL DIRECTIONAL DRILLING

1. Unit of Measurement: Lineal Foot [LF]
2. Payment for Furnish and Install 24-Inch Diam. DIPS DR18, Fused AWWA C900 PVC Casing by Horizontal Directional Drilling shall be made at the unit price per foot named in the Proposal, which payment shall be considered full compensation for all tools, labor, equipment (including fusing equipment), materials, and incidentals required to complete this work as specified herein; including boring and receiving pits, casing fusing, internal fused bead trimming, pipe insertion, drill log, end seals, dewatering, excavation, trenching, and haul and disposal of excess soils, in accordance with the Plans and requirements of the Contract Documents.
3. This Bid Item is considered Specialty Work under this Contract.

ITEM 6 - FURNISH AND INSTALL 12-INCH DIAM. DIPS DR18, FUSED AWWA C-900 PVC WATER PIPE THROUGH CASING

1. Unit of Measurement: Lineal Foot [LF]
2. Payment for Furnish and Install 12-inch Diam. DIPS DR18, Fused AWWA C900 PVC Water Pipe through Casing shall be made at the unit price per each named in the Proposal. Price shall be considered full compensation for all labor, materials and equipment (including fusing equipment), and incidentals required to complete this work as specified herein; including required work and materials such as pipe fusing, casing spacers, pipe insertion, end caps, temporary thrust blocking, and gaskets to mechanically incorporate or fuse the fitting.
3. This Bid Item is considered Specialty Work under this Contract.

ITEM 7 - FURNISH AND INSTALL 3-INCH DIAM. HDPE COMMUNICATION DUCT, ORANGE DR11, FOR FIBER OPTIC CONDUIT THROUGH CASING

1. Unit of Measurement: Lineal Foot [LF]
2. Payment for Furnish and Install 3-inch Diam. HDPE Communication Duct, Orange DR11, for Fiber Optic Conduit through Casing shall be made at the unit price per linear foot named in the Proposal. Price shall be considered full compensation for all labor, materials and equipment (including fusing equipment), and incidentals required for conduit installation, joint connection, tracer wire, pull cord, dewatering, trenching, disposal of excess soils, in accordance with requirements of the Contract Documents.
3. This Bid Item is considered Specialty Work under this Contract.

ITEM 8 - WATERLINE FLUSHING, PRESSURE TESTING, DISINFECTION AND BACTERIA TESTING

1. Unit of Measurement: Lump Sum [LS]
2. Payment for Waterline Flushing, Pressure Testing, Disinfection and Bacteria Testing shall be made at the lump sum price named in the Proposal, which price shall constitute full compensation for all tools equipment, labor, materials and incidentals to complete waterline pressure testing, flushing and disinfection and bacteria testing, including temporary flushing assembly, blocking, connections, sample ports, and other appurtenant work, in accordance with the requirements of the Contract Documents.

ITEM 9 - TRAFFIC CONTROL

1. Unit of Measurement: Lump Sum [LS]
2. Payment for Traffic Control shall be by the lump sum price named in the Proposal, which price shall constitute full payment for all work to provide traffic control as stated in Section 1-10 of the Standard Specifications, including all tools, equipment, labor, and materials required to complete this work as specified herein; including but not limited to completion of Contractor's Daily Report of Traffic Control – Summary and Traffic Control Logs, setup and take down of traffic control signs and devices, and providing flaggers.

ITEM 10 - REMOVAL AND REINSTALL BEAM GUARDRAIL AND SIGNS

1. Unit of Measurement: Lump Sum [LS]
2. Payment for Removal and Resetting Beam Guardrail and Signs shall be pump lump sum price named in the Proposal, which price shall constitute full payment for all work to remove and reset the rail elements and hardware and signs that may be required to pull the casing and carrier pipes into the borehole. Guardrail removal and replacement shall conform to Section 8-11.3(1)F of the Standard Specifications, including all tools, equipment, labor, and materials required to complete this work as specified herein. Sign removal and replacement work shall conform to Section 8-21 of the Standard Specifications, including all tools, equipment, labor, and materials required to complete this work as specified herein.

PART 2 - PRODUCT (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 00
PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.01 SUMMARY

- A. The Work covered in this section consists of administrative and procedural for the management and coordination of subcontractors and coordination with the Owner and others.

1.02 RELATED SECTIONS

- A. Section 01 11 00 – Summary of Work
- B. Section 01 33 00 – Submittal Procedures
- C. Section 01 71 13 – Mobilization

1.03 CONTRACT METHOD

- A. The Work herein will be constructed under a single contract.

1.04 PROJECT COORDINATION

- A. The Contractor shall cooperate fully with all utility forces of the Owner or forces of other public or private agencies engaged in the relocation, altering, or otherwise rearranging of any facilities which interfere with the progress of the Work, and shall schedule the Work so as to minimize interference with said relocation, altering, or other rearranging of facilities.

1.05 PROJECT MEETINGS

- A. Preconstruction Meeting:
 - 1. Prior to the commencement of Work at the Site, a preconstruction conference will be held at the District's Mount Vernon office, located at 1415 Freeway Drive, Mount Vernon, WA. The conference shall be attended by the Contractor's Project Manager, its superintendent, and its Subcontractors as the Contractor deems appropriate. Other attendees will be:
 - a. Owner and Owner representatives.
 - b. Governmental representatives as appropriate.
 - c. Others as requested by Contractor, or Owner.
 - 2. The Contractor shall provide submittals in accordance with Section 01 33 00.
 - 3. The purpose of the conference is to designate responsible personnel and establish a working relationship. Matters requiring coordination will be discussed and procedures for handling such matters established. The complete agenda will be furnished to the Contractor prior to the meeting date. However, the Contractor should be prepared to discuss all of the items listed below.
 - a. Status of Contractor's insurance and bonds.
 - b. Contractor's tentative schedule.
 - c. Transmittal, review, and distribution of Contractor's submittals.
 - d. Processing applications for payment.
 - e. Maintaining record documents.
 - f. Critical work sequencing, proposed schedule, and proposed outage schedule.
 - g. Field decisions and Change Orders.
 - h. Use of Site, office and storage areas, security, housekeeping, and Owner's needs.

- i. Major equipment deliveries and priorities.
 - j. Contractor's assignments for safety and first aid.
 - k. Contractor's Daily Report Form.
 - l. Submittal Transmittal Form
 - m. Request for Information (RFI) Form.
 - n. Deviation Request Form.
 4. The Owner will preside at the preconstruction conference and will arrange for keeping and distributing the minutes to all persons in attendance.
 5. The Contractor and its Subcontractors should plan on the conference taking no less than 2 hours. The meeting will cover the items listed in paragraphs 2 and 3, and review of the Drawings and Specifications, with the Owner.
- B. Progress Meetings:
1. The Contractor shall schedule and hold regular on-site progress meetings at least biweekly and at other times as requested by Owner or as required by progress of the Work. The Contractor and all Subcontractors active on the Site shall attend each meeting. Contractor may at its discretion request attendance by representatives of its Suppliers, manufacturers, and other Subcontractors.
 2. The Owner will preside at the progress meetings and will arrange for keeping and distributing the minutes. The purpose of the meetings is to review the progress of the WORK, maintain coordination of efforts, discuss changes in scheduling, and resolve other problems that may develop. During each meeting, the Contractor shall present any issues that may impact its progress with a view to resolving these issues expeditiously, and the Contractor shall discuss the timing and notification process for water service interruptions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END SECTION

**SECTION 01 32 00
CONSTRUCTION PROGRESS DOCUMENTATION**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes administrative and procedural requirements and constraints for scheduling, recording and reporting progress.
- B. Constraints on the construction schedule are imposed by permits, environmental regulation, the OWNER, and other agency requirements. The CONTRACTOR is expected to use this information in preparing construction schedules to ensure adequate planning and performance of the work by the CONTRACTOR in compliance with permits and other regulatory constraints.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittal Procedures
- B. Section 01 41 00 – Regulatory Requirements

1.03 SUBMITTALS

- A. Submittals for this section shall be in accordance with Section 01 33 00 of these Specifications.
- B. Construction schedule shall clearly show restricted portions of the project with respect to time and hours of work.

PART 2 - PRODUCTS

2.01 SOFTWARE

- A. CONTRACTOR is required to use a software package compatible with Microsoft Project for Windows for all scheduling activities.

2.02 NETWORK DIAGRAM

- A. The network diagram shall be printed on tabloid-sized (11”x17”) sheets with font size large enough to clearly show all activities. The network diagram shall have a title block including the print date, revision number, contract number, CONTRACTOR name, and Project title.

PART 3 - EXECUTION

3.01 SCHEDULING OF WORK

- A. The scheduling of the WORK under the Contract shall be performed by the CONTRACTOR in accordance with the requirements of this section. Where submittals are required hereunder, the CONTRACTOR shall submit four copies of each submittal item.
- B. Scheduling terms and practices shall conform to the standards established in “Construction Planning and Scheduling, Second Edition”, published by the Associated General Contractors of America. Except for weekly look-ahead schedules, all schedules shall meet these general requirements and provide the following information:

1. Include all activities necessary to physically complete the project.
2. Show the planned order of WORK activities in a logical sequence.
3. Show durations of WORK activities in working days.
4. Show activity durations that are reasonable for the intended WORK.
5. Show activity durations in sufficient detail to evaluate progress of individual activities on a daily basis.
6. Show the completion of all work within the authorized contract time.

3.02 CONSTRUCTION PROGRESS SCHEDULES

- A. The CONTRACTOR shall submit project schedule at the Preconstruction Conference which shall serve as the CONTRACTOR's Plan of Operation for the 50-day period of the Contract Time and to identify when the CONTRACTOR intends to complete all work within the Contract Time. The schedule document shall reflect the Construction and Schedule Constraints identified in this Section.
- B. The Progress Schedule may be a critical path method (CPM) schedule, Gantt chart, or another standard schedule format. Regardless of which format is used, the schedule shall identify the critical path. The Progress Schedule shall indicate the relationships and time frames in which the various components of the WORK will be made substantially complete and placed into service in order to meet the project milestones. For the main pipeline work, sufficient detail shall be included for the identification of subdivisions of major components into such activities as:
 1. Shop drawing submittals
 2. Pipe fabrication and delivery
 3. Permit and other scheduling constraints
 4. Installation of erosion/sedimentation control measures
 5. Traffic Control Plan signage procurement and installation
 6. Trench excavation and backfill
 7. Restoration and revegetation
 8. Pipeline testing and disinfection
 9. Other important work for each major facility within the overall project scope.
- C. If requested by the OWNER, the OWNER and the CONTRACTOR shall meet to review and discuss the Project Schedule within 5 working days after they have been submitted to the OWNER. The OWNER's review and comment on the Project Schedule shall be limited to Contract conformance (with the construction and schedule constraints as stated in Section 3.04). The CONTRACTOR shall make corrections to the Project Schedule necessary to comply with the Contract requirements and shall adjust the Project Schedule to incorporate any missing information requested by the OWNER.
- D. Within 2 working days of receipt of comments, the CONTRACTOR shall have revised the original Progress Schedule submittal to address all review comments from the review meeting and resubmit revised Progress Schedule for the OWNER'S review. The OWNER, within 2 working days from the date that the CONTRACTOR submitted his revised schedule will either (1) accept the Project Schedule as submitted, or (2) advise the CONTRACTOR in writing to revise any part or parts of the Project Schedule which either do not meet the Contract requirements or are unsatisfactory for the OWNER to monitor the project's progress and status or evaluate monthly payment requests by the CONTRACTOR. The OWNER reserves the right to require that the CONTRACTOR adjust, add to, or clarify any portion of the Project Schedule which may later be insufficient for the monitoring of the WORK or approval of partial payment requests. No additional compensation will be provided for such adjustments or clarifications.

- E. The acceptance of the CONTRACTOR'S schedule by the OWNER will be based solely upon the schedule's compliance with the Contract requirements. By way of the CONTRACTOR assigning activity durations and proposing the sequence of the WORK, the CONTRACTOR agrees to utilize sufficient and necessary management and other resources to perform the work in accordance with the schedule. Upon submittal of a schedule update, the updated schedule shall be considered the "current" project schedule.
1. Submission of the CONTRACTOR's progress schedule to the OWNER shall not relieve the CONTRACTOR of total responsibility for scheduling, sequencing, and pursuing the WORK to comply with the requirements of the Contract Documents, including adverse effects such as delays resulting from ill-timed work.
- F. Following the acceptance of the CONTRACTOR's schedule, the CONTRACTOR shall monitor the progress of the WORK and adjust the schedule at each meeting to reflect actual progress and any changes in planned future activities. Each schedule update submitted must be complete including all information requested in the original schedule submittal. Each update shall continue to show all work activities including those already completed. These completed activities shall accurately reflect the "as built" information by indicating when the work was actually started and completed.
1. Neither the submission nor the updating of the CONTRACTOR's original schedule submittal nor the submission, updating, change or revision of any other report, curve, schedule or narrative submitted to the OWNER by the CONTRACTOR under this Contract, nor the OWNER's review or acceptance of any such report, curve, schedule or narrative shall have the effect of amending or modifying, in any way, the Contract completion date or milestone dates or of modifying or limiting, in any way, the Contractor's obligations under this Contract. Only a signed, fully executed change order can modify these contractual obligations.
- G. The schedule update submittal will be reviewed with the CONTRACTOR during the bi-weekly construction progress meeting. The goal of these meetings is to enable the CONTRACTOR and the OWNER to initiate appropriate remedial action to minimize any known or foreseen delay in completion of the WORK and to determine the amount of WORK completed since the previous schedule update. The status of the WORK will be determined by the percent completion of each activity shown on the schedule. These meetings are considered a critical component of the overall schedule update submittal and the CONTRACTOR shall have appropriate personnel attend. As a minimum, these meetings shall be attended by the contractor's Project Manager and General Superintendent.

3.03 CHANGE ORDERS

- A. Upon approval of a change order, or upon receipt by the CONTRACTOR of authorization to proceed with additional work, the change shall be reflected in the next submittal of the schedule by the CONTRACTOR.

3.04 PROJECT CONSTRAINTS

- A. Schedule Constraints
1. Some permits have specific restrictions on construction timing, work hours and type of construction activity allowed. The CONTRACTOR shall abide by all restrictions imposed by these permits.
 2. Refer to Permissible Construction Windows shown on the plan and profile drawings for schedule constraints.

3. The CONTRACTOR shall prepare a construction schedule, which incorporates the schedule information shown on the drawings and in **Table 1** at the end of this section. These constraints have been identified here for the convenience of the CONTRACTOR. However, all schedule constraints identified in permits, regulations, or elsewhere in the Specifications or Drawings shall be incorporated into the CONTRACTOR's schedule, whether included in Table 1 or not.
4. The CONTRACTOR shall attend meetings with affected property owners to coordinate work activities.

B. Property Constraints

1. The CONTRACTOR shall be available for periodic construction coordination meetings with landowners as the CONTRACTOR proceeds with work along the pipeline alignment. These meetings will ensure the proper coordination of protection for structures and utilities, temporary utility shutdowns (if necessary), traffic control, safety, minimizing impacts to business operations, etc.

C. Traffic Control Constraints

1. Working hours for the project shall be from **Table 1** at end of section.

TABLE 1. CONSTRUCTION TIMING CONSTRAINTS SUMMARY		
Location/ Jurisdiction⁽¹⁾	Activity	Constraints⁽²⁾
Skagit County	Construction Hours	<ul style="list-style-type: none"> • 7 a.m. to 9 p.m. Monday through Friday • 8 a.m. to 9 p.m. on Saturday and Sunday • To work outside of normal hours, a request must be submitted to the County. The County Official will review and issue written approval (administrative process).
Skagit County PUD No. 1	Connection to Existing Pipeline	<ul style="list-style-type: none"> • Provide 10 Day Notice prior to start of work
Adjacent Farm Fields	Pipe Layout and Fusing	<ul style="list-style-type: none"> • Work with farmer and land owner regarding use of farm field.
<p>Notes:</p> <p>(1) Per locations noted on plan/profile drawings.</p> <p>(2) Unless otherwise noted, a time period is when construction can occur. If there is a conflict between permits/approvals, the more restrictive constraint will apply.</p>		

END OF SECTION

**SECTION 01 33 00
SUBMITTAL PROCEDURES**

PART 1 - GENERAL

1.01 SUMMARY

- A. Wherever submittals are required hereunder, all such submittals by the CONTRACTOR shall be submitted to the OWNER.

1.02 RELATED SECTIONS

- A. Section 01 31 00 – Project Management and Coordination
- B. Section 01 32 00 – Construction Progress Documentation
- C. Section 01 77 00 – Closeout Procedures

1.03 DEFINITIONS

- A. Shop Drawings:
 - 1. See General Conditions.
 - 2. Product data and samples are Shop Drawing information.
 - 3. Manufacturer Certification
- B. Miscellaneous Submittals:
 - 1. Submittals other than Shop Drawings and O&M Manuals.
 - 2. Representative types of miscellaneous submittal items include but are not limited to:
 - a. Construction Stormwater Pollution Prevention Plan (SWPPP)
 - b. Spill Prevention Control and Countermeasure Plan (SPCC)
 - c. Site Specific Health and Safety Plan
 - d. Instrumentation and control commissioning reports.
 - e. Warranties.
 - f. Construction photographs.

1.04 PRECONSTRUCTION MEETING SUBMITTALS

- A. At the Preconstruction Meeting referred to in Section 01 31 00, Project Management and Coordination, which shall be held within ten (10) days of Notice to Proceed, the CONTRACTOR shall submit the following items to the OWNER for review:
 - 1. A preliminary schedule of Shop Drawings, Samples, and proposed Substitute ("Or-Equal") requests.
 - 2. A list of all submittals that will be prepared and a schedule for submission to the OWNER.
 - 3. A list of all permits and licenses the CONTRACTOR is obtaining per the requirements of these Contract Documents indicating the agency required to grant the permit, the expected date of submittal for the permit, and required date for receipt of the permit.
 - 4. A 30-day plan of operation in accordance with Section 01 32 00 – Construction Progress Documentation.
 - 5. A Progress Schedule in accordance with Section 01 32 00 – Construction Progress Documentation, which identifies critical activities to meet the project milestones.
 - 6. Erosion Control Plan for areas outside of the right-of-way and any alternative Traffic Control Plan.

1.05 PREPARATION OF SUBMITTALS

A. General:

1. All submittals and all pages of all copies of a submittal shall be completely legible.
2. Submittals which, in the Engineer's sole opinion, are illegible will be returned without review.

B. Shop Drawings:

1. Wherever called for in the Contract Documents, or where required by the OWNER, the CONTRACTOR shall furnish to the OWNER for review, two copies, plus one reproducible copy, (When feasible an electronic copy may be substituted), of each shop drawing submittal. The term "Shop Drawings" as used herein shall be understood to include detailed design calculations, shop drawings, fabrication, and installation drawings, erection drawings, lists, graphs, catalog sheets, data sheets, and similar items. Whenever the CONTRACTOR is required to submit design calculations as part of a submittal, such calculations shall bear the signature and seal of an engineer registered in the appropriate branch in Washington State, unless otherwise directed.
2. All Shop Drawing submittals shall be accompanied by the OWNER's standard submittal transmittal form which is appended at the end of this section or the CONTRACTOR's standard transmittal form approved by the OWNER. Any submittal not accompanied by such a form, or where all applicable items on the form are not completed, will be returned for resubmittal.
3. Except as may otherwise be indicated herein, the OWNER will return prints of each submittal to the CONTRACTOR with its comments noted thereon, within 7 Calendar Days following their receipt by the OWNER. It is considered reasonable that the CONTRACTOR shall make a complete and acceptable submittal to the OWNER by the second submission of a submittal item. The OWNER reserves the right to withhold money due to the CONTRACTOR to cover additional costs of the submittal review beyond the second submittal. The OWNER'S maximum review period for each submittal, including all resubmittals, will be 7 Calendar Days per submittal.
4. The OWNER's review of CONTRACTOR shop drawings submittals shall not relieve the CONTRACTOR of the entire responsibility for the correctness of details and dimensions. The CONTRACTOR shall assume all responsibility and risk for any misfits due to any errors in CONTRACTOR submittals. The CONTRACTOR shall be responsible for the dimensions and the design of adequate connections and details.
5. Numbering letter of transmittal:
 - a. Assign submittal numbers beginning with "001" and increasing sequentially with each additional transmittal.
6. Describing transmittal contents:
 - a. Provide listing of each component or item in submittal capable of receiving an independent review action.
 - b. Identify for each item:
 - 1) Manufacturer and Manufacturer's Drawing or data number.
 - 2) Contract Drawing Section or detail number if applicable.
 - 3) Specification Article/Paragraph number if applicable.
 - 4) Unique page numbers for each page of each separate item.
 - c. When submitting "or-equal" items that are not the products of named manufacturers, include the words "or-equal" in the item description.
7. Resubmittals:
 - a. Number with original root number and a suffix letter starting with "A" on a (new) duplicate transmittal form.

- b. Do not increase the scope of any prior transmittal.
- c. Account for all components of prior transmittal.
 - 1) If items in prior transmittal received "A" or "B" Action code, list them and indicate "A" or "B" as appropriate.
 - a) Do not include submittal information for items listed with prior "A" or "B" Action in resubmittal.
 - 2) Indicate "Outstanding-To Be Resubmitted At a Later Date" for any prior "C" or "D" Action item not included in resubmittal.
 - a) Obtain Engineer's approval to exclude items.
- 8. Contractor shall not use red color for marks on transmittals.
 - a. Duplicate all marks on all copies transmitted, and ensure marks are photocopy reproducible.
 - b. Outline Contractor marks on reproducible transparencies with a rectangular box.
- 9. Transmittal contents:
 - a. Coordinate and identify Shop Drawing contents so that all items can be easily verified by the Engineer.
 - b. Identify equipment or material use, Drawing detail reference, weight, and other Project specific information.
 - c. Provide sufficient information together with technical cuts and technical data to allow an evaluation to be made to determine that the item submitted is in compliance with the Contract Documents.
 - d. Submit items such as equipment brochures, cuts of fixtures, product data sheets or catalog sheets on 8-1/2 x 11 IN pages.
 - 1) Indicate exact item or model and all options proposed.
 - e. When a Shop Drawing submittal is called for in any Specification Section, include as appropriate, scaled details, sizes, dimensions, performance characteristics, capacities, test data, anchoring details, installation instructions, storage and handling instructions, color charts, layout Drawings, rough-in diagrams, wiring diagrams, controls, weights and other pertinent data in addition to information specifically stipulated in the Specification Section.
 - 1) Arrange data and performance information in format similar to that provided in Contract Documents.
 - 2) Provide, at minimum, the detail specified in the Contract Documents.
 - f. If proposed equipment or materials deviate from the Contract Drawings or Specifications in any way, clearly note the deviation and justify the said deviation in detail in a separate letter immediately following transmittal sheet.

1.06 ENGINEER'S REVIEW ACTION

- A. Shop Drawings and Samples:
 - 1. Items within transmittals will be reviewed for overall design intent and will receive one of the following actions:
 - a. A - FURNISH AS SUBMITTED.
 - b. B - FURNISH AS NOTED.
 - c. C - REVISE AND RESUBMIT.
 - d. D - REJECTED.
 - e. E - ENGINEER'S REVIEW NOT REQUIRED.
 - 2. Submittals received will be initially reviewed to ascertain inclusion of Contractor's approval stamp.

- a. Submittals not stamped by the Contractor or stamped with a stamp containing language other than that specified herein will not be reviewed for technical content and will be returned without any action.
3. In relying on the representation on the Contractor's review and approval stamp, Owner and Engineer reserve the right to review and process poorly organized and poorly described submittals as follows:
 - a. Submittals transmitted with a description identifying a single item and found to contain multiple independent items:
 - 1) Review and approval will be limited to the single item described on the transmittal letter.
 - 2) Other items identified in the submittal will:
 - a) Not be logged as received by the Engineer.
 - b) Be removed from the submittal package and returned without review and comment to the Contractor for coordination, description and stamping.
 - c) Be submitted by the Contractor as a new series number, not as a re-submittal number.
 - b. Engineer, at Engineer's discretion, may revise the transmittal letter item list and descriptions, and conduct review.
 - 1) Unless Contractor notifies Engineer in writing that the Engineer's revision of the transmittal letter item list and descriptions was in error, Contractor's review and approval stamp will be deemed to have applied to the entire contents of the submittal package.
4. Submittals returned with Action "A" or "B" are considered ready for fabrication and installation.
 - a. An electronic copy of said submittal will be returned to the Contractor.
 - b. If for any reason a submittal that has an "A" or "B" Action is resubmitted, it must be accompanied by a letter defining the changes that have been made and the reason for the resubmittal.
 - c. Destroy or conspicuously mark "SUPERSEDED" all documents having previously received "A" or "B" Action that are superseded by a resubmittal.
5. Submittals with Action "A" or "B" combined with Action "C" (Revise and Resubmit) or "D" (Rejected) will be individually analyzed giving consideration as follows:
 - a. The portion of the submittal given "C" or "D" will not be distributed (unless previously agreed to otherwise at the Preconstruction Meeting).
 - 1) One (1) copy or the one (1) transparency of the "C" or "D" Drawings will be marked up and returned to the Contractor.
 - a) Correct and resubmit items so marked.
 - b. Items marked "A" or "B" will be fully distributed.
 - c. If a portion of the items or system proposed are acceptable, however, the major part of the individual Drawings or documents are incomplete or require revision, the entire submittal may be given "C" or "D" Action.
 - 1) This is at the sole discretion of the Engineer.
 - 2) In this case, some Drawings may contain relatively few or no comments or the statement, "Resubmit to maintain a complete package."
 - 3) Distribution to the Owner and field will not be made (unless previously agreed to otherwise).
6. Failure to include any specific information specified under the submittal paragraphs of the Specifications will result in the submittal being returned to the Contractor with "C" or "D" Action.
7. Calculations required in individual Specification Sections will be received for information purposes only, as evidence calculations have been performed by individuals meeting

- specified qualifications, and will be returned stamped "E. Engineer's Review Not Required" to acknowledge receipt.
8. All costs associated with the Engineer's review of any Shop Drawing resubmitted more than once shall be borne by the Contractor with said costs being deducted from the Contract Price.
 9. Transmittals of submittals which the Engineer considers as "Not Required" submittal information, which is supplemental to but not essential to prior submitted information, or items of information in a transmittal which have been reviewed and received "A" or "B" Action in a prior submittal, will be returned with Action "E. Engineer's Review Not Required."
 10. Samples may be retained for comparison purposes.
 - a. Remove samples when directed.
 - b. Include in bid all costs of furnishing and removing samples.
 11. Approved samples submitted or constructed, constitute criteria for judging completed work.
 - a. Finished work or items not equal to samples will be rejected.

1.07 SAMPLES

- A. Whenever in the Specifications samples are required, the CONTRACTOR shall submit not less than three samples of each item or material to the OWNER for acceptance at no additional cost to the OWNER.
- B. Samples, as required herein, shall be submitted for acceptance a minimum of 7 Calendar Days prior to ordering such material for delivery to the jobsite, and shall be submitted in an orderly sequence so that dependent materials or equipment can be assembled and reviewed without causing delays in the WORK.
- C. All samples shall be individually and indelibly labeled or tagged, indicating thereon all specified physical characteristics and Manufacturer's name for identification and submitted to the OWNER for acceptance. Upon receiving acceptance of the OWNER, one set of the samples will be stamped and dated by the OWNER and returned to the CONTRACTOR, and one set of samples will be retained by the OWNER, and one set of samples shall remain at the job site until completion of the WORK.
- D. Unless indicated otherwise, all colors and textures of specified items presented in sample submittals shall be from the manufacturer's standard colors and standard materials, products, or equipment lines. If the samples represent non-standard colors, materials, products, or equipment lines and their selection will require an increase in contract time or price, the CONTRACTOR will clearly indicate same on the transmittal page of the submittal.

1.08 CONTRACTOR'S SCHEDULE SUBMITTAL

- A. See Section 01 32 00 for CONTRACTOR's schedule submittal requirements.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION



Contractor's Submittal Transmittal Form

For all contractor submittals, including shop drawings, samples calculation, data, or other

Date	Transmittal No.
------	-----------------

Project Name: Conway I-5 Crossing Project

Owner: Skagit PUD No. 1	Contractor:
-------------------------	-------------

Attention: Mark Handzlik	Attention:
--------------------------	------------

Address: 1415 Freeway Drive PO Box 1436 Mount Vernon, WA 98273	Address:
---	----------

Action Legend: A – Furnish As Submitted B – Furnish As Noted C – Revise and Resubmit D – Rejected E – Engineer’s Review Not Required	This is: <div style="text-align: right; margin-right: 20px;">Check one</div> <input style="width: 50px; height: 20px; margin-bottom: 10px;" type="checkbox"/> an original submittal <input style="width: 50px; height: 20px; margin-bottom: 10px;" type="checkbox"/> a 2nd submittal <input style="width: 50px; height: 20px;" type="checkbox"/> a ____ submittal
--	--

Item No.	Description	Spec Section or Drawing No.	Action Taken

District Reviewer: _____

Contractor to complete either (a) or (b), following:

(a) We have verified that the materials or equipment contained in this submittal meets all the requirements specified or shown (no exceptions)

(b) We have verified that the material or equipment contained in this submittal meets all the requirements specified or shown, except for the following deviations (List Deviations):

Contractor's Authorized Representative _____

SECTION 01 35 29
HEALTH, SAFETY, AND EMERGENCY RESPONSE PROCEDURES

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the administrative and procedural requirements for health, safety and emergency response procedures.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittal Procedures

1.03 REQUIREMENTS

- A. CONTRACTOR and all subcontractors shall:
 1. Select all appropriate safety equipment required to do the job and furnish it to workers.
 2. Participate in coordination of all safety issues among all contractors on the job.
 3. Make your Accident Prevention Plan [APP] and Health and Safety Plan [HASP] available and accessible to your workers at the site.
 4. Communicate to all workers the work rules and abide by said rules. Implement a disciplinary plan for safety or work rule violations which is consistently enforced.
 5. Provide weekly documentation relating to your safety compliance, identification of hazards or safety violations, actions taken to correct those hazards and safety training undertaken.
 6. Provide safety training on a regular basis to all workers as required by WISHA and other regulations.
 7. Conduct safety inspections as required by Washington Industrial Safety and Health Act [WISHA] and report all identified hazards.

1.04 SUBMITTALS

- A. Provide the Table of Contents for the Accident Prevention Plan.
- B. A written site-specific Health and Safety Plan for the CONTRACTOR and each SUBCONTRACTOR which identifies anticipated job safety hazards within the scope of CONTRACTOR's and subcontractor's work for all phases of the CONTRACT, including the specific means used to address each hazard prior to starting the job. The APP and HASP must conform to the requirements of WISHA.
- C. Submittals shall be furnished prior to starting the job.

1.05 WARRANTIES

- A. CONTRACTOR warrants that before starting the job, it will develop and furnish the District with a copy of its written APP and site-specific HASP, which identifies anticipated job safety hazards within the scope of its contract and for all phases of its contract and which addresses the specific means it will use to address each hazard.
- B. CONTRACTOR warrants that its Health and Safety Plan conforms to the requirements of the Washington Industrial Safety and Health Act.

- C. CONTRACTOR warrants it will ensure that its employees follow all APP and HASP policies and work rules.
- D. CONTRACTOR warrants that it will communicate all work rules to its employees and that it has a disciplinary plan for safety or work rule violations which it consistently enforces and will continue to enforce throughout the length of this contract.
- E. CONTRACTOR warrants that it will select and furnish to its employees all appropriate safety equipment and participate fully in coordination of all safety issues among all CONTRACTORS and subcontractors on the job.
- F. CONTRACTOR warrants that it will make its APP and HASP available and accessible at the site to all of its employees.
- G. CONTRACTOR agrees that it will have available in its job file weekly documentation relating to CONTRACTOR's safety compliance, identification of hazards or safety violations, actions taken to correct those hazards and safety training undertaken.
- H. CONTRACTOR warrants that it will provide safety training on a regular basis to all workers as required by WISHA and other regulations, will conduct safety inspections as required by WISHA and will report all identified hazards.
- I. CONTRACTOR warrants and agrees that it and each of its employees will comply with all rules and regulations relating to safety, including but not limited to WISHA regulations.
- J. CONTRACTOR agrees to undertake any abatement actions required as a result of the discovery of violations.
- K. CONTRACTOR warrants and agrees to require each subcontractor to have its own APP and site-specific HASP.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

**SECTION 01 41 00
REGULATORY REQUIREMENTS**

PART 1 - GENERAL

1.01 SUMMARY

- A. This section describes the Contract applicable permits and easements. As shown in the vicinity map on the Contract Plans, work will occur within unincorporated Skagit County.

1.02 RELATED SECTIONS

- A. Section 01 32 00 – Construction Progress Documentation
- B. Section 01 77 00 – Closeout Procedures

1.03 PERMITS

- A. Keep fully informed of all local ordinances, as well as state and federal laws, which in any manner affect the work herein specified. At all times comply with said ordinances, laws, and regulations, and protect and indemnify the OWNER and its officers and agents against any claim or liability arising from or based on the violation of such laws, ordinances, or regulations. Secure and pay for all permits, licenses, and inspection fees necessary for prosecution and completion of the work unless otherwise specified.
- B. Permits:
 1. OWNER will provide and pay all fees for the permits shown in **Table 1**. When applicable, the General Stormwater permit will be transferred into the Contractor’s name after the contract is executed, all other permits will remain in the OWNER’s name.
 2. Comply with all conditions attached to applicable federal, state, and local permits.
 3. Copies of the issued permits are included in **Appendix B**.
 4. Obtain all other permits not provided by the OWNER.

Table 1: Conway I-5 Crossing Project Permits and Approvals					
Permit Agency	Permit Name	Submitted	Permit No.	Status	Issued
Department of Ecology	SEPA Determination of Non-Significance			Issued	3/12/18
Department of Ecology	Construction Stormwater Permit	Not Applicable – Less than 1 acre of disturbance			
Department of Fish and Wildlife	Hydraulic Project Approval [HPA]	3/27/18	2018-6-610-01	Issued	8/22/18
Department of Transportation	Utility Permit	3/2/18	UP20588	Issued	12/20/18
Department of Archeological and Historic Preservation	No SEPA Comments; Use Inadvertent Discovery Plan [IDP]	Inadvertent Discovery Plan is included in Appendix D			
Skagit County	Right-of-Way Permit		PW18-0339	Issued	1/8/19
		Contractor’s Certificate of Insurance required			

- C. Terms and conditions of the permits obtained by the OWNER prior to bid submittal are included in **Appendix B**. Comply with all applicable terms and conditions contained in such permits.
- D. Anticipated terms and conditions of permits not secured prior to bid submittal which are to be obtained by the OWNER are included in the specifications.

1.04 EASEMENTS

- A. The OWNER has or will obtain easements for portions of the work as required. These easement limits are shown on the Drawings. Copies of all easements are included in **Appendix C**. Easements provide for the use of private property for construction purposes or for access during construction to the extent indicated in the easements. It shall be the CONTRACTOR's responsibility to:
 - 1. Determine the limitations in the easement obtained in every case and to abide by all requirements and provisions of the easement.
 - 2. Confine construction operations to within the easement limits or street right-of-way limits or make special arrangements with the property owner and appropriate public agency for the additional area required.
 - 3. Pay for any property use outside the prescribed limits and easements provided for in the Contract Documents.
 - 4. Repair to an equal to or better condition any property damaged either inside or outside the limits of the easements.
 - 5. Remove, protect, and reinstall all fences, mailboxes, paving, utilities or other items encountered on public or private property.
 - a. If the CONTRACTOR makes "special arrangements" with property owner, then the CONTRACTOR shall inform the OWNER of these arrangements and provide written documents.
 - b. CONTRACTOR may negotiate with the adjacent property owner if additional easements are required.
- B. CONTRACTOR shall comply with all applicable terms and conditions contained in such easements and additional easements that the CONTRACTOR may acquire.

1.05 PERMITS AND EASEMENTS OBTAINED AFTER BID SUBMITTAL

- A. If, after the bid submittal date, the OWNER obtains any permits or easements which require changes to the work hereunder and thereby cause an increase or decrease in the cost of, or the time required for, the performance of the work, submit information sufficient for the OWNER to determine the extent of the effects on the cost and/or schedule. If the OWNER agrees the cost and/or schedule will be affected by such changes, such effects will be handled in accordance with the General Conditions. The OWNER will provide CONTRACTOR with a copy of any such permits or easements. The CONTRACTOR shall comply with all applicable terms and conditions contained in such permits or easements.

1.06 EASEMENTS AND AGREEMENTS TO BE OBTAINED BY THE CONTRACTOR

- A. Obtain all other easements, permits and agreements required to perform the work. Prepare and submit to the proper authority all information required for the issuance of such easements, permits and agreements and pay all costs thereof, including agency inspections unless specifically provided otherwise in these Contract Documents. Submit a copy of each such easement, permit and agreement to the OWNER.

1.07 POSTING PERMITS AND EASEMENTS

- A. Post permits at the site of the work if required.

1.08 RESTORATION OF PROPERTY

- A. Comply with all property restoration requirements contained in permits, easements and agreements to complete the work.
- B. Restoration of road shoulders within the right of way, driveways, and private property and landscaping damaged by the Contractor through the course of the work or by accident shall be repaired to same at no cost to the Owner.
- C. Whenever any work is performed on property where an easement, permit or agreement has been obtained by the CONTRACTOR, submit to the OWNER, before final payment under Section 01 77 00 – Closeout Procedures, a written release from the property owner or proper authority acting for the owner, of each property affected, stating that the restoration of structures and surfaces has been completed to the satisfaction of the owner and that the owner has no claims for damages on account of such restoration. Use the release form provided by the OWNER. If, in the opinion of the OWNER, the release is unreasonably withheld by the property owner, the OWNER may, in its sole discretion, accept the portion of the work involved and cause final payment to be made.

1.09 HOURS OF WORK

- A. Comply with Section 01 32 00 - Construction Progress Documentation.

1.10 LICENSES

- A. The CONTRACTOR is responsible for obtaining all required licenses including all required Business License(s).

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION



Owner Release Form

To: _____

We (I), the undersigned, hereby acknowledge that _____
contractor, has satisfactorily restored the surface of the property owned by us (me) upon, or
under which said contractor has performed work pursuant to contract with the _____

(Owner)

(Owner)

Address: _____

Date: _____

SECTION 01 42 13
ABBREVIATIONS AND ACRONYMS

PART 1 - GENERAL

1.01 SUMMARY

- A. Wherever in these Specifications references are made to the standards, specifications, or other published data of the various international, national, regional, or local organizations, such organizations may be referred to by their acronym or abbreviation only. As a guide to the user of these Specifications, the following acronyms or abbreviations which may appear in these Specifications shall have the meanings indicated herein.

1.02 ABBREVIATIONS AND ACRONYMS

A. Institution Abbreviations

AAMA	Architectural Aluminum Manufacturer's Association
AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AISC	American Institute of Steel Construction
AISI	American Iron and Steel Institute
ANSI	American National Standards Institute, Inc.
API	American Petroleum Institute
APWA	American Public Works Association
ASCE	American Society of Civil Engineers
ASME	American Society of Mechanical Engineers
ASQC	American Society for Quality Control
ASTM	American Society for Testing and Materials
AWS	American Welding Society
AWWA	American Water Works Association
BBC	Basic Building Code, Building Officials and Code Administrators International
BNSF	Burlington Northern Santa Fe Railroad
BPA	Bonneville Power Administration
CRSI	Concrete Reinforcing Steel Institute
EIA	Electronic Industries Association
ETL	Electrical Test Laboratories
EPA	Environmental Protection Agency
IAPMO	International Association of Plumbing and Mechanical Officials
ICBO	International Conference of Building Officials
IEEE	Institute of Electrical and Electronics Engineers
IES	Illuminating Engineering Society
ISA	Instrument Society of America
ISO	International Organization for Standardization
ITE	Institute of Traffic Engineers
MSS	Manufacturers Standardization Society
NAAMM	National Association of Architectural Metal Manufacturer's
NACE	National Association of Corrosion Engineers
NBS	National Bureau of Standards
NCCLS	National Committee for Clinical Laboratory Standards
NEC	National Electrical Code
NEMA	National Electrical Manufacturer's Association

NFPA	National Fire Protection Association
OSHA	Occupational Safety and Health Administration
PCA	Portland Cement Association
PPI	Plastic Pipe Institute
PUD	Public Utility District No. 1
RWMA	Resistance Welder Manufacturer's Association
SAE	Society of Automotive Engineers
SAMA	Scientific Apparatus Makers Association
SMA	Screen Manufacturers Association
SPFA	Steel Plate Fabricators Association
SPR	Simplified Practice Recommendation
SSPC	Steel Structures Painting Council
SSPWC	Standard Specifications for Public Works Construction
UBC	Uniform Building Code
UL	Underwriters Laboratories, Inc.
UPRR	Union Pacific Railroad
WCRSI	Western Concrete Reinforcing Steel Institute
WISHA	Washington Industrial Safety and Health Administration
WRI	Wire Reinforcement Institute, Inc.
WSDOT	Washington State Department of Transportation

B. Acronyms

SPCC	Spill Prevention, Control, and Countermeasure Plan
SWPPP	Stormwater Pollution Prevention Plan

C. Other acronyms or abbreviations may appear and shall be determined by the context in which they are used.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

SECTION 01 42 19
REFERENCE STANDARDS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes reference standards that may apply to this Project.
- B. **Titles of Sections and Paragraphs:** Captions accompanying specification sections and paragraphs are for convenience of reference only, and do not form a part of the Specifications.
- C. **Applicable Publications:** Whenever in these Specifications references are made to published specifications, codes, standards, or other requirements, it shall be understood that wherever no date is specified, only the latest specifications, standards, or requirements of the respective issuing agencies which have been published as of the date that the WORK is advertised for bids, shall apply; except to the extent that said standards or requirements may be in conflict with applicable laws, ordinances, or governing codes. No requirements set forth herein or shown on the Drawings shall be waived because of any provision of, or omission from, said standards or requirements.
- D. **Specialists, Assignments:** In certain instances, specification text requires (or implies) that specific work is to be assigned to specialists or expert entities, who must be engaged for the performance of that work. Such assignments shall be recognized as special requirements over which the CONTRACTOR has no choice or option. These requirements shall not be interpreted so as to conflict with the enforcement of building codes and similar regulations governing the WORK; also they are not intended to interfere with local union jurisdiction settlements and similar conventions. Such assignments are intended to establish which party or entity involved in a specific unit of work is recognized as "expert" for the indicated construction processes or operations. Nevertheless, the final responsibility for fulfillment of the entire set of contract requirements remains with the CONTRACTOR.

1.02 REFERENCE SPECIFICATIONS, CODES, AND STANDARDS

- A. Without limiting the generality of other requirements of the Specifications, all work specified herein shall conform to or exceed the requirements of applicable codes and the applicable requirements of the following documents.
- B. References herein to "Building Code" or "Uniform Building Code" shall mean Uniform Building Code of the International Conference of Building Officials (ICBO). Similarly, references to "Mechanical Code" or "Uniform Mechanical Code," "Plumbing Code" or "Uniform Plumbing Code," "Fire Code" or "Uniform Fire Code," shall mean Uniform Mechanical Code, Uniform Plumbing Code and Uniform Fire Code of the International Conference of the Building Officials (ICBO). "Electric Code" or "National Electric Code (NEC)" shall mean the National Electric Code of the National Fire Protection Association (NFPA). The latest edition of the codes as approved by the Municipal Code and used by the local agency as of the date that the WORK is advertised for bids, as adopted by the agency having jurisdiction, shall apply to the WORK herein, including all addenda, modifications, amendments, or other lawful changes thereto.
- C. In case of conflict between codes, reference standards, drawings and the other Contract Documents, the most stringent requirements shall govern. All conflicts shall be brought to the

attention of the OWNER for clarification and directions prior to ordering or providing any materials or furnishing labor. The CONTRACTOR shall bid for the most stringent requirements.

- D. The CONTRACTOR shall construct the WORK specified herein in accordance with the requirements of the Contract Documents and the referenced portions of those referenced codes, standards, and specifications listed herein.
- E. **Applicable Standard Specifications:** References in the Contract Documents to "Standard Specifications" shall mean the **Standard Specifications for Road, Bridge, and Municipal Construction of the Washington State Department of Transportation and Washington State Chapter of American Public Works Association, 2018 edition**, which applicable parts are incorporated herein and made a part of these Documents by specific reference thereto. If requirements contained in the Standard Specifications are modified by or are in conflict with supplemental information in these Contract Documents, the requirements of these Contract Documents shall prevail.
- F. References herein to "OSHA Regulations for Construction" shall mean **Title 29, Part 1926, Construction Safety and Health Regulations**, Code of Federal Regulations (OSHA), including all changes and amendments thereto.
- G. References herein to "OSHA Standards" shall mean **Title 29, Part 1910, Occupational Safety and Health Standards**, Code of Federal Regulations (OSHA), including all changes and amendments thereto.
- H. References herein to "WISHA Standards" shall mean **Chapter 296 - 24 WAC, General Safety and Health Standard**, State of Washington, Division of Industrial Safety and Health, (WISHA) including all changes and amendments thereto.
- I. References herein to "WISHA Standards for Construction" shall mean **Chapter 296 - 155 WAC, Safety Standards for Construction Work**, State of Washington, Division of Industrial Safety and Health, (WISHA) including all changes and amendments thereto.

1.03 REGULATIONS RELATED TO HAZARDOUS MATERIALS

- A. The CONTRACTOR is responsible that all work included in the Contract Documents, regardless if shown or not, shall comply with all EPA, OSHA, RCRA, NFPA, and any other Federal, State, and Local Regulations governing the storage and conveyance of hazardous materials, including petroleum products.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

**SECTION 01 45 00
QUALITY CONTROL**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the administrative and procedural requirements for activities to evaluate completed Work and elements for conformance with the requirements.
- B. Specific quality control requirements for the Work are indicated throughout the Contract Documents. The requirements of this Section are primarily related to performance of the Work beyond furnishing of manufactured products. The term "Quality Control" includes inspection, sampling and testing, and associated requirements.

1.02 SOURCE QUALITY CONTROL

- A. Unless otherwise indicated, all products, materials, and equipment shall be subject to inspection by the OWNER at the place of manufacture at the OWNER's leisure.
- B. The presence or absence of the OWNER at the place of manufacture, however, shall not relieve the CONTRACTOR of the responsibility for furnishing products, materials, and equipment which comply with all requirements of the Contract Documents. Compliance is a duty of the CONTRACTOR, and said duty shall not be avoided by any act or omission on the part of the OWNER.

1.03 TESTING AND INSPECTION SERVICES

- A. Unless otherwise indicated, all sampling and testing shall be in accordance with the methods prescribed in the current standards of the ASTM, as applicable to the class and nature of the article or materials considered; however, the OWNER reserves the right to use any generally-accepted system of sampling and testing which, in the opinion of the OWNER will ensure the OWNER that the quality of the workmanship is in full accord with the Contract Documents.
- B. Any waiver by the OWNER of any specific testing or other quality assurance measures, whether or not such waiver is accompanied by a guarantee of substantial performance as a relief from the specified testing or other quality assurance requirements as originally specified, and whether or not such guarantee is accompanied by a performance bond to assure execution of any necessary corrective or remedial Work, shall not be construed as a waiver of any requirements of the Contract Documents.
- C. Notwithstanding the existence of such waiver, the OWNER reserves the right to make independent investigations and tests, and failure of any portion of the Work to meet any of the requirements of the Contract Documents, shall be reasonable cause for the OWNER to require the removal or correction and reconstruction of any such work in accordance with the General Provisions.

1.04 TESTING LABORATORY SERVICES

- A. Inspection and testing laboratory service shall comply with the following:
- B. OWNER will appoint, employ, and pay for services of an independent firm to perform inspection and testing or will perform inspection and testing itself.

- C. The OWNER or independent firm will perform inspections, testing, and other services specified in individual specification sections and as required by the OWNER.
- D. Reports will be submitted by the independent firm to the OWNER in duplicate, indicating observations and results of tests and indicating compliance or non-compliance with Contract Documents.
- E. The CONTRACTOR shall cooperate with the OWNER or independent firm and furnish samples of materials, design mix, equipment, tools, storage and assistance as requested.
- F. The CONTRACTOR shall notify OWNER 24 hours prior to the expected time for operations requiring inspection and laboratory testing services.
 - 1. Retesting required because of non-conformance to specified requirements shall be performed by the same independent firm on instructions by the OWNER. The CONTRACTOR shall bear all costs for such retesting at no additional cost to the OWNER.
 - 2. For samples and tests required for CONTRACTOR's use, the CONTRACTOR shall make arrangements with an independent firm for payment and scheduling of testing. The cost of sampling and testing for the CONTRACTOR's use shall be included in the Contract Price.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 INSTALLATION

- A. **Inspection:** The CONTRACTOR shall inspect materials or equipment upon the arrival on the jobsite and immediately prior to installation, and reject damaged and defective items.
- B. **Measurements:** The CONTRACTOR shall verify measurements and dimensions of the Work, as an integral step of starting each installation.
- C. **Manufacturer's Instructions:** Where installations include manufactured products, the CONTRACTOR shall comply with manufacturer's applicable instructions and recommendations for installation, to whatever extent these are more explicit or more stringent than applicable requirements indicated in Contract Documents.

END OF SECTION

SECTION 01 57 19
TEMPORARY ENVIRONMENTAL CONTROLS

PART 1 - GENERAL

1.01 SUMMARY

- A. This section specifies Temporary Environmental Controls required to be maintained during construction in addition to Section 31 25 00 – Erosion and Sediment Control.
- B. The CONTRACTOR is made aware that local waterways may be impaired for low dissolved oxygen. Soil on the site may contain phosphorus. Phosphorus may contribute to excessive plant growth resulting in low dissolved oxygen levels in water bodies. The Stormwater Pollution Prevention Plan [SWPPP] shall contain detailed plans to cover all exposed soils to prevent stormwater from conveying soils into the water body. Soil stabilization activities in the vicinity of the impaired water body will not include the use of phosphorus-containing fertilizers, compost, or other products that could cause excess phosphorus or other nutrients to be discharged.
- C. The CONTRACTOR shall prepare a Spill Prevention, Control and Countermeasures Plan (SPCC) in conformance with Section 1-07.15(1) of the Standard Specifications.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittal Procedures
- B. Section 31 25 00 – Erosion and Sedimentation Control

1.03 SUBMITTALS

- A. SPCC Plan in conformance with Section 1-07.15(1) of the Standard Specifications.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 AIR POLLUTION CONTROL

- A. The CONTRACTOR shall not discharge smoke, dust, and other contaminants into the atmosphere that violate the regulations of legally constituted authorities. Minimize dust nuisance by cleaning, sweeping, and sprinkling with water, or other means. The use of water, in amounts resulting in mud on public streets, is not acceptable as a substitute for sweeping or other methods.

3.02 NOISE CONTROL

- A. The CONTRACTOR shall perform all work in compliance with the local jurisdiction's Noise Ordinance, except where additional restrictions are applicable. The CONTRACTOR shall schedule noisy operations to minimize their duration.
- B. The CONTRACTOR shall use whatever means necessary to comply with the Noise Ordinance. The CONTRACTOR shall be responsible for all costs necessary to reduce noise levels to those specified in the Noise Ordinance or to obtain a variance from the specific levels.

- C. The CONTRACTOR shall provide the following noise abatement equipment or operate construction equipment in the following manner so as to avoid exceeding noise limitations:
- D. Each internal combustion engine, used for any purpose on the job or related to the job, shall be equipped with a muffler of a type recommended by the manufacturer. No internal combustion engine shall be operated on the project without said muffler.
 - 1. Equipment that cannot meet the noise levels specified under the local Noise Ordinance shall be quieted by use of improved exhaust mufflers or other means.
 - 2. Noisy portable equipment, such as generators, compressors or pumps shall be located as far away from sensitive noise receptor areas as practicable. (Noise sensitive receptors include residences.)
 - 3. Noise barriers shall be constructed around stationary construction equipment which has to be utilized at locations near sensitive noise receptors.
 - 4. Idling equipment shall be shut off when not in active use.

3.03 SITE MAINTENANCE

- A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in a clean and orderly condition.
- B. Remove waste materials, debris and rubbish from the site immediately upon such materials becoming unfit for use in the work. In the event this material is not removed, the OWNER reserves the right to have the material removed and the expense charged to the CONTRACTOR.
- C. Prevent dirt and dust from escaping trucks departing the site by covering dusty loads, washing truck tires before leaving the site, or other methods as applicable.
- D. The CONTRACTOR is responsible for controlling dust and mud within the project limits. All streets outside the project limits used by the CONTRACTOR during the execution of this Contract shall be kept clean. The CONTRACTOR shall use watering trucks equipped with high-velocity water jets and low-head sprinkling devices, power sweepers, and any other pieces of equipment necessary to render the streets free of all mud, debris, and foreign materials. Any damage caused by dust or mud accumulation on the streets and in the storm drain system shall be the sole responsibility of the CONTRACTOR.
- E. Watering trucks may be used on paved streets with an adequate storm drainage system. Watering trucks shall not be used on streets where, in the opinion of the OWNER, mud could be created, causing a nuisance. Where water flushing is not allowed, street sweepers (not power brooms) shall be used.
- F. Sweep or flush all surface roadways upon completion of each day's activities. Equipment required for this operation shall be on the job site or available at all times. Failure to have this equipment on the job site or available may necessitate a shutdown of the project.
- G. Clean all roadways, streets, and appurtenances, including sidewalks and paths which are open for public use, of all material or debris which has been dropped or otherwise deposited thereon, as a result of CONTRACTOR on- and off-site operations, at the conclusion of each working day, and at such other times as deemed necessary by the OWNER to ensure the safety of the traveling public and to prevent inconvenience to the public and owners of private property adjacent to the project.
- H. Any violation of the above requirements will be sufficient grounds for the OWNER to order the roadways, streets and appurtenances cleaned or sprinkled by others, and to deduct all costs of such cleaning or sprinkling from any money due, or to become due to the CONTRACTOR.

3.04 WATER AND EROSION CONTROL

- A. **Temporary Drainage:** Conform to the regulations and requirements of legally authorized surface water management agencies.
- B. Keep trenches and areas of excavations free from water as required to permit continuous progress of, or to prevent damage to, the work or the work of others.
- C. Discharge dewatering waters and runoff or other waters collected in or intercepted by excavations under the work of this Contract in conformance with all permits. The CONTRACTOR must obtain approval from the appropriate local sewer authority or drainage authority, in writing, for any discharge to local sewers. The CONTRACTOR's operations shall be conducted in such a manner as to prevent sediment from reaching the storm drains and surface waters.
- D. Prevent solids or turbid runoff from entering waterways. No dirt, sediments, cement leachate or other material harmful to fish shall enter fish bearing waters. Cover and secure excavated area, spoils piles and imported or stored fill materials. Cut and cover techniques, storm drains filter socks, straw bales around construction sites, silt fencing and similar erosion control measures shall be employed as required to prevent contamination of local waterways.
- E. Erosion control measures shall be in accordance with Section 31 25 00 – Temporary Erosion and Sediment Control and general notes, and shall be installed prior to excavation, clearing or grading activities.

3.05 TREE AND PLANT PROTECTION

- A. Protect existing trees as directed by the OWNER. The CONTRACTOR shall be responsible for restoration of trees and plants damaged by the CONTRACTOR's operation or damaged as a result of insufficient or improper protection, as determined by the OWNER.

3.06 OIL SPILL PREVENTION AND CONTROL

- A. **Regulations:** The CONTRACTOR is advised that discharge of oil from equipment or facilities into state waters or onto adjacent land is not permitted under Washington State water quality regulations.
- B. **Responsibility:** The CONTRACTOR shall be responsible for prevention, containment, and cleanup of spilling of oil, fuel and other petroleum products used in the CONTRACTOR's operations. All such prevention, containment and cleanup costs shall be borne by the CONTRACTOR. The CONTRACTOR shall, at a minimum, take the following measures regarding oil spill prevention, containment and cleanup.
- C. **Minimum Precautions:**
 - 1. Fuel hoses, lubrication equipment, hydraulically operated equipment, oil drums, and other equipment and facilities shall be inspected regularly for drips, leaks, or signs of damage, and shall be maintained and stored properly to prevent spills. Proper security shall be maintained to discourage vandalism.
 - 2. All land-based oil and products storage tanks shall be diked or located so as to prevent spills from escaping to the water. Diking and subsoils shall be lined with impervious material to prevent oil from seeping through the ground and dikes.
 - 3. All visible floating oils shall be immediately contained with booms, dikes, or other appropriate means and removed from the water prior to discharge into state waters. All visible oils on land shall be immediately contained using dikes, straw bales, or other

- appropriate means and removed using sand, ground clay, sawdust, or other absorbent material, which shall then be properly disposed of by the CONTRACTOR.
4. In the event of any oil or product discharges into public waters, or onto land with a potential for entry into public waters, the CONTRACTOR shall immediately notify the following agencies at their listed 24-hour response numbers:
 - a. Washington DOE Northwest Regional Office, Telephone No. (425) 649-7000.
 - b. U.S. Coast Guard Telephone No. (206) 217-6232.
 - c. Maintain on the job site, in the vicinity of ongoing work, the following spill response and containment materials:
 - 1) Oil-absorbent booms: minimum four (4) each, five (5) feet long.
 - 2) Oil-absorbent pads or bulk material, adequate for coverage of 200 square feet of surface area, minimum.
 - 3) Straw bales.
 - 4) Dry all.
 - 5) Gloves.
 - 6) Plastic bags.

3.07 CULTURAL RESOURCES FINDINGS

A. References:

1. The CONTRACTOR shall adhere to the National Historic Preservation Act of 1966 and 36 CFR 800 which provide for the preservation of potential historical architectural, archaeological, or cultural resources (hereinafter called "cultural resources").
2. The CONTRACTOR shall conform to the applicable requirements of the National Historical Preservation Act of 1966 as it relates to the preservation of cultural resources and fair compensation to the CONTRACTOR for delays resulting from such cultural resources investigations.

B. Findings Procedures:

1. Attached in **Appendix D** is a copy of the District's Inadvertent Discovery Plan. In the event of such a discovery the Contractor shall comply with the plan.

END OF SECTION

SECTION 01 66 00
PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section includes the requirements for storage and handling of products for the Project.

1.02 RELATED SECTIONS

- A. Section 01 71 13 - Mobilization

1.03 DEFINITIONS

- A. The word "Products", as used herein, is defined to include purchased items for incorporation into the Work, regardless of whether specifically purchased for the project or taken from CONTRACTOR's stock of previously purchased products. The word "Materials," is defined as products which must be substantially cut, shaped, worked, mixed, finished, refined, or otherwise fabricated, processed, installed, or applied to form units of work. The word "Equipment" is defined as products with operational parts, regardless of whether motorized or manually operated, and particularly including products with service connections (wiring, piping, and other like items). Definitions in this paragraph are not intended to negate the meaning of other terms used in the Contract Documents, including "specialties," "systems," "structure," "finishes," "accessories," "furnishings," special construction," and similar terms, which are self-explanatory and have recognized meanings in the construction industry.
- B. Neither "Products" nor "Materials" nor "Equipment" includes machinery and equipment used for preparation, fabrication, conveying and erection of the Work.

1.04 QUALITY ASSURANCE

- A. **Source Limitations:** To the greatest extent possible for each unit of work, the CONTRACTOR shall provide products, materials, and equipment of a singular generic kind from a single source.
- B. **Compatibility of Options:** Where more than one choice is available as options for CONTRACTOR's selection of a product, material, or equipment, the CONTRACTOR shall select an option which is compatible with other products, materials, or equipment. Compatibility is a basic general requirement of product, material and equipment selections.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 GENERAL

- A. Products shall be transported by methods to avoid damage and shall be delivered in undamaged condition in manufacturer's unopened containers and packaging.
- B. The CONTRACTOR shall deliver and store products in accordance with manufacturer's written recommendations and by methods and means which will prevent damage, deterioration, and loss including theft. Delivery schedules shall be controlled to minimize long-term storage of products at the site and overcrowding of construction spaces. In particular, the CONTRACTOR shall

ensure coordination to ensure minimum holding or storage times for flammable, hazardous, easily damaged, or sensitive materials to deterioration, theft, and other sources of loss.

- C. The CONTRACTOR shall provide equipment and personnel to handle products, materials, and equipment by methods to prevent soiling and damage.
- D. The CONTRACTOR shall provide additional protection during handling to prevent marring and otherwise damaging products, packaging, and surrounding surfaces.

3.02 PROTECTION

- A. Products shall be stored in accordance with manufacturer's written instructions and with seals and labels intact and legible. Sensitive products shall be stored in accordance with manufacturer's recommendations.
- B. For exterior storage of fabricated products, products shall be placed on sloped supports above ground. Products subject to deterioration shall be covered with impervious sheet covering and ventilation shall be provided to avoid condensation.
- C. Loose granular materials shall be stored on solid flat surfaces in a well-drained area and shall be prevented from mixing with foreign matter.
- D. Storage shall be arranged to provide access for inspection. The CONTRACTOR shall periodically inspect to assure products are undamaged and are maintained under required conditions.

3.03 MAINTENANCE

- A. The CONTRACTOR shall comply with manufacturer's product storage requirements and recommendations.
- B. The CONTRACTOR shall ensure that surfaces of products exposed to the elements are not adversely affected and that weathering of finishes does not occur.
- C. The CONTRACTOR shall maintain manufacturer-required environmental conditions continually.
- D. For mechanical and electrical equipment, the CONTRACTOR shall provide a copy of the manufacturer's service instructions with each item and the exterior of the package shall contain notice that instructions are included.
- E. Products shall be serviced on a regularly scheduled basis, and a log of services shall be maintained and submitted as a record document prior to acceptance by the OWNER in accordance with the Contract Documents.

END OF SECTION

**SECTION 01 71 13
MOBILIZATION**

PART 1 - GENERAL

1.01 GENERAL

- A. Mobilization shall include the obtaining of all permits; moving onto the site of all equipment; furnishing and erecting plants, temporary buildings, and other construction facilities; and implementing security requirements; all as required for the proper performance and completion of the Work. Mobilization shall include the following principal items:
1. Moving on to the site of all CONTRACTOR's plant and equipment required for first month operations.
 2. Submittals for ordering long lead time materials and major equipment within ten (10) days of Notice to Proceed.
 3. Installing temporary construction power, wiring, and lighting facilities.
 4. Developing construction water supply.
 5. Providing all on-site communication facilities, including telephones.
 6. Providing on-site sanitary facilities and potable water facilities.
 7. Arranging for and erection of CONTRACTOR's work and storage yard.
 8. Obtaining all required permits.
 9. Having all OSHA required notices and establishment of safety programs.
 10. Having the CONTRACTOR's superintendent at the job site full time.
 11. Preparation and submission of initial submittals.
 12. Preparation and submission of the following documents:
 - a. Stormwater Pollution Prevention Plan
 - b. Spill Prevention, Control, and Countermeasure Plan
 - c. Site Specific Health and Safety Plan
- B. Mobilization shall include demobilization of all equipment and facilities from the site and the restoration thereof.

1.02 RELATED SECTIONS

- A. Section 01 31 00 – Project Management and Coordination
- B. Section 01 66 00 – Product Storage and Handling Requirements

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

**SECTION 01 77 00
CLOSEOUT PROCEDURES**

PART 1 - GENERAL

1.01 SUMMARY

- A. This Section provides administrative and procedural requirements for completion of the Work.

1.02 RELATED SECTIONS

- A. Section 01 31 00 – Project Management and Coordination
- B. Section 01 33 00 – Submittal Procedures

1.03 FINAL CLEANUP

- A. The CONTRACTOR shall promptly remove from the vicinity of the completed work, all rubbish, unused materials, concrete forms, construction equipment, and temporary structures and facilities used during construction. Final acceptance of the WORK by the OWNER will be withheld until the CONTRACTOR has satisfactorily complied with the foregoing requirements for final cleanup of the project site.

1.04 CLOSEOUT TIMETABLE

- A. The CONTRACTOR shall establish dates for pipeline and equipment testing, acceptance periods, and on-site instructional periods (as required under the Contract). Such dates shall be established not less than one week prior to beginning any of the foregoing items, to allow the OWNER and their authorized representative sufficient time to schedule attendance at such activities.

1.05 CLOSEOUT SUBMITTALS

- A. The CONTRACTOR, prior to requesting final payment, shall obtain and submit the following items to the OWNER:
 - 1. Drill log.
 - 2. Written guarantees, where required.
 - 3. Operating manuals and instructions, as required
 - 4. New permanent cylinders and key blanks for all locks, if provided.
 - 5. Bonds for maintenance, etc., as required.
 - 6. Certificates of inspection and acceptance by local governing agencies having jurisdiction.
 - 7. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law, on the OWNER-furnished form appended at the end of this section, or on the CONTRACTOR's standard form as approved by the OWNER.
 - 8. Releases from property owners where the CONTRACTOR has secured an easement, permit or agreement for use of the property.

1.06 MAINTENANCE AND GUARANTEES

- A. The CONTRACTOR shall comply with the maintenance and guarantee requirements contained in Section 4.4 of the Supplementary General Conditions.

- B. Replacement of earth fill or backfill, where it has settled below the required finish elevations, shall be considered as a part of such required repair work, and any repair or resurfacing constructed by the CONTRACTOR which becomes necessary by reason of such settlement shall likewise be considered as a part of such required repair work unless the CONTRACTOR shall have obtained a statement in writing from the affected private owner or public agency releasing the OWNER from further responsibility in connection with such repair or resurfacing.
- C. The CONTRACTOR shall make all repairs and replacements promptly upon receipt of written order from the OWNER. If the CONTRACTOR fails to make such repairs or replacements promptly, the OWNER reserves the right to do the WORK and the CONTRACTOR and his surety shall be liable to the OWNER for the cost thereof.

1.07 BOND

- A. The CONTRACTOR shall provide a bond to guarantee performance of the provisions contained in Paragraph "Maintenance and Guarantee" above, and Section 4.4 of the Supplementary General Conditions.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION (NOT USED)

END OF SECTION

D I V I S I O N 3 1

EARTHWORK

**SECTION 31 10 00
SITE CLEARING**

PART 1 - GENERAL

1.01 SUMMARY

- A. The Work of this section includes measures required during the CONTRACTOR's initial move onto the site to protect existing fences, houses and associated improvements, streets, and utilities near the construction areas from damage and clearing, grubbing and stripping.

1.02 RELATED SECTIONS

- A. Section 01 41 00 – Regulatory Requirements
- B. Section 31 25 13 – Dewatering
- C. Section 32 92 19 – Seeding

1.03 SITE INSPECTION

- A. Prior to moving onto the site, the CONTRACTOR shall inspect the Site conditions and review maps of the pipeline routes and facilities delineating the OWNER's property and right-of-way lines.
- B. The OWNER will document existing alignment conditions with video and photo records. These will be available to the CONTRACTOR if requested.

1.04 COORDINATION OF WORK

- A. The scheduling and performance of this work is dependent on meeting the requirements of the Erosion Control (EC). No ground disturbing activities shall be performed before approved EC measures are implemented for that area to the satisfaction of the OWNER.
- B. Comply with provisions on the Drawings and in Section 01 41 00 – Regulatory Requirements, regarding restrictions on work within wetland areas and general environmental protection measures.

PART 2 - PRODUCTS (NOT USED)

PART 3 - EXECUTION

3.01 SITE ACCESS

- A. The CONTRACTOR shall develop any necessary access to the pipeline route; including access barriers that prohibit entry of unauthorized persons.
- B. **Utility Interference:** Where existing utilities interfere with the WORK, notify the utility owner and the OWNER before proceeding.

3.02 CLEARING, GRUBBING, AND STRIPPING

- A. Construction areas shall be cleared of grass and weeds to at least a depth of six inches and cleared of structures, pavement, sidewalks, concrete or masonry debris, trees, logs, upturned stumps, loose boulders, and any other objectionable material of any kind which would interfere with the performance or completion of the WORK, create a hazard to safety, or impair the subsequent usefulness of the WORK, or obstruct its operation. Pavement, curbs, and sidewalk shall first be sawcut along neat lines before removal. Trees and other natural vegetation outside the actual limits of construction shall be protected from damage during construction, as directed by the OWNER.
- B. Within the limits of excavation, the areas below the natural ground surface shall be grubbed to a depth necessary to remove all stumps, roots, buried logs, and all other objectionable material. Septic tanks, drain fields, and connection lines and any other underground structures, debris or waste shall be removed if found on the Site unless marked for protection by OWNER. All objectionable material from the clearing and grubbing process shall be removed from the Site and wasted in approved safe locations.
- C. In areas not covered with pavement or sidewalks, and outside of wetlands, the topsoil shall be removed to a depth of 6 inches below the stripping limits across the full width of the clearing limits. The stripped materials shall be stockpiled for later incorporation as the final backfill material for the trench and other disturbed areas as shown on the Drawings.
- D. Unless otherwise indicated, native trees larger than three inches in diameter at the base shall not be removed without the OWNER's approval. The removal of any trees, shrubs, fences, or other improvements outside of rights-of-way, if necessary for the CONTRACTOR's choice of means and methods, shall be arranged with the owner of the property, and shall be removed and replaced, at no additional cost to the OWNER.
- E. Backfill all holes and depressions resulting from tree root and stump removals.
 - 1. Use native material
 - 2. Compact by track-walking until no further settlement is noted under equipment weight.
 - 3. Grade to conform to the surrounding ground contours.
- F. Level all soil piles left from stump removal by rough grading.

END OF SECTION

**SECTION 31 23 19
DEWATERING**

PART 1 - GENERAL

1.01 SUMMARY

- A. The CONTRACTOR shall provide all labor, materials, and equipment necessary to dewater trench and structure excavations, in accordance with the requirements of the Contract Documents.
- B. The CONTRACTOR shall make a judgment of the level of effort required based on his review of the project geotechnical data report and his own independent investigations and include costs of dewatering all other areas not specifically listed.
- C. The CONTRACTOR is made aware that the slough is impaired for low dissolved oxygen. Soil on the site may contain phosphorus. Phosphorus may contribute to excessive plant growth resulting in low dissolved oxygen levels in water bodies. The Stormwater Pollution Prevention Plan [SWPPP] shall contain detailed plans to cover all exposed soils (with plastic sheets, straw mulch, etc.) to prevent stormwater from conveying soils into the water body. Soil stabilization activities in the vicinity of the impaired water body will not include the use of phosphorus-containing fertilizers, compost, or other products that could cause excess phosphorus or other nutrients to be discharged. In addition, sediment control measures (silt fence, waddles, etc.) will be installed and maintained to ensure that sediment-laden stormwater is not discharged during the construction activity.
- D. The CONTRACTOR shall secure all other necessary permits to complete the requirements of this Section of the Specifications.
- E. Subsurface conditions at the site are addressed in the **“Geotechnical Engineering and Trenchless Design Services, Conway I-5 Crossing Project”** by GeoEngineers Inc., dated August 2, 2018. This report is provided in **Appendix A** and provides information about explorations and tests of subsurface conditions at or contiguous to the site and is not part of the Contract Documents.
 - 1. The subsurface investigations made were for the sole purpose of furnishing data necessary for planning and design of the work. The OWNER's Consultants warrant that the data represents, with reasonable accuracy, the conditions and materials found in the specific borings at the time they were made. The OWNER and the OWNER's Consultants do not warrant the condition, materials, or proportions of materials between such borings.
 - 2. The OWNER makes no representation or warranty, expressed or implied, that the Bidders' interpretations from the data are correct, that moisture conditions and indicated water tables will not vary substantially from those found at the time that the borings were made, and that the ground at the location of the borings has not been physically disturbed or altered after the tests were made. The availability of this subsurface information is solely for the convenience of the Bidder and shall not relieve the Bidder or CONTRACTOR from any risks, or from any duty to make a separate examination and investigation, or any other responsibility under the terms and conditions of the Contract.
- F. Costs for dewatering shall be included in the unit cost for furnishing and installing the casing and pipe.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittal Procedures
- B. Section 01 41 00 – Regulatory Requirements
- C. Section 33 05 07.13 – Horizontal Directional Drilling

1.03 GENERAL REQUIREMENTS

- A. Where groundwater is encountered during construction, the CONTRACTOR shall immediately take measures to control the rate of flow into the work area, and quality of water discharged from the work area. The OWNER shall judge the adequacy of the CONTRACTOR's dewatering effort, determine whether construction can continue without violating terms of any permit, and direct a course of action.
- B. Areas of high groundwater may need to be dewatered with deep wells or well points prior to construction. In tight soil areas, where the rate of groundwater infiltration is slow, pumping directly from the trench may be feasible.
- C. Depending on the site, sediment-laden water from trenches shall be settled in temporary storage facilities, such as ponds or Baker Tanks, and only clean water meeting permit requirements shall be discharged to drainage channels.
- D. If the settling process does not adequately remove sediment such that water can be released to receiving waters, the CONTRACTOR shall employ mechanical or chemical treatment to meet water quality discharge requirements prior to release.
- E. To reduce sediment in water pumped directly from trenches, the following measure shall be implemented when site conditions allow.
 - 1. If possible, a depression in the down-gradient portion of the trench shall be excavated to collect water before removal.

1.04 CONTRACTOR SUBMITTALS

- A. At least 7 Calendar Days prior to installation of dewatering systems the CONTRACTOR shall submit a detailed plan and operation schedule for dewatering of excavations stamped by a Professional Engineer or hydrologist licensed in the State of Washington. The CONTRACTOR may be required to demonstrate the system proposed and to verify that adequate equipment, personnel, and materials are provided to dewater the excavations and test the discharge water, at all locations and times. The plan shall also show the locations and screen depths of groundwater observation wells. The CONTRACTOR's dewatering plan is subject to review by the OWNER. OWNER's review is limited to determining general conformance with the intent of this specification, but not for detailed verification of well sizes, spacing, construction, or adequacy of the planned dewatering.
- B. CONTRACTOR or subcontractor shall have a minimum of 5 years of experience in the field of groundwater control system installation, operation, and maintenance. The dewatering plan submittal shall be prepared by an Engineer in the CONTRACTOR's or subcontractor's employ.
- C. The CONTRACTOR shall submit weekly summaries of daily measurements of the dewatering system(s) performance including groundwater levels, discharge rates, and turbidity of the discharge water.

- D. Copies of required Department of Ecology permits for installing and abandoning any dewatering wells.

1.05 QUALITY CONTROL

- A. It shall be the sole responsibility of the CONTRACTOR to control the rate and effect of the dewatering in such a manner as to avoid all objectionable settlement and subsidence.
- B. All dewatering operations shall be adequate to assure the integrity of the finished project and shall be the responsibility of the CONTRACTOR.
- C. The responsibility for conducting the dewatering operation in a manner which will protect adjacent structures and facilities rests solely with the CONTRACTOR. The cost of repairing any damage to adjacent structures and restoration of facilities shall be the responsibility of the CONTRACTOR.
- D. In the event that dewatering is determined to be affecting an adjacent structure, the CONTRACTOR shall cease dewatering until satisfactory methods can be developed so as not to endanger the integrity of the existing facility or structure. If an existing facility or structure is damaged in any way or if the owner of such facility claims damage of any type, the CONTRACTOR shall be solely responsible for correcting the problem to the satisfaction of the owner of that structure or facility.

PART 2 - PRODUCTS

2.01 EQUIPMENT AND MATERIALS

- A. Dewatering, where required, may include the use of wells, well points, sump pumps, temporary pipelines for water disposal, rock or gravel placement, and other means. Standby pumping equipment shall be maintained on the jobsite.
- B. If the water produced as a result of dewatering operations is not suitable for direct discharge to receiving waters, the water shall be treated. The CONTRACTOR is responsible for the selection of proper equipment, chemicals and process to successfully treat the water for discharge.

2.02 CONTINGENCY EQUIPMENT AND MATERIALS

- A. The CONTRACTOR shall have onsite, at all times, sufficient pumping equipment to dewater any open sections of trench, in good working condition, with spare pumps and other equipment for emergencies including, but not limited to, power outage. The CONTRACTOR shall have onsite, at all times, competent workers for the operation and repair of the pumping equipment.

PART 3 - EXECUTION

3.01 GENERAL REQUIREMENTS

- A. The CONTRACTOR shall provide all equipment necessary for dewatering. It shall have on hand, at all times, sufficient pumping equipment and machinery in good working condition and shall have available, at all times, competent workmen for the operation of the pumping equipment. Adequate standby equipment shall be kept available at all times to insure efficient dewatering and maintenance of dewatering operation during power failure.

- B. Dewatering for structures and pipelines shall commence when groundwater is first encountered, and shall be continuous until such times as water can be allowed to rise in accordance with the provisions of this Section or other requirements.
- C. At all times, site grading shall promote drainage. Surface runoff shall be diverted from excavations. Water entering the excavation from surface runoff shall be collected in shallow ditches around the perimeter of the excavation, drained to sumps, and be pumped or drained by gravity from the excavation to maintain a bottom free from standing water.
- D. Dewatering shall at all times be conducted in such a manner as to preserve the undisturbed subgrade soils at proposed bottom of excavation. Use of sumps for dewatering is acceptable if undisturbed subgrade soils are maintained. If undisturbed subgrade soils cannot be maintained by this method, then the groundwater table shall be lowered to a level at least 2 feet below the bottom of the excavation by other means. The groundwater table shall be lowered further as required for safety or other reasons.
- E. The groundwater control system shall be designed for continuous, 24-hour operation and shall not be shut down between shifts, on holidays, or weekends, or during work stoppage, without written permission from the OWNER.
- F. The groundwater control system shall be monitored continuously while in operation.
- G. The groundwater control system shall include a means for measuring the quantity of discharge.
- H. The quality and quantity of discharge water from the groundwater control and dewatering system shall be in conformance with all Federal, State, and local laws and regulations.
- I. If foundation soils are disturbed or loosened by the upward seepage of water or an uncontrolled flow of water, the affected areas shall be excavated and replaced with foundation stabilization material at no additional cost to the OWNER.
- J. In general, the CONTRACTOR shall maintain the water level below the bottom of excavation in all work areas where groundwater occurs during excavation construction, backfilling, and up to acceptance.
- K. Flotation shall be prevented by the CONTRACTOR by maintaining a positive and continuous removal of water. The CONTRACTOR shall be fully responsible and liable for all damages which may result from failure to adequately keep excavations dewatered.
- L. Where well points or wells are used, they shall be adequately spaced to provide the necessary dewatering and shall be sand-packed and/or other means used to prevent pumping of fine sands or silts from the subsurface. A continual check by the CONTRACTOR shall be maintained to ensure that the subsurface soil is not being removed by the dewatering operation.

3.02 SUMPS

- A. Open or cased sumps may be used provided they meet the requirements of paragraph 3.1.
- B. Sumps shall be designed and constructed to prevent the removal of native or other soils.

3.03 SYSTEM MODIFICATIONS

- A. If the system does not meet the above requirements as determined by the OWNER, the CONTRACTOR shall modify sumps or wells, add sumps or wells, or install additional alternative systems as needed at no additional cost to the OWNER. If during the course of construction, the

system or a part thereof becomes inoperable, it shall be repaired or replaced at no additional cost to the OWNER.

3.04 SYSTEM PROTECTION

- A. Necessary precautions shall be taken, including, but not limited to, marking wells and pipes, protecting pipes at vehicular crossings, and routing vehicular traffic away from dewatering facilities to protect the groundwater control system from damage and ensure continued operation.

3.05 DISPOSAL OF WATER

- A. Pumped water shall be disposed of in such a manner so as not to cause damage to public or private property or adversely impact downstream receiving waters or facilities. Quality of discharge water will comply with all State and local regulations and with requirements of all applicable permits.
- B. The CONTRACTOR shall regularly monitor the quality of the water being pumped and discharged. If the water is determined to be unsuitable for disposal to receiving waters based on code and permit requirements, the CONTRACTOR shall provide appropriate treatment of the water to achieve minimum water quality levels to allow release.
- C. Quality of discharge water shall comply with permit requirements specified in Section 01 41 00 – Regulatory Requirements.
- D. The removal of natural, in-place soils during dewatering operations shall be prevented. In order to remove sand and fine sized soil particles before disposal into any drainage system, water shall be filtered or coagulated using an approved method or allowed to settle in a sediment trap designed to meet the requirements of the DOE Stormwater Management Manual for Western Washington. If filtration or coagulation methods are used, they shall be conducted to achieve a minimum of 90 percent reduction in total suspended solids. The OWNER may require submission of test results to a frequency of one per day to demonstrate adequate reduction in total suspended solids. No water shall be released directly to private property without written permission from the owner. Water released into any ditch, swale or water course shall be at such a rate so as to avoid any downstream flooding or channel erosion. The system shall be set up such that after initial development, the quantity and size of soil particles will decrease until no visible soil particles are present in water being pumped at any time after 24 hours from initial pumping.
- E. Pumped water shall not be disposed of in a manner which causes contamination of wells in the vicinity.

3.06 TERMINATING DEWATERING

- A. The pumping equipment shall be operated prior to complete shutdown in a manner that will allow the groundwater level to rise gradually to its static level. The release of groundwater to its static level shall be performed in such a manner as to maintain the undisturbed state of the natural foundation soils, prevent disturbance of compacted backfill and prevent flotation or movement of structures, pipelines, and sewers.
- B. After the groundwater control system is deactivated, all wells, sumps and drains shall be removed and the ground shall be restored to a condition better than or equal to the condition prior to installation of the groundwater control system.

- C. The construction, permitting, and abandonment of all wells used in dewatering systems shall comply with Washington State Department of Ecology requirements (Chapter 173-160 WAC and Chapter 18.104 RCW).

END OF SECTION

SECTION 31 25 13
EROSION AND SEDIMENTATION CONTROL

PART 1 - GENERAL

1.01 SUMMARY

- A. This section covers the work necessary for furnish, install and maintain Erosion and Sedimentation Control measures at all CONTRACTOR work and staging areas.
- B. The General Stormwater Permit was obtained by the OWNER, but will be transferred into the CONTRACTOR's name after contract execution, and the CONTRACTOR will be responsible for the preparation and implementation of all temporary erosion and sediment controls, plans, sampling, and reporting, and permit closeout.
- C. CONTRACTOR shall prepare a Construction Stormwater Pollution Prevention Plan (SWPPP) for the entire project in accordance with the requirements of the General Stormwater permit.
- D. CONTRACTOR shall prepare erosion control plans for staging areas used by the CONTRACTOR that are outside designated work area limits.

1.02 RELATED SECTIONS

- A. Section 01 32 00 – Construction Progress Documentation
- B. Section 01 33 00 – Submittal Procedures
- C. Section 01 41 00 – Regulatory Requirements
- D. Section 01 57 19 – Temporary Environmental Controls
- E. Section 31 10 00 – Site Clearing
- F. Section 31 23 19 – Dewatering
- G. Section 32 92 19 – Seeding

1.03 REFERENCES

- A. Definitions
 - 1. CESCL Certified Erosion and Sediment Control Lead
 - 2. ESC Erosion and Sedimentation Control
 - 3. SMMWW Stormwater Management Manual for Western Washington
 - 4. SWPPP Stormwater Pollution Prevention Plan
 - 5. WSDOT Washington State Department of Transportation

1.04 GENERAL REQUIREMENTS

- A. All erosion and sediment control procedures shall conform to the current version of the Washington State Department of Ecology Stormwater Management Manual for Western Washington.
- B. The CONTRACTOR shall designate a person responsible as the Certified Erosion and Sediment Control Lead (CESCL). The CESCL shall hold a current certification with Washington State Department of Ecology or associated training programs as CESCL. The CESCL will have

overall responsibility for implementation of the Contractor's ESC plan and implementation on site.

- C. The CONTRACTOR shall take all precautions to prevent the silting of streams or water impoundments during construction and to control water pollution during the life of the Contract through the use of sediment traps, silt fences, mulching, covering stored piles of soil and backfill, and other erosion control devices or methods. Also, wherever feasible, natural vegetation should be retained and protected.
- D. Prior to commencing work, a joint onsite inspection shall be held between representatives of the CONTRACTOR and CESCL, Skagit County, and the OWNER to review specific soil erosion and sediment control requirements to be employed during the Contract.
- E. CONTRACTOR shall prepare a Construction Stormwater Pollution Prevention Plan required to complete the project. The SWPPP will follow the guidelines set in the DOE Stormwater Management Manual for Western Washington.
- F. CONTRACTOR shall prepare an erosion and sediment control plan for facilities not shown on the Drawings that the CONTRACTOR requires to accomplish the work. Such facilities include, but are not limited to, staging areas, parking areas, truck washing areas, and waste storage and disposal areas.
- G. Perform no ground-disturbing activities on the project, unless specifically authorized in writing by the OWNER, until the ESC Plan has been approved and necessary ESC measures are completely in place and functional.
- H. CONTRACTOR shall have back-up equipment readily available in case emergency situations arise. This includes pumps, hoses, backhoes, and bulldozers. In addition, CONTRACTOR shall have a stockpile of extra ESC materials such as filter fence, gravel, and crushed rock for emergency situations.
- I. Clean water may be discharged into existing waterways or storm drains if the discharge points are sufficiently protected or into vegetated areas within the construction area if the ground infiltration characteristics are adequate to handle the discharge over the period of pumping, as approved by the CESCL.
- J. Depending on the site, sediment-laden water from trenches shall be dispersed over vegetated areas outside of sensitive area buffers or the sediment shall be settled in temporary storage facilities, and only clean water discharged to drainage channels.

1.05 SUBMITTALS

- A. Submit in accordance with Section 01 33 00 a SWPPP for the project an erosion and sediment control plan to the OWNER for approval. No work may begin before the SWPPP and the ESC Plan is approved by the OWNER.
- B. Erosion control measures in addition to those shown on the Drawings may be required to meet discharge water quality criteria, depending on the CONTRACTOR's methods, equipment and operations. Where such measures are necessary, they shall be designed in accordance with the current version of the Washington State Department of Ecology Stormwater Management Manual for Western Washington and all other relevant regulations and design standards, and shall be stamped by a Civil Engineer licensed in the State of Washington and submitted for the OWNER's approval.

C. ESC Plans:

1. The CONTRACTOR shall describe how it intends to construct, inspect, operate, and maintain ESC measures shown on the Drawings or CONTRACTOR facilities such as stockpile areas or waste disposal sites.
2. Except for cut-and-fill areas where ESC work depends on completion of earthwork, show that all ESC work is to be completed before any other work in a segment begins. The CONTRACTOR may schedule the ESC work in phases, providing no construction activity, including truck traffic, occurs in a segment with incomplete ESC work.
3. The ESC Plan shall be coordinated with, and in no way contradict, the progress schedule required in Section 01 32 00.

D. The CONTRACTOR shall revise and bring the ESC Plan up to date whenever the OWNER makes written request for revisions and whenever the CONTRACTOR proposes to change the sequence of work. All revisions shall be coordinated with the current approved progress schedule.

E. The CONTRACTOR's proposed ESC Plan shall include:

1. Scheduling and timing of ESC installations, with ESC installation schedules referenced to the progress schedule required.
2. Manufacturer's data and detailed plans for the products specified in this section.
3. Plans for diverting, collecting, pumping, and piping surface stormwater runoff, process water and seepage from source to the treatment/disposal facilities. The plan shall include the provisions for operating and maintaining the system during periods of inactivity. The plan shall include:
 - a. Layout and details of the system.
 - b. Flow calculations for stormwater, seepage, and dewatering pump discharge. Sketch of location and sizing calculations for dewatering systems.
 - c. Information on pumps, including flow/head, power (gas, diesel, electric), and placement. See Section 01 41 00 for requirements and restrictions on gas and diesel powered equipment.
4. Plans for all work not shown on the Drawings, including:
 - a. Additional earthwork proposed by CONTRACTOR.
 - b. Temporary access or haul roads.
 - c. CONTRACTOR-provided waste disposal areas.
 - d. Staging, CONTRACTOR's field office, and parking sites.
 - e. Storage of pipe and other trench materials along the right-of-way.
 - f. Stockpile and material processing areas.
5. Plans and schedules for operating, inspecting, and maintaining ESC facilities and equipment.
6. The name and 24-hour-a-day phone number and alternate contacts for responsible CONTRACTOR personnel.
7. Plans for site restoration of the following areas:
 - a. Work areas.
 - b. Office and parking areas.
 - c. Waste areas.
 - d. Temporary access roads.
8. A designated individual who will have primary responsibility for the installation and maintenance of the ESC facilities, as well as a designated group of work personnel who will report to the designated lead.
9. A description of training that will be provided to all construction personnel to establish the importance of and the mechanics of the ESC measures on the project, including the individual expectations for following the ESC Plan.

10. A plan for the locations and outlets of dewatering systems shall be required.

F. Shop Drawings, Samples, and Product Data:

1. Samples of all fabrics.
2. Manufacturer's data on all products.
3. Stone filter material gradation.
4. Riprap gradation.
5. Rock gradation for check dams.

G. **Submission of ESC Plan:** All submissions shall meet the requirements of Section 01 33 00.

H. Prepare a schedule of value earned on which to base payment.

1.06 OPERATION AND MAINTENANCE OF ESC FACILITIES

A. Requirements:

1. The CONTRACTOR shall be directly responsible for the operation and maintenance of all ESC facilities, equipment, and treatment.
2. Provide to the OWNER the name and emergency phone number of one person who can be contacted on a 24-hour-a-day, 7-day-a-week basis. This person shall have the authority to implement maintenance of ESC facilities.
3. The CONTRACTOR shall respond with adequate personnel, equipment, and material immediately when notified of an emergency situation.
4. Adhere to approved schedules for inspection and maintenance.

B. Noncompliance:

1. After notification by the OWNER, in writing, of noncompliance with the requirements of this section, the OWNER may have the work required to restore compliance performed immediately by OWNER's forces or by such other means as the OWNER may deem necessary.
2. For the purpose of this section, "compliance" shall be agreed to include all items of work shown in the plans, specifications, the approved ESC Plan, and any additional items of work directed by the OWNER to meet the requirements of representatives of other agencies charged with enforcement of these requirements.
3. Direct and indirect costs incurred by the OWNER attributable to correcting noncompliance with this section shall be paid by the CONTRACTOR. Payment will be deducted by the OWNER from monies due, or to become due, the CONTRACTOR. Such direct or indirect cost shall include, but not be limited to, compensation for additional professional services required, all fines or penalties levied against the OWNER for damages relating to this section, corrections, repair and replacement of damaged work, and compensation for OWNER overhead cost related to these activities.
4. The rights exercised under the provisions of this section shall not diminish the OWNER's ability to pursue any other avenue for additional remedy of damages with respect to the CONTRACTOR's failure to perform the work as required.

PART 2 - PRODUCTS

2.01 SILT FABRIC FENCE

- A. Filter Fabric Type 1: Woven polypropylene, monofilament yarn. The fabric shall be inert to biological degradation and shall be resistant to alkalis and acids found in soils. The base plastic

shall contain stabilizers and inhibitors to make the fabric resistant to ultraviolet radiation. Filter Fabric Type 1 shall also meet the following physical properties:

Description	Test	Result
Minimum thickness	ASTM D1777	13 mils
Minimum weight	ASTM D3776	6.5 oz/sy
Grab tensile strength	ASTM D4632	415 lbs x 250 lbs
Mullen burst strength	ASTM D3786	510 psi
Equivalent opening size	ASTM D4751	70-100 U.S. Std Sieve
Permeability (cm/sec)	ASTM D4991	0.015
Permittivity (1/sec)	ASTM D4991	0.2
Water Flow Rate (gpm/sf)	ASTM D4991	20

1. Filter Fabric Type 1 shall be Mirafi 700X Synthetic Industries Erosion 1, or approved equal.
- B. Posts shall be either 2-inch by 4-inch standard grade lumber or steel fence posts. The posts shall be spaced no further apart than 6 feet. Closer spacing may be required if the fabric begins to sag and allow leakage over the top.
 - C. Washed gravel for backfilling the trench shall have a minimum diameter of 3/4 inch and a maximum diameter of 1-1/2 inches.

2.02 MULCHING

- A. Straw shall be used as the mulching material. The straw shall conform to the requirements in the Stormwater Manual.

2.03 PLASTIC COVERING

- A. Plastic covering shall meet the requirements of the ASTM D4397 and have a minimum thickness of 6 mils.

2.04 PIPE SLOPE DRAIN

- A. Flexible corrugated polyethylene pipe [PE] shall be used for the pipe slope drains.
- B. A flared entrance section shall be used at the upstream end of each pipe slope drain. The entrance shall transition to a corrugated PE pipe with diameter equal to the diameter of the diversion pipe as shown on the Drawings.
- C. Pipe sections shall be joined using PE external split couplers with neoprene gaskets. The external split couplers shall be tightened with plastic locking cable ties or wire ties.

2.05 CHECK DAMS

- A. Material for rock check dams shall be 4-inch minus rock spalls.
- B. Material for sandbag check dams shall be approved by the OWNER.
- C. Triangular silt dikes may be used as approved by the OWNER.

2.06 RIPRAP PROTECTION

- A. Riprap material used as energy dissipating rock for the outlets of the stormwater diversion pipes shall be quarry spalls conforming to Washington State Department of Transportation (WSDOT) Standard Specification Section 9-13 and meeting the following requirements for grading:

Sieve Size	Percent Passing
8-inch	100
6-inch	40 - 60
2-inch	0 - 10

2.07 WIRE FABRIC FOR SILT FENCE

- A. 2-inch x 4-inch mesh, 14 gage, or approved equal.
- B. Hot-dip galvanized, ASTM A392, Class 2.
- C. Height: As shown on Drawings.

2.08 STONE FILTER OVERFLOW WEIR FOR SEDIMENT TRAP

- A. As shown on the Drawings.

2.09 HOLD DOWNS FOR PLASTIC SHEETING

- A. As approved by the OWNER.
- B. Hold downs to consist of sandbags secured with 1/4-inch polypropylene rope at 10 feet on center maximum each way.
- C. Anchor rope with 2-inch x 4-inch stake fir, standard or better.

2.10 STABILIZED CONSTRUCTION ENTRANCES

- A. Quarry spalls shall meet the requirements of Section 9-13.1 of the WSDOT Standard Specifications.

2.11 STORM DRAIN INLETS

- A. As shown on the Drawings.

PART 3 - EXECUTION

3.01 GENERAL

- A. All construction procedures shall conform to the approved erosion and sediment control plans and the requirements of the respective jurisdictions and as shown on the Drawings.
- B. All excavated materials shall be stockpiled at the CONTRACTOR staging area or at a site designated by the CONTRACTOR and approved by the OWNER.
- C. During the period of October 1 to April 30, any stockpiled material that is left unworked for more than 12 hours shall be protected with plastic covering. In addition, any stock piled material near

sensitive areas left unworked for 12 hours during the period May 1 to September 30 shall be protected with plastic.

- D. Stockpiled material shall be covered during rain storms.
- E. During the period of October 1 to April 30, plastic covering shall be placed on bare soil slopes.
- F. Where spoil is placed on the downhill side of the trench, it shall be backsloped to drain toward the trench.
- G. CONTRACTOR shall not side cast, push, sluice or cause foreign, waste, or excavated material to enter surface waters. Materials shall be carefully excavated and moved to an approved spoil or waste area. Provide and maintain erosion and sediment control measures.
- H. Sediment shall be trapped onsite using filter fabric fences, sedimentation ponds, sediment traps, and other appropriate methods.
- I. All erosion and sediment control measures and facilities provided shall be maintained in proper condition so that they will individually and collectively perform the functions for which they were provided. In order to ensure the efficiency and proper maintenance of the measures and facilities, inspections shall be made daily to detect any impairment of the structural stability, adequate capacity or other requisites of the measures and facilities which might impair their effectiveness, and the CONTRACTOR shall take immediate steps to correct any such impairment found to exist.
- J. All erosion and sediment control devices shall be removed immediately after the disturbed areas are brought to their final, completed condition. Removal of ESC devices shall be approved by the OWNER and/or the jurisdiction.
- K. Runoff, stormwater and wastewater flows shall be controlled and treated during construction to minimize water quality impacts. Runoff from undisturbed areas shall be diverted from areas of construction activity by utilizing existing road drainage ditches and drainage ways as much as possible. Where this is not possible, and as practical, diversion dikes and swales shall be constructed so runoff from undisturbed areas will not be contaminated by construction activity. Construction and grading materials shall not be stored within 50 feet of the Ordinary High Water Level of streams, dry or flowing; and shall not be deposited or stored in or alongside wetlands, wetland buffers, streams, rivers, lakes, or watercourses where the materials can be eroded by high water or storm runoff. The OWNER shall approve all stockpile locations.
- L. Water from runoff, dewatering and process wastewater shall be treated and disposed by dispersing it across vegetated (grassy) areas. The method of disposing of water shall be approved by the OWNER. Water with pollutants will require other disposal methods in accordance with local, State, and Federal law.
- M. Stormwater runoff from disturbed areas within the limits of construction and from CONTRACTOR staging and laydown areas shall be collected and treated before releasing. The extent of erosion and sediment control measures required will depend on the extent of the CONTRACTOR's earthwork and ground cover disturbance and resulting erosion potential. The CONTRACTOR is responsible for meeting specified water quality criteria for all stormwater runoff discharge from construction areas.
- N. The CONTRACTOR shall comply with the water quality criteria stated in the permits if sediment-laden flow from the disturbed area enters any streams.

3.02 SILT FENCE

- A. The silt fabric shall be one piece or continuously sewn to make one piece for the full height of the fence including the portion buried in the toe trench. Care shall be taken not to puncture the fabric during installation. Any damaged area shall be repaired or replaced. All joints shall have a 1.5-foot minimum overlap and shall be made in a manner that will not allow soil materials to pass through the joint. Posts shall be embedded a minimum of 1.5 feet. Minimize disturbance of native soils and vegetation when installing filter fabric fences. Side casting soils on the downhill side will not be allowed. Filter fabric material must be toed in as shown on the Drawings for fences to function. Bury filter fabric using washed gravel as shown on the Drawings. Monitor the condition of the filter fabric fences, remove accumulated sediments and keep the filter fabric fence in good condition. Completely remove all fabric and posts at completion of construction.
- B. Wire Fabric:
 - 1. Install wire fabric for attachment of filter fabric for sediment fence.
 - 2. Secure wire fabric to posts with aluminum alloy wire, minimum 10 gage. Secure at top, middle, and bottom.
 - 3. Bury 4-inch minimum of wire fabric in trench upslope and adjacent to the wood post for the full length.
 - 4. Set posts at 6 feet maximum per Drawings.
 - 5. Wire fabric to extend not more than 24 inches above the ground surface unless otherwise noted on Drawings.

3.03 GROUND COVER

- A. Do not clear any areas until construction is ready to begin. Disturb only the minimum area necessary to accomplish the work. The summer construction season is defined as May 1 to September 30. If construction extends beyond the summer construction season, permanent seeding erosion control measures shall be installed in areas unworked for more than 15 consecutive days. In addition, all disturbed areas shall be covered with plastic sheeting when work has stopped for more than 12 hours. If seasonal cover and erosion control practices have already been placed, plastic sheeting is required during the winter season until plant growth is firmly established. If construction has stopped for more than 15 consecutive days during the summer season, temporary cover measures shall be applied to the affected cleared areas. All temporary measures (Summer and Winter) must be inspected and repaired daily.
- B. Protect all disturbed areas, including cleared, cut, fill, or other areas of reduced plant cover or exposed soil caused by work in this contract from erosion until permanent erosion control measures are established. Protection shall include plastic sheeting, organic or inorganic erosion control matting, riprap, temporary seeding, or straw mulch.
- C. Temporary seeding shall be done in accordance with the provisions of Section 32 92 19 – Seeding. Erosion control matting shall be applied according to the manufacturer's printed instructions and Section 32 92 19. Temporary erosion control measures shall be removed prior to installing permanent seeding erosion control only if the temporary facilities interfere with proper installation of permanent seeding (e.g., plastic on slopes to be seeded).

- D. All work areas that are disturbed shall receive temporary or permanent cover measures. The table and text below lists required cover measures by slope and season.

Season	Slope 3:1 or Flatter
Temporary, May 1 to September 30 (Dry Season)	3,000 lb/acre straw mulch if unworked for more than 15 consecutive days; temporary hydroseed mix if future earthwork delayed more than 30 days.
Temporary, October 1 to April 30 (Wet Season)	Plastic on all slopes and stockpiles, with more than 10 feet of vertical relief, if unworked for more than 12 hours. Permanent measures (except hydroseeding, which must be performed in the next growing season) if unworked for more than 15 consecutive days.
Permanent Measures (After Construction)	Hydroseed. Erosion control matting required at critical steeper areas as indicated on the Drawings.

- E. Slopes steeper than 3:1 and with more than 10 feet of vertical relief, require erosion control matting, as shown on the Drawings, in addition to the measures in the above table.
- F. Areas receiving temporary treatments other than seeding shall be hydroseeded at the beginning of the following seeding season.
- G. Temporary stockpile slopes shall not exceed 2:1. Stockpiles shall be covered with plastic sheeting.
- H. Plastic covering shall be installed and maintained tightly in place by using sandbags or tires on ropes with a maximum 10-foot grid spacing in all directions. All seams shall be overlapped 12 inches and taped or weighted down for the full length. Plastic covering sheets shall be toed in a minimum of 2 feet at the top of slopes in order to prevent surface water flow beneath the sheets.
- I. Areas requiring mulching will be determined by the OWNER based on weather and site conditions. Mulching techniques and rates shall conform to the 1992 Puget Sound Stormwater Manual and the Washington State Department of Ecology Stormwater Management Manual for the Puget Sound Basin.

3.04 CHECK DAMS

- A. Construct check dams in ditches where shown on the Drawings and in locations where excessive flow velocity may cause erosion.
- B. Check dams shall be placed by hand or mechanical placement and shall cover the entire section of the ditch. Placing the rock or sandbags by end dumping is not permissible. The top of the dam shall be lower than the existing ground surface adjacent to the ditch.
- C. Spacing where not shown on the Drawings, shall be such that the crest of a dam is the same elevation as the toe of the upstream dam.
- D. Remove temporary check dams after site has stabilized and as approved by the OWNER.

3.05 TEMPORARY CULVERTS

- A. Construct temporary culverts in accordance with Section 7-02 of the Standard Specifications.

3.06 STABILIZED CONSTRUCTION ENTRANCE

- A. This work shall consist of constructing access points to public roads in order to minimize the tracking of material onto the roadway. Quarry spalls shall be used to construct the stabilized construction entrance.
- B. The CONTRACTOR shall place and maintain the quarry spalls as shown in the Plans or as designated by the OWNER.

3.07 FLOW ROUTING

- A. To the extent practical, install filter fabric and construct swales, berms, and ditches as required to route surface water from offsite around the areas disturbed by construction. In locations where the offsite flow must cross the disturbed areas, install temporary culvert pipe as required to convey the water across the disturbed areas.

3.08 OTHER EROSION CONTROL MEASURES

- A. Construction of other erosion control measures, in addition to those detailed in these specifications, shall be in accordance with the current Washington State Department of Ecology Stormwater Manual for Western Washington.

3.09 MAINTENANCE DURING CONSTRUCTION

- A. Inspect all erosion control facilities daily or more frequently if necessary, to ensure that they are in good condition and operating properly. Repair or replace damaged or missing items immediately.
- B. Clean, repair, and replace filter fabric fences, straw bale barriers, stormwater diversion pipe sections, check dams, and rip rap pads as necessary to maintain their effectiveness and proper operation.
- C. Maintain seeded surfaces throughout construction including watering and mowing.
- D. Maintain an inspection report file.
- E. Remove and properly dispose of trapped sediment, debris, trash, and all other material from measures designed to retain sediment.
- F. After excavation and/or grading construct slope protection where required or as instructed by the OWNER.
- G. Construct and replace existing storm drains and inlets as soon as possible or as directed by the OWNER.
- H. Provide necessary ditches, swales and dikes to direct all water towards and into sediment ponds or traps.
- I. Excavate sediment out of basins, catch basins, check dams, and traps when capacity has been reduced by 50 percent or when more than 1 foot of sediment has accumulated.
 - 1. Remove sediment from behind sediment fence to prevent overtopping.
 - 2. Prevent sediments from being flushed to the downstream system during cleaning.
 - 3. Check dams shall be replaced before the pore spaces are filled with sediment.

3.10 HEAVY RAIN EVENTS

- A. During periods of heavy rain storms, as determined by the OWNER, construction work on the pipeline shall be discontinued. The CONTRACTOR's equipment and personnel shall be available to construct and maintain the erosion control facilities.
- B. A "Heavy Rain Event" is defined as a rain storm that, in the opinion of the OWNER, is of sufficient duration and intensity that excavation activities must be stopped, and the personnel and equipment from the excavation work are needed to maintain the erosion control facilities.

3.11 SITE RESTORATION

- A. As soon as practical after completion of a portion of the work, or when a work or waste area is no longer required, commence site restoration and install permanent erosion control measures. Temporary erosion and sedimentation control methods shall be kept in effect until the permanent erosion control is established, and the OWNER approves removal of designated temporary facilities. The time period between clearing/grubbing and final ground restoration shall be no more than 4 months in duration.
- B. All disturbed areas shall be properly cleared of temporary structures, rubbish and waste materials upon completion of the Project.
- C. All designated temporary water diversion and treatment areas or devices shall be removed and the areas restored to a permanent protected condition and drainage configuration after completion of work.
- D. Work, staging, laydown, office and other disturbed areas shall be returned to their original condition. Contaminated material shall be removed from the site and disposed of in an approved location.

END OF SECTION

D I V I S I O N 3 2

EXTERIOR IMPROVEMENTS

**SECTION 32 92 19
SEEDING**

PART 1 - GENERAL

1.01 SUMMARY

- A. The Work under this section consists of the revegetation with seeded grasses. CONTRACTOR shall furnish all labor, materials, equipment, tools, and transportation required to complete the Work, and shall perform all operations in connection with and reasonably incidental to establishing, maintaining, and warranting the reseeded areas.
- B. All Work shall be completed in accordance with these specifications, the drawings and contract documents, and in a manner consistent with accepted horticultural practices. All permits, licenses, and fees associated with any Work under this contract are the responsibility of CONTRACTOR, unless otherwise noted.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittal Procedures
- B. Section 31 25 00 – Erosion and Sedimentation Controls

1.03 REFERENCES

- A. Association of Official Seed Analysts (AOSA)

1.04 SUBMITTALS

- A. CONTRACTOR shall be required to submit statements of guarantee and/or certifications from vendors who supply seed, mulches, tackifiers, and fertilizers.
- B. CONTRACTOR shall furnish a signed statement certifying that the seed furnished is from a lot that has been tested by a recognized laboratory for seed testing within six (6) months prior to the date of delivery.
- C. Seed container labels shall be submitted to OWNER at the completion of Project.
- D. CONTRACTOR shall submit the manufacturers guaranteed chemical analysis, name, trade name, trademark, and conformance to state law of all fertilizers and herbicides.
- E. Submit compost sample for approval.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. All materials shall be furnished in original manufacturers shipping bags or containers and remain in these bags or containers until they are used. All materials shall be stored in a manner that will prevent them from coming into contact with precipitation, surface water, or any other contaminating substance.
- B. Fertilizer and herbicide shall be delivered in original, unopened containers, unless provisions are made and approved by OWNER for bulk deliveries to the site of the Work. All herbicides will be stored in a manner that satisfies local, State and Federal Guidelines for Herbicide Storage.

PART 2 - PRODUCTS

2.01 GENERAL

- A. All materials used shall be new and without flaws or defects of any type, and shall be the best of their class and kind. Seeds shall be prepared for sale during the year of installation.
- B. All materials and equipment furnished shall be free of any state-listed noxious weed species.
- C. Any materials that have become wet, moldy, or otherwise damaged in transit or in storage shall not be used.

2.02 SEED

- A. Seed shall be certified in accordance with Chapter 16-302 WAC, General Rules for Seed Certification.
- B. All seed shall conform to all current State and Federal regulations and shall be subject to the testing provisions of the Association of Official Seed Analysts.
- C. All seed and seed mixes shall be commercially-prepared and supplied in sealed bags or containers clearly labeled to show:
 - 1. Common and botanical names of seed
 - 2. Lot number
 - 3. Net weight
 - 4. Pounds of Pure Live Seed [PLS] in the mix
 - 5. Origin of seed
- D. All seed vendors must have a business license issued by supplier's state or provincial Department of Licensing with a "seed dealer" endorsement.

2.03 FERTILIZER

- A. Fertilizer shall be standard commercial grade of organic and inorganic fertilizer.
- B. Fertilizer shall be supplied in one of the following forms:
 - 1. A dry free-flowing granular fertilizer, suitable for application by agricultural fertilizer spreader.
 - 2. A soluble form that will permit complete suspension of insoluble particles in water, suitable for application by power sprayer.
 - 3. A homogeneous pellet, suitable for application through a ferti-blast gun.
 - 4. A tablet or other form of controlled release with a minimum of a 6 month release period.
 - 5. A liquid suitable for application by a power sprayer or hydroseeder.
- C. No cyanamide compounds shall be permitted in fertilizers.

2.04 MULCH AND AMENDMENTS

- A. All amendments shall be delivered to the site in the original, unopened containers bearing the manufacturer's guaranteed chemical analysis and name.
- B. In lieu of containers, amendments may be furnished in bulk.
- C. A manufacturer's Certificate of Compliance shall accompany each delivery.

- D. Compost and other organic amendments shall be accompanied with all applicable health certificates and permits.

2.05 ORGANIC TACKIFIER

- A. Organic Tackifier shall be included with all hydroseeder applications.

2.06 EROSION CONTROL NETTING, BLANKETS, MATS, FABRICS

- A. Erosion control blankets, mats, or other commercial products for stabilizing land disturbed areas may be required in certain areas. If so, the type, manufacturer, and installation method for these products shall be specified by OWNER.

2.07 WATER

- A. All water used on the Project shall be free of any substances harmful to plant germination and growth or to the environment in general. CONTRACTOR shall be responsible for furnishing and applying water that meets these requirements. OWNER may, at CONTRACTOR's expense, submit samples of water used on the Project for laboratory analysis (of a reasonable number and kind) to ensure the quality of the water. Onsite water shall not be used unless approved by OWNER.

2.08 HYDRAULICALLY APPLIED EROSION CONTROL PRODUCTS [HECP]

- A. All HECPs shall be made of natural plant fibers unaltered by synthetic materials, and in a dry condition, free of noxious weeds, seeds, chemical printing ink, germination inhibitors, herbicide residue, chlorine bleach, rock, metal, plastic, and other materials detrimental to plant life.
- B. The HECP shall be suitable for spreading with a hydroseeder.
- C. All HECP shall be furnished premixed by the manufacturer with Organic Tackifier. The product shall be hydrated in accordance with the manufacturer's recommendations.

PART 3 - EXECUTION

3.01 GENERAL

- A. **Contractor's Site Responsibilities:** It shall be the responsibility of CONTRACTOR to locate and protect all utilities, structures, roadways, parking areas, fences, survey markers, and existing vegetation (such as, trees and shrubs) on all Work sites. Any damage caused by CONTRACTOR shall be immediately repaired or corrected at no expense to OWNER.
- B. **Timing of the Work:** Seeding shall be completed as soon as practical after the completion of final grading. CONTRACTOR shall coordinate the actual start of the seeding operation with OWNER.
- C. **Notice to Proceed:** CONTRACTOR shall inform OWNER when they are ready to commence permanent revegetation. Upon agreement with preparation for this Work, OWNER shall provide CONTRACTOR with a Notice to Proceed. CONTRACTOR shall begin and complete the Work as specified in this section.
- D. **Performance of the Work:** All Work is to be performed by personnel thoroughly familiar with proper and accepted methods for soil preparation, herbicide applications, fertilizing, seeding, and mulching.

3.02 SOIL PREPARATION

- A. All ripping and tilling operations shall be done in a direction which follows the natural contour of the land on slopes of three to one (3:1) or less. Soils on slopes greater than three to one (3:1) shall be prepared for planting in a manner specified by OWNER. Any irregularities in the ground surface resulting from soil preparation operations shall be corrected and sloped to drain.
- B. Limit subgrade preparation to areas that shall be planted in the immediate future.
- C. Prior to spreading salvaged topsoil and seeding, thoroughly till or rip to a depth of twelve (12) inches all areas compacted by access, staging, or construction traffic. Till all remaining areas to a depth of six (6) inches. Channel bottom areas are to be ripped to a depth of at least twelve (12) inches on approximately 4-foot centers. The soils shall be worked until no clods greater than two (2) inches in diameter remain, unless directed otherwise by OWNER. Remove rocks and other objects three (3) inches or greater in any dimension.
- D. Spread topsoil to depth required to meet grades and elevations after light rolling and natural settlement.
- E. Prior to seeding, grade the areas to be seeded to a smooth, even surface with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades. Soils shall meet grades and elevations after light rolling and natural settlement. Limit fine grading to areas that can be planted in the immediate future.
- F. Moisten prepared areas to be seeded prior to planting when soils are dry. Water thoroughly and allow surface to dry before seeding. Do not create muddy conditions. Restore prepared areas if eroded or disturbed after fine grading and before planting.

3.03 SEEDING

- A. CONTRACTOR shall notify OWNER when seeding is to take place.
- B. Broadcast Seeding:
 - 1. Seed shall be uniformly broadcast at twice the specified PLS per acre and covered with soil to a depth of one-quarter (1/4) inch to one-half (1/2) inch by hand raking or harrowing by some other means acceptable to OWNER.
 - 2. Broadcast seeding shall be accomplished using hand-operated "cyclone-type" seeders or rotary broadcast equipment attached to construction or revegetation machinery. All machinery shall be equipped with metering devices. Broadcasting by hand shall be acceptable on small, isolated sites. Prior to hand broadcast seeding, divide the seed required into two portions. Apply the first half of the seed and then follow up by applying the second portion to ensure complete coverage by seed. When broadcast seeding, passes shall be made over each site to be seeded in a manner to ensure an even distribution of seed. When using hopper type equipment, seed shall be frequently mixed within the hopper to discourage seed settling and uneven planting distribution of species.
 - 3. Broadcast seeding shall take place immediately following the completion of final seedbed preparation techniques and upon inspection and approval of OWNER. Broadcast seeding should not be conducted when wind velocities would prohibit even seed distribution.

3.04 FERTILIZATION

Any fertilizers specified by OWNER shall be applied and mixed with the soil. In some instances, as directed by OWNER, fertilizers shall be spread evenly on the surface of the soil rather than tilled into

the top four (4) inches. All fertilizers shall be applied using standard application equipment at rates indicated by required soils tests (Article Submittals), or in some cases as specified by OWNER.

3.05 MULCHING

- A. Mulch shall be applied immediately after seeding has been completed with a mechanical spreader at a rate not less than one and one-half (1-1/2) tons per acre, and not more than two (2) tons per acre.

3.06 HERBICIDE AND CHEMICAL APPLICATIONS

- A. All noxious weed growth on the site shall be controlled by the CONTRACTOR during the construction period and until the final inspection by spot application of herbicides. Spot application of herbicides means detailed application of only the targeted weed species by wand or wick with a backpack applicator. No herbicides shall be permitted for general application (broadcast) during a time when it would cause detrimental impact to germination or establishment of the seeded grasses.
- B. Herbicides or other chemicals, if required, shall be applied using well-maintained spraying equipment by individuals working for CONTRACTOR who are appropriately licensed by any State and/or Federal agency having jurisdiction over such applications. It shall be the responsibility of CONTRACTOR to be knowledgeable of any and all current laws and regulations pertaining to herbicide and other chemical applications, and to advise OWNER immediately if any requests for these applications made by OWNER are inappropriate as they pertain to these laws and regulations. Herbicide application shall be conducted by trained weed control personnel who also can recognize the targeted weed species.
- C. Herbicides and other chemicals shall not be applied during periods when wind or other physical conditions cause the herbicides or chemicals to be transported a distance of more than five (5) feet from the immediate area where they are being placed. It shall be the responsibility of CONTRACTOR to stop Work immediately and to notify OWNER if any weather or other physical condition exists which would make the application of herbicides or other chemicals inappropriate.
- D. All herbicides or other chemicals used (except solid fertilizers) shall be applied at a rate and strength, and by the method recommended by the manufacturer of the product being used. Failure to properly apply herbicides (spot treatment) may result in the OWNER requiring the CONTRACTOR to reseed the damaged area at no cost to the OWNER.

3.07 EROSION CONTROL NETTING, BLANKETS, MATS, AND FABRICS

- A. Slopes over three to 1 (3:1), concave areas on slopes, drainage swales, areas along the edges of hard surfaces (trails and roads), and any other areas which may rill, shall be mulched with jute netting or other erosion control fabric as specified in drawings. These fabrics shall be installed only after the installation area is graded smooth. All clods or rocks shall be removed from the area, so that the fabric will lie flat on the surface of the soil and not bridge over it. The edges of the fabric shall be secured by 2-foot wooden stakes installed two (2) feet on center along all edges and seams. Seams shall overlap one (1) foot and the body of the fabric shall be further secured to the soil surface on 3-foot centers. The fabric shall not be stretched tight.

3.08 FIELD QUALITY CONTROL

- A. Final Acceptance:
1. When Work has been completed for the Project, CONTRACTOR and OWNER shall inspect the site together and determine the total area of the Work, and whether or not the Work is complete and has been done in accordance with contract documents and specifications. If mutual agreement cannot be reached on these issues, the determinations made by OWNER shall be final. Deficiencies in the Work, if any, shall be noted and a checklist of these deficiencies given to CONTRACTOR by OWNER. CONTRACTOR shall immediately correct any deficiencies listed on the checklist at no cost to OWNER.
 2. When all checklist items are completed to the satisfaction of OWNER, OWNER shall issue a Certificate of Final Acceptance. CONTRACTOR shall then submit these items for payment to OWNER based on the original project bid prices and any change orders which have been agreed to and signed by both parties.

3.09 CLEANING

- A. All Work sites shall be kept clean and free from all debris. At the conclusion of Work at any site, CONTRACTOR shall remove and haul from the site all excess materials, debris, and equipment. Any damage (for example, damaged fencing, damaged road surfaces, excessive tire furrows, mud tracked onto pavement) resulting from CONTRACTOR's activities shall be repaired by CONTRACTOR to OWNER's satisfaction at no expense to OWNER.

END SECTION

D I V I S I O N 3 3

UTILITIES

**SECTION 33 05 07.13
HORIZONTAL DIRECTIONAL DRILLING**

PART 1 - GENERAL

1.01 SUMMARY

- A. Work covered in this specification shall consist of Horizontal Directional Drilling (HDD) operations related to the installation of a 24-inch diameter casing pipe to house a 12-inch diameter water line and 3-inch diameter fiber optic conduit in areas where trenching is not feasible or permitted, or as designed on the plans.
- B. CONTRACTOR shall furnish all supervision, labor, equipment, materials and supplies to perform the work necessary to install casing pipe by Horizontal Directional Drilling in accordance with the project Drawings, Specifications, Contract Documents, and this specification.

1.02 RELATED SECTIONS

- A. Section 01 33 00 – Submittal Procedures
- B. Section 30 10 00 – Site Clearing
- C. Section 31 23 19 – Dewatering
- D. Section 31 25 13 – Erosion and Sedimentation Controls
- E. Section 33 05 31.19 – Fusible Polyvinyl Chloride Pipe
- F. Section 33 05 33.63 – HDPE Communication Duct

1.03 PRICE AND PAYMENT PROCEDURES

- A. Measurement footage calculated for payment shall be per linear foot of installed casing pipe as measured along the Horizontal Directional Drill profile from entry point station to exit point station, as measured along pipeline survey stationing. No additional compensation will be allowed for contractor's adjustment to the profile depth or length, or that depth or length which is outside the tolerances specified in these specifications, unless approved by OWNER.
- B. The unit measure shall also include skids, pipe rollers, and equipment required to handle the casing pipe during pullback operations.
- C. Incidentals, including but not limited to, preparation of various plans, drilling log, pipe fusion, site restoration and cleanup are also included in the unit price bid item.

1.04 REFERENCES

- A. Abbreviations and Acronyms
 1. HDD – Horizontal Directional Drilling.
 2. WSDOT – Washington State Department of Transportation
 3. WSDOT Standard Specifications - WSDOT Standard Specifications for Road, Bridge, and Municipal Construction, 2018 edition.
 4. OSHA – Occupational Safety and Health Administration
 5. CFR – Code of Federal Regulations.
 6. API – American Petroleum Institute.

7. SDS – Safety Data Sheets (formerly called Material Safety Data Sheets).
8. AWWA – American Water Works Association
9. PVC Pipe – Polyvinyl Chloride Pipe
10. HDPE – high density polyethylene
11. GPM – gallons per minute
12. psig – pounds per square inch gauge pressure.
13. CDF – controlled density fill

B. Definitions

1. CONTRACTOR - For the purposes of this specification CONTRACTOR shall include the General Pipeline Contractor, Horizontal Directional Drilling Contractor, and all their subcontractors, suppliers, vendors, or other parties required by CONTRACTOR to complete work defined herein as appropriate.
2. OWNER - For the Purposes of this specification, the OWNER is Public Utility District No.1 of Skagit County.
3. Outside annulus – the space between the installed casing and the reamed hole, and any voids created during the directional drilling process.
4. Casing or Casing pipe – sleeve through which carrier pipe and fiber optic conduit will be placed.
5. Casing pull section – casing pipe fabricated into one continuous string of an equal or greater length as the as-built reamed hole length.
6. Carrier pipe – 12-inch waterline.
7. Fusible PVC Pipe – fusible polyvinylchloride pipe.
8. Fiber Optic Conduit – 3-inch fiber optic conduit.
9. HDPE Duct Conduit – orange high-density polyethylene pipe.
10. Inadvertent return (also called drilling fluid surface release or “frac-out) – Drilling fluid that surfaces in any location other than the HDD entry and exit pits, or which migrates from the drill hole to beneath existing pavements.
11. Drilling fluid – a mixture of bentonite and drilling fluid, which may also contain approved additives.
12. Secondary surface survey – ParaTrack2, TruTracker or equivalent as approved by OWNER.
13. Contract plan and profile drawings: HDD plan and profile drawings presented in Geotechnical Report by GeoEngineers, Inc.: “*Geotechnical Engineering and Trenchless Design Services, Conway I-5 Crossing Project, Skagit County, Washington*” dated August 2, 2018.

C. Reference Standards

1. Work shall be performed in strict accordance with all governing Federal, State, and Local regulations, including OSHA regulations.
2. WSDOT Standard Specifications for Road, Bridge and Municipal Construction, 2018 M41-10.
3. Specific sections of the WSDOT Specifications pertaining to the project include but are not limited to Section 8-20(5)E3, Section 8-20(5)E4, and Section 2-09.3(1)E. In some cases, these project specifications may conflict with the WSDOT standard Specifications. If a conflict is identified, the more stringent of the two specifications shall be used.
4. International Association of Drilling Contractors (IADC) Drilling Manual
5. API RP 13B-1 Recommended Practice for Field Testing Water-based Drilling Fluids.
6. 29 CFR 1926.652 – “Safety and Health Regulations for Construction – Trenching and Excavation”.
7. API Specification 13A/ISO 13500: Specification for Drilling-Fluid Materials.

8. API Recommended Practice 13D: Recommended Practice on the Rheology and Hydraulics of Oil-well Drilling Fluids.
9. AWWA C605 – Standard for Underground Installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.
10. ASTM D1785 – Polyvinyl Chloride (PVC) Plastic Pipe, Schedules 40, 80, and 120
11. ASTM D2152 – Test Method for Degree of Fusion of Extruded Polyvinyl Chloride (PVC) Pipe and Molded Fittings by Acetone Immersion.
12. ASTM D2241 – Polyvinyl Chloride (PVC) Plastic Pipe (SDR-PR).

D. Reference Materials

1. Geotechnical Report by GeoEngineers, Inc.: “Geotechnical Engineering and Trenchless Design Services, Conway I-5 Crossing Project, Skagit County, Washington” dated August 2, 2018
2. It is the CONTRACTOR’S responsibility to be thoroughly familiarized with the geotechnical report. There is no warrantee or guarantee either expressed or implied that the conditions indicated by the geotechnical investigations, or records thereof, are representative of conditions existing throughout the area.

1.05 ADMINISTRATIVE REQUIREMENTS

A. Coordination

1. Coordinate all phases of work, including tie-ins, with OWNER and OWNER’S crews to prevent schedule delays or conflicts as a result of CONTRACTOR’S work.

B. Preconstruction Meetings

1. Attend a preconstruction meeting prior to initiating mobilization.
2. OWNER will be responsible for coordinating and providing a location for the preconstruction meeting.

C. Sequencing

1. Coordinate work with District crews such that tie-in with the open trench installed water line can be completed directly after acceptance of the HDD installed casing, and prior to backfilling of HDD entry/exit pits.
2. Coordinate work with District crews as to not limit access, delay or otherwise impede the work of District crews of the OWNER.

D. Scheduling

1. Schedule all work to occur in succession such that downtime related to CONTRACTOR’S operations is minimized.
2. Individual HDD operations (i.e. pilot hole, reaming, swabbing, pullback, post-installation grouting) shall occur in sequence with no delays between operations.
3. Pullback shall commence within no more than one day of completing a final swab pass that verifies that the reamed hole is in an acceptable condition to receive the casing pipe and not result in failure of the installation of the casing pipe.

1.06 ACTION / INFORMATIONAL SUBMITTALS

A. Shop Drawings

1. Shop drawings shall be submitted in accordance with the contract documents, and meeting the requirements of the OWNER including the following:
 - a. Drawings showing the location and configuration of approach trench, entry and exit pits, joint type for both casing and installed carrier pipes.

- b. Drawings providing plan and profile view of casing spacers within the casing, and specifications for casing spacers and end seals. Casing spacers shall be situated in such a manner that the carrier pipe does not sag between casing spacers. End seals shall prevent migration of soil into casing.

B. Drilling Schedule

1. Contractor shall submit a drilling schedule for OWNER approval. The schedule shall be job specific and comply with the schedule specified in the Contract. The schedule shall be updated weekly during drilling operations. CONTRACTOR's plan shall address continuity of supervision, quality management, and communication between shifts to address completion of tasks and processes begun in previous shifts or to be undertaken in subsequent shifts. The following shall be included in the schedule:
 - a. Dates for mobilization, rig-up drill start, casing, carrier and conduit pipe fusing, pullback completion, rig tear-down, demobilization.
 - b. Dates for fabrication and pre-installation pressure testing casing pull section.
 - c. Mobilization and set up durations;
 - d. Pilot drill duration.
 - e. Reaming steps with duration for each pass.
 - f. Final hole preparation (swab pass) and pullback duration.
 - g. Dates for final pressure and deflection testing and internal inspection of installed casing.
 - h. Clean up, restoration and move out duration.
 - i. Any other site specific activities required for the particular crossing project
 - j. Daily work schedule for all phases of the project -- i.e. 12 or 24-hour workday and number of shifts.
 - k. Personnel (supervisor and work crews) schedule for the various work shifts and phases.

C. Shutdown Notification

1. Contractor shall submit a 72-hour notification prior to any changes in schedule or shutdowns (including holidays) to OWNER for approval. The schedule change or shutdown will not occur without OWNER approval.

D. Drilling Plan

1. Contractor shall submit a drilling plan with its bid for OWNER approval. CONTRACTOR's drilling plan shall not override or change requirements of Drawings, Specifications, Contract Documents or this specification without written approval from OWNER. Approval of drilling plan by OWNER does not relieve CONTRACTOR of any responsibility or liability for safety, damages, compliance with permits and regulations, accuracy, adequacy of the plan for execution of the project. Any operational deviation from the submitted plan, including, but not limited to, change in reaming size, shall be presented to OWNER in written form. OWNER shall review and approve any deviations to the drilling plan prior to implementation by the CONTRACTOR.
2. The Drilling Plan shall be site specific and shall be updated during drilling operations. The following shall be included in the plan; if requested, CONTRACTOR shall provide supporting data, calculations and/or other information for each item:
 - a. Size of drilling rig, including torque and pulling capacities.
 - b. Type of rig, including size of motors.
 - c. Type of survey tracking equipment to be utilized and its stated accuracy.
 - d. A description of the downhole survey instruments and surface location equipment and provide a sketch of the cable layout.
 - e. Pilot survey equipment with sketch of tracking cable layout.
 - f. Pilot hole size, each reaming step size, and final hole size.
 - g. Diameter, type, grade of drill pipe.

- h. Most recent inspection records for drill pipe to be used for this project.
- i. Type of pilot hole bits (include diameter and type).
- j. Type of hole opening tools (include diameter and type).
- k. Anticipated and maximum penetration rates to be maintained for the anticipated soil and groundwater conditions for this project.
- l. Equipment (pumps, etc.) required to obtain water.
- m. Quantity of water required for drilling operations with estimated maximum daily rate to be consumed.
- n. Drilling fluid system, including recycle plans (if applicable).
- o. Drilling fluid composition and additives including all Safety Data Sheets.
- p. Drilling fluid and hole cuttings disposal method and location.
- q. Disposal location permit status and/or authorization to dispose fluid and cuttings or other project wastes.
- r. Contingency plan for inadvertent drilling fluid migration and release.
- s. Inventory of equipment and material to be on site for fluid release.
- t. Roller spacing.
- u. Buoyancy mitigation plan.
- v. Spare equipment and parts inventory.
- w. Plan for pipe fabrication and pullback support. Number and size(s) of pullback equipment (i.e. number of side boom pipe layers, cranes, and other support equipment). Contractor shall submit pull back head design for casing and carrier pipes.
- x. Pneumatic Ram and Pull Assistance Contingency Plan. This contingency plan will only be considered if the pipe string becomes lodged during the pullback. CONTRACTOR shall provide detailed description of the proposed equipment, procedures, methods, monitoring and engineering calculations for any pneumatic ramming or pull assistance equipment. Written authorization from the OWNER will be required before the CONTRACTOR implements this contingency plan.
- y. Plan for site grading and access road preparation including support mats.
- z. On-site equipment required to continuously monitor highways or sensitive natural areas during drilling operations.
- aa. Sample of daily report.

E. Daily Reports

- 1. Submit daily reports to OWNER at end of each work shift. CONTRACTOR shall submit daily reports on OWNER approved form and shall include the following information:
 - a. Supervisor on site, crew members on site, shifts/time worked.
 - b. Description of work, tools in use, footage completed.
 - c. Daily total of Bentonite used and total to date.
 - d. Drilling fluid additives in use.
 - e. Loss of drilling fluid circulation and duration.
 - f. Quantity of drilling fluid lost or released, and disposition of the fluid released in regard to clean-up.
 - g. Pilot drill deviations and corrections made.
 - h. Maximum torque values on each pilot or reaming joint.
 - i. Penetration rates for each pilot or reaming joint.
 - j. Maximum downhole annular pressure recorded for each pilot hole joint.
 - k. Calculation of 3-joint radius for the days drill footage.
 - l. Copy of directional survey report and report from pilot hole tracking (ParaTrack or equal) system(s).
 - m. Data required to independently calculate minimum radius of each 3-joint segment of pilot hole.

- n. Disposal quantities of drilling mud and cuttings.
 - o. Disposal bill of lading/trip ticket and lab sample results.
 - p. Drilling schedule updates.
 - q. Drilling plan updates.
 - r. Drilling fluid system updates.
 - s. Drilling fluid properties report.
- F. Drilling Fluid Mixing System
1. Submit a job specific plan of the proposed drilling fluid mixing system, cleaning system, and mud pumping capabilities and provide the plan with its bid. The plan shall include the following information:
 - a. Total volume of mixing tank – (BBLs).
 - b. Total volume of cleaning tank – (BBLs).
 - c. Scalping shakers – quantity.
 - d. Scalping shakers – mesh size.
 - e. Desander cones – quantity.
 - f. Desander cleaning ability – GPM.
 - g. Desander shakers – mesh size.
 - h. Desilter cones – quantity.
 - i. Desilter cleaning ability – GPM.
 - j. Desilter shakers – mesh size.
 - k. Centrifuge(s) – quantity.
 - l. Centrifuge(s) cleaning ability – GPM.
 - m. Mud pump(s) capabilities (entry side): name brand, liner size, stroke length, maximum pressure, maximum flow rate (GPM) and gallons per stroke).
 - n. Anticipated mud pump volumes (GPM) to be maintained on each reaming pass in clay, sand, silt, rock and gravel.
 - o. Anticipated daily water usage.
- G. Drilling Fluid Plan
1. Contractor shall submit a drilling fluid plan describing the drilling fluid composition to be used on this project. The drilling fluid plan shall include the following information:
 - a. Anticipated drilling fluid composition with SDS sheets.
 - b. Anticipated additives with SDS sheets. Drilling fluid additives not included in the drilling fluid plan will NOT be allowed on-site or used without prior OWNER approval.
 - c. Minimum and maximum viscosities that will be maintained in sand, silt, clay, rock and gravel.
 - d. Proposed ideal and maximum percentage of solids (sand content) to be maintained during the drilling process. Describe the process that will be implemented should the percentage of solids exceed the proposed maximum.
 - e. Sample drilling fluid daily report.
- H. Safety Data Sheets
1. Contractor shall submit Safety Data Sheets (SDS) sheets for any changes to the drilling fluid composition or use of additives during construction for OWNER approval. OWNER shall approve any changes prior to use of the new drilling fluid composition.
- I. Disposal Plan for Drilling Fluid and Cuttings
1. CONTRACTOR shall include a disposal management plan for drilling fluid and cuttings in its bid for approval by OWNER. CONTRACTOR shall notify OWNER and submit list with any changes in plan for OWNER approval prior to work starting. The plan shall include:
 - a. Description of CONTRACTOR'S plans for disposal of the drilling fluid and cuttings.

- b. Names, addresses and telephone numbers of subcontractors to be performing any portion of the disposal activities.
 - c. Anticipated drilling fluid composition with SDS sheets.
 - d. Anticipated additives with SDS sheets.
 - e. Anticipated intervals of disposing of the drilling fluid, duration between loads and volume per load.
 - f. Disposal hauler.
 - g. Estimated quantities to be disposed.
- J. Disposal Reporting
- 1. CONTRACTOR shall submit daily disposal reports to OWNER including the following:
 - a. Quantity of drilling fluid and cuttings hauled from drill sites.
 - b. Number of loads hauled off site.
 - 2. Bill of lading / trip ticket for each truckload.
 - 3. CONTRACTOR shall maintain a steady supply of trucks to keep up with the volume of drilling fluid disposal (mud, soil and cuttings).
 - 4. Lab sample results in accordance with disposal permit.
- K. Drilling Fluid Release Plan
- 1. Contractor shall submit a plan for containing, collecting and cleaning up after drilling fluid releases (inadvertent returns). The plan shall include detailed descriptions of all equipment and materials to be utilized, and an inventory of equipment and materials to be on site. Equipment should include, but not be limited to, the drilling fluid release equipment in Section 3.05 of these specifications.
- L. Post-Installation Grouting Plan
- 1. Contractor shall submit a plan for post-installation grouting of the outside annulus of the casing. The plans shall include:
 - a. Grout mix design conforming to WSDOT Specification Section 9-20.3(4).
 - b. A description and drawing of grout delivery system. The grout delivery system shall be designed in such a manner to withstand the forces of pullback, not become plugged during pullback, and prevent short term and long term leakage of grout and groundwater into the casing.
 - c. The grout plan shall describe how the casing will be protected from excessive overheating, damage and deformation from the grouting program.
 - d. A description of how the grout quantities, flow rate and grout pressure will be monitored and controlled in such a manner as to completely fill the outside annulus and/or voids, and prevent deformation of the casing and heaving or settlement of the ground surface and structures placed on the ground surface.
 - e. Contingency plan for grouting of voids created by the drilling process if those voids occur during the drilling process and are detrimental to the safe operation of infrastructure on the ground surface (roadways) or within the subsurface (utilities).

1.07 CLOSE OUT SUBMITTALS

- A. Directional Survey Report and As-Built Drawing
- 1. Contractor shall submit to OWNER a copy of the complete computer printout of the directional survey report (ParaTrack2, TruTracker or equal) made during the drilling operation and an as-built drawing of the horizontally drilled section showing the “x”, “y”, and “z” coordinates of the final location of the pipeline. All coordinates shall be in State Plane Coordinate system unless otherwise stated in Contract documents or permits. As-built

- drawing to be overlaid on an aerial photo. The maximum spacing between coordinate points shall be every joint of drill pipe (approx. 30 feet).
2. Contractor shall submit the as-built drawing within 15 days after the pulled back pipe has been installed.

B. As-Recorded Pipe Fusion Data

1. The following As-Recorded data is required from the CONTRACTOR and/or fusion subcontractor provided to the OWNER or supplier upon request
 - a. Approved data logger device reports
 - b. Fusion joint documentation containing the following information:
 - i. Pipe size and thickness
 - ii. Machine size
 - iii. Fusion Technician Identification
 - iv. Job identification
 - v. Fusion joint number
 - vi. Fusion, heating and drag pressure settings
 - vii. Heat plate temperature
 - viii. Time stamp
 - ix. Heating and cool down time of fusion
 - x. Ambient temperature

1.08 DELIVERY, STORAGE AND HANDLING

A. Delivery and Offloading

1. All pipe shall be bundled or packaged in such a manner as to provide adequate protection of the ends during transportation to the site. Any pipe damaged in shipment shall be replaced as directed by the OWNER.
2. Each pipe shipment should be inspected prior to unloading to see if the load has shifted or otherwise been damaged. Notify OWNER immediately if more than immaterial damage is found. Each pipe shipment should be checked for quantity and proper pipe size, color, and type.
3. Pipe should be loaded, off-loaded, and otherwise handled in accordance with AWWA M23, and all of the pipe supplier's guidelines shall be followed.
4. Off-loading devices such as chains, wire rope, chokers, or other pipe handling implements that may scratch, nick, cut, or gouge the pipe are strictly prohibited.
5. During removal and handling, be sure that the pipe does not strike anything. Significant impact could cause damage, particularly during cold weather.
6. If appropriate unloading equipment is not available, pipe may be unloaded by removing individual pieces. Care should be taken to ensure that pipe is not dropped or damaged. Pipe should be carefully lowered, not dropped, from trucks.

B. Handling and Storage

1. Any length of pipe showing a crack, or which has received a blow that may have caused an incident fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work. Damaged areas, or possible areas of damage may be removed by cutting out and removing the suspected incident fracture area. Limits of the acceptable length of pipe shall be determined by the OWNER.

2. Any scratch or gouge greater than 10% of the wall thickness will be considered significant and can be rejected unless determined acceptable by the OWNER.
3. Pipe lengths should be stored and placed on level ground. Pipe should be stored at the job site in the unit packaging provided by the manufacturer. Caution should be exercised to avoid compression, damage, or deformation to the ends of the pipe. The interior of the pipe, as well as all end surfaces, should be kept free from dirt and foreign matter.
4. Pipe shall be handled and supported with the use of woven fiber pipe slings or approved equal. Care shall be exercised when handling the pipe to not cut, gouge, scratch or otherwise abrade the piping in any way.
5. If pipe is to be stored for periods of 1 year or longer, the pipe should be shaded or otherwise shielded from direct sunlight. Covering of the pipe which allows for temperature build-up is strictly prohibited. Pipe should be covered with an opaque material while permitting adequate air circulation above and around the pipe as required to prevent excess heat accumulation.
6. Pipe shall be stored and stacked per the pipe supplier's guidelines.

1.09 SITE CONDITIONS

- A. Refer to the Geotechnical Report "*Geotechnical Engineering and Trenchless Design Services, Conway I-5 Crossing Project, Skagit County, Washington*" dated August 2, 2018 for existing site conditions and proposed Horizontal Directional Drill design.
- B. The CONTRACTOR shall conduct a site visit prior to bidding and also prior to construction to evaluate site conditions at the time of bidding and construction. Changed conditions between bid submittal and construction shall be immediately brought to the attention of the OWNER.
- C. Horizontal directionally drill so as not to interfere with, interrupt, or endanger surface and activity thereon including but not limited to:
 1. Minimizing subsidence of surface, structures, and utilities above and in the vicinity of bore.
 2. Support ground continuously to prevent loss of ground and keep perimeters stable.
- D. CONTRACTOR shall be responsible for settlement resulting from operations and shall repair and restore damaged property to its conditions before being disturbed.

1.10 WARRANTY

- A. The pipe shall be warranted for one year per the pipe supplier's standard terms.
- B. In addition to the standard pipe warranty, the fusion services shall be warranted for one year per the fusion service provider's standard terms

PART 2 - PRODUCTS

2.01 OWNER-SUPPLIED PRODUCTS

- A. None

2.02 PRODUCT TYPES

- A. Casing Pipe
 1. Casing pipe shall consist of 25.80-inch outside diameter by 1.43-inch wall thickness, DR18 Fusible C-900 PVC Pipe.

B. Fusible PVC Pipe

1. Fusible PVC pipe shall conform to AWWA C900, ASTM D2241 or ASTM D1785 for standard dimensions, as applicable. Testing shall be in accordance with the referenced AWWA standards for all pipe types.
2. Pipe shall be manufactured with 100% virgin resin. Pipe shall also have 0% recycled plastics content, and shall not consist of any rework compound, even that obtained from the manufacturer's own production using the same formulation.
3. Fusible PVC pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.
4. Fusible PVC pipe shall be manufactured in a standard 40' nominal length, unless otherwise approved by the OWNER.
5. Pipe shall be marked as follows:
 - a. Nominal pipe size
 - b. PVC
 - c. Dimension Ratio (DR), Standard Dimension Ratio (SDR), or Schedule
 - d. AWWA pressure class, or standard pressure rating for non-AWWA pipe, as applicable
 - e. AWWA standard designation number, or pipe type for non-AWWA pipe, as applicable
 - f. Extrusion production-record code
 - g. Trademark or trade name
 - h. Cell Classification 12454 and/or PVC material code 1120 may also be included
6. Pipe shall be homogeneous throughout and be free of visible cracks, holes, foreign material, blisters, or other visible deleterious faults.

C. Non-Rigid Non-Metallic Duct Conduit

1. HDPE communication duct conduit manufactured with premium, high-density polyethylene 3408/3608 resin that provides service of telecommunication needs.
2. The duct shall be supplied as a continuous conduit on a reel.
3. Color shall be orange.

D. Pipe Rollers

1. Pipe rollers, if required, shall be of sufficient size to fully support the weight of the pipe during handline and installation operations.
2. A sufficient quantity of rollers and spacing, per the pipe supplier's guidelines shall be used to assure adequate support and limit excessive sagging of the casing pipe.

E. Casing Spacers

1. Manufacturer: Cascade Waterworks, Mfg.
2. Model: Multiple Pipe Casing Spacer, Series CCS-08 Multi – 8" Wide
3. Material: 304 Stainless Steel, 14-gauge
4. Liner: 0.090" thick, ribbed extruded PVC
5. PVC Hardness: 85-90 Durameter

F. End Seal

1. Manufacturer: GPT, a division of EnPro Industries
2. Model: C or W
3. Material: 1/8-inch thick Neoprene, Nitrile, or EPDM
4. Hardware: Stainless Steel Bands
5. Offset or eccentric fitting.

G. Grout

1. Grout used for filling the annulus between the casing and the bore hole walls, or any voids created during boring, shall conform to Section 9-20.3(4) of WSDOT Standard Specifications and be sufficiently fluid to fill outside annulus and voids with prompt setting to control grout flow.

H. Entry and Exit Pit Backfill

1. Entry/exit pit backfill shall conform to WSDOT Standard Specifications Section 2-09.3(1)E.
2. If Controlled density fill (CDF) is used for backfill, the CDF shall also conform to WSDOT Standard Specifications Section 2-09.3(1)E.

PART 3 - EXECUTION

3.01 GENERAL

A. Obstructions

1. Notify OWNER immediately if obstruction stopping forward motion of operation is encountered during pilot hole, reaming or pullback operations.

B. Inadvertent Drilling Fluid Returns

1. Notify OWNER immediately if drilling fluid surfaces in any location other than the entry or exit pits.

C. Permits

1. All work shall be completed in accordance with the applicable federal, state, county and city permits.

D. Safety

1. All work shall be conducted in a safe manner to protect employee and public health and safety and shall conform to all applicable State of Washington and OSHA regulations.

E. Erosion and Sediment Control

1. CONTRACTOR shall supply, install and maintain erosion and sediment control structures in accordance with the Contract documents.
2. CONTRACTOR shall install additional erosion and sediment control structures as needed and/or as directed by the environmental inspector.

F. Workspace

1. Maximum workspace limits are depicted on the Contract plan and profile drawings. Restrict clearing to the workspace indicated at the entry and exit points, and casing pipe stringing and fabrication workspaces along the construction right-of-way.
2. Clearing between the entry and exit points requires prior approval from the project environmental inspector and is limited to the amount necessary to string survey wires.

3.02 PREPARATION

A. Existing Utilities

1. Call the applicable utility locating service to locate utilities within the work areas.
2. Confirm the location of all known existing utilities by pot hole excavation prior to start of launching/receiving pit excavation and pipe installation.
3. Notify OWNER immediately if any utility is found to be in conflict with the contract plans and specifications.

4. It is the CONTRACTOR's responsibility to identify and protect any foreign utility that may be affected by the HDD operations.
 5. A minimum 12-foot long section of the existing waterline near the proposed HDD entry point shall be bypassed and removed prior to initiating HDD operations, if deemed necessary due to utility conflict identified during pot hole excavation of the existing utility.
- B. Assembly of Casing Pipe Pull Section
1. The casing pipe pull section shall be assembled in one continuous string within the approved project workspace. Multiple pull sections will not be permitted without prior OWNER approval.
- C. Assembly of Carrier Pipe Pull Section
1. Install casing spacers on carrier pipe. Casing spacers shall be spaced a maximum of eight (8) feet apart along the length of the carrier pipe with one spacer within two (2) feet on each side of the pipe joint and the rest evenly spaced.
 2. Securely attach fiber optic conduit to carrier pipe.
- D. Equipment Selection and HDD Equipment Set Up
1. Select necessary equipment and methods to horizontally directional drill, prepare hole to install casing, accurately track pilot hole, install casing, clean and recycle drilling fluid, and grout outside annulus after installation.
 2. Perform preliminary work to set up drill rig in line with the staked HDD entry point and HDD alignment including (but not limited to) placing or removing timber mats (if necessary), verifying the HDD entry point and alignment from onsite alignment stakes.
 3. Set up ancillary equipment including, but not limited to, drilling fluid recycling system, drill rig power unit and driller's control cabin within the provided workspace in such a manner that the workspace remains safe for workers within the workspace.
 4. Set up drill rig in line with the HDD entry and exit point. The drill rig shall be set up such that the vise to entry length will allow the drill bit to enter the ground surface within the specified HDD entry point tolerance as specified in section 3.06(B) of these specifications.
- E. Excavate HDD Entry and Exit Pits
1. Methods of construction of the HDD entry/exit pits shall be such as to ensure the safety of the work, CONTRACTOR's employees, the public, existing utilities, and adjacent property and improvements whether public or private.
 2. Exit pit should be excavated upon conclusion of the pilot hole and prior to reaming.
 3. Before excavating the HDD entry/exit pits, adequately protect existing structures, utilities, trees, shrubs, and other existing facilities.
 4. HDD entry/exit pit sizes shall be the minimum required size to temporarily contain drilling fluid as it is being transferred to the drilling fluid cleaning and recycling system for processing and reuse in HDD operations.
 5. Place orange construction fencing or equivalent around HDD entry/exit pits to provide for safety.
 6. Inspect entry/exit pits excavations daily to check safety of excavation.
- F. Prepare Bottom Hole Assembly
1. Make up bottom hole assembly suitable for the expected subsurface soil conditions.
 2. The bottom hole assembly shall include a downhole annular pressure tool capable of monitoring downhole annular pressures at all times during pilot hole operations, and a downhole survey probe capable of providing calculated survey and secondary surface survey (ParaTrack; TruTracker) of the bottom hole assembly location.

3. Prior to initiating pilot hole operations, the downhole survey probe shall be tested to verify it is in good working order and functioning properly.

3.03 DRILLING FLUID SYSTEM

A. Drilling Fluid System Instrumentation

1. CONTRACTOR shall provide and maintain instrumentation that will accurately measure drilling fluid discharge rate and pressure. OWNER or their representative shall have access to these instruments and their readings at all times.

B. Drilling Fluid Pressures

1. CONTRACTOR shall take necessary precautions to insure the drilling fluid pressure in the drilled hole does not exceed what can be contained by the overburden soil to prevent any migration into waterbodies, wetlands, utilities, foundations, structured, road/railroad rights-of-way, or any other facilities.
2. CONTRACTOR shall make every effort to maintain circulation and recycle the drilling fluid throughout the drilling process.

C. Drilling Fluid Containment

1. CONTRACTOR shall provide metal fluid storage tanks on both sides of the crossing sufficient to contain all drilling fluids resulting from the drilling operations. CONTRACTOR shall insure that all drilling fluids are contained within the drilled hole, the entry/exit pits or the fluid tanks.

D. Drilling Fluid Engineer

1. CONTRACTOR shall provide a certified and OWNER approved drilling fluid engineer on-site during all phases of the drilling process. CONTRACTOR shall provide a resume for the proposed drilling fluid engineer in its bid. CONTRACTOR will be responsible for these costs.

E. Reporting Of Drilling Fluid Properties

1. CONTRACTOR shall check drilling fluid properties at least once every two hours during drilling operations. The results of these tests shall be recorded during each shift and a copy of the report shall be given to OWNER and OWNER's on-site representative at the end of each shift. The report shall include the following (suggested testing procedure indicated (latest edition) or as otherwise approved by OWNER:
 - a. Density ('mud weight', per API RP 13B-1);
 - b. Viscosity (including apparent viscosity, plastic viscosity and yield point per API RP 13B-1);
 - c. Funnel Viscosity (using Marsh funnel, per API RP 13B-1);
 - d. Gel Strength (per API RP 13B-1);
 - e. Solids and Sand Content (per API RP 13B-1);
 - f. Water loss (filtration, per API RP 13B-1); and
 - g. Chemical quality of make-up water and drilling fluid (e.g., pH, chlorides, hardness, per API RP 13B-1).

3.04 DRILLING FLUID COMPOSITION

- A. CONTRACTOR shall use new, water based, environmentally safe drilling fluids and conduct drilling operations in a manner so as to provide a stable drill hole, helping prevent the discharge of drilling fluids to unintended areas.
- B. CONTRACTOR may consider using environmentally safe drilling fluid additives, only after submitting SDS to OWNER and gaining approval. Do not use chemicals or polymer surfactant in the drilling fluid without written consent of the OWNER. Certify in writing to the OWNER that any chemicals to be added are environmentally safe and not harmful or corrosive to the casing or utilities being installed. Identify the source of water for mixing the drilling fluid. Approvals and permits are required for obtaining water from such sources as streams, rivers, ponds or fire hydrants. Any water source used other than potable water requires a pH test.
- C. Appropriate pressures and flow rates will be used during drilling operation so as to reduce the potential for fracturing the sub grade material around and or above the drill hole.

3.05 DISPOSAL OF DRILLING FLUID

- A. General
 - 1. CONTRACTOR shall promptly remove all drilling fluids and associated cuttings from job site and haul to an OWNER approved facility for proper disposal. All costs of disposal of both drilling fluids and associated cuttings, including hauling, shall be at CONTRACTOR'S expense. At its discretion, OWNER may obtain use of private property to land farm drilling fluid and associated cuttings if specified elsewhere in the contract. CONTRACTOR shall be responsible for all work necessary for land farming, including any improvements to the property and including improvements necessary for ingress and egress to the site. CONTRACTOR shall be responsible for all work necessary to clean up and restore property used for land farming. CONTRACTOR shall bear all costs to clear additional disposal sites requested by the CONTRACTOR.
- B. Disposal Reporting
 - 1. CONTRACTOR shall include disposal reports in accordance with the approved CONTRACTOR submitted disposal reporting plan with daily field reports.

3.06 DRILLING FLUID MIGRATION AND RELEASE

- A. General
 - 1. CONTRACTOR will supply trained personnel to observe for and respond to any inadvertent release of drilling fluid.
 - 2. CONTRACTOR shall supply and stage containment response and clean-up equipment at the Horizontal Directional Drilling crossing location to assure a timely response prior to any drilling activities being conducted. Minimum equipment required, unless otherwise waived by OWNER shall include:
 - a. Silt fencing and stakes to support immediate construction of 200 feet of silt fence to provide containment.
 - b. A minimum of 1 vacuum truck (either tandem tractor-trailer or single truck is acceptable depending on the length and size of the drill and access to the centerline of the drill).
 - c. Pumps – at a minimum, two 3” trash pumps, capable of being transported by foot, with enough suction hose and discharge hose to reach either the distance of the midpoint of the drill to either the exit or entry points of the drill, or the farthest distance between the centerline of the drill and access to the centerline of the drill, whichever is longer. Larger pumps may be used, if accessibility to the drill is not restricted.

- d. Tools – a minimum of 4 brooms, five 5-gallon buckets, 4 squeegees, 4 flat shovels, and 4 garden rakes are required on site near the drill rig.
 - e. Absorbent pads – 2 bundles minimum.
 - f. Straw logs (wattles)/absorbent logs – 10 logs or 100-foot minimum.
 - g. The mud storage tanks used for drilling operations may be used to capture or store inadvertent returns using the equipment listed in items 1 through 6 above.
3. The crossing area will be observed during drill operations by CONTRACTOR for any release of drilling fluid.
 4. CONTRACTOR is responsible for any permission, permits or traffic control required to respond to inadvertent returns within the WSDOT right-of-way.
 5. CONTRACTOR shall immediately cease drilling, relieve downhole drilling fluid pressure by disengaging pumps and notify OWNER upon detection of drilling fluid/mud release to the ground surface or water body, or detection of drilling fluid/mud migration under pavement, foundation, utilities or other structure. Operations shall not resume without OWNER approval.
 6. CONTRACTOR shall have adequate spill containment measures and collection equipment on site at all times to contain and collect any release of drilling fluids to the ground surface, wetlands, or waterbodies.
 7. If inadvertent surface returns of drilling fluids occur, CONTRACTOR will immediately contain drilling fluids with hand placed barriers (i.e. haybales, straw wattles, silt fence, sandbags, etc.) and collect fluids using pumps if practical. If the amount of surface return is not great enough to allow practical collection, the affected area will be diluted with fresh water and the fluid will be allowed to dry and dissipate naturally.
 8. If an inadvertent return takes place during a critical step of the drilling operations (such as pullback), the CONTRACTOR may continue cautiously with reduced pump volumes until a stopping point is reached or the critical step is completed. If the drilling fluid has impacted sensitive areas such as a wetland or roadway then drilling may not resume until authorized by OWNER.
 9. Upland areas – CONTRACTOR shall evaluate the release to determine if containment structures are warranted and can effectively contain the release. Deploy appropriate containment measures to contain and recover drilling fluid as feasible. Remove excess drilling fluid at a rate sufficient to prevent an uncontrolled release of drilling fluid. Suspend drilling if the drilling fluid release cannot be controlled until appropriate containment is in place.
 10. Wetland areas – OWNER will make notification to environmentally regulatory agencies. Initiate suspension of drilling until appropriate evaluation and containment measures are completed and initiated.
 11. In Stream – document and monitor release. Order installation of containment as needed to prevent solids propagation. Initiate immediate suspension of drilling operation if released volume is determined to pose a threat to human health and safety.
 12. All areas contaminated by drilling fluid migration and release shall be cleaned up and restored to the original condition, agency requirements, or as accepted by the OWNER at CONTRACTOR's expense.
 13. CONTRACTOR shall be responsible for damages to structures, foundations, pavements, utilities or other facilities affected by drilling fluid migration.
 14. CONTRACTOR shall be responsible for fluid migration that effects any domestic or agricultural water supply. All activities in this event must be documented and submitted to the Company by end of business day. A mitigation plan must be communicated to OWNER.

B. Reporting Of Drilling Fluid Migration and Release

1. CONTRACTOR shall submit a report of quantity of drilling fluid released, location, and clean up activity.

3.07 PILOT DRILLING, TRACKING AND SURVEY

A. General

1. CONTRACTOR will at all times provide and maintain instrumentation which will accurately locate the pilot hole, measure drill string axial and torsional loads, and measure drilling fluid discharge rate and pressure and downhole annular pressure. OWNER or their representative will have access to these instruments and their readings at all times.
2. The pilot hole shall be drilled within OWNER tolerances along the path shown on the plan and profile drawing. The position of the drill string shall be monitored by CONTRACTOR with precise downhole survey instruments and verified with surface location equipment (i.e., ParaTrack2, TruTracker or equal, or as approved in writing by OWNER).
3. CONTRACTOR shall compute the position in the X, Y and Z-axis relative to ground surface from down-hole survey data and secondary surface survey data a minimum of once per length of each drill pipe (approximately 30-foot interval). Upon exit of the pilot hole bit, CONTRACTOR shall take the final survey with the survey probe at the ground elevation. This survey shall be tied-in to the existing exit survey stake.
 - a. If permit conditions do not allow placement of wire coils across roadways, then calculated surveys only beneath roadways are acceptable. However, no deviation from the horizontal and vertical tolerances in these specifications will be allowed unless otherwise approved by OWNER.

B. Pilot Hole Tolerances

1. The entry and exit points will be staked on the ground as shown on Contract plan and profile drawings and shall be located by OWNER using traditional survey methods. If site grading is required at entry or exit, OWNER will provide new coordinates for entry or exit point.
2. Pilot drill shall follow the path shown on the Contract plan and profile drawings within the following tolerances, unless otherwise stated in Contract documents.

Item	Tolerance
Pilot Hole Entry Angle	Increase up to 1° (deeper), but no decrease in angle allowed
Pilot Hole Entry Location	As per coordinates provided by COMPANY, or as staked by OWNER, with no changes without OWNER approval
Pilot Hole Exit Angle	Increase angle up to 1° (higher) or Decrease up to 2° (flatter)
Pilot Hole Exit Location	Up to 5 feet longer or 10 feet shorter than exit stake unless otherwise specified by contract documents. Between 5 feet left and 5 feet right of OWNER survey centerline.
Pilot Hole Depth	Up to 2 feet above the design drill profile allowed. Up to 10 feet below the design drill profile allowed, except where this tolerance conflicts with other specifications or tolerances
Pilot Hole Alignment	Shall remain within 5 feet left or right of OWNER centerline survey

C. Pilot Drill Radius

1. The pilot hole shall be drilled at a radius equal to or greater than that shown on the Contract plan and profile drawing. Pilot drill deviations and corrections made along the drill path shall not exceed the absolute minimum radius, over a three joint range, as shown on Contract plan and profile drawings and/or Contract documents.

2. CONTRACTOR shall calculate the drilled radius over all consecutive three joint segments using the following formula (assuming range 2 drill pipe):

$$R_{\text{drilled}} = (L_{\text{drilled}} / A_{\text{avg}}) * 57.32$$

Where:

R_{drilled} = drilled radius over L_{drilled}

L_{drilled} = length drilled, approximately 90 feet for Range 2 drill pipe

A_{avg} = total change in angle over L_{drilled}

D. Pilot Drill Survey Reporting

1. Horizontal and vertical tolerance deviations between the recorded position of the drill string and the Contract plan and profile drawing, and/or radius violations shall be documented and immediately brought to the attention of OWNER or their on-site representative.
2. CONTRACTOR shall provide in its daily report to OWNER, the computer printout of the directional survey and the ParaTrack2, TruTracker or equivalent reports generated by the downhole survey tools. Report data shall be in a format suitable for independent calculation of the pilot hole profile. OWNER or their on-site representative reserves the right to request this information at any time or during any shift. CONTRACTOR shall supply this information, for independent calculation, with no additional cost to OWNER or their representative should the pilot drilling operation be halted to supply this information.
3. CONTRACTOR shall also furnish the following to OWNER in its daily report:
 - a. Maximum torque values read on each pilot joint or reaming joint run. CONTRACTOR shall note reasoning for any excessive torque value beyond normal operating conditions.
 - b. Survey information on the minimum radius of each three (3) joint segment of the pilot hole.
4. CONTRACTOR shall notify OWNER or their on-site representative of any drill profile failing to meet the specifications, and correction for this shall be at CONTRACTOR's sole expense.

E. Pilot Drill Corrections

1. CONTRACTOR shall redrill or pullback and correct the pilot hole and provide documentation that the pilot hole is within OWNER specifications. CONTRACTOR will be responsible for all costs associated with re-drilling of any portion of the pilot hole, including grouting of the old pilot hole.

3.08 HOLE REAMING AND PREPARATION FOR PIPE PULLBACK

A. Pilot Hole Acceptance

1. CONTRACTOR shall meet with OWNER and their on-site representative and review pilot data before the hole-opening process begins. Contractor may not proceed with hole opening until meeting has occurred, or approval to proceed is provided by OWNER.

B. Lost or Lodged Tools

1. Any tools or other metal object lost or lodged downhole shall be immediately reported to the OWNER and their on-site representative. Metal objects shall be fully recovered prior to pipe pullback operation unless specifically approved otherwise by OWNER. Failure to recover metal objects lost or lodged downhole within a reasonable time period constitute just cause for rejection of the drill hole.

C. Reaming and Swabbing Operations

1. After successfully completing the pilot hole, the bore shall be reamed to a diameter which meets the requirements of the pipe being installed. For example: the pilot hole for a 24-inch diameter casing installation is typically reamed to a minimum size of 12 inches greater than the casing pipe (36-inches) unless otherwise recommended by casing manufacturer. However, hole conditions may warrant a larger reamed hole.
2. Multiple reaming passes shall be used at the discretion of the CONTRACTOR and shall conform to this specification.
3. During reaming and swabbing operations, drilling fluid pumping rates and volumes shall be maintained to ensure that no more than 30 percent solids remain in the reamed hole.

3.09 PIPE FABRICATION AND PRE-INSTALLATION TESTING

A. Pipe Fabrication and Pre-Installation Testing

1. CONTRACTOR shall fabricate pipe for pullback into reamed hole, including installing and removing of manifolds or test caps. CONTRACTOR shall keep 24-hour security on the pullback section. CONTRACTOR may install pull heads and associated equipment after pre-installation testing. CONTRACTOR shall be responsible for all costs (labor, equipment and material) associated with pre-installation testing.
2. CONTRACTOR shall conduct a pre-installation low-pressure air test on the casing pipe pull section before installing in the prepared hole. The low-pressure air test shall be conducted in accordance with Section 7-17.3(2)F of the WSDOT Standard Specifications.
 - a. Water source for pre-wetting of the inside of the fabricated pull section, if conducted, will be at an OWNER approved source. Contractor shall be responsible for all costs (labor, equipment and material) associated with hauling, filling and dewatering of the pull section(s).
 - b. The test period shall last no less than 2 hours with a maximum pressure drop of 1.0 psig with a starting pressure of 3.5 psig.
3. Pipe may be pressure tested on skids or rollers; however, if pipe is placed on rollers or skids for pressure test, CONTRACTOR shall perform the pressure test in accordance with the following requirements:
 - a. All pipe in the test section shall be as specified on the Contract plan and profile drawings in the Contract documents.
 - b. The test medium shall be air.
 - c. The maximum support spacing shall be 50 feet or as otherwise stipulated in the Contract documents for fabrication and low-pressure testing. If necessary, supports shall be placed at a lesser interval to prevent sagging of the pipe between supports.
 - d. Each support shall have a weight capacity sufficient to hold up the pipe with an appropriate safety factor.
4. Supports shall be arranged such that they are loaded approximately equally. Supports located in low areas shall be raised to keep the pull section as straight as possible. Additional supports or timber pads (under supports) or other means shall be used to provide firm support so that sinkage is minimized in areas where the ground is soft, at no additional cost to OWNER. Supports shall closely conform to the shape of the pipe (e.g. rollers, chocks, notched out timber, etc.).

3.10 PULLBACK

A. Maximum Pull Force

1. CONTRACTOR shall provide and maintain instrumentation that will accurately measure drill string axial and torsional loads. OWNER or their on-site representative shall have access to

these instruments and their readings at all times. Adhere to the following data regarding maximum allowable pull-in force for fusible PVC pipe used for trenchless application.

Pipe Diameter (in)	Dimension Ratio (DR)	Max. Working Pressure	DIPS Series			
			Pipe O.D. (in)	Min. Wall (in)	Pipe I.D. (in)	Max. Pull-in Force (Ibs)
24	18	235 psi	25.8	1.43	22.76	307,000

B. Pullback Assistance

1. CONTRACTOR shall not use any hammering or ramming device to aid in the installation of the pipeline. CONTRACTOR may submit a Pneumatic Ram and Pull Assistance Contingency Plan for OWNER review and approval. This contingency plan will only be considered if the pipe string becomes lodged during pullback and all other means for removing the lodged casing and completing the pullback have been exhausted. All costs associated with this contingency plan shall be included in the Contract Bid Proposal, at no additional cost to the OWNER. Written authorization from the OWNER will be required before the CONTRACTOR implements this contingency plan.
2. The Pneumatic Ram and Pull Assistance Contingency Plan should include a description of the equipment, procedures, methods or monitoring to be used; and engineering calculations to verify the pipe will not be overstressed or the pipe dimensions impacted by using a pneumatic rammer or pulling device/s. The maximum ramming force/s should be specified in the plan. CONTRACTOR shall install thinner wall sacrificial pipe between the pneumatic rammer and the casing pipe. OWNER will inspect the pipeline sections at the entry and exit points for visual damage. NDT will be performed on all exposed fusion butt welds to demonstrate that no weld cracking has occurred in the rammed or pulled sections of the casing pipe. The COMPANY may require material test coupons for material inspection. Ultimate approval will be based on the successful post-installation low pressure test, deflection test survey, ovality checks and material inspections. CONTRACTOR shall comply with all applicable regulations.
3. Approval of the Pneumatic Ram and Pull Assistance Contingency Plan by the OWNER does not relieve the CONTRACTOR of any responsibility or liability for safety, damages, accuracy or compliance with the execution of the Contract. Final acceptance of the drilled pipeline crossing will be as outlined in Section 3.11.

C. Pullback Assembly

1. To minimize torsional stress imposed on the pull section, CONTRACTOR shall use a swivel assembly to connect the pull section.
2. A barrel reamer or similar swabbing tool shall be placed in front of the swivel in the pullback assembly to clear cuttings that may remain in the hole after swabbing operations.

D. Pullback

1. CONTRACTOR shall install the casing pipe in one continuous string with no tie-in welds unless stated otherwise in OWNER’s approved Drill Plan. CONTRACTOR shall begin the pullback operation immediately after the final swab pass has been completed, if possible. If it is not possible to commence pullback immediately after the final swab has been completed because of permit limitations or other unforeseen circumstances, pullback shall commence within 12 hours of completion of the final swab pass, unless otherwise approved by OWNER. If pullback does not start within 12 hours, the OWNER or their on-site representative, or the CONTRACTOR has reason to suspect that the reamed hole is not ready to accept the casing pipe, the CONTRACTOR shall conduct additional swab pass(es) prior to attempting pullback

- at no cost to OWNER. Once CONTRACTOR begins pullback operations, installation shall not cease until pullback operations are completed.
2. CONTRACTOR shall provide buoyancy modification as required and/or when conditions necessitate. Water source for buoyancy modification will be at an OWNER provided source. Contractor shall be responsible for all costs (labor, equipment and material) associated with hauling, filling and dewatering of the pull section. OWNER may take samples during fill and dewatering operations.
 3. During the pullback operation, CONTRACTOR shall monitor roller operation and shall use side boom pipe layers or cranes if required to assist movement of the pipe. Situations that cause pipe damage shall be corrected immediately. CONTRACTOR shall repair pipe damage to OWNER Specifications before pulling operations resume. OWNER reserves the right to stop pullback operation if pipe damage cannot be corrected to OWNER's satisfaction, at no additional cost to OWNER.
 4. CONTRACTOR shall utilize equipment necessary to lift the pullback section up to reach the proper entry angle and safely support the pipeline in the break over area. CONTRACTOR shall submit an equipment list and procedures in the Drilling Plan.
 5. CONTRACTOR is responsible for traffic control and related plans, permits and costs for traffic control required during pullback.
 6. If the pipe becomes lodged in the drill hole during pullback and cannot be recovered, CONTRACTOR shall seal the pipe and existing drilled hole, as specified by OWNER.
 7. If pullback is not successful, CONTRACTOR shall repeat efforts to successfully install the drilled sections beginning with the re-drilling of a pilot hole. Unless otherwise specified in the contract documents, CONTRACTOR shall bear all costs of re-drilling, furnishing and hauling casing pipe, welding, and pressure testing to replace any pipe that is not retrieved from an unsuccessful pullback.
 8. During pullback, the exposed pipe shall be supported on rollers. All rollers shall be in good mechanical and physical condition. OWNER shall have the right, in its sole judgment, to stop work, on CONTRACTOR'S account, if insufficient rollers are being used.

3.11 POST INSTALLATION TESTING, INSPECTIONS AND ACCEPTANCE OF INSTALLED PIPE

A. Post Installation Low-Pressure Air Test

1. CONTRACTOR shall dewater casing pipe (if necessary) and conduct a post installation low-pressure air test on the installed casing pipe in accordance with Section 7-17.3(2)F of the WSDOT Standard Specifications.
 - a. The test period shall last no less than 2 hours with a maximum pressure drop of 1.0 psig with a starting pressure of 3.5 psig.
2. CONTRACTOR shall be responsible for installing and removing launchers, test manifolds or test caps.

B. Deflection Test

1. CONTRACTOR shall de-water the crossing pipe and perform a deflection test using a go/no-go mandrel. The mandrel's outside dimension shall be sized to permit no more than 7.5 percent deflection. The percent deflection shall be established from the base inside diameter of the pipe prior to pullback. If the internal beading of the fused joints for the pipe is not required to be removed, the mandrel shall account for this clearance as well. The mandrel shall be approved by the OWNER prior to use.

C. Acceptance of Installation

1. OWNER will review results of the drill profile survey information, low pressure test data, deflection test data and any other required internal pipeline inspection report, and any

- material inspection data; and then determine the acceptability of installed Horizontally Directional Drilling installed crossing. OWNER shall notify the CONTRACTOR of the final results.
2. Unless otherwise specified in the Measurement and Payment Section, payment for the Horizontal Directional Drill shall be made per lineal foot upon successful pullback and review of the testing data. There will be no partial payment or progress payment made for the HDD operations.

3.12 POST INSTALLATION GROUTING OF VOIDS OUTSIDE CASING AND SEALING CASING

- A. CONTRACTOR shall conduct post-installation grouting of the annulus between the installed casing and the bore hole in such a manner as to completely fill voids outside the casing resulting from the jacking or boring operation.
 1. Grouting shall be accomplished in accordance with the approved CONTRACTOR submitted post-installation grouting plan.
 2. Water source for grouting operations, if required, will be at an OWNER approved source. Contractor shall be responsible for all costs (labor, equipment and material) associated with hauling, filling and dewatering of the pull section(s).
 3. Casing end seals shall be provided at the end of the casing pipe after installation of the carrier pipe and fiber optic conduit. Casing end seals shall conform to the approved CONTRACTOR submitted casing seal shop drawings and specifications.

3.13 SITE RESTORATION

- A. Entry and Exit Pit Backfilling
 1. The entry and exit pits, and extensions thereof, shall be backfilled such that the adjacent ground surface does not settle thus compromising adjacent infrastructure.
 2. Backfill shall be in accordance with WSDOT Standard Specifications Section 2-09.3(1)E or as otherwise directed by OWNER.
- B. Clean Up, Stabilization and Restoration
 1. CONTRACTOR shall return all disturbed areas to the original topographic contours prior to construction.
 2. Disturbed areas shall be replanted and/or seeded as specified in the site restoration plan included in the Contract documents.

END OF SECTION

SECTION 33 05 31.19
FUSIBLE POLYVINYL CHLORIDE PIPE

PART 1 - GENERAL

1.01 SUMMARY

- A. This section specifies fusible polyvinyl chloride [PVC] pipe, including standards for dimensionality, testing, quality, acceptable fusion practice, safe handling and storage.
- B. CONTRACTOR shall furnish all supervision, labor, equipment, materials and supplies to perform the work necessary to install fusible PVC pipe in casing pipe in accordance with the project Drawings, Specifications, Contract Documents, and this specification.

1.02 RELATED SECTION

- A. Section 01 33 00 – Submittal Procedure
- B. Section 33 05 07.13 – Horizontal Directional Drilling

1.03 QUALITY ASSURANCE

- A. References:
 - 1. This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those other standards are included as references under this section as if referenced directly. In the event of a conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
 - 2. Unless otherwise specified, references to documents shall mean the documents in effect at the time of design, bid, or construction, whichever is earliest. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.
 - 3. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued or replaced.
 - a. WSDOT Standard Specifications for Road, Bridge and Municipal Construction, 2018 Manual M41-10
 - b. ANSI/AWWA C900-16 Polyvinyl Chloride (PVC) Pressure Pipe and Fabricated Fittings, 4 In. Through 60 In. (100mm Through 1,500 mm)
- B. Manufacturer Requirements
 - 1. All piping shall be made from PVC compound conforming to cell classification 12454 per ASTM D1784.
- C. Warranty
 - 1. The pipe shall be warranted for one year per the pipe supplier's standard terms.
 - 2. In addition to the standard pipe warranty, the fusion services shall be warranted for one year per the fusion service provider's standard terms.

1.04 SUBMITTAL REQUIREMENTS

- A. Pre-Construction Submittals:
 - 1. The following PRODUCT DATA is required from the pipe supplier and/or fusion provider:
 - a. Pipe Size
 - b. Dimensionality
 - c. Pressure Class per applicable standard
 - d. Color
 - e. Recommended Minimum Bending Radius
 - f. Recommended Maximum Safe Pull Force
 - g. Fusion technician qualification indicating conformance with this specification
- B. Testing Procedures and Protocol:
 - 1. CONTRACTOR shall provide project-specific hydrostatic and leakage testing plan for the potable water pipeline.
 - 2. CONTRACTOR shall provide project-specific disinfection plan and protocol for the disinfection of the potable water pipelines. Backflow and backpressure conditions shall also be addressed in the plan.
- C. Post-Construction Submittals:
 - 1. The following As-Recorded Data is required from the CONTRACTOR and/or fusion provider to the OWNER or pipe supplier upon request:
 - a. Approved data logger device reports
 - b. Fusion joint documentation containing the following information:
 - i. Pipe Size and Thickness
 - ii. Machine Size
 - iii. Fusion Technician Identification
 - iv. Job Identification
 - v. Fusion Joint Number
 - vi. Fusion, Heating, and Drag Pressure Settings
 - vii. Heat Plate Temperature
 - viii. Time Stamp
 - ix. Heating and Cool Down Time of Fusion
 - x. Ambient Temperature

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Offloading:
 - 1. All pipe shall be bundled or packaged in such a manner as to provide adequate protection of the ends during transportation to the site. Any pipe damaged in shipment shall be replaced as directed by the OWNER.
 - 2. Each pipe shipment should be inspected prior to unloading to see if the load has shifted or otherwise been damaged. Notify OWNER immediately if more than immaterial damage is found. Each pipe shipment should be checked for quantity and proper pipe size, color, and type.
 - 3. Pipe should be loaded, off-loaded, and otherwise handled in accordance with AWWA M23, and all of the pipe supplier's guidelines shall be followed.
 - 4. Off-loading devices such as chains, wire rope, chokers, or other pipe handling implements that may scratch, nick, cut, or gouge the pipe are strictly prohibited.
 - 5. During removal and handling, be sure that the pipe does not strike anything. Significant impact could cause damage, particularly during cold weather.

6. If appropriate unloading equipment is not available, pipe may be unloaded by removing individual pieces. Care should be taken to ensure that pipe is not dropped or damaged. Pipe should be carefully lowered, not dropped, from trucks.

B. Handling and Storage:

1. Any length of pipe showing a crack, or which has received a blow that may have caused an incident fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work. Damaged areas, or possible areas of damage may be removed by cutting out and removing the suspected incident fracture area. Limits of the acceptable length of pipe shall be determined by the OWNER.
2. Any scratch or gouge greater than 10% of the wall thickness will be considered significant and can be rejected unless determined acceptable by the OWNER.
3. Pipe lengths should be stored and placed on level ground. Pipe should be stored at the job site in the unit packaging provided by the manufacturer. Caution should be exercised to avoid compression, damage, or deformation to the ends of the pipe. The interior of the pipe, as well as all end surfaces, should be kept free from dirt and foreign matter.
4. Pipe shall be handled and supported with the use of woven fiber pipe slings or approved equal. Care shall be exercised when handling the pipe to not cut, gouge, scratch or otherwise abrade the piping in any way.
5. If pipe is to be stored for periods of 1 year or longer, the pipe should be shaded or otherwise shielded from direct sunlight. Covering of the pipe which allows for temperature build-up is strictly prohibited. Pipe should be covered with an opaque material while permitting adequate air circulation above and around the pipe as required to prevent excess heat accumulation.
6. Pipe shall be stored and stacked per the pipe supplier's guidelines.

PART 2 - PRODUCTS

2.01 OWNER-SUPPLIED PRODUCTS

- A. Water pipeline and fittings for the water system connections as depicted on the Drawings.

2.02 FUSIBLE PVC PIPE

- A. Pipe supplier shall furnish fusible polyvinyl chloride pipe conforming to all standards and procedures and meeting all testing and material properties as described in this specification.
- B. Pipe shall conform to the following dimensionality and general characteristics table:

Nominal Diameter	Dimension Ratio	Pressure Class	Min. Wall Thickness	Internal Diameter
12-inch	DR 18	235 psi	0.73 inches	11.65 inches
24-inch	DR 18	235 psi	1.43 inches	22.76 inches

C. Fusible PVC Pipe:

1. Fusible PVC pipe shall conform to AWWA C900, ASTM D2241 or ASTM D1785 for standard dimensions, as applicable. Testing shall be in accordance with the referenced AWWA standards for all pipe types.
2. Pipe shall be manufactured with 100% virgin resin. Pipe shall also have 0% recycled plastics content, and shall not consist of any rework compound, even that obtained from the manufacturer's own production using the same formulation.

3. Fusible PVC pipe shall be extruded with plain ends. The ends shall be square to the pipe and free of any bevel or chamfer. There shall be no bell or gasket of any kind incorporated into the pipe.
 4. Fusible PVC pipe shall be manufactured in a standard 40' nominal length, unless otherwise approved by the OWNER.
 5. Pipe shall be marked as follows:
 - a. Nominal pipe size
 - b. PVC
 - c. Dimension Ratio (DR), Standard Dimension Ratio (SDR), or Schedule
 - d. AWWA pressure class, or standard pressure rating for non-AWWA pipe, as applicable
 - e. AWWA standard designation number, or pipe type for non-AWWA pipe, as applicable
 - f. Extrusion production-record code
 - g. Trademark or trade name
 - h. Cell Classification 12454 and/or PVC material code 1120 may also be included
 6. Pipe shall be homogeneous throughout and be free of visible cracks, holes, foreign material, blisters, or other visible deleterious faults.
- D. Fusion Joints:
1. Unless otherwise specified, fusible polyvinyl chloride pipe lengths shall be assembled in the field with butt-fused joints. The CONTRACTOR shall follow the pipe supplier's written guidelines for this procedure. All fusion joints shall be completed as described in this specification.
- E. Connection and Fittings for Pressure Applications:
1. Connections shall be defined in conjunction with the coupling of project piping, as well as the tie-ins to other piping systems.
 2. Ductile Iron Mechanical and Flanged Fittings
 - a. Acceptable fittings for use with fusible polyvinyl chloride pipe shall include standard ductile iron fittings conforming to AWWA/ANSI C110/A21.10, or AWWA/ANSI C153/A21.53 and AWWA/ANSI C111/A21.11.
 - b. Connections to fusible polyvinyl chloride pipe may be made using a restrained or non-restrained retainer gland product for PVC pipe, as well as for MJ or flanged fittings.
 - c. Bends, tees and other ductile iron fittings shall be restrained with the use of thrust blocking or other means as indicated in the Drawings.
 - d. Ductile iron fittings and glands must be installed per the manufacturer's guidelines.
 - e. If required, linings for Ductile Iron fittings shall meet the following requirements for the following service environments:
 - i. Liquid Epoxy shall be 100% solids liquid epoxy, Tnemec Epoxyline Series FC22.
 - ii. Polyurethane shall be DuraShield 210-61 or 310-61.
 - f. If required, coatings for Ductile Iron fittings shall meet the following requirements for buried and/or immersion service duty:
 - i. Polyurethane shall be DuraShield 210 or 310.
 - ii. Liquid Epoxy shall be 100% solids liquid epoxy, Tnemec Epoxyline Series FC22.
 - iii. Coal tar epoxy shall be Sherwin Williams Targuard.
 3. Sleeve-Type Couplings:
 - a. Sleeve-type mechanical couplings shall be manufactured for use with PVC pressure pipe, and may be restrained or unrestrained as indicated in the Drawings.
 - b. Sleeve-type couplings shall be rated at the same or greater pressure carrying capacity as the pipe itself.

4. Connection Hardware:
 - a. Bolts and nuts for buried service shall be made of non-corrosive, high-strength, low-alloy steel having the characteristics specified in ANSI/AWWA C111/A21.11, regardless of any other protective coating.

PART 3 - EXECUTION

3.01 FUSION PROCESS

- A. General:
 1. Fusion Technician shall be fully qualified by the pipe supplier to install fusible polyvinyl chloride pipe of the type(s) and size(s) being used.
 2. Fusible polyvinyl chloride pipe will be handled in a safe and non-destructive manner before, during, and after the fusion process and in accordance with this specification and pipe supplier's guidelines.
 3. Fusible polyvinyl chloride pipe will be fused by qualified fusion technicians, as documented by the pipe supplier.
 4. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine.
 5. Only appropriately sized and outfitted fusion machines that have been approved by the pipe supplier shall be used for the fusion process. Fusion machines must incorporate the following elements:
 - a. **Heat Plate:** Heat plates shall be in good condition with no deep gouges or scratches. Plates shall be clean and free of any debris or contamination. Heater controls shall function properly; cord and plug shall be in good condition. The appropriately sized heat plate shall be capable of maintaining a uniform and consistent heat profile and temperature for the size of pipe being fused, per the pipe supplier's guidelines.
 - b. **Carriage:** Carriage shall travel smoothly with no binding at less than 50 psi. Jaws shall be in good condition with proper inserts for the pipe size being fused. Insert pins shall be installed with no interference to carriage travel.
 - c. **General Machine:** Overview of machine body shall yield no obvious defects, missing parts, or potential safety issues during fusion.
 - d. **Data Logging Device:** An approved data logging device with the current version of the pipe supplier's recommended and compatible software shall be used. Data logging device operations and maintenance manual shall be with the unit at all times. If fusing for extended periods of time, an independent 110V power source shall be available to extend battery life.
 6. Other equipment specifically required for the fusion process shall include the following:
 - a. Pipe rollers shall be used for support of pipe to either side of the machine.
 - b. A weather protection canopy that allows full machine motion of the heat plate, fusion assembly and carriage shall be provided for fusion in inclement, extreme temperatures, and /or windy weather, per the pipe supplier's recommendations.
 - c. An infrared (IR) pyrometer for checking pipe and heat plate temperatures.
 - d. Fusion machine operations and maintenance manual shall be kept with the fusion machine at all times.
 - e. Facing blades specifically designed for cutting fusible polyvinyl chloride pipe shall be used.
 - f. Weld bead removal tool to remove the inside weld beads on the 24-inch casing pipe.

- B. Joint Recording:
 - 1. Each fusion joint shall be recorded and logged by an electronic monitoring device (data logger) connected to the fusion machine. The fusion data logging and joint report shall be generated by software developed specifically for the butt-fusion of fusible polyvinyl chloride pipe. The software shall register and/or record the parameters required by the pipe supplier and these specifications. Data not logged by the data logger shall be logged manually and be included in the Fusion Technician's joint report.

3.02 GENERAL INSTALLATION

- A. Installation guidelines from the pipe supplier shall be followed for all installations.
- B. The fusible polyvinyl chloride pipe will be installed in a manner so as not to exceed the recommended bending radius.
- C. Where fusible polyvinyl chloride pipe is installed by pulling in tension, the recommended Safe Pulling Force established by the pipe supplier shall not be exceeded.

3.03 TESTING

- A. Hydrostatic and Leakage Testing for Potable Water Piping:
 - 1. Hydrostatic and leakage testing for piping systems that contain mechanical jointing as well as fused PVC jointing shall comply with AWWA C605.
 - 2. Unless agreed to or otherwise designated by the OWNER, for a simultaneous hydrostatic and leakage test following installation, a pressure equal to 150% of working pressure at point of test, but not less than 125% of normal working pressure at highest elevation shall be applied. The duration of the pressure test shall be for two (2) hours.
 - 3. If hydrostatic testing and leakage testing are performed at separate times, follow procedures as outlined in AWWA C605.
 - 4. In preparation for pressure testing the following parameters must be followed:
 - a. All air must be vented from the pipeline prior to pressurization. This may be accomplished with the use of the air relief valves or corporation stop valves, vent piping in the testing hardware or end caps, or any other method which adequately allows air to escape the pipeline at all high points. Venting may also be accomplished by 'flushing' the pipeline in accordance with the parameters and procedures as described in AWWA C605.
 - b. The pipeline must be fully restrained prior to pressurization. This includes complete installation of all mechanical restraints per the restraint manufacturer's guidelines, whether permanent or temporary to the final installation. This also includes the installation and curing of any and all required thrust blocking. All appurtenances included in the pressure test, including valves, blow-offs, and air-relief valves shall be checked for proper installation and restraint prior to beginning the test.
 - c. Temporary pipeline alignments that are being tested, such as those that are partially installed in their permanent location, shall be configured to minimize the amount of potentially trapped air in the pipeline.
- B. Disinfection of Potable Water Piping:
 - 1. After installation and having passed all required pressure and leakage testing, the potable water pipeline shall be disinfected prior to being put into service. Unless otherwise directed by the OWNER, the pipeline will be disinfected per AWWA C651.
 - 2. CONTRACTOR shall provide the OWNER with the project-specific disinfection procedures to be used for the Work.
 - 3. Potable water pipelines require two sets of samples for coliform analysis.

- a. Collect two sets of samples at least 16 hours apart, or
- b. Collect two sets of samples at least 15 minutes apart after at least a 16-hour rest period.
4. Segments of the pipe may be tested separately in accordance with standard testing procedure, as approved by the OWNER.
5. Do not place any section of pipeline into service until satisfactory bacteriological analyses have been received.

3.04 WATER SYSTEM CONNECTIONS

- A. Unless otherwise approved, new water pipeline shall be completely assembled and successfully tested prior to making connections into existing pipe systems.
- B. Approximate locations for existing piping systems are shown in the Drawings.
- C. The OWNER's crew will make the final connection to the existing water system.
- D. Prior to making connections into existing water systems, the OWNER shall:
 1. Field verify the location, size, and piping material of the existing pipe.
 2. Obtain all required fittings, which may include saddles, sleeve type couplings, flanges, tees, or others as shown in the Drawings.

END OF SECTION

SECTION 33 05 33.63
HDPE COMMUNICATION DUCT

PART 1 - GENERAL

1.01 SUMMARY

- A. This section specifies HDPE Communication Duct for telecommunications, including standards for dimensionality, testing, quality, acceptable installation practice, safe handling and storage.
- B. CONTRACTOR shall furnish all supervision, labor, equipment, materials and supplies to perform the work necessary to install HDPE Communication Duct in casing pipe in accordance with the project Drawings, Specifications, Contract Documents, and this specification.

1.02 RELATED SECTION

- A. Section 01 33 00 – Submittal Procedure
- B. Section 33 05 07.13 – Horizontal Directional Drilling

1.03 QUALITY ASSURANCE

- A. References:
 - 1. This section contains references to the following documents. They are a part of this section as specified and modified. Where a referenced document contains references to other standards, those other standards are included as references under this section as if referenced directly. In the event of a conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
 - 2. Unless otherwise specified, references to documents shall mean the documents in effect at the time of design, bid, or construction, whichever is earliest. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.
 - 3. Where document dates are given in the following listing, references to those documents shall mean the specific document version associated with that date, regardless of whether the document has been superseded by a version with a later date, discontinued or replaced.
 - a. WSDOT Standard Specifications for Road, Bridge and Municipal Construction, 2018 Manual M41-10
 - b. Underwriters Laboratory [U.L.] 1660 and 514B
 - c. American Society for Testing and Materials [ASTM] F2160
- B. Warranty
 - 1. The duct shall be warranted for one year per the pipe supplier's standard terms.

1.04 SUBMITTAL REQUIREMENTS

- A. Pre-Construction Submittals:
 - 1. The following PRODUCT DATA is required from the duct supplier:
 - a. Duct Size
 - b. Dimensionality
 - c. Color

- d. Recommended Minimum Bending Radius
- e. Recommended Maximum Safe Pull Force

1.05 DELIVERY, STORAGE AND HANDLING

- A. Delivery and Offloading:
 - 1. Duct shall be on a continuous reel and packaged in such a manner as to provide adequate protection during transportation to the site.
 - 2. Duct damaged in shipment shall be replaced as directed by the OWNER.
 - 3. The duct shipment should be inspected prior to unloading to see if the load has shifted or otherwise been damaged. Notify OWNER immediately if more than immaterial damage is found. The duct shipment should be checked for quantity and proper pipe size, color, and type.
 - 4. Duct should be loaded, off-loaded, and otherwise handled in accordance with the duct supplier's guidelines.
 - 5. Off-loading devices such as chains, wire rope, chokers, or other lift handling implements that may scratch, nick, cut, or gouge the duct are strictly prohibited.
 - 6. During removal and handling, be sure that the duct does not strike anything. Significant impact could cause damage, particularly during cold weather.
- B. Handling and Storage:
 - 1. Any length of duct showing a crack, or which has received a blow that may have caused an incident fracture, even though no such fracture can be seen, shall be marked as rejected and removed at once from the work. Damaged areas, or possible areas of damage may be removed by cutting out and removing the suspected incident fracture area. Limits of the acceptable length of duct shall be determined by the OWNER.
 - 2. Any scratch or gouge greater than 10% of the wall thickness will be considered significant and can be rejected unless determined acceptable by the OWNER.
 - 3. Duct reel should be stored and placed on level ground. Duct reel should be stored at the job site in the unit packaging provided by the manufacturer. Caution should be exercised to avoid compression, damage, or deformation to the ends of the pipe. The interior of the duct, as well as all end surfaces, should be kept free from dirt and foreign matter.
 - 4. Duct shall be handled and supported with the use of woven fiber slings or approved equal. Care shall be exercised when handling the duct to not cut, gouge, scratch or otherwise abrade in any way.
 - 5. If duct reel is to be stored for periods of 1 year or longer, the pipe should be shaded or otherwise shielded from direct sunlight. Covering of the pipe which allows for temperature build-up is strictly prohibited. Duct reel should be covered with an opaque material while permitting adequate air circulation above and around to prevent excess heat accumulation.
 - 6. Duct reel shall be stored and per the pipe supplier's guidelines.

PART 2 - PRODUCTS

2.01 OWNER-SUPPLIED PRODUCTS

- A. None.

2.02 HDPE COMMUNICATION DUCT

- A. Duct supplier shall furnish HDPE communication duct conforming to all standards and procedures and meeting all testing and material properties as described in this specification.

- B. Non-Rigid Non-Metallic Duct Conduit
 - 1. Manufacturer: JM Eagle of equal.
 - 2. Type: U.L. 1660 Listed, meeting requirements outlined in ASTM F2160, Non-Pressure Rated HDPE
 - 3. Material: 3408/3608 resin.
 - 4. Dimensionality: DR-11
 - 5. Color: Orange.
 - 6. Size: 3" or as specified on plans.
 - 7. Configuration: continuous reel.
 - 8. Fittings: U.L. 514B matched to conduit and material. Includes conduit fittings, conduit couplings, junction box adapters, female adapters, male terminal adapters, reducers, caps, and end bells. Utilize appropriate cement as recommended by conduit and fitting manufacturer.
 - 9. Conduit, fittings and cement shall be produced by the same manufacturer to assure system integrity.

PART 3 - EXECUTION

3.01 GENERAL INSTALLATION

- A. Installation guidelines from the duct supplier shall be followed for all installations.
- B. The HDPE duct will be installed in a manner so as not to exceed the recommended bending radius.
- C. Where HDPE duct is installed by pulling in tension, the recommended Safe Pulling Force established by the duct supplier shall not be exceeded.
- D. Install a pull cord inside the duct for fiber optic cable.
 - 1. Certified Type III Nylon Paracord
 - 2. 550 lb. tensile strength
 - 3. 4 mm diameter
 - 4. 7 Inner strands

END OF SECTION

APPENDIX A
Geotechnical Data Report

**Geotechnical Engineering and
Trenchless Design Services**

Conway I-5 Crossing Project
Skagit County, Washington

for
Public Utility District No. 1 of Skagit County

August 2, 2018



**Geotechnical Engineering and
Trenchless Design Services**

Conway I-5 Crossing Project
Skagit County, Washington

for

Public Utility District No. 1 of Skagit County

August 2, 2018



600 Dupont Street
Bellingham, Washington
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Geotechnical Engineering and Trenchless Design Services

Conway I-5 Crossing Project Skagit County, Washington

File No. 2402-033-01

August 2, 2018

Prepared for:

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EXECUTIVE SUMMARY

This report provides GeoEngineers' horizontal directional drilling (HDD) design recommendations for the proposed 24-inch-diameter nominal size (24-inch) casing installation beneath Interstate 5 (I-5) just north of the Conway I-5 interchange in Skagit County, Washington. The proposed casing will house a new Public Utility District No. 1 of Skagit County (District) waterline and fiber optic conduit and parallels an existing waterline.

GeoEngineers explored subsurface conditions at the site on January 15 and 16, 2018 by advancing two geotechnical borings to depths of 71½ and 81½ feet below ground surface (bgs). In general, soils observed by the borings consisted of very soft to medium stiff silts and medium dense sands that become very soft or very loose at depths ranging between 20 to 25 feet bgs, and become stiffer/denser at depths ranging between 40 and 70 feet bgs. Groundwater levels observed in a piezometer installed in one of the borings indicated that groundwater levels fluctuated between approximately 3.2 and 4.8 feet bgs during the monitoring period. More detailed descriptions of subsurface conditions observed by the borings are presented in Section 3.3 of this report. Subsurface materials encountered in each boring are described in more detail in the boring logs in Appendix A.

Based on the subsurface conditions encountered in the borings, and the District's proposed trenchless alignment, GeoEngineers prepared an HDD design for the proposed trenchless installation to be included in the District's bid documents. The HDD design is approximately 552 feet long as measured along the HDD alignment and crosses between approximately 33 and 35 feet below the paved surfaces of I-5. A horizontal auger bore (HAB) installation was also completed as a preliminary design; however, based on site constraints, Washington State Department of Transportation (WSDOT) permitting requirements, and soil/groundwater conditions, this trenchless installation method was not completed as a final design.

Bidding contractors should understand and address the considerations and recommendations included in this report in the bidding, preconstruction and construction phases of the project to facilitate a successful trenchless installation. The list below is a summary of the primary considerations and recommendations detailed in this report. This list is not intended to detail every project challenge that may be encountered during trenchless construction.

General Considerations

- Bidding contractors should perform a site visit of the project location and review subsurface information within this report prior to submitting bids to evaluate surface and subsurface conditions and their potential effect on the proposed trenchless installation. Contractors shall not rely solely on this report to evaluate any and all potential issues related to surface and subsurface conditions that may arise during construction.
- Contractors should expose and confirm the depth and location of all utilities along the proposed alignment, and within the workspaces prior to initiating trenchless operations to verify that trenchless operations do not conflict with the existing utilities (with the exception of the existing waterline near the HDD entry point, as discussed in this report).
- Contractors should provide engineered shoring for any excavation over 4 feet in depth. The shoring should consider groundwater conditions, adjacent roadways, adjacent utilities, traffic loading, and

trenchless equipment loading. Shoring plans should be designed and sealed by a professional engineer registered in the state of Washington.

- Settlement monitoring should be completed prior to, during and after construction to verify that trenchless operations have not adversely affected the ground surface near the trenchless alignment.
- Post-construction grouting of the annulus outside of the casing pipe should be conducted.

HDD Considerations

- The contractor should prepare a drilling fluid surface release contingency plan that will be implemented in the event that a release does occur. The contingency plan should include implementation of traffic control measures to safely stop or and/or guide traffic as necessary if a drilling fluid surface release occurs that could potentially impede the safe passage of vehicles. The plan should also outline measures for immediately assessing the integrity of pavements at or near the release and measures for expeditiously mitigating compromised pavement and restoring traffic flow as soon as practical. The contingency plan will need to be submitted to Washington State Department of Transportation and Skagit County for review and approval. The conceptual HDD crosses the existing waterline near the conceptual entry point. Temporary rerouting of the water line and removal of a section of the waterline will be required prior to beginning HDD operations (to be completed by District work crew if necessary).
- Groundwater will likely be encountered during HDD operations. Groundwater infiltration is typically mitigated during HDD operations by proper drilling fluid management. Contractors should include a drilling fluid management plan in their bids. We recommend that the contractor provide a drilling fluid engineer during HDD operations to evaluate and amend drilling fluid make up during construction given the subsurface materials encountered.
- Contractors should maintain drilling fluid returns to the entry or exit pits during HDD operations to assist with cuttings removal, reduce the risk of drilling fluid surface release, and lubricate the drill string downhole.
- A downhole annular pressure tool is recommended to be utilized during HDD pilot hole operations in order to maintain drilling fluid pressures below the allowable pressures indicated in Figure 5 of this report. In addition, continuous monitoring for drilling fluid surface release should be conducted during construction.

The Executive Summary should be used only in context of the full report for which it is intended.

1.0 INTRODUCTION

1.1 General

This report provides GeoEngineers' horizontal directional drilling (HDD) design recommendations for the proposed 24-inch-diameter nominal size (24-inch) casing installation beneath Interstate-5 (I-5) just north of the Conway I-5 interchange in Skagit County, Washington. The proposed casing will house a new Public Utility District No. 1 of Skagit County (District) waterline and fiber optic conduit. The location of the project site is shown in the Vicinity Map, Figure 1.

A horizontal auger bore (HAB) installation was also completed as a preliminary design; however, based on site constraints, Washington State Department of Transportation (WSDOT) permitting requirements, and soil/groundwater conditions, this trenchless installation method was not completed as a final design.

1.2 Project Description and Basis of Design

The District is planning to install a new 12-inch-diameter waterline and 4-inch-diameter fiber optic conduit within a 24-inch-diameter casing beneath I-5. The proposed HDD installation passes beneath I-5, on- and off-ramps of between I-5 and Highway 534, and Cedardale Road. The location of the installation is shown in the Site Plan, Figure 2. Table 1 summarizes the basis of design for the conceptual HDD installation.

TABLE 1. BASIS OF DESIGN FOR THE I-5 HDD

Casing Pipe Data	Design Parameter
Casing Pipe Specifications	25.80 inches x 1.43 inches w.t. ^a DR 18 Fusible C-905 PVC®
Approximate HDD Horizontal Crossing Length	552 feet
Minimum Crossing Depth ^b	3.5 feet beneath any ditch line of I-5 and 5 feet beneath lowest point of finished roadway or shoulder

Notes:

^a w.t. - wall thickness

^b Minimum crossing depth based on WSDOT Utilities Accommodation Policy

2.0 SCOPE OF SERVICES

The purpose of our services was to prepare both HDD and HAB design drawings and this trenchless design report. As noted, the HAB design was eliminated from consideration and is not discussed further in this report. Our specific scope of services related to the HDD design included the following:

2.1. Task 310. Trenchless Design, Report and Design Drawings

1. Provide general project management including conference call meetings, invoice review and staff coordination.
2. Complete a hydraulic fracture and drilling fluid surface release analysis along the proposed HDD profile.

3. Complete engineering analyses for an HDD installed casing pipe including:
 - a. Minimum radius
 - b. Fusible PVC® collapse potential
 - c. Installation forces during pullback
4. Prepare “Issued for Bid” HDD design drawings; the HDD design drawings include the following:
 - a. Plan and profile
 - b. Minimum radius
 - c. Proposed workspaces
 - d. Proposed access roads
 - e. Plots of subsurface materials
 - f. Locations of known utilities
 - g. Recommended construction tolerances
 - h. A drill data box that defines specific points along the proposed HDD profile
 - i. General construction notes
5. Prepare this draft trenchless design report for review by the project team. The report includes:
 - a. HDD Plan and profile and workspace layout drawings
 - b. A summary of surface conditions along the proposed pipeline alignment and within the proposed workspaces
 - c. A summary of subsurface conditions encountered by the borings completed near the proposed alignment
 - d. A discussion of groundwater conditions expected to be encountered at the site
 - e. A summary of our basis of design for the proposed HDD installation
 - f. A summary of engineering and analysis, including hydraulic fracture and drilling fluid surface release analysis and HDD installation forces
 - g. HDD construction considerations for site access, workspace preparation, water sources, drilling fluid containment pits, pilot hole operations, reaming operations, drill hole stability, cuttings removal and pullback operations
6. Prepare a final trenchless design report with design drawings incorporating review comments received by the project team (to be completed).

3.0 SITE CONDITIONS

3.1. Geological Conditions

Surficial mapping (Dragovich et al., 2004; Pessl et al., 1989) shows the site underlain by Holocene-aged near shore deposits and younger Holocene-aged alluvium. The Holocene-aged near shore deposits mapped by Dragovich et al. (2004) are described as estuarine or tidal flat deposits composed of loose or soft, gray

to olive gray, fine to very fine sand, silty very fine sand, silt, silty clay, and bluish gray clay with various admixtures of organic material. These near shore deposits are noted as shell-bearing sediments of the earlier Skagit River delta fronts. The younger Holocene-aged alluvial deposits mapped by Pessl and others (1989) are typically included in Dragovich's mapping as near shore deposits. However, mapping by Pessl and others differentiates the alluvial deposits as including moderate to well-sorted silt, clay, and fine sand with minor sand and pebble gravel typically 3 to 30 feet in thickness. We anticipate that the younger alluvial deposits will overlie the older marine deposits.

3.2. Surface Conditions

3.2.1. General

We completed a surface reconnaissance of the site on January 9, 2018. The following description of surface conditions is based on observations completed during our site reconnaissance, review of Harmen & Associates, Inc.'s Conway I-5 Pipeline Crossing Topographic Survey, Sheet S-1 dated October 10, 2017, National Wetland Inventory (NWI) web-based wetland mapper application and a review of aerial photographs viewed on Google Earth® software.

3.2.2. Surface Description

In general, the site is situated within the relatively flat Skagit River Valley. More specifically, the proposed trenchless installation is oriented east-west and crosses I-5 approximately 750 feet north of Washington State Route 534 (SR 534) at the southbound I-5 Exit 221 off-ramp. Conway Frontage Road and Cedardale Road parallel I-5 to the west and east, respectively. The ground surfaces to the west and east of these two roadways is relatively flat and covered with agricultural grass. Between Conway Frontage Road and Cedardale Road, the ground surface is relatively level and grass covered except where paved roadways are elevated on fill prisms that are approximately 6 to 7 feet above the adjacent grass covered surfaces. Based on discussions with the District and a review of the NWI mapping in the area (NWI, 2018), wetlands are mapped between Cedardale Road and the on-ramp to northbound I-5, just east of Cedardale Road and west of Conway Frontage Road, as shown in Figure 2.

As shown in Figure 2, there are several utilities in the project vicinity, including overhead power, overhead communication, a buried fiber optic cable, storm culverts and drainage ditches, and the existing water pipeline that is being replaced. The existing waterline is orientated parallel to the proposed trenchless alignment and offset approximately 10 feet north. On the west side of the crossing, the existing waterline turns north (a point of inflection [PI]) to follow the east side of Conway Frontage Road. On the east side of the crossing, the existing waterline ties into another waterline that parallels the east side of Cedardale Road. The proposed pipeline to be replaced is between the western point of the intersection and the eastern tie-in point. There is a buried fiber optic cable marker about 65 feet east of Cedardale Road; however, the orientation of the buried fiber optic cable was not determined by the site-specific survey.

3.3. Subsurface Conditions

3.3.1. General

We explored subsurface conditions at the site on January 15 and 16, 2018 by advancing two geotechnical borings (GEI-1 and GEI-2) to depths of 71½ and 81½ feet below ground surface (bgs), respectively. The boring locations are shown in Figure 2. A representative from GeoEngineers maintained logs of the materials encountered in the borings, collected disturbed soil samples at 2½-foot intervals within the upper

15 feet of the boring and then at 5-foot intervals to the completion depth. Appendix A presents the boring logs, and a description of the subsurface exploration and laboratory-testing programs. Laboratory testing results are shown in the boring logs in Appendix A, and are included as separate figures in Appendix A.

3.3.2. Subsurface Description

In general, subsurface materials encountered in the borings were consistent with geologic mapping we reviewed. The soils observed by the borings consist of very soft to medium stiff silts and medium dense sands that become very soft or very loose at a depth of approximately 20 to 25 feet bgs. The soils become stiffer/denser at depths of approximately 40 and 70 feet bgs in boring GEI-1 and GEI-2, respectively. Subsurface materials observed in each boring are described in more detail in the boring logs in Appendix A.

3.3.3. Groundwater Conditions

A piezometer was installed in boring B-2, which is located on the east side of Cedardale Road at the east side of the crossing. Groundwater was measured within this piezometer at a depth of 3.4 feet bgs (Elevation 4.6 feet above mean sea level [MSL]) on January 16, 2018. Groundwater was subsequently measured within the piezometer at a depth of 4.8 feet bgs (Elevation 3.2 feet MSL) on May 23, 2018. We anticipate that groundwater levels will fluctuate based on season, precipitation, site utilization or other factors; however, relatively small fluctuations in groundwater elevation have been measured thus far (January through May 2018) and as such we anticipate that the groundwater level could remain above the proposed tunnel zones of the trenchless installation throughout the year.

4.0 HDD DESIGN ELEMENTS

4.1. HDD Geometry

The proposed I-5 HDD geometry is shown in the HDD design drawings in Appendix B. The design geometry is constrained by the tie-in locations with the existing waterlines located on the east sides of Cedardale Road and Conway Frontage Road, which limits the length and depth of the HDD profile. Given these constraints, the bottom tangent elevation was chosen such that the HDD profile would remain within or below medium dense sandy soils that will help resist drilling fluid surface release to I-5.

The proposed I-5 HDD is approximately 552 feet long as measured along the HDD alignment, and approximately 556½ feet long as measured along the drill profile. The design radius of curvature for the entry and exit vertical curves was chosen to be 1,100 feet. Although, the minimum allowable radius of the proposed 24-inch PVC casing pipe is smaller than 1,100 feet, this radius was selected for constructability. Steering the pilot hole at tighter radii may be difficult in the soft soils along the proposed HDD profile, which may cause the pilot hole to exit west of the design exit point and thus adversely impact Conway Frontage Road and the proposed tie-in locations. The entry and exit angles are 12 degrees. The proposed entry point was chosen such that the HDD profile would be located at the approximate tie-in depth of 5 feet bgs where it intersects the existing waterline. The HDD exit point was placed approximately 40 feet east of Conway Frontage Road to allow the casing pipe pull section overbend to clear the elevated road surface while lining up with the proposed 12-degree exit angle. The bottom tangent was placed at an elevation of -22 feet MSL within or below medium dense sandy soils that will help resist drilling fluid surface release to I-5.

4.2. HDD Workspace and Access Roads

The proposed temporary entry workspace is an irregular shaped workspace measuring 0.33 acres in area with the entry point positioned approximately 40 feet from the front (west side) of the workspace, as shown in the HDD design drawing in Appendix B. The workspace is situated in a relatively flat ROW of Cedardale Road and an adjacent grass field so that little to no grading or vegetation removal will be required to prepare the workspace.

The proposed temporary exit workspace is an irregular shaped workspace measuring 0.24 acres in size. The workspace is positioned between Conway Frontage Road and a southbound off-ramp of I-5, as shown in Sheet 1 of the HDD design drawings in Appendix B. The exit point is positioned approximately 100 feet from the west shoulder of the referenced off-ramp and approximately 12 feet east of the east shoulder of Conway Frontage Road.

The proposed pipe stringing and fabrication extends westward approximately 700 feet from the west side of the exit workspace. Approximately 575 feet of the workspace is located within a relatively flat agricultural field to allow for fabrication and stringing of one continuous casing pipe pull section. The remaining 125 feet of the workspace crosses Conway Frontage Road. The proposed pipe stringing and fabrication workspace is shown in Sheet 2 of the HDD design drawings in Appendix B.

Temporary roads will be required to access the proposed entry and exit workspaces as shown in Sheet 2 of the HDD design drawings in Appendix B.

5.0 ENGINEERING AND ANALYSIS

5.1. Hydraulic Fracture and Drilling Fluid Surface Release Evaluation

5.1.1. General

This section describes the general methodology for evaluating the potential for hydraulic fracture and drilling fluid release to the ground surface. The results of our analysis are summarized below in Section 5.1.3.

Drilling fluid is pumped through the drill pipe string to the cutting tool and returns through the drilled hole annulus. For HDD installations like the Conway I-5 HDD, if a relatively small drill rig is used to complete the HDD pump pressures of about 200 psi and pump rates of 75 to 200 gallons per minute (gpm) are expected. The drilling fluid typically has a specific gravity ranging from 1.1 to 1.2 (approximately 69 to 75 pounds per cubic foot [pcf]).

Drilling fluid circulation may be reduced or lost primarily by either or both of the following two processes:

1. Formational fluid loss occurs when drilling fluid flows into preexisting fractures, voids and/or pore spaces in the surrounding soil or rock. Sand and gravel soil layers and highly fractured rock are typically more susceptible to formational fluid loss than cohesive soils like clay and silt.
2. Hydraulic fracturing can occur where the combined resisting force of the overburden pressure and the shear strength of the overburden soil is less than the hydrostatic pressure applied by the drilling fluid at the cutting tool.

Drilling fluid surface releases, commonly referred to as “Frac-Outs”, occur when drilling fluid emerges at the ground surface or in any other undesired location such as wetlands, utility trenches, basements, roads, railroads and waterbodies. Hydraulic fracture and formational fluid loss can lead to drilling fluid surface releases if drilling fluid migrates to the ground surface or other undesired locations.

5.1.2. Model Input Parameters

The HDD geometry used for our analyses of the Conway I-5 HDD is shown in Sheet 1 of the HDD design drawings in Appendix B. The soil units encountered in the vicinity of the HDD are characterized by GeoEngineers’ borings GEI-1 and GEI-2. Based on the boring logs and laboratory-testing data, we developed the following soil properties for use in the model.

TABLE 2. ESTIMATED SOIL PROPERTIES

Soil Descriptions	USCS ^a Classification	Consistency/Density	Unit Weight (pcf ^b)	Friction Angle (degrees)	Cohesion (psf ^c)
High Plasticity Silt	MH	Soft	110	0	500
Silt	ML	Soft to Very Soft	105	0	300
Poorly Graded Silt with Sand	SP-SM	Medium Dense	115	32	0
Silty Sand	SM	Loose	110	25	0
Lean Clay	CL	Very Soft	100	0	300

Notes:

- ^a USCS = Unified Soil Classification System
- ^b pcf = pounds per cubic foot;
- ^c psf = pounds per square foot

Based on available information and common HDD construction procedures, the tool dimensions and rheological properties used in the evaluation are summarized in Table 3. Because these parameters are dependent upon the HDD contractor’s means and methods, the hydraulic fracture and drilling fluid surface release evaluation should be refined during construction.

TABLE 3. ESTIMATED TOOL DIMENSIONS AND RHEOLOGICAL PROPERTIES

Parameter	Value
Pilot Hole Bit Diameter	6.5 inches
Drill Pipe Diameter	3.5 inches
Drilling Fluid Weight	9.5 ppg ^a
Plastic Viscosity	12 CP ^b
Yield Point	26 lb/100 sf ^c

Notes:

- ^a ppg = pounds per gallon
- ^b CP = centipoise
- ^c lb/100 sf = pounds per 100 square feet

5.1.3. Results of Hydraulic Fracture and Drilling Fluid Surface Release Analysis

The results of the hydraulic fracture analysis are presented in Figures 3 and 4. The formation limit pressure, presented in Figure 3, is the ability of the soil to resist plastic deformation and is a product of the shear strength of the soil through which the HDD profile passes.

In the model, the formation limit pressure varies depending on the soil encountered along the HDD profile as shown in Figure 3 as the green line. The estimated drilling fluid pressure is also shown in Figure 3 as the red line and represents the estimated drilling fluid pressure along the HDD profile based on the anticipated drilling fluid properties shown in Table 4.

When evaluating the risk of hydraulic fracture and drilling fluid surface releases, the analysis computes two types of safety factors. These are:

- Factor of safety against localized hydraulic fracture
- Factor of safety against drilling fluid surface release

Local Hydraulic Fracture: The factor of safety against hydraulic fracture is the ratio of the formation limit pressure to the estimated drilling fluid pressure along the profile, shown as the green line in Figure 4. This represents the factor of safety against hydraulic fracture of the soil immediately surrounding the HDD profile and is a localized condition.

Drilling Fluid Surface Release: The factors of safety against drilling fluid surface release considers the strength of the soil column above the HDD profile that resists drilling fluid migrating to the ground surface. It is computed by comparing the formation limit pressure of the soil units above a specific point along the planned HDD alignment to the anticipated drilling fluid pressure at the same point. The factors of safety against drilling fluid surface releases are shown in Figure 4 at selected points shown as red triangles.

As shown in Figure 4, the model indicates that the risk of localized hydraulic fracture is high between approximate stations 7+85 and 5+55 (approximately 90 feet to 320 feet west of the HDD entry point) with calculated safety factors at about 1.0. However, the model indicates that the risk of drilling fluid surface release is generally low across the I-5 corridor, with calculated factors of safety greater than 4 where the HDD profile passes beneath I-5 and the adjacent roadways. The disparity between the relatively low factor of safety for hydraulic fracture and the higher factor of safety against drilling fluid surface release is a result of higher strength sand layers that tend to restrict the upward movement of drilling fluid to the ground surface being located above the HDD profile.

The risk of hydraulic fracture and drilling fluid surface release increases within approximately 50 to 100 feet of the HDD entry and exit points. Low factors of safety against drilling fluid surface release are common near the entry and exit points because of the decrease in soil cover and overburden pressure. This risk is exacerbated near the exit point because of the higher drilling fluid pressures.

5.1.4. Maximum Allowable Drilling Fluid Pressure

Figure 5 presents the maximum allowable drilling fluid pressure that should be maintained during pilot hole operations to reduce the risk of drilling fluid surface release. The green line in Figure 5 represents our recommended maximum allowable drilling fluid pressure along the proposed HDD profile. The maximum allowable drilling fluid pressure is based on a safety factor of 3 relative to the pressures that we estimate

will result in drilling fluid surface release. In general, the calculated maximum allowable drilling fluid pressure ranges between approximately 5 and 39 psi between the entry point and station 8+00, between 39 and 50 psi between stations 8+00 and 4+80, and between 39 and 30 psi between stations 4+80 and the exit point, respectively. A downhole annular pressure tool will be necessary to monitor downhole annular pressures as discussed in Section 6.7.

5.2. Fusible PVC Ring Deflection Collapse Potential

We evaluated the factor of safety against collapse of the fusible PVC® casing pipe during and shortly after installation. Our analysis was conducted in accordance with the Uni-Bell PVC Pipe Association's Handbook of PVC Pipe Design and Construction (Uni-Bell, 2012), and assumes that the 24-inch casing pipe is empty and unpressurized. We utilized the following parameters and assumptions in our analysis:

- Casing Pipe: 24-inch Fusible C-905 PVC® pipe with outside diameter of 25.80 inches, inside diameter of 22.76 (1.43-inch wall thickness) and a DR/Pipe stiffness ratio DR- 18.
- Modulus of elasticity of PVC is 400,000 psi and the performance limit for ring deflection is 7.5 percent.
- Our analysis assumes that the 24-inch casing pipe will be installed at a maximum depth of approximately 35 feet bgs within relatively soft clay soils.

Based on our analysis the factor of safety against pipe collapse is 3.7 if the PVC casing pipe is installed empty, 5.8 if the PVC casing pipe is installed filled with water, and 4.0 after installation (with the casing pipe empty). We anticipate that ring deflection of the installed fusible casing pipe will be less than 4.25 percent.

5.3. Pullback Loads

For the proposed HDD, we analyzed the anticipated pull loads based upon different drilling fluid weights in the hole during pullback of the casing pipe. Because the PVC casing pipe will be buoyant in the anticipated drilling fluid weights, the contractor may elect to utilize buoyancy control during the installation of the 24-inch pipe. Our analyses include a range of cases with differing levels of drilling fluid weight with the pipe empty and the pipe filled with water. In all cases, the 24-inch PVC casing is buoyant.

The four cases analyzed are as follows:

1. The annulus contains 9.5 pounds per gallon (lb/gal) drilling fluid and the casing pipe is empty.
2. The annulus contains 9.5 lb/gal drilling fluid and the casing pipe is filled with water.
3. The annulus contains 12 lb/gal drilling fluid and the casing pipe is empty.
4. The annulus contains 12 lb/gal drilling fluid and the casing pipe is filled with water.

Table 4 below presents a summary of the calculated installation loads for the crossing.

TABLE 4. INSTALLATION LOADS FOR THE CONWAY I-5 HDD

Drilling Fluid Weight (lb/gal)	Buoyancy Condition	Buoyancy Control (lb/ft)	Effective Pipe Weight ^a (lb/ft)	Pullback Force ^b (lb)
9.5	Empty	0	-192.53	69,500
9.5	Full	179.1	-13.43	32,700
12	Empty	0	-260.43	83,200
12	Full	179.1	-81.33	46,900

Notes:

^a Negative values indicate upward force (positive buoyancy).

^b Assumes a fully open drilled hole.

Based on our analysis of the installation loads (see Table 4), the pullback force during installation of the 24-inch-diameter casing pipe may be as high as approximately 83,000 pounds depending on the weight of the drilling fluid in the hole at the time of pullback and how well the hole is prepared for pullback operations. However, utilizing buoyancy control during pullback will reduce the installation loads required to install the casing pipe.

5.4. Estimated Settlement

We conducted post-construction settlement analysis in accordance with methods presented by Wallin et al. (2008). Our settlement analysis assumes the following:

- Maximum reamed hole size of 36 inches.
- 50 percent reduction in annulus volume for solidified drilling fluid filling the annulus after construction.
- Minimum depths of cover beneath paved surfaces as shown in Table 5 below.

Based on the results of the initial settlement analysis, we also performed additional analyses assuming the annulus between the casing pipe and the reamed hole would be grouted after construction. For this scenario, we assumed that grout would fill 90 percent of the annulus.

Table 5 below shows the results of our initial analysis, termed “unmitigated settlement” and our subsequent analysis, termed “mitigated settlement”. The table indicates the maximum expected settlement at the ground surface over the crown of the installed casing pipe.

TABLE 5. ESTIMATED POST-CONSTRUCTION HDD SETTLEMENT

Feature Being Crossed	HDD Alignment Station	Depth of Cover (feet)	Estimated unmitigated Settlement (inches)	Estimated Mitigated Settlement (inches)
Cedardale Road	7+68	23	1.01	0.20
I-5 Northbound On-Ramp	6+49	33	0.74	0.15
I-5 Northbound	6+08	35	0.70	0.14
I-5 Southbound	5+13	33	0.74	0.15
I-5 Southbound Off-Ramp	4+43	28	0.85	0.17

6.0 CONSTRUCTION CONSIDERATIONS AND RECOMMENDATIONS

6.1. General

The HDD contractor's means and methods during construction are critical to the successful completion of the HDD. Specifically, while completing the pilot hole, only small deviations from the design for horizontal and vertical curvature should be allowed so that pull load forces similar to those estimated by the calculations can be maintained. The HDD contractor's ability to maintain proper drilling fluid properties with appropriate penetration and drilling fluid flow rates will also be important factors to consider during HDD operations, because hole conditions and annular drilling fluid pressures will be directly affected by these operations.

We recommend contacting GeoEngineers immediately if subsurface conditions are claimed to be different than presented in this report. Because the subsurface conditions can vary between widely spaced borings, we recommend GeoEngineers be on-site during HDD construction to document the drilling process in real time, and to characterize and quantify risks that might reduce the potential for a successful HDD installation. We also recommend that a qualified third-party drilling fluid engineer/technician be required to evaluate the drilling fluid properties on a continuous basis throughout the entire HDD process. Close coordination between the HDD contractor and the drilling fluid engineer/technician is vital to maintaining proper drilling fluid properties, penetration rates and drilling fluid flow rates.

6.2. Site Access and Workspace Preparation

6.2.1. Access Roads

The proposed entry workspace can be accessed from Cedardale Road and the proposed exit and pipe stringing and fabrication workspaces can be accessed from Conway Frontage Road. Temporary roads will be required to access the workspaces, as shown in Sheet 2 of the HDD design drawings in Appendix B.

The proposed entry workspace access road begins at a gravel field access road adjacent to Cedardale Road and then turns south crossing grass covered land to the HDD entry workspace. We do not anticipate that grading or significant vegetation removal will be required for construction of the access road.

The proposed exit workspace access road begins at the south end of the guard rail on the east side of Conway Frontage Road, descends an approximately 2-foot-high fill slope and then turns north crossing grass covered ground to the proposed exit workspace. A fill ramp will be required between Conway Frontage Road and the lower elevation access road to the proposed temporary exit workspace. Otherwise, we do not anticipate that significant grading or vegetation removal will be required.

The proposed pipe stringing and fabrication workspace begins at a paved/gravel pull out on the west side of Conway Frontage Road and turns south following an existing agricultural field access road to the proposed pipe stringing and fabrication workspace. We do not anticipate that grading or vegetation removal will be required.

Depending on ground conditions at the time of construction, placement of timber mats may be required to provide a stable travel surface for construction equipment along each access road.

6.2.2. Workspaces

The proposed entry workspace is situated on relatively flat ground. We do not anticipate that grading or significant vegetation removal will be required to prepare the proposed entry workspace. The proposed exit workspace is also situated on relatively flat ground. We do not anticipate that grading will be required to prepare the exit workspace. However, removal of brush vegetation will be required in the northern part of the workspace.

Because the majority of the proposed pipe stringing and fabrication workspace is located within a relatively flat agricultural grass field, no grading will be allowed in the active farm fields. We understand that the field will be planted with a cover crop at the time of construction, so we do not anticipate that significant vegetation removal will be required. Roughly 575 linear feet of the workspace is located in this agricultural grass field. The remaining approximately 125 feet of the pipe stringing and fabrication workspace crosses Conway Frontage Road and its associated fill slopes. This section of the workspace should only be used during pullback operations, when the casing pipe pull section will be required to cross the road. Closure of the road will be necessary to protect the public and to position side boom tractors or similar equipment needed to support the casing pipe pull section during pullback operations. We recommend that the contractor develop a traffic control plan for pullback operations.

Depending on ground conditions at the time of construction, placement of timber mats may be required to provide a stable working surface for construction equipment within each workspace.

6.3. Utilities

Generally, the proposed HDD alignment was positioned with relatively little conflict with known existing utilities documented by the site survey. However, the existing waterline crosses the proposed HDD alignment approximately 23 feet west of the HDD entry point where the proposed HDD profile was designed to be approximately 3 feet deep to facilitate tie-in activities between the existing waterline and the newly installed waterline. We assumed a depth of cover for the existing waterline of 5 feet. However, the actual depth of this waterline may vary and should be confirmed by pothole excavation. If the actual depth of the waterline conflicts with the proposed HDD alignment, we recommend installing a bypass on the waterline and removing a minimum 12-foot-wide section of the waterline to facilitate HDD operations and protect the waterline from damage during construction.

There may be underground utilities that were not provided by the site survey. We recommend that the HDD contractor perform utility locates and physically locate (pothole) all utilities that are within the workspaces, or crossed by the proposed HDD alignment, prior to initiating pilot hole operations to verify the location and depth of each utility and confirm that HDD operations will not conflict with the utilities.

6.4. Water Sources

A reliable source of water for drilling operations is required during the HDD installation process. The water for drilling operations may need to be obtained from an outside source and transported to the site. However, if a temporary water bypass is required during construction, the District can provide a temporary water connection to the existing waterline at the site, if desired.

6.5. Noise Mitigation Techniques

Both the proposed entry and exit workspaces are located within a rural area. Thus, we do not anticipate that noise mitigation will be required. If required, diesel power units associated with heavy equipment may be outfitted with noise-reducing mufflers. In addition, the workspace can be muffled by placing baffles around the equipment to further reduce noise emissions. The actual placement of the noise reduction measures should be implemented by the HDD contractor, if deemed necessary.

6.6. Drilling Fluid Containment Pits and Temporary Excavations

Drilling fluid containment pits will be required at the HDD entry and exit workspaces. Depending on the HDD contractor's drilling fluid pit excavation practices, drilling fluid containment pit excavations are typically constructed adjacent to the centerline near the entry and exit point locations. Drilling fluid containment pits can vary in size but are usually not larger than 10 feet long by 8 feet wide and 6 feet deep.

Based on the borings completed at the site, soils within the planned excavation depths are anticipated to consist of very soft to soft silt and elastic silt, and/or loose to medium dense sand. Conventional equipment, such as backhoes or excavators, should be suitable for excavating these soils.

Maintenance of safe working conditions, including temporary excavation stability, is the responsibility of the HDD contractor. All temporary cuts in excess of 4 feet in height should be shored or sloped in accordance with Occupational Safety and Health Administration (OSHA) regulation 1926 Subpart P, Appendix B, Sloping and Benching. For planning purposes, soils encountered within the exploratory borings in the vicinity of the excavation areas should be classified as Type C soil. Temporary excavations in Type C soil should be inclined no steeper than 1.5H:1V (horizontal to vertical). These allowable cut slope inclinations are applicable to excavations above the groundwater table only. Steeper temporary slope inclinations may be allowed if soil conditions are determined to be suitable by the field geotechnical engineer. For open cuts, we recommend that:

- No traffic, construction equipment, stockpiles or supplies should be allowed within a distance of at least 5 feet from the top of the cut.
- Construction activities should be scheduled to reduce the length of time the cuts are left open.
- Erosion control measures should be implemented as appropriate to limit runoff from the site.
- Surface water should be diverted away from the excavations.

6.7. Hydraulic Fracture and Drilling Fluid Surface Release

Based on our analyses, there is a high risk of hydraulic fracture from Stations 7+85 and 5+55, but a generally low risk of drilling fluid surface release along the HDD alignment provided that drilling fluid pressures are maintained below the allowable pressures shown in Figure 5. As is typical with all HDD installations, the risk of hydraulic fracture and drilling fluid surface release increases and is usually considered to be moderate to high within 50 to 100 feet of the HDD entry and exit point. This increased risk of drilling fluid surface release is common near the entry and exit points because of the decreased soil cover and/or relatively high drilling fluid pressures at exit.

The HDD contractor's ability to maintain proper drilling fluid properties with appropriate penetration and drilling fluid flow rates will be important factors to consider during drilling, because hole conditions and risk

of drilling fluid surface releases will be directly affected by these operations. The contractor's means and methods will be instrumental in maintaining a clean pilot hole and reamed hole, and in maintaining drilling fluid returns to the entry point throughout the drilling process so that the risk of hydraulic fracture and drilling fluid releases is not increased during the pilot hole and reaming operations. We recommend that the contractor utilize a downhole annular pressure monitoring tool in the bottom hole assembly while conducting pilot hole operations. The contractor should maintain downhole annular pressures below the allowable drilling fluid pressure shown in Figure 5.

We recommend that the contractor should prepare a drilling fluid surface release contingency plan that will be implemented in the event that a release does occur. The contingency plan should include implementation of traffic control measures to safely stop or and/or guide traffic as necessary if a drilling fluid surface release occurs that could potentially impede the safe passage of vehicles. The plan should also outline measures for immediately assessing the integrity of pavements at or near the release and measures for expeditiously mitigating compromised pavement and restoring traffic flow as soon as practical. The contingency plan will need to be submitted to WSDOT and Skagit County for review and approval.

6.8. Post-construction Settlement

Based on our analyses, post-construction settlement above the crown of the installed casing pipe could cause damage to the paved surfaces being crossed by the proposed HDD if not mitigated. Therefore, we recommend that potential post-construction settlement be mitigated by fully grouting the annulus between the casing pipe and the reamed hole immediately after installation of the casing pipe. We recommend that the HDD contractor develop and submit a post-construction grouting plan with their bid.

6.9. Pilot Hole Considerations

Sheet 1 of the HDD design drawing in Appendix B includes the necessary geometric information required to complete the pilot hole.

We recommend that a secondary survey system (TruTracker, ParaTrack or equivalent) be used along the entire length of the HDD, if allowed by the WSDOT. We recommend that the wire grids be placed at least as wide as the survey probe is deep plus 20 feet. As a result, the depth of the HDD profile will require the coil separation to increase from approximately 20 feet wide near the entry and exit locations to a minimum of 40 feet wide through the deepest portions of the drill profile. The placement of the coils is limited to areas where ground surface conditions, permit requirements and landowner permissions allow. If WSDOT will not allow placement of coil wires across I-5, we recommend using an AC Beacon or gyroscopic tracking tools to supplement the downhole calculated survey.

We recommend minimum allowable 3-joint radius over any consecutive 3-joint section should not be less than 800 feet. We recommend that the 3-joint radius be calculated for each 3-joint section (for Range 2 Drill Pipe, approximately 90 feet) completed during pilot hole operations. The design radii of the entry and exit vertical curves of the HDD profile and the horizontal curve of the HDD alignment are 1,100 feet.

The HDD contractor should complete the pilot hole as closely as possible to the designed HDD alignment and profile while still maintaining 3-joint vertical and horizontal radii equal to or greater than the minimum allowable radius of 800 feet. We recommend a horizontal tolerance of 5 feet left and 5 feet right of the designed alignment. We recommend a vertical tolerance of 2 feet above and 10 feet below the designed

profile, except where these recommended tolerances conflict with other specifications. We also recommend that, upon completion of the pilot hole, GeoEngineers have the opportunity to review the pilot hole survey data prior to the start of reaming operations.

The proposed exit point is located within about 40 feet of Conway Frontage Road. Because the proposed exit point is relatively close to Conway Frontage Road, if the pilot hole is completed at more than about 5 feet west of the design exit point, the layout of the casing pipe overbend during pullback may be adversely affected. Therefore, we recommend a pilot hole exit location tolerance of 10 feet short (east) or 5 feet long (west) of the proposed exit point.

Based on our experience with similar HDD projects of this length and diameter, we anticipate that the pilot bit diameter will likely range from 6.5 to 9.875 inches.

The HDD contractor should be responsible for producing and submitting an as-built drawing of the pilot hole survey data within 2 weeks of the completion of the pilot hole. The HDD contractor's as-built drawing should be reviewed by GeoEngineers prior to storing the data in the project file.

6.10. Reaming/Swabbing Considerations

During reaming operations, we anticipate that the HDD contractor will likely ream the hole by conducting multiple ream passes to enlarge the hole to a minimum final hole diameter of 36 inches.

During the reaming operations, the rate of penetration and drilling fluid flow rates should be evaluated to reduce potential problems with inadequate removal of cuttings, hydraulic fracturing and drilling fluid surface releases. Generally accepted best management practices (BMPs) within the HDD industry recommend an annular solids percentage of 30 percent or less, which requires pumping drilling fluid at a flow rate such that the volume of drilling fluid is more than three times the volume of soil cuttings being generated. The annular solids percentage can be adjusted by varying either penetration or pumping rates. If cuttings begin to build up in the hole because of high annular solids content, high drill string torque or stuck tooling could occur. Refer to Section 6.12 for additional recommendations regarding cuttings removal.

Upon conclusion of reaming, and prior to pullback operations, we recommend conducting at least one swab pass to clean cuttings from the reamed hole and verify that the reamed hole is ready to receive the casing pipe.

6.11. Drill Hole Stability

Based on the soils encountered in the borings conducted near the proposed HDD alignment, it is our opinion that there is a relatively low risk of bore hole instability during construction provided the hole remains filled with drilling fluid at all times.

6.12. Cuttings Removal and Annular Solids

If cuttings are not effectively removed from the hole during HDD operations, pullback forces could be excessively high during pullback of the proposed casing pipe, the casing pipe could become lodged in the hole, or the casing pipe could become damaged. The failure to effectively remove cuttings from the hole could potentially result in failure of the HDD installation. Therefore, we recommend that the HDD contractor maintain drilling fluid returns at all times and use appropriate means and methods (appropriate penetration

rates, drilling fluid management, mechanical methods) to adequately remove the cuttings from the hole during the HDD process.

In order to reduce the potential for down hole blockage during HDD operations, the annular solids in the drilling fluid should be maintained within acceptable limits, which is typically less than 30 percent.

6.13. Pullback Considerations

Based on our analysis of the installation loads (see Section 5.3), the pullback force during installation of the 24-inch-diameter casing pipe may be as high as approximately 83,000 pounds depending on the weight of the drilling fluid in the hole at the time of pullback and buoyancy control measured used during pullback. This anticipated pull force assumes that cuttings are removed from the hole prior to attempting pullback. Improper conditioning of the hole prior to pullback could result in higher installation forces.

We recommend that the HDD contractor utilize a drill rig with a capacity of at least 1.5 times the anticipated pull loads. In addition, the HDD contractor should install a deadman anchor of sufficient capacity to withstand the anticipated pull loads; these aspects are generally left to the HDD contractor's discretion as approved by the owner. We also recommend that during pullback, the carrier pipe over-bend radius be maintained at 800 feet or greater to reduce the risk of damaging the carrier pipe during installation.

6.14. Settlement Monitoring

We recommend that the contractor perform a pre-construction survey along the proposed HDD alignment to document conditions prior to construction. Surface settlement survey monuments should be installed above the casing alignment to document settlement resulting from construction in areas not covered by pavements. We recommend installing subsurface survey monuments on either side of pavements to document settlement that may occur, but not be detected beneath pavements if only surface monitoring were used. The survey monuments should be read prior to beginning trenchless construction, at least twice a day during the HDD operations and at least once a day for 2 weeks after construction. If settlement greater than $\frac{1}{4}$ inch is detected, operations should be stopped, and the settlement should be reported to the project team and WSDOT.

The above recommended settlement monitoring is a minimum recommended monitoring frequency and will not supersede WSDOT requirements. We recommend that contractors submit a settlement monitoring plan with their bid.

6.15. Post-construction Grouting

We recommend that the contractor perform post-installation grouting of the annulus between the casing and the bore hole after construction to reduce the risk of settlement adversely affecting the ground surface. The contractor should submit a post installation grouting plan with their bid.

7.0 LIMITATIONS

We have prepared this report for use by Public Utility District No. 1 of Skagit County and their authorized agents and other approved members of the design team involved with this project. The report is not intended for use by others and the information contained herein is not applicable to other sites. Our report,

conclusions and interpretations should not be construed as a warranty of the subsurface conditions. The conclusions and recommendations in this report should be applied in their entirety.

Variations in subsurface conditions are possible between the borings. Subsurface conditions may also vary with time. A contingency for unanticipated conditions should be included in the project budget and schedule for such an occurrence. We recommend that sufficient monitoring and consultation be provided by GeoEngineers during construction to confirm that the conditions encountered are consistent with those indicated by the borings, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether earthwork and pipeline installation activities comply with contract plans and specifications.

The scope of our services does not include services related to construction safety precautions. Our recommendations are not intended to direct the trenchless contractor's methods, techniques, sequences or procedures, except as specifically described in our report for consideration in developing a trenchless installation plan.

Within the limitations of scope, schedule and budget, our services have been executed in accordance with generally accepted practices in this area at the time the report was prepared. No warranty or other conditions, express, written or implied, should be understood.

Please refer to Appendix D, titled "Report Limitations and Guidelines for Use," for additional information pertaining to use of this report.

8.0 REFERENCES

Handbook of PVC Pipe: Design and Construction, Fifth Edition, Uni-Bell PVC Pipe Association, Dallas, Texas, December 2012.

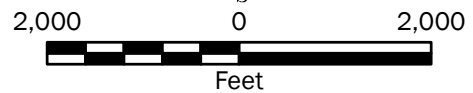
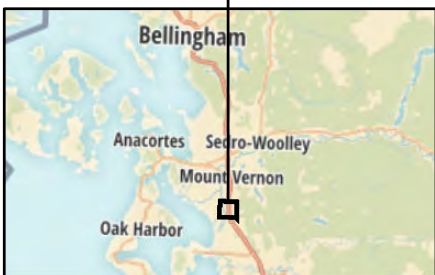
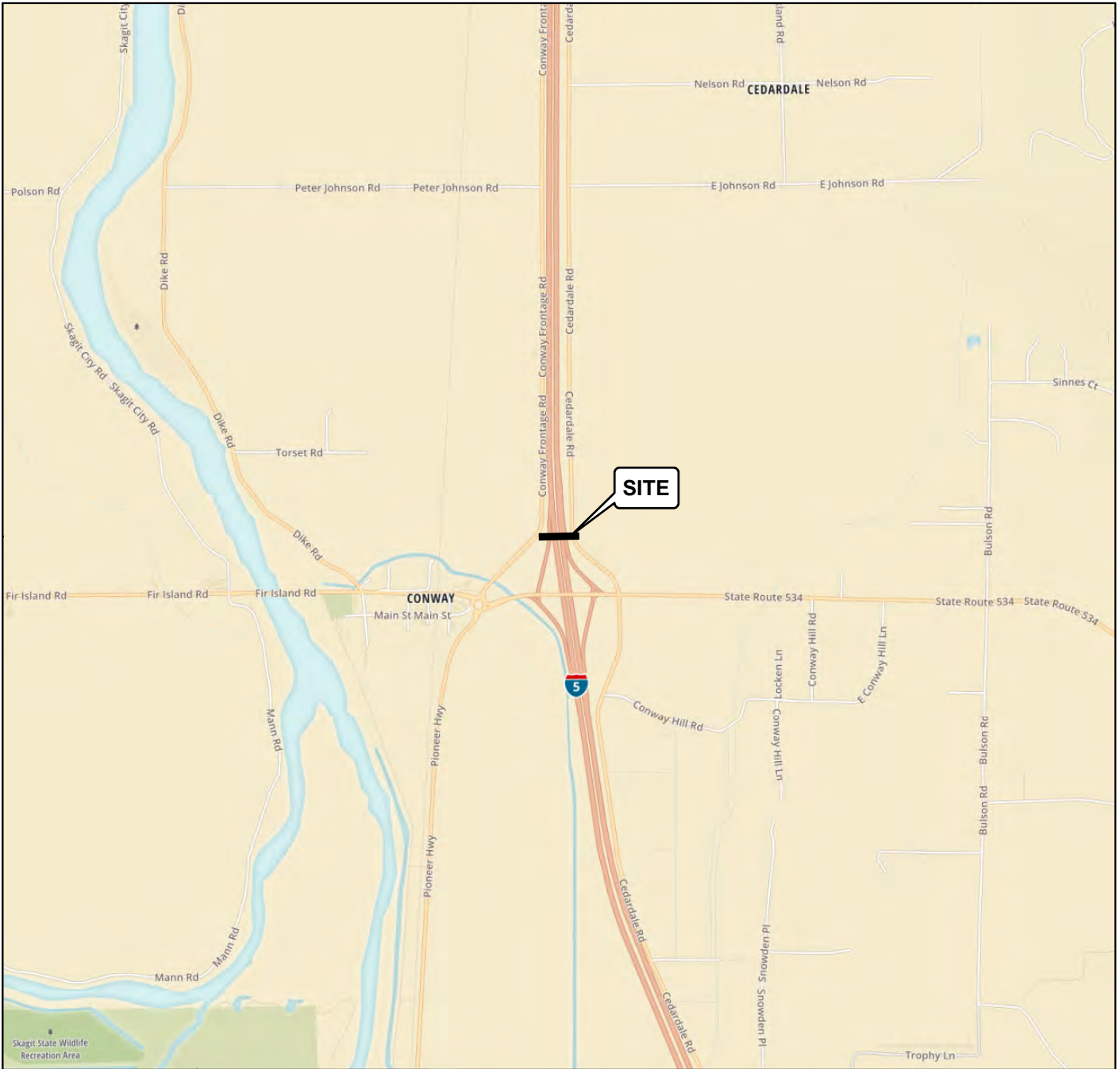
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Vicinity Map

Conway I-5 Crossing Project
Skagit County, Washington



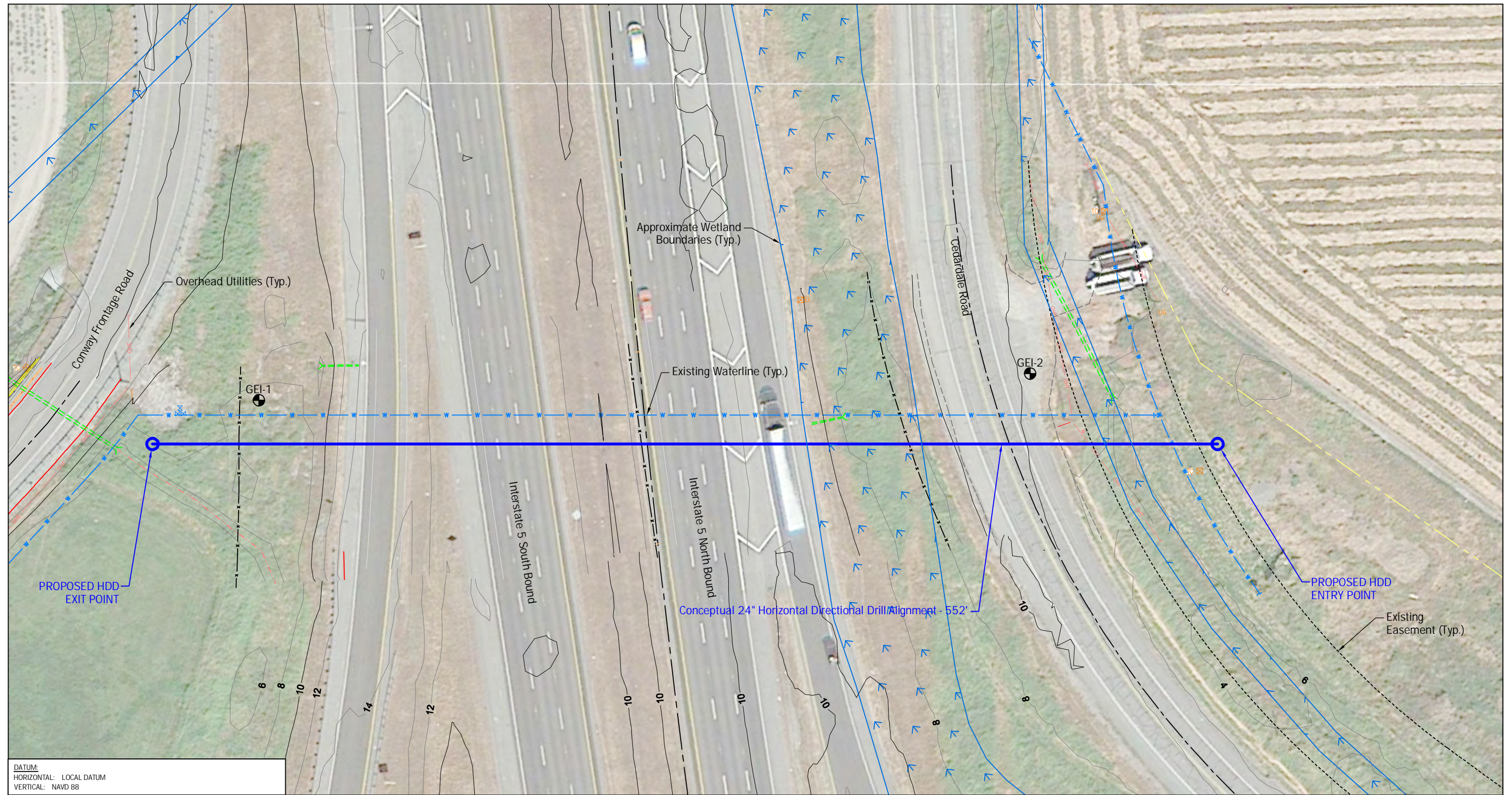
Figure 1

Notes:

1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.

Data Source: Mapbox Open Street Map, 2017

Projection: NAD 1983 UTM Zone 10N



DATUM:
 HORIZONTAL: LOCAL DATUM
 VERTICAL: NAVD 88

Notes:

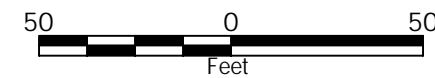
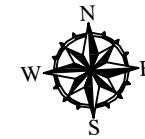
1. The locations of all features shown are approximate.
2. This drawing is for information purposes. It is intended to assist in showing features discussed in an attached document. GeoEngineers, Inc. cannot guarantee the accuracy and content of electronic files. The master file is stored by GeoEngineers, Inc. and will serve as the official record of this communication.
3. The utilities shown on the drawing are based on survey data provided by Harmsen & Associates, Inc. GeoEngineers, Inc. has not verified the field location of the existing utilities.
4. Wetlands boundaries obtained from the National Wetlands Inventory, dated 12/16/2015.

Reference: Base files provided by Harmsen & Associates, Inc. Aerial image taken from Google Earth Pro © 2018, licensed to GeoEngineers, Inc., image dated 07/24/17.

Legend

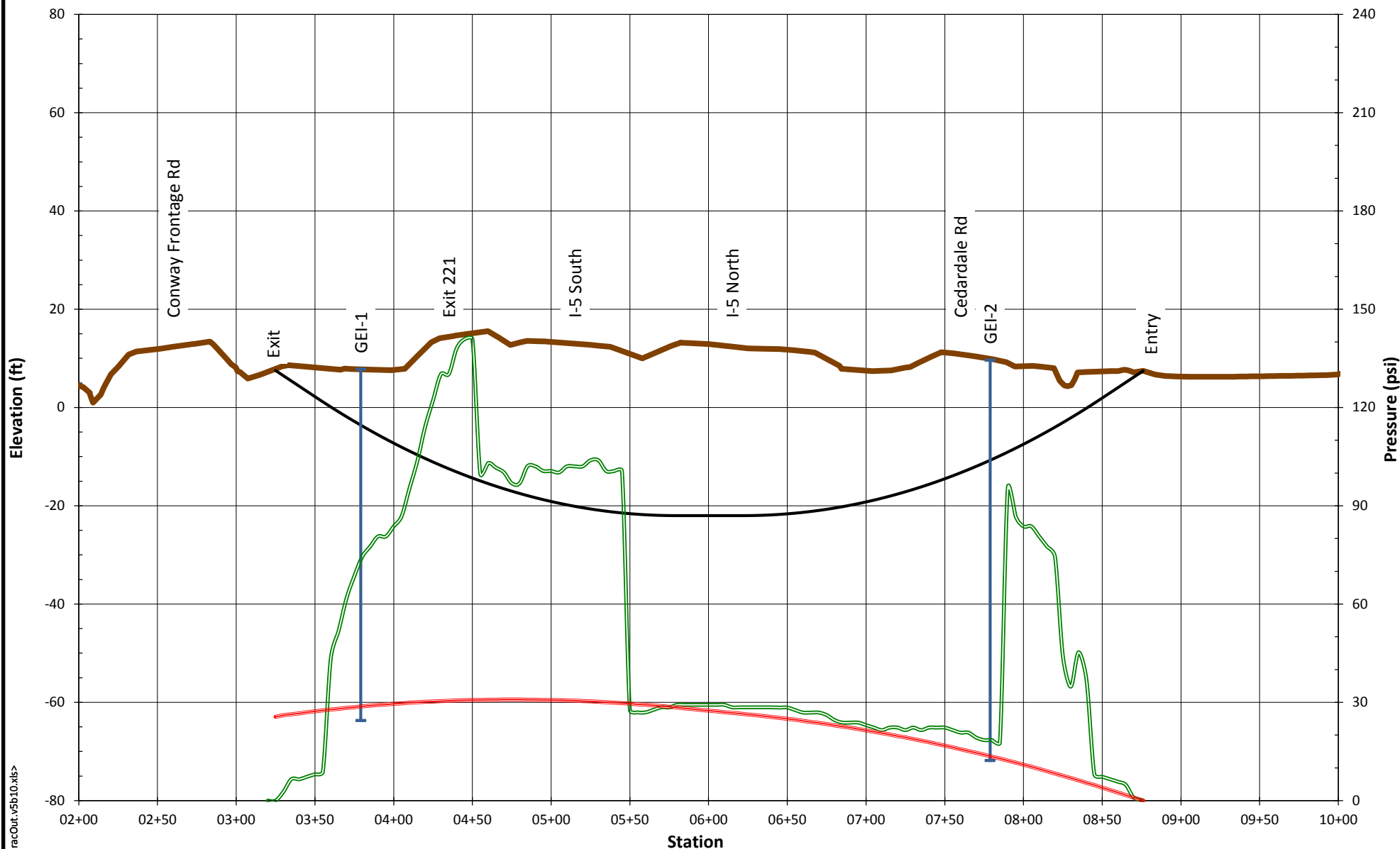
- Boring Location
- Major Contour - 10' Interval
- Minor Contour - 2' Interval

FINAL



Site Plan	
Conway I-5 Crossing Project Interstate 5 HDD Skagit County, Washington	
	Figure 2

CONWAY INTERSTATE 5 WATERLINE CROSSING - INTERSTATE 5 HDD



2402-033-00 JAH 180523 <FracOut.v5b1.0.xls>

Crossing Length (ft)	552
Hole Diameter (in)	6.500
Drill Pipe O.D. (in)	3.500
Drilling Fluid Weight (ppg)	9.5
Plastic Viscosity (cP)	12
Yield Point (lb/100 sf)	26

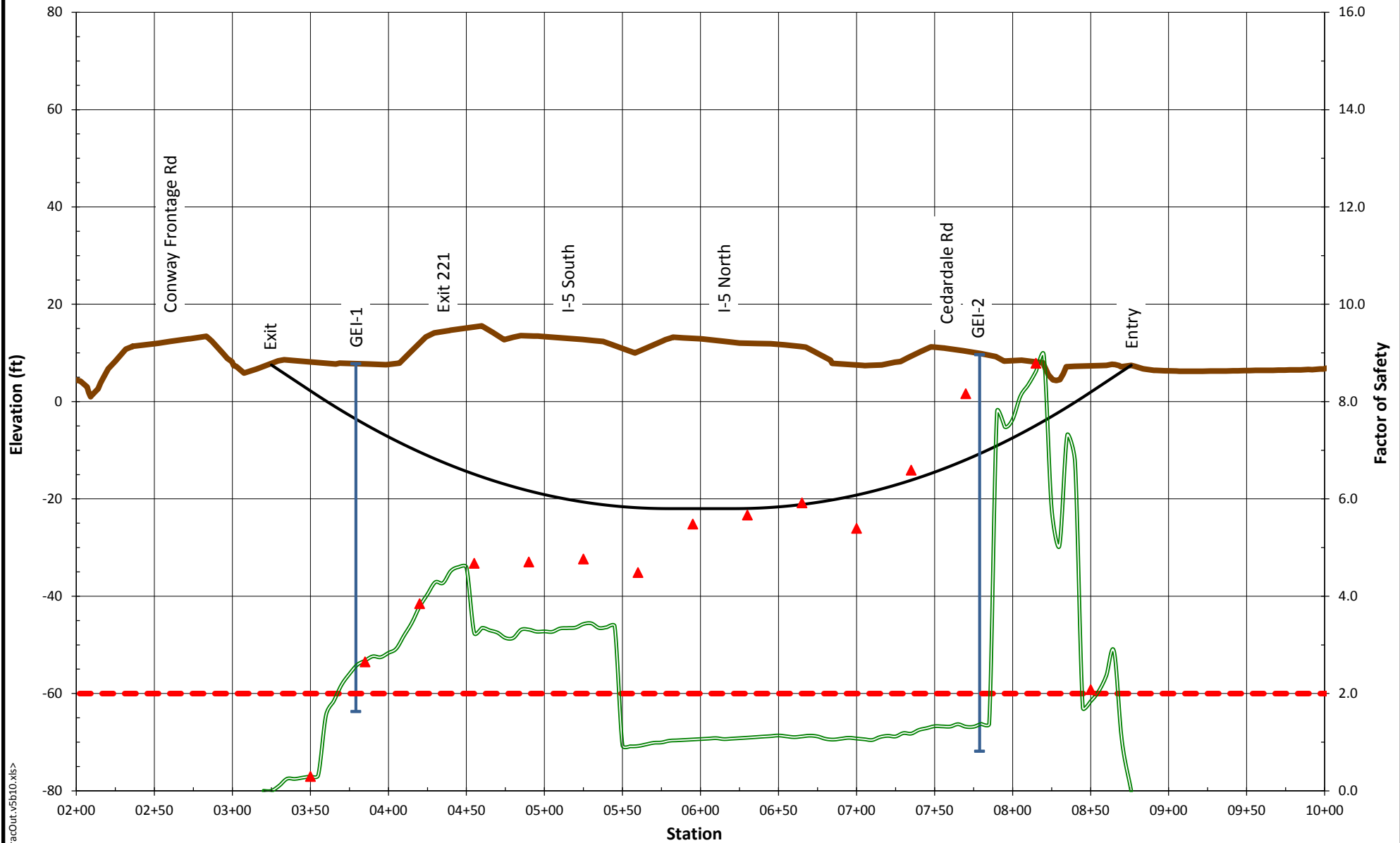
	Ground Surface Elevation (ft)
	HDD Profile (ft)
	Formation Limit Pressure (psi)
	Estimated Annular Drilling Fluid Pressure (psi) for Pilot Hole

CONWAY I-5 CROSSING PROJECT - INTERSTATE 5 HDD

ESTIMATED ANNULAR DRILLING FLUID AND FORMATION LIMIT PRESSURES

FIGURE 3

CONWAY INTERSTATE 5 WATERLINE CROSSING - INTERSTATE 5 HDD



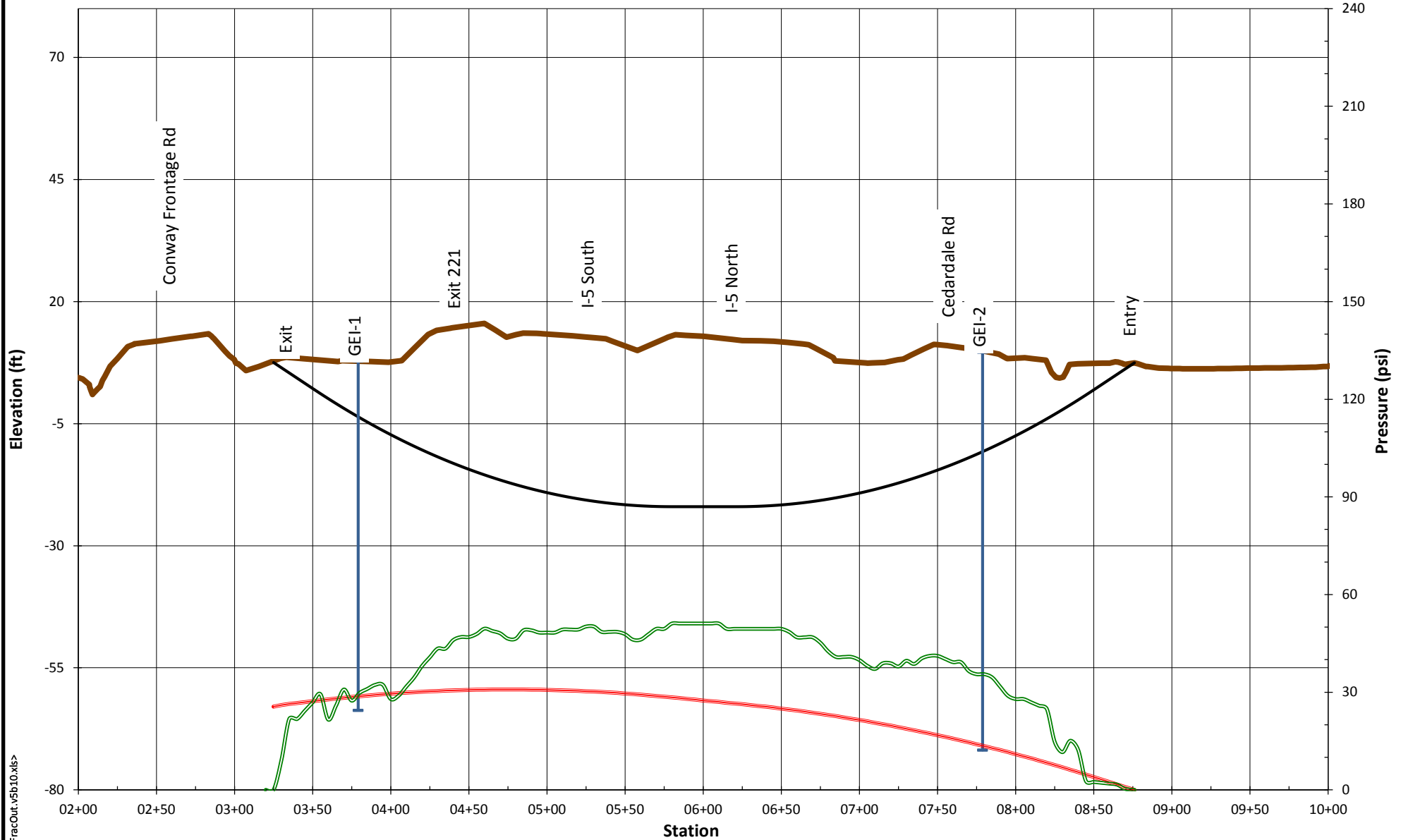
2402.035.00 JAH 180523 <FracOut.v51010.xls>

Crossing Length (ft)	552
Hole Diameter (in)	6.500
Drill Pipe O.D. (in)	3.500
Drilling Fluid Weight (ppg)	9.5
Plastic Viscosity (cP)	12
Yield Point (lb/100 sf)	26

	Ground Surface Elevation (ft)
	HDD Profile (ft)
	Factor of Safety = 2
	Hydraulic Fracture Factor of Safety for Pilot Hole
	Drilling Fluid Surface Release Factor of Safety for Pilot Hole

CONWAY I-5 CROSSING PROJECT - INTERSTATE 5 HDD	
HYDRAULIC FRACTURE AND DRILLING FLUID SURFACE RELEASE FACTORS OF SAFETY	
	FIGURE 4

CONWAY INTERSTATE 5 WATERLINE CROSSING - INTERSTATE 5 HDD



2402-033-00 JAH 180523 <FracOut.v5b10.xls>

Crossing Length (ft)	552
Hole Diameter (in)	6.500
Drill Pipe O.D. (in)	3.500
Drilling Fluid Weight (ppg)	9.5
Plastic Viscosity (cP)	12
Yield Point (lb/100 sf)	26

	Ground Surface Elevation (ft)
	HDD Profile (ft)
	Estimated Annular Drilling Fluid Pressure (psi) for Pilot Hole
	Allowable Drilling Fluid Pressure (psi)

CONWAY I-5 CROSSING PROJECT - INTERSTATE 5 HDD
ESTIMATED AND ALLOWABLE ANNULAR DRILLING FLUID PRESSURES

FIGURE 5

APPENDIX A
Subsurface Explorations and Laboratory Testing Program

APPENDIX A SUBSURFACE EXPLORATIONS AND LABORATORY TESTING PROGRAM

Subsurface Explorations

We explored subsurface conditions at the site by drilling two borings with a track-mounted drill rig using hollow stem auger and mud rotary drilling methods. Holocene Drilling, Inc. of Puyallup, Washington drilled the borings to depths of 71½ and 81½ feet bgs at boring GEI-1 and GEI-2, respectively. Figure 2 shows the approximate boring locations. A representative from our Bellingham, Washington office observed field activities, classified the soil encountered, obtained representative samples, observed groundwater conditions where possible, and prepared a log of each exploration. The borings were backfilled in accordance with Washington Department of Ecology recommendations at the conclusion of each exploration. A piezometer was installed in boring B-2 and capped with a steel flush-mount monument.

Soil samples were obtained by performing SPTs in general accordance with ASTM Test Method D 1586. 1.5-inch outside diameter (OD) split spoon samplers were used to obtain the soil samples. The sampler was driven with a 140-pound hammer falling 30 inches. The number of blows required to drive the sampler 1 foot, or as otherwise indicated, into the soils is shown adjacent to the sample symbols on the boring logs. Disturbed and relatively undisturbed samples were obtained from the split spoon sampler for subsequent classification and index testing.

Soils encountered in the borings were classified in the field by a GeoEngineers representative in general accordance with ASTM D 2488, the Standard Practice for the Classification of Soils (Visual-Manual Procedure) which is described in Figure A-1. The boring logs are presented in Figures A-2 and A-3. Soil classifications and sampling intervals are shown in the boring logs. Inclined lines at the material contacts shown on the log indicate uncertainty as to the exact contact elevation, rather than the inclination of the contact itself.

The relative soil density of the SPT samples recovered at each interval was evaluated based on correlations with lab and field observations in general accordance with the values outlined in Table A-1 below. Note that the blows per foot shown on the attached borings logs for samples obtained with the D&M sampler were adjusted to generally correlate with SPT N values using an equation developed by Burmister (1948).

TABLE A-1. CORRELATION BETWEEN BLOW COUNTS AND RELATIVE DENSITY *

Cohesive Soils (Clay/Silt)						
Parameter	Very Soft	Soft	Medium Stiff	Stiff	Very Stiff	Hard
Blows, N	< 2	2 - 4	4 - 8	8 - 16	16 - 32	>32
Cohesionless Soils (Gravel/Sand/Silty Sand) **						
Parameter	Very Loose	Loose	Medium Dense	Dense	Very Dense	
Blows, N	0 - 4	4 - 10	10 - 30	30 - 50	> 50	

Notes:

* After Terzaghi, K and Peck, R.B., "Soil Mechanics in Engineering Practice," John Wiley & Sons, Inc., 1962.

** Classification applies to soils containing additional constituents; that is, organic clay, silty or clayey sand, etc.

Laboratory Testing Program

Samples obtained from the explorations were transported to our Bellingham, Washington laboratory and examined to confirm or modify field classifications, as well as to evaluate engineering properties of the samples. Representative soil samples were selected for laboratory testing consisting of percent fines and Atterberg limits determinations, and sieve analyses. The laboratory testing procedures are discussed in more detail below.

Percent Fines Determinations

Nine percent fines determinations were performed on soil samples obtained from the borings. The tests were used to evaluate the relative amounts of coarse and fine-grained particles present in the samples and were completed in general accordance with the ASTM D 1140. The result of the testing is presented in the boring logs at its respective sample depth.

Atterberg Limits Testing

Three Atterberg limits tests were performed on a selected soil sample. The tests were used to classify and evaluate index properties of the soil. The liquid limit and the plastic limit were estimated through a procedure performed in general accordance with ASTM D 4318. The results of the Atterberg limits testing is shown in Figure A-4.

Sieve Analyses

Two sieve analyses were performed on selected soil samples to evaluate the grain size characteristics of selected soil samples. We completed the sieve analyses in general accordance with ASTM D 422. The results of the sieve analyses are shown in Figure A-5.

Moisture Content Determinations

Moisture content determinations were performed on select soil samples in conjunction with Atterberg limits, sieve analysis, and percent fines tests. Moisture content determinations were completed in general accordance with ASTM D 2216. The results of the moisture content determinations are shown in the attached boring logs.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	CLEAN GRAVELS <small>(LITTLE OR NO FINES)</small>		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES
		GRAVELS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
	SAND AND SANDY SOILS	CLEAN SANDS <small>(LITTLE OR NO FINES)</small>		SW	WELL-GRADED SANDS, GRAVELLY SANDS
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		SP	POORLY-GRADED SANDS, GRAVELLY SAND
		SANDS WITH FINES <small>(APPRECIABLE AMOUNT OF FINES)</small>		SM	SILTY SANDS, SAND - SILT MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS, ROCK FLOUR, CLAYEY SILTS WITH SLIGHT PLASTICITY
		LIQUID LIMIT LESS THAN 50		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
		LIQUID LIMIT LESS THAN 50		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS SILTY SOILS
		LIQUID LIMIT GREATER THAN 50		CH	INORGANIC CLAYS OF HIGH PLASTICITY
		LIQUID LIMIT GREATER THAN 50		OH	ORGANIC CLAYS AND SILTS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: Multiple symbols are used to indicate borderline or dual soil classifications

Sampler Symbol Descriptions

	2.4-inch I.D. split barrel
	Standard Penetration Test (SPT)
	Shelby tube
	Piston
	Direct-Push
	Bulk or grab
	Continuous Coring

Blowcount is recorded for driven samplers as the number of blows required to advance sampler 12 inches (or distance noted). See exploration log for hammer weight and drop.

"P" indicates sampler pushed using the weight of the drill rig.

"WOH" indicates sampler pushed using the weight of the hammer.

NOTE: The reader must refer to the discussion in the report text and the logs of explorations for a proper understanding of subsurface conditions. Descriptions on the logs apply only at the specific exploration locations and at the time the explorations were made; they are not warranted to be representative of subsurface conditions at other locations or times.

ADDITIONAL MATERIAL SYMBOLS

SYMBOLS		TYPICAL DESCRIPTIONS
GRAPH	LETTER	
	AC	Asphalt Concrete
	CC	Cement Concrete
	CR	Crushed Rock/ Quarry Spalls
	SOD	Sod/Forest Duff
	TS	Topsoil

Groundwater Contact



Measured groundwater level in exploration, well, or piezometer



Measured free product in well or piezometer

Graphic Log Contact

Distinct contact between soil strata

Approximate contact between soil strata

Material Description Contact

Contact between geologic units

Contact between soil of the same geologic unit

Laboratory / Field Tests

%F	Percent fines
%G	Percent gravel
AL	Atterberg limits
CA	Chemical analysis
CP	Laboratory compaction test
CS	Consolidation test
DD	Dry density
DS	Direct shear
HA	Hydrometer analysis
MC	Moisture content
MD	Moisture content and dry density
Mohs	Mohs hardness scale
OC	Organic content
PM	Permeability or hydraulic conductivity
PI	Plasticity index
PP	Pocket penetrometer
SA	Sieve analysis
TX	Triaxial compression
UC	Unconfined compression
VS	Vane shear

Sheen Classification

NS	No Visible Sheen
SS	Slight Sheen
MS	Moderate Sheen
HS	Heavy Sheen

Key to Exploration Logs

Start Drilled	1/16/2018	End	1/16/2018	Total Depth (ft)	71.5	Logged By	BWS	Checked By	JAH	Driller	Holocene Drilling, Inc.	Drilling Method	Mud Rotary
Surface Elevation (ft)	8			Vertical Datum	NAVD88	Hammer Data	Automatic			140 (lbs) / 30 (in) Drop		Drilling Equipment	Track-mounted Diedrich D-50
Latitude	48.343302			Longitude	-122.336592	System Datum	Decimal Degrees			WGS84		See "Remarks" section for groundwater observed	
Notes:													

Elevation (feet)	Depth (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
		Interval	Recovered %	Blows/foot	Collected Sample						
0						TS	Dark brown organic topsoil				
						ML	Light brown silt with occasional sand and wood fibers (medium stiff, moist) (fill)				
5		100	5	1			Becomes wet below approximately 3½ feet			Groundwater level inferred at 3½ feet bgs based on visual observation of soil sample moisture content	
		100	0	2			Becomes brown-gray, very soft and wet				
10		100	13	3	SA	SPSM	Gray poorly graded sand with silt (medium dense, wet) (alluvial deposit)	25	7	SA (%G = 1)	
15		83	13	4							
20		0	23	5						No recovery	
25		83	9	6	%F		Becomes loose	27	12		
30		100	25	7		ML	Gray silt with sand (stiff, wet)				
35						SPSM	Gray poorly graded sand with silt (medium dense, wet)				
40		100	1	8	%F, AL	ML	Gray sandy silt with shell fragments (very soft, wet) (marine deposit)	34	51	AL (non-plastic)	
45											
50		100	8	9	%F	SM	Gray silty sand with shell fragments (loose, wet)	34	26		
55						CL/ML	(see next page for description)				

Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on GPS (Rec). Vertical approximated based on GPS (Rec).

Log of Boring GEI-1



Project: Conway I-5 Crossing Project
Project Location: Skagit County, Washington
Project Number: 2402-033-00

Date: 3/1/18 Path: W:\PROJECTS\2402033\GINT\240203300.GPJ DBLibrary\Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GB8_GEOTECH_STANDARD_%F_NO_GW

Date: 3/1/18 Path: W:\PROJECTS\2402033\GINT\240203300.GPI DBLibrary\Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GBB_GEO TECH_STANDARD_%F_NO_GW

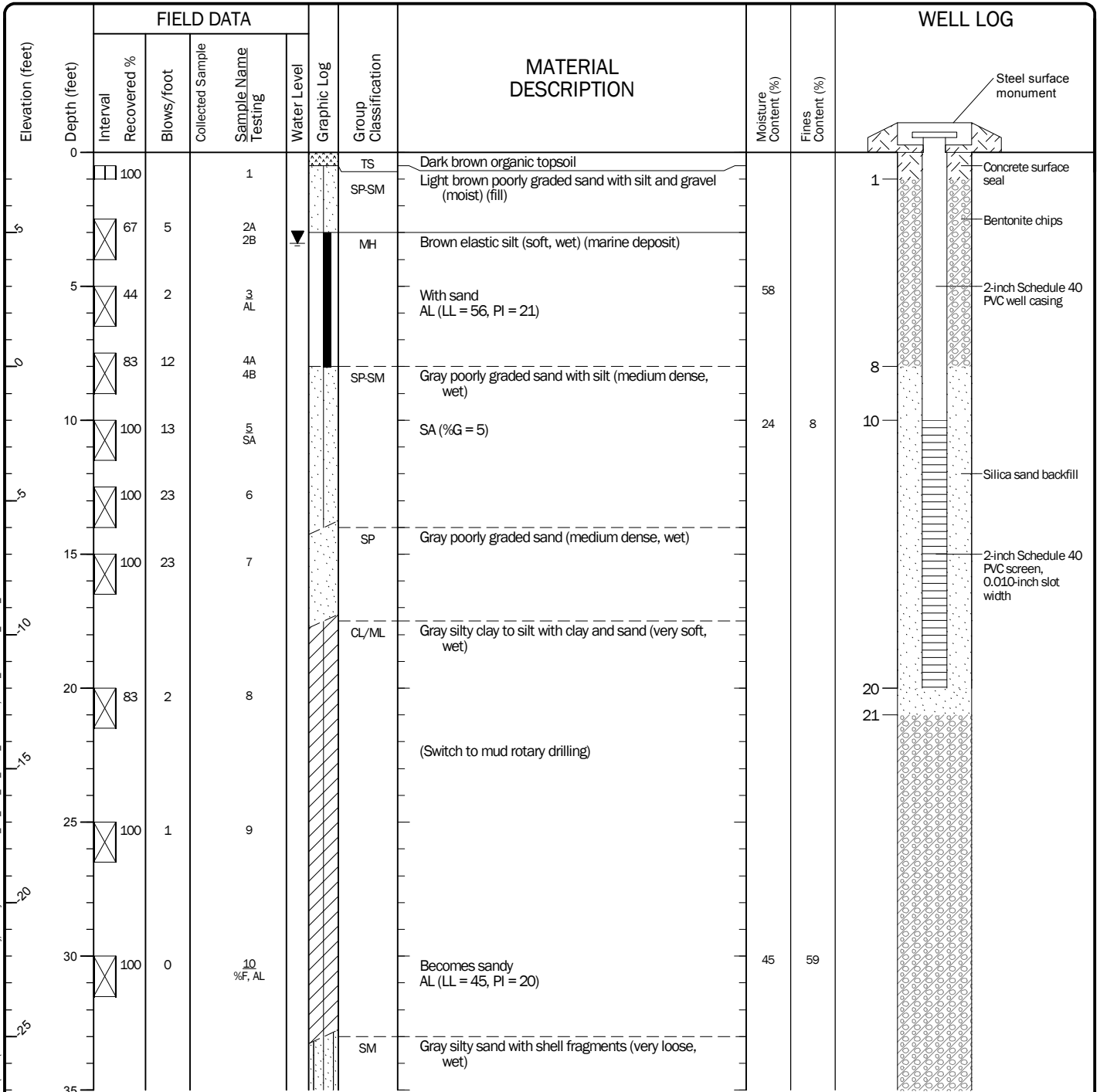
Elevation (feet)	FIELD DATA				Graphic Log	Group Classification	MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	REMARKS
	Depth (feet)	Interval Recovered %	Blows/foot	Collected Sample						
35		100	0		10	CL/ML	Gray silty clay to silt with clay, occasional sand and shell fragments (very soft, wet)			
30										
40		100	0		11					
35						SM	Gray silty sand with shell fragments (loose, wet)			
45		67	8		12					
40										
50		100	15		13 %F		Becomes medium dense	33	14	
45						SPSM	Gray poorly graded sand with silt and shell fragments (loose, wet)			
55		100	7		14					
50										
60		100	18		15		Becomes medium dense			
55						CL/ML	Gray silty clay to silt with clay, sand and occasional shell fragments (very soft, wet)			
65		100	2		16					
60										
70		100	12		17	SM	Gray silty sand with shell fragments (medium dense, wet)			

Log of Boring GEI-1 (continued)



Project: Conway I-5 Crossing Project
 Project Location: Skagit County, Washington
 Project Number: 2402-033-00

Start Drilled 1/15/2018	End 1/15/2018	Total Depth (ft) 81.5	Logged By Checked By BWS JAH	Driller Holocene Drilling, Inc.	Drilling Method Hollow-stem Auger/Mud Rotary
Hammer Data Automatic 140 (lbs) / 30 (in) Drop	Drilling Equipment Track-mounted Diedrich D-50		A 2 (in) well was installed on 1/15/2018 to a depth of 20 (ft).		
Surface Elevation (ft) Vertical Datum 8 NAVD88	Top of Casing Elevation (ft) 8.00		Groundwater Date Measured 1/16/2018		
Latitude Longitude 48.343295 -122.334946	Horizontal Datum Decimal Degrees WGS84		Depth to Water (ft) 3.40	Elevation (ft) 4.60	
Notes:					



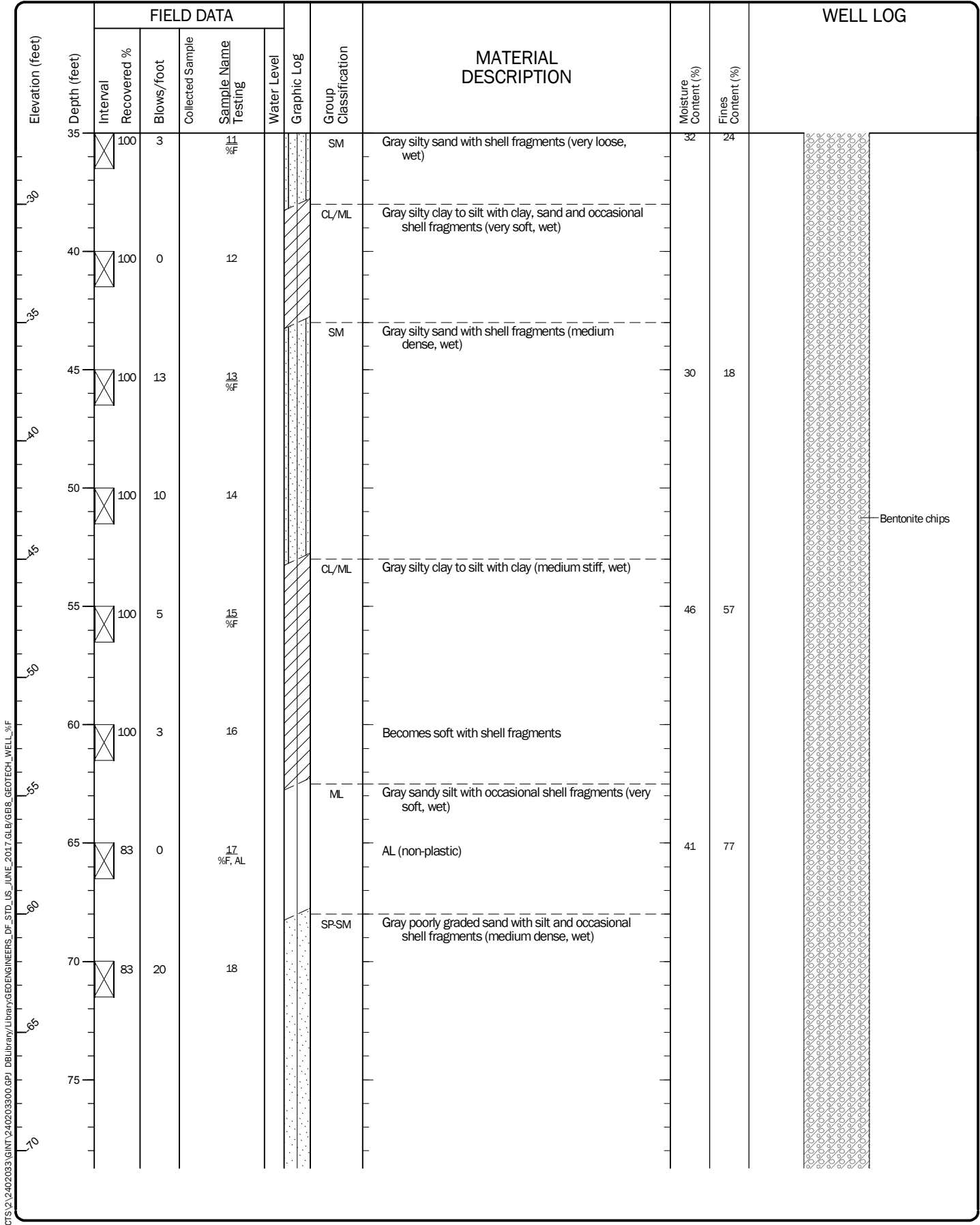
Note: See Figure A-1 for explanation of symbols.
Coordinates Data Source: Horizontal approximated based on GPS (Rec). Vertical approximated based on GPS (Rec).

Log of Monitoring Well GEI-2



Project: Conway I-5 Crossing Project
Project Location: Skagit County, Washington
Project Number: 2402-033-00

Date: 3/1/18 Path: W:\PROJECTS\2402033\GINT\240203300.GPI DBLibrary\Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GB8_GEOTECH_WELL_%F



Date: 3/1/18 Path: W:\PROJECTS\2402033\GINT\2402033\GINT_2402033\GPI_Database\Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GB8_GEDTECH_WELL_%F

Log of Monitoring Well GEI-2 (continued)



Project: Conway I-5 Crossing Project
 Project Location: Skagit County, Washington
 Project Number: 2402-033-00

Date: 3/1/18 Path: W:\PROJECTS\2402033\GINT\240203300.GPI DBLibrary/Library\GEOENGINEERS_DF_STD_US_JUNE_2017.GLB\GB8_GEOTECH_WELL_%F

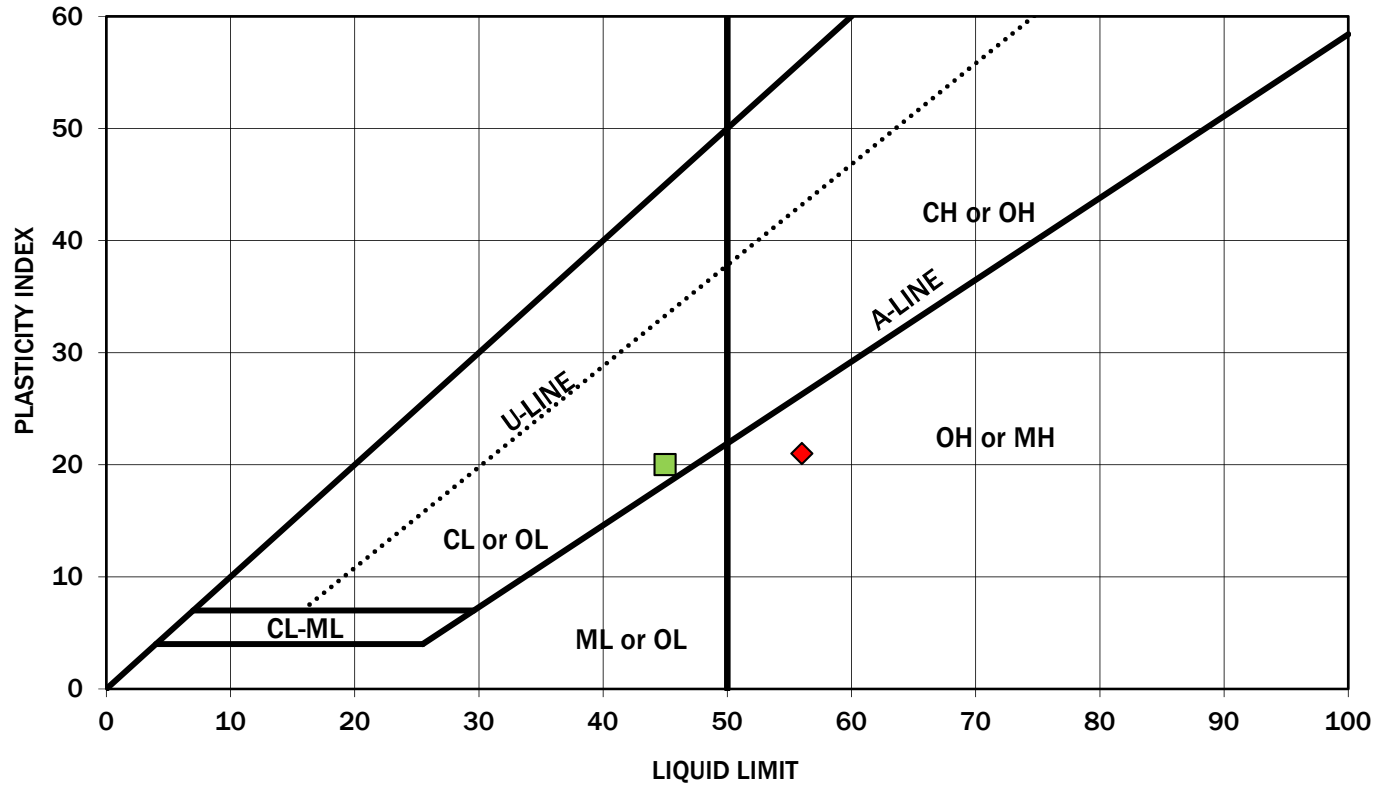
Elevation (feet)	FIELD DATA						MATERIAL DESCRIPTION	Moisture Content (%)	Fines Content (%)	WELL LOG											
	Depth (feet)	Interval	Recovered %	Blows/foot	Collected Sample	Sample Name Testing					Water Level	Graphic Log	Group Classification								
80			100	23		19			SP-SM	Gray poorly graded sand with silt and occasional shell fragments (medium dense, wet)											
																					81.5

Log of Monitoring Well GEI-2 (continued)



Project: Conway I-5 Crossing Project
 Project Location: Skagit County, Washington
 Project Number: 2402-033-00

PLASTICITY CHART



Symbol	Boring Number	Depth (feet)	Moisture Content (%)	Liquid Limit (%)	Plasticity Index (%)	Soil Description
◆	B-1	25	34	N/A	N/A	Non-plastic silt (ML)
◆	B-2	5	58	56	21	Elastic silt (MH)
■	B-2	30	45	45	20	Lean clay (CL)
■	B-2	65	46	N/A	N/A	Non-plastic silt (ML)

Atterberg Limits Test Results

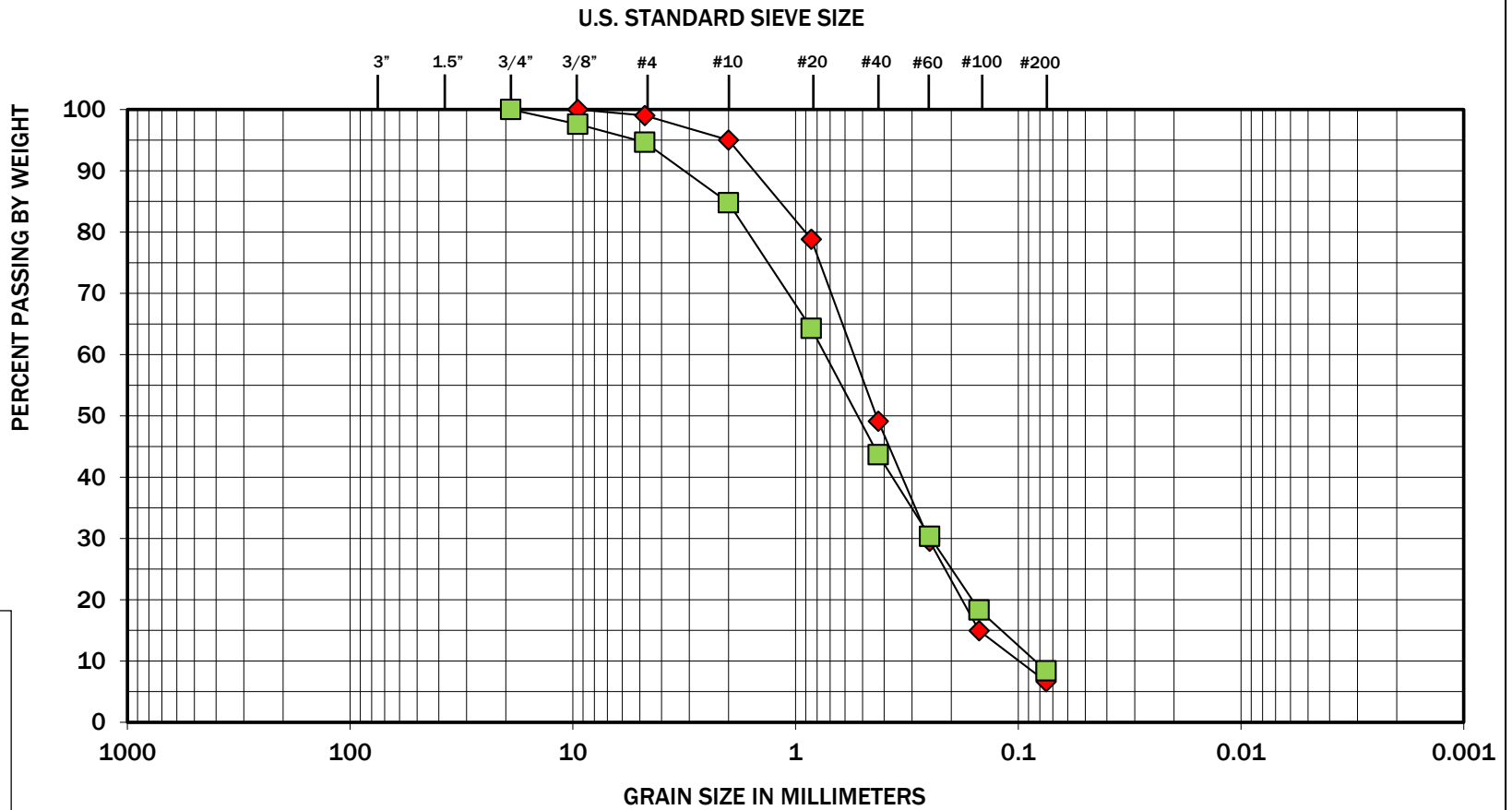
Conway I-5 Crossing Project
Skagit County, Washington

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The liquid limit and plasticity index were obtained in general accordance with ASTM D 4318.



Figure A-4



Symbol	Boring Number	Depth (feet)	Moisture (%)	Soil Description
◆	B-1	7.5	25	Poorly graded sand with silt (SP-SM)
■	B-2	10	24	Poorly graded sand with silt (SP-SM)

Note: This report may not be reproduced, except in full, without written approval of GeoEngineers, Inc. Test results are applicable only to the specific sample on which they were performed, and should not be interpreted as representative of any other samples obtained at other times, depths or locations, or generated by separate operations or processes.

The grain size analysis results were obtained in general accordance with ASTM D 6913.

APPENDIX B
HDD Engineering Summary and HDD Design Drawings

APPENDIX B HDD ENGINEERING SUMMARY AND HDD DESIGN DRAWING

General

The following sections provide a discussion of the methodologies utilized as part of the design process for this project.

Hydraulic Fracture Calculations

The procedures used to evaluate the potential for drilling fluid loss through hydraulic fracturing are based primarily on research completed by Delft Geotechnics, as discussed in Appendix B of the U.S. Army Corps of Engineers (USACE) Report CPAR-GL-98 (Staheli, et al. 1998). The methodologies used to estimate the hydraulic fracture potential outlined in the research are based on cavity expansion theory. The cavity expansion model is used to estimate the maximum effective pressure in the drill hole before plastic deformation of the drill hole occurs.

In order to evaluate the hydraulic fracture and drilling fluid surface releases potential for an HDD installation, assumptions must be made when selecting the input parameters. The assumptions used in the model include the extent and uniformity of soil layers, hydrostatic groundwater pressures, drilling fluid properties, penetration rates and drilling fluid flow rates. The soil strength properties are estimated based on interpretations of the boring logs and laboratory test results. The drilling fluid properties, penetration rates and pump rates are estimated based on generally accepted, BMPs of the HDD industry. Consequently, the results of the evaluation are only estimates of the potential for hydraulic fracture and drilling fluid surface releases.

In addition, the drilling fluid properties are dependent on the field conditions and the construction practices of the HDD contractor and drilling fluid engineer. Changes in these properties can significantly affect the potential for hydraulic fracture and drilling fluid surface releases.

Based on the soil properties, rheological parameters and anticipated tool dimensions, the model considers the total and effective overburden stresses, shear strengths of the soil, and the estimated drilling fluid pressures along the drill path. A comparison is then made of the estimated drilling fluid pressures immediately behind the drill bit and the ability of the soil to resist plastic deformation. The evaluation considers only the hydraulic fracture potential during pilot hole operations assuming the drilling fluid returns are continuously maintained to the entry point.

When evaluating the risk of hydraulic fracture and drilling fluid surface releases, the analysis computes two types of factor of safety. These are:

- Factor of Safety against localized hydraulic fracture
- Factor of Safety against drilling fluid surface release

Local Hydraulic Fracture: The factor of safety against hydraulic fracture is the ratio of the formation limit pressure to the estimated drilling fluid pressure along the profile. This represents the factor of safety against hydraulic fracture of the soil immediately surrounding the HDD profile and is a localized condition.

Drilling Fluid Surface Release: The factors of safety against drilling fluid surface release considers the strength of the soil column above the HDD profile that resists drilling fluid migrating to the ground surface. It is computed by comparing the formation limit pressure of the soil units above a specific point along the planned HDD profile to the anticipated drilling fluid pressure at that same point.

Table B-1 below shows the relative risk associated with the estimated factors of safety against hydraulic fracture and drilling fluid surface releases.

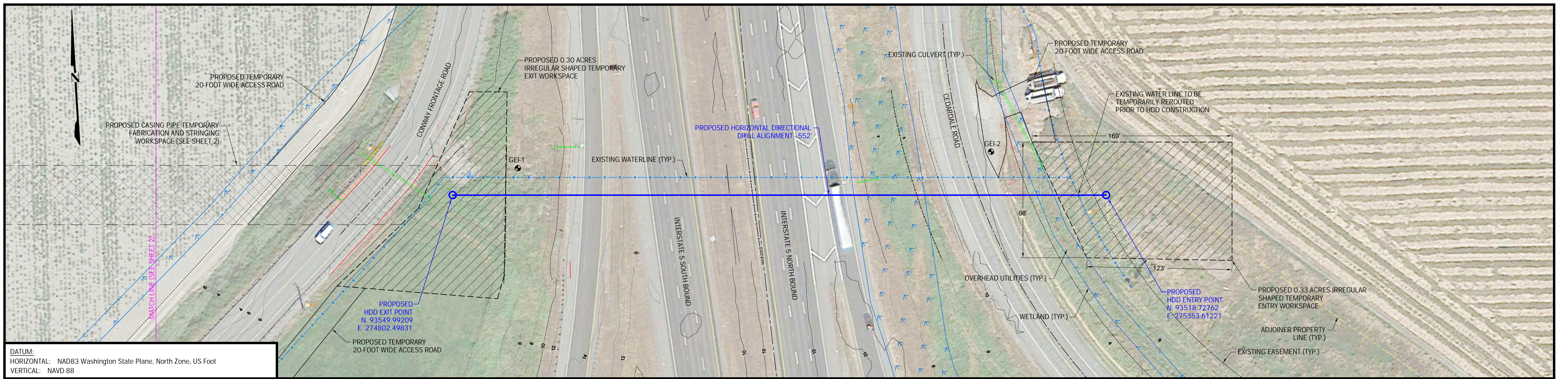
TABLE B-1. RELATIVE HYDRAULIC FRACTURE AND DRILLING FLUID SURFACE RELEASE RISK

Factor of Safety	Relative Risk
Less than 1	Very High
Between 1 and 1.5	High
Between 1.5 and 2	Moderate
Greater than 2	Low

Installation Stresses

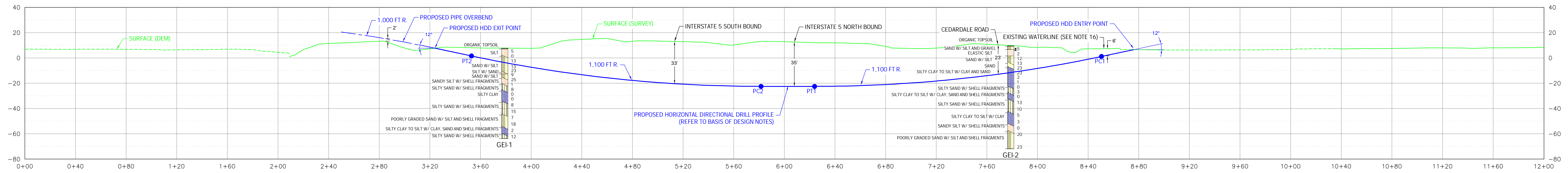
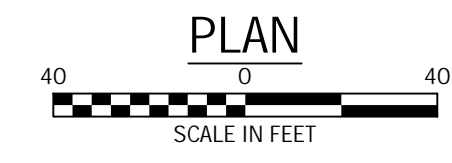
The analyses of installation loads and stresses are based on the casing pipe being installed along the designed path using BMPs of the HDD industry. The addition of water into the casing pipe is the standard method that HDD contractors typically use to control buoyancy of the casing pipe during the installation procedure for carrier pipes greater than a 24-inch-diameter.

The analyses are based upon the methods developed by the Pipeline Research Committee International (PRCI) of the American Gas Association (PRCI, 1995).



DATUM:
 HORIZONTAL: NAD83 Washington State Plane, North Zone, US Foot
 VERTICAL: NAVD 88

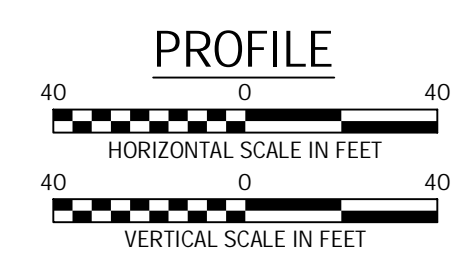
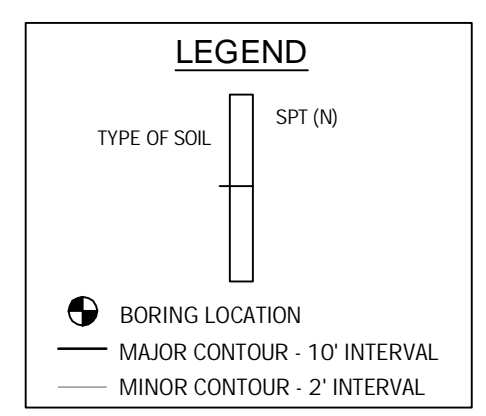
NOTE: THIS IS A FULL SIZE DRAWING THAT IS INTENDED TO BE PRINTED ON A 24" X 36" SHEET OF PAPER.



DIRECTIONAL DRILL DATA CONWAY I-5 HDD		
DESCRIPTION	STATION + (FT)	ELEVATION (FT)
★ ENTRY @ 12°	8+76.00	6.58
P C 1 (12.00° @ 1,100 FT R.)	8+52.57	1.60
P T 1	6+23.86	-22.44
P C 2 (12.00° @ 1,100 FT R.)	5+81.56	-22.44
P T 2	3+52.86	1.60
EXIT @ 12°	3+24.00	7.74
HORIZONTAL DISTANCE = 552.00 FT		
DIRECTIONAL DRILL PIPE LENGTH = 556.53 FT		

* THE STATIONING IS BASED ON AN ARBITRARY REFERENCE POINT

RECOMMENDED TOLERANCES	
ITEM	TOLERANCE
PILOT HOLE ENTRY ANGLE	INCREASE ANGLE UP TO 1° (STEEPER), BUT NO DECREASE IN ANGLE ALLOWED.
PILOT HOLE ENTRY LOCATION	AS PER COORDINATES PROVIDED BY COMPANY WITH NO CHANGES WITHOUT COMPANY APPROVAL.
PILOT HOLE EXIT ANGLE	INCREASE ANGLE UP TO 1° (STEEPER)
PILOT HOLE EXIT LOCATION	FIVE FEET BEYOND THE EXIT POINT OR 10 FEET SHORT OF THE EXIT STAKE. BETWEEN 5 FEET LEFT AND 5 FEET RIGHT OF CENTERLINE.
PILOT HOLE DEPTH	UP TO 2 FEET ABOVE THE DESIGN DRILL PROFILE ALLOWED, UP TO 10 FEET BELOW THE DESIGN DRILL PROFILE ALLOWED, EXCEPT WHERE THIS TOLERANCE CONFLICTS WITH OTHER SPECIFICATIONS.
PILOT HOLE ALIGNMENT	SHALL REMAIN WITHIN 5 FEET LEFT OR RIGHT OF THE HDD ALIGNMENT.



- NOTES:
- CONTRACTOR SHALL ADHERE TO THE SPECIFICATIONS AND REQUIREMENTS PER PUD NO. 1 OF SKAGIT COUNTY SPECIFICATIONS, CONTRACT DOCUMENTS AND SPECIAL PERMIT CONDITIONS, EXCEPT AS NOTED ON THIS DRAWING.
 - CONTRACTOR IS RESPONSIBLE FOR CALLING WASHINGTON STATE ONE CALL AND LOCATING ALL UNDERGROUND UTILITIES PRIOR TO BEGINNING CONSTRUCTION. IF ANY UTILITY IS LOCATED WITHIN 15 FEET OF THE DESIGNED HDD PROFILE AND ALIGNMENT, CONTRACTOR SHALL OBTAIN APPROVAL FROM PUD NO. 1 OF SKAGIT COUNTY PRIOR TO INITIATING HDD OPERATIONS.
 - IT IS THE CONTRACTOR'S RESPONSIBILITY TO IDENTIFY AND PROTECT ANY FOREIGN UTILITY THAT MAY BE AFFECTED BY THE HDD OPERATIONS.
 - PLACEMENT OF THE HDD RIG IS NOT FIXED BY THE DESIGNATION OF THE ENTRY AND EXIT POINTS.
 - ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY OR FROM APPROVED ACCESS ROADS.
 - WORKSPACE: MAXIMUM WORKSPACE LIMITS ARE DEPICTED. RESTRICT CLEARING TO THE WORKSPACE INDICATED AT THE ENTRY AND EXIT POINTS AND PRODUCT PIPE STRINGING AND FABRICATION AREA ALONG THE CONSTRUCTION RIGHT-OF-WAY. CLEARING BETWEEN THE ENTRY AND EXIT POINTS REQUIRES PRIOR APPROVAL FROM THE ENVIRONMENTAL INSPECTOR AND IS LIMITED TO THE AMOUNT NECESSARY TO STRING SURVEY WIRES AND INSTALL PUMPS AND PIPING TO OBTAIN WATER (WHERE APPROVED).
 - WATER SOURCE: DRILL WATER SHALL BE OBTAINED FROM AN APPROVED SOURCE.
 - LOW-PRESSURE AIR TEST AND DEFLECTION TESTING: PRE-INSTALLATION AND POST INSTALLATION LOW-PRESSURE AIR TESTS AND A POST-INSTALLATION DEFLECTION TEST SHALL BE COMPLETED ON THE CASING PIPE IN ACCORDANCE WITH THE PROJECT SPECIFICATION.
 - SPILL-PREVENTION: REFUELING OF ALL EQUIPMENT SHALL BE COMPLETED IN ACCORDANCE WITH THE SPOC PLAN.
 - EROSION AND SEDIMENT CONTROL: CONTRACTOR SHALL SUPPLY, INSTALL AND MAINTAIN SEDIMENT CONTROL STRUCTURES IN ACCORDANCE WITH CONTRACT DOCUMENTS. CONTRACTOR SHALL INSTALL ADDITIONAL EROSION CONTROL STRUCTURES AS DIRECTED BY THE ENVIRONMENTAL INSPECTOR.
 - INSTALLATION: THE PIPE SECTION FOR THE DRILLED CROSSING SHALL BE MADE UP WITHIN THE APPROVED CONSTRUCTION RIGHT-OF-WAY AT THE DRILL EXIT POINT AS SHOWN. AFTER THE PILOT HOLE IS COMPLETE, CONTRACTOR'S ACTUAL DRILL PROFILE SHALL BE SUBMITTED TO PUD NO. 1 OF SKAGIT COUNTY FOR APPROVAL. CONTRACTOR SHALL ASSESS THE NEED FOR AND SUPPLY APPROPRIATE BALLAST DURING PULLBACK.
 - DRILLING FLUID DISPOSAL: CONTRACTOR SHALL DISPOSE OF EXCESS DRILLING FLUID AT THE APPROPRIATE DISPOSAL SITE AND IN ACCORDANCE WITH PERMIT CONDITIONS. UNDER NO CIRCUMSTANCES SHALL DRILLING FLUID BE DISPOSED OF IN WATER BODIES OR WETLANDS. ANY DRILLING FLUID WHICH INADVERTENTLY SURFACES AT POINTS OTHER THAN THE ENTRY OR EXIT POINTS SHALL BE CONTAINED AND COLLECTED TO THE EXTENT PRACTICAL.
 - CLEANUP/STABILIZATION/RESTORATION: ALL DISTURBED AREAS SHALL BE RETURNED TO THE ORIGINAL CONTOURS. DISTURBED AREAS SHALL BE SEED AS SPECIFIED IN THE CLEAN UP AND RESTORATION REQUIREMENTS. IF THE TERRAIN ALLOWS AND ACCESS IS PERMITTED, CONTRACTOR SHALL UTILIZE LOW GROUND PRESSURE EQUIPMENT OR OTHER EQUIPMENT APPROVED BY OWNER, TO FACILITATE CONTAINMENT AND CLEAN-UP OF ANY INADVERTENT RETURNS THAT OCCUR DURING THE HDD INSTALLATION PROCESS.
 - GEOTECHNICAL DATA: BORE HOLES ARE OFFSET FROM THE PIPELINE CENTERLINE AS SHOWN ON THE PLAN VIEW. THE GEOTECHNICAL INFORMATION PROVIDED ON THIS DRAWING IS A GENERAL SUMMARY. REFER TO THE APPLICABLE GEOTECHNICAL REPORT IN THE CONTRACT DOCUMENTS FOR MORE DETAILED INFORMATION.
 - GROUND SURFACE SURVEY AND UTILITIES SHOWN ON THE DRAWING ARE BASED ON SURVEY DATA PROVIDED BY HARMSEN & ASSOCIATES, INC. GROUND SURFACE DEM DATA WAS TAKEN FROM USGS, DATED 2006. AERIAL IMAGE TAKEN FROM GOOGLE EARTH PRO @ 2017. LICENSED TO GEOENGINEERS, INC., IMAGE DATED 07/24/17. WETLAND BOUNDARIES WERE PROVIDED BY THE NATIONAL WETLANDS INVENTORY, DATED 12/16/2015.
 - A MINIMUM 12-FOOT LONG SECTION OF THE EXISTING WATER LINE, NEAR THE PROPOSED ENTRY, SHALL BE BYPASSED AND REMOVED TO INITIATING HDD OPERATIONS.

- BASIS OF DESIGN:
- CASING PIPE WILL CONSIST OF 25.80" O.D. X 1.43" WT. DR 18 FUSIBLE C-905 PVC PIPE.
 - THE MINIMUM ALLOWABLE THREE JOINT RADIUS SHALL NOT BE LESS THAN 800 FEET.

FINAL

REFERENCES		REVISIONS					
DRAWING NUMBER	REFERENCE DRAWING TITLE	NO.	DESCRIPTION	BY	DATE	CHK'D	APP'D
GEO_17-204	TOPO CIVIL 3D						

JAH	05/15/18
Design	Date
RBM	05/20/18
Drawn	Date
BCR	07/31/18
Checked	Date
SWC	07/31/18
Approved	Date

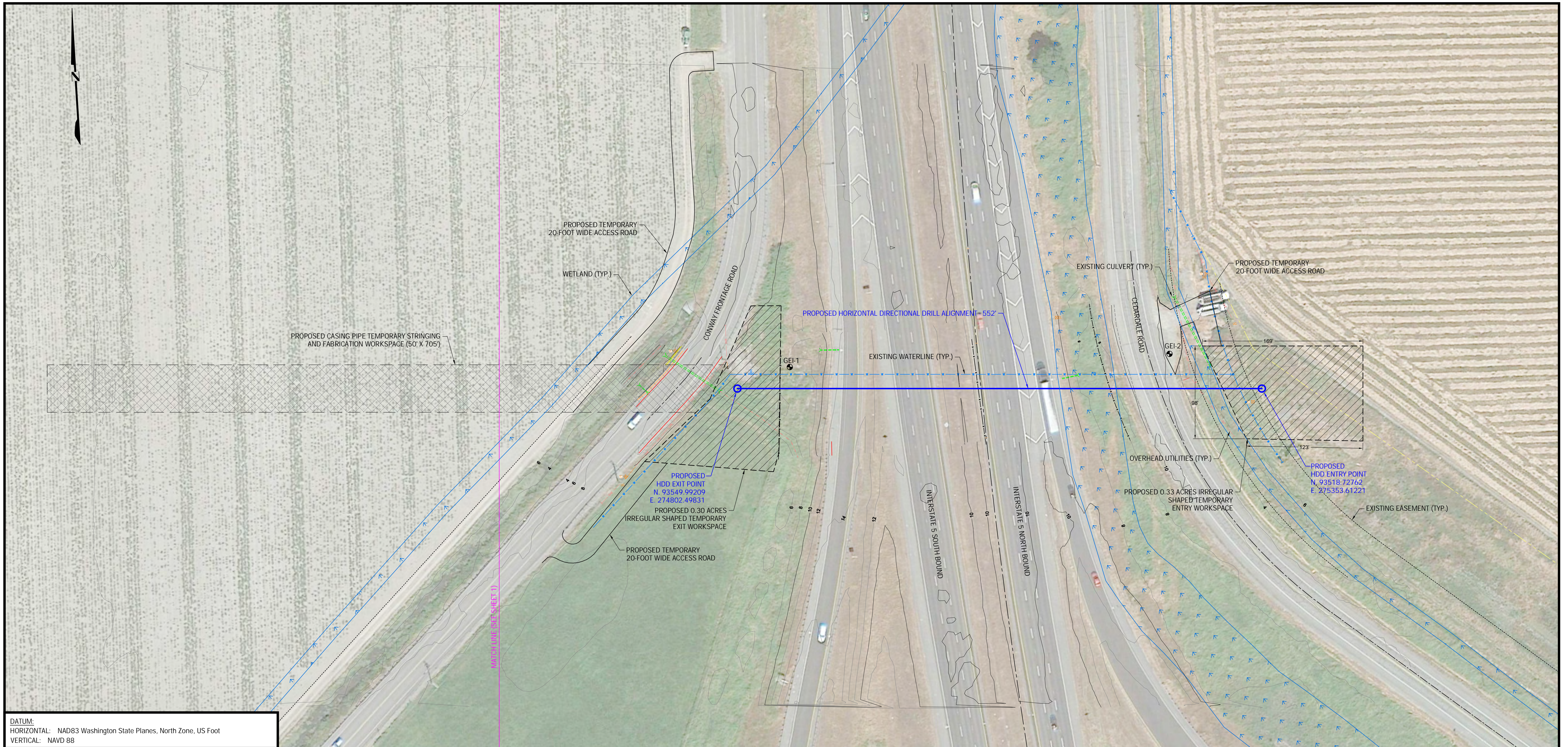
GEOENGINEERS

600 Dupont St.
 Bellingham, Washington 98225
 Telephone (360) 647-1510
 Fax (360) 647-5044

**CONWAY I-5 CROSSING PROJECT
 SITE PLAN AND PROFILE**

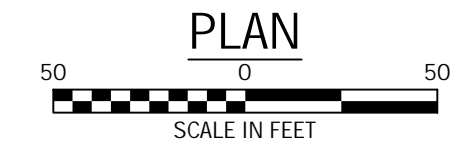
**INTERSTATE 5 HDD
 SKAGIT COUNTY, WASHINGTON**

Project No.	02402-033-00
Drawing No.	
Sheet	1 of 2



DATUM:
 HORIZONTAL: NAD83 Washington State Planes, North Zone, US Foot
 VERTICAL: NAVD 88

NOTE: THIS IS A FULL SIZE DRAWING THAT IS INTENDED TO BE PRINTED ON A 24" X 36" SHEET OF PAPER.



- NOTES:
- ALL EQUIPMENT MUST ACCESS THE SITE ALONG THE CONSTRUCTION RIGHT-OF-WAY OR FROM APPROVED ACCESS ROADS.
 - GROUND SURFACE SURVEY AND UTILITIES SHOWN ON THE DRAWING ARE BASED ON SURVEY DATA PROVIDED BY HARMSEN & ASSOCIATES, INC. GROUND SURFACE DEM DATA WAS TAKEN FROM USGS, DATED 2006. AERIAL IMAGE TAKEN FROM GOOGLE EARTH PRO @ 2017, LICENSED TO GEOENGINEERS, INC., IMAGE DATED 07/24/17. WETLAND BOUNDARIES WERE PROVIDED BY THE NATIONAL WETLANDS INVENTORY, DATED 12/16/2015.

FINAL

LEGEND	
	BORING LOCATION
	MAJOR CONTOUR - 10' INTERVAL
	MINOR CONTOUR - 2' INTERVAL

REFERENCES		REVISIONS					
DRAWING NUMBER	REFERENCE DRAWING TITLE	NO.	DESCRIPTION	BY	DATE	CHK'D	APP'D
GEO_17-204	TOPO CIVIL 3D						

JAH	05/15/18
Design	Date
RBM	05/20/18
Drawn	Date
BCR	07/31/18
Checked	Date
---	07/31/17
Approved	Date

GEOENGINEERS

600 Dupont St.
 Bellingham, Washington 98225
 Telephone (360) 647-1510
 Fax (360) 647-5044

CONWAY I-5 CROSSING PROJECT
 PROPOSED WORKSPACES

INTERSTATE 5 HDD
 SKAGIT COUNTY, WASHINGTON

Project No.	02402-033-00
Drawing No.	
Sheet	2 of 2

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APPENDIX C
Report Limitations and Guidelines for Use

APPENDIX C REPORT LIMITATIONS AND GUIDELINES FOR USE¹

This appendix provides information to help you manage your risks with respect to the use of this report.

Geotechnical and Environmental Services Are Performed for Specific Purposes, Persons and Projects

This report has been prepared for the exclusive use of Public Utility District No. 1 of Skagit County and their authorized agents. This report is not intended for use by others, and the information contained herein is not applicable to other sites.

GeoEngineers structures our services to meet the specific needs of our clients. For example, a geotechnical or geologic study conducted for a civil engineer or architect may not fulfill the needs of a construction contractor or even another civil engineer or architect that are involved in the same project. Similarly, an environmental assessment study conducted for a property owner may not fulfill the needs of a prospective purchaser of the same property. Because each study is unique, each report is unique, prepared solely for the specific client and project site. Our report is prepared for the exclusive use of our Client. No other party may rely on the product of our services unless we agree in advance to such reliance in writing. This is to provide our firm with reasonable protection against open-ended liability claims by third parties with whom there would otherwise be no contractual limits to their actions. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and generally accepted geotechnical practices in this area at the time this report was prepared. This report should not be applied for any purpose or project except the one originally contemplated.

A Geotechnical Engineering or Environmental Report Is Based on a Unique Set of Project-Specific Factors

This report has been prepared for the proposed Conway I-5 Trenchless Waterline Crossing located in Skagit County, Washington. GeoEngineers considered a number of unique, project-specific factors when establishing the scope of services for this project and report. Unless GeoEngineers specifically indicates otherwise, do not rely on this report if it was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

¹ Developed based on material provided by ASFE/The Best People on Earth, Professional Firms Practicing in the Geosciences; www.asfe.org.

For example, changes that can affect the applicability of this report include those that affect:

- the function of the proposed structure;
- elevation, configuration, location, orientation or weight of the proposed structure;
- composition of the design team; or
- project ownership.

If important changes are made after the date of this report, GeoEngineers should be given the opportunity to review our interpretations and recommendations and provide written modifications or confirmation, as appropriate.

Subsurface Conditions Can Change

This report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time, by manmade events such as construction on or adjacent to the site, by new releases of hazardous substances, or by natural events such as floods, earthquakes, slope instability or groundwater fluctuations. Always contact GeoEngineers before applying a report to determine if it remains applicable.

Most Geotechnical and Environmental Findings Are Professional Opinions

Our interpretations of subsurface conditions are based on field observations and laboratory test results from widely spaced sampling locations at the site. Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. GeoEngineers reviewed field and laboratory data and then applied our professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in this report. Our report, conclusions and interpretations should not be construed as a warranty of the subsurface conditions.

Geotechnical Engineering Report Recommendations Are Not Final

Do not over-rely on the preliminary construction recommendations included in this report. These recommendations are not final, because they were developed principally from GeoEngineers' professional judgment and opinion. GeoEngineers' recommendations can be finalized only by observing actual subsurface conditions revealed during construction. GeoEngineers cannot assume responsibility or liability for this report's recommendations if we do not perform construction observation.

Sufficient monitoring and consultation by GeoEngineers should be provided during construction to confirm that the conditions encountered are consistent with those indicated by the explorations, to provide recommendations for design changes should the conditions revealed during the work differ from those anticipated, and to evaluate whether or not construction activities are completed in accordance with our recommendations. Retaining GeoEngineers for construction observation for this project is the most effective method of managing the risks associated with unanticipated conditions.

A Geotechnical Engineering or Geologic Report Could Be Subject to Misinterpretation

Misinterpretation of this report by other design team members can result in costly problems. You could lower that risk by having GeoEngineers confer with appropriate members of the design team after submitting the report. Also, retain GeoEngineers to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering or geologic report. Reduce that risk by having GeoEngineers participate in pre-bid and preconstruction conferences, and by providing construction observation.

Do Not Redraw the Exploration Logs

Geotechnical engineers and geologists prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering or geologic report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognize that separating logs from the report can elevate risk.

Give Contractors a Complete Report and Guidance

Some owners and design professionals believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering or geologic report, but preface it with a clearly written letter of transmittal. In that letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with GeoEngineers and/or to conduct additional study to obtain the specific types of information they need or prefer. A pre-bid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might an owner be in a position to give contractors the best information available, while requiring them to at least share the financial responsibilities stemming from unanticipated conditions. Further, a contingency for unanticipated conditions should be included in your project budget and schedule.

Contractors Are Responsible for Site Safety on Their Own Construction Projects

Our geotechnical recommendations are not intended to direct the contractor's procedures, methods, schedule or management of the work site. The contractor is solely responsible for job site safety and for managing construction operations to minimize risks to on-site personnel and to adjacent properties.

Read These Provisions Closely

Some clients, design professionals and contractors may not recognize that the geoscience practices (geotechnical engineering or geology) are far less exact than other engineering and natural science disciplines. This lack of understanding can create unrealistic expectations that could lead to disappointments, claims and disputes. GeoEngineers includes these explanatory "limitations" provisions in our reports to help reduce such risks. Please confer with GeoEngineers if you are unclear how these "Report Limitations and Guidelines for Use" apply to your project or site.

APPENDIX B
Project Permits



Right-of-Way/Utility Permit Application

Skagit County Public Works
 1800 Continental Place
 Mount Vernon, WA 98273
 Phone: 360 416-1400
 www.skagitcounty.net
 pw@co.skagit.wa.us

Internal Use Only	
Permit Number	PW18-0339
Road Number	80070 / 70550
Mile Post	2.781 / 2.748
Road District	2

Subject to all the terms, conditions, and provisions written or printed below or on any part of this form.

Permission is hereby granted to: (Issued in the name of the utility owner)

Name:	Public Utility District No. 1 of Skagit County c/o Wendy LaRocque		
Address:	PO Box 1436	City:	Mount Vernon
State:	WA	Zip:	98273
Contractor	TBD	Phone:	360-848-4451
Email:	larocque@skagitpud.org		
		Contr Lic #	

Proposed start: February 2019 **Finish:** May 2019
Project location: Skagit County just north of the SR 534 / I-5 Interchange (Conway)

Project Description: (attach construction plans) *Conway Frontage Rd / Cedarvale Rd -*

Public Utility District No. 1 of Skagit County (District) is proposing to install approximately 500 linear feet (LF) of 12-inch water pipeline in a 24-inch casing via a trenchless boring technique. This waterline will replace the 6-inch waterline located 10' north. A 4-inch PVC fiber optic conduit will also be installed within the new casing.

Contractor's COI required prior to any work in ROW Class B

No work shall be done under this permit until the party or parties to whom it is granted shall have communicated with and received instructions from the Skagit County Road Engineer or his representative.

Approved By:  **Date Issued:** 1-8-19

Permit expires 90 days from date of issuance.
Please be sure to read and sign the following pages of this application.

FINAL INSPECTION REQUIRED 24 HOURS MINIMUM NOTICE

Inspected by:			
Date:		Final:	
Comments:	Casing and water pipeline will be assembled in field west of Conway Frontage Rd. Contractor will then close road to pull assembly over road through bore under I-5. <i>& Cedarvale Rd</i>		

GENERAL PROVISIONS APPLICABLE TO ALL WORK WITHIN COUNTY RIGHT-OF-WAY

Insurance

The Applicant shall furnish and maintain all insurance as required herein and comply with all limits, terms and conditions stipulated therein, at their expense, for the duration of the contract. Following is a list of requirements for this contract. Any exclusion that may restrict required coverage must be pre-approved by the County. The Permit shall not be effective until evidence of all required insurance and bonding is provided to the County. The Applicant's insurer shall have a minimum A.M. Best's rating of A-VII and shall be licensed to do business in the State of Washington. Evidence of such insurance shall consist of a completed copy of the Certificate of Insurance, signed by the insurance agent for the Applicant and returned to the County Department with whom the Permit is executed. The insurance policy or policies will not be cancelled, materially changed or altered without forty-five (45) day prior notice submitted to the department with whom the Permit is executed. The policy shall be endorsed and the certificate shall reflect that the County is an additional named insured on the Applicant's general liability policy with respect to activities under the Permit. The policy shall provide and the certificate shall reflect that the insurance afforded applies separately to each insured against whom claim is made or suit is brought except with respect to the limits of the company's liability.

The policy shall be endorsed and the certificate shall reflect that the insurance afforded therein shall be primary insurance and any insurance or self-insurance carried by the County shall be in excess and not contributory insurance to that provided by the Applicant.

The Applicant shall not commence work, nor shall the Applicant allow any subcontractor to commence work on any subcontract until a Certificate of Insurance, meeting the requirements set forth herein, has been approved by the County and filed with the department with whom the Permit is executed. Upon request, the Applicant shall forward to the County the original policy, or endorsement obtained, to the Applicant's policy currently in force.

Failure of the Applicant to fully comply with the insurance requirements set forth herein, during the term of the Permit, shall be considered a material breach of contract and cause for immediate termination of the Permit at the County's discretion.

Providing coverage in the amounts listed shall not be construed to relieve the Applicant from liability in excess of such amounts.

REQUIRED COVERAGE: The insurance shall provide the minimum coverage as set forth below:

1. GENERAL LIABILITY INSURANCE: The Applicant shall have Commercial General Liability with limits of \$1,000,000.00 per occurrence, which includes general aggregate, products, completed operation, personal injury, fire damage and medical expense.

2. ADDITIONAL INSURED ENDORSEMENT: General Liability Insurance must state that Skagit County, its officers, agents and employees, and any other entity specifically required by the provisions of this Agreement will be specifically named additional insured(s) for all coverage provided by this policy or insurance and shall be fully and completely protected by this policy from all claims. Language such as the following should be used, "Skagit County, its Officers, Agents and Employees are named Additional Insured."

The Applicant shall defend, indemnify and hold the County, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with activities or operations performed by the Applicant or on the Applicant's behalf out of issuance of this Permit, except for injuries and damages caused by the sole negligence of the County.

GENERAL PROVISIONS APPLICABLE TO ALL WORK WITHIN COUNTY RIGHT-OF-WAY

The construction of all public and private roads in Skagit County shall comply with the most recent version of the Skagit County Public Works Standards adopted by the Board of Skagit County Commissioners. See, **SCC 14.36.010**

No person shall be permitted to build or construct any approach to any county road without first obtaining permission therefor from the Board [of Skagit County Commissioners]. See, **RCW 36.75.130**

A bond in the amount of \$ (120% of the actual contract amount) is required for the protection of Skagit County asset forth in the terms of the bond.

All work shall comply with Skagit County Utility Policy and Road Standards. Available online at <http://www.skagitcounty.net/Departments/PublicWorksDevelopmentReview/main.htm>

All work shall comply with Washington State Department of Transportation Standard Specifications for Road, Bridge and Municipal Construction. <http://www.wsdot.wa.gov/Publications/Manuals/M41-10.htm>

The Applicant shall defend, indemnify and hold the County, its officers, officials, employees and volunteers harmless from any and all claims, injuries, damages, losses or suits including attorney fees, arising out of or in connection with activities or operations performed by the Applicant or on the Applicant's behalf out of issuance of this Permit, except for injuries and damages caused by the sole negligence of the County.

The undersigned hereby accept this permit subject to the terms and conditions as herein set forth.

Signature of applicant: Wendy LaRocque

Print name:	Wendy LaRocque	Date:	12/26/2018
Title of Applicant:	Environmental Compliance Coordinator		

Please complete roadside safety section:

ROADSIDE HAZARDS

- This installed utility meets Skagit County Control Zone Guidelines.
- This installed utility does not meet Skagit County Control Zone Guidelines and the completed Control Zone Variance Request form is attached.

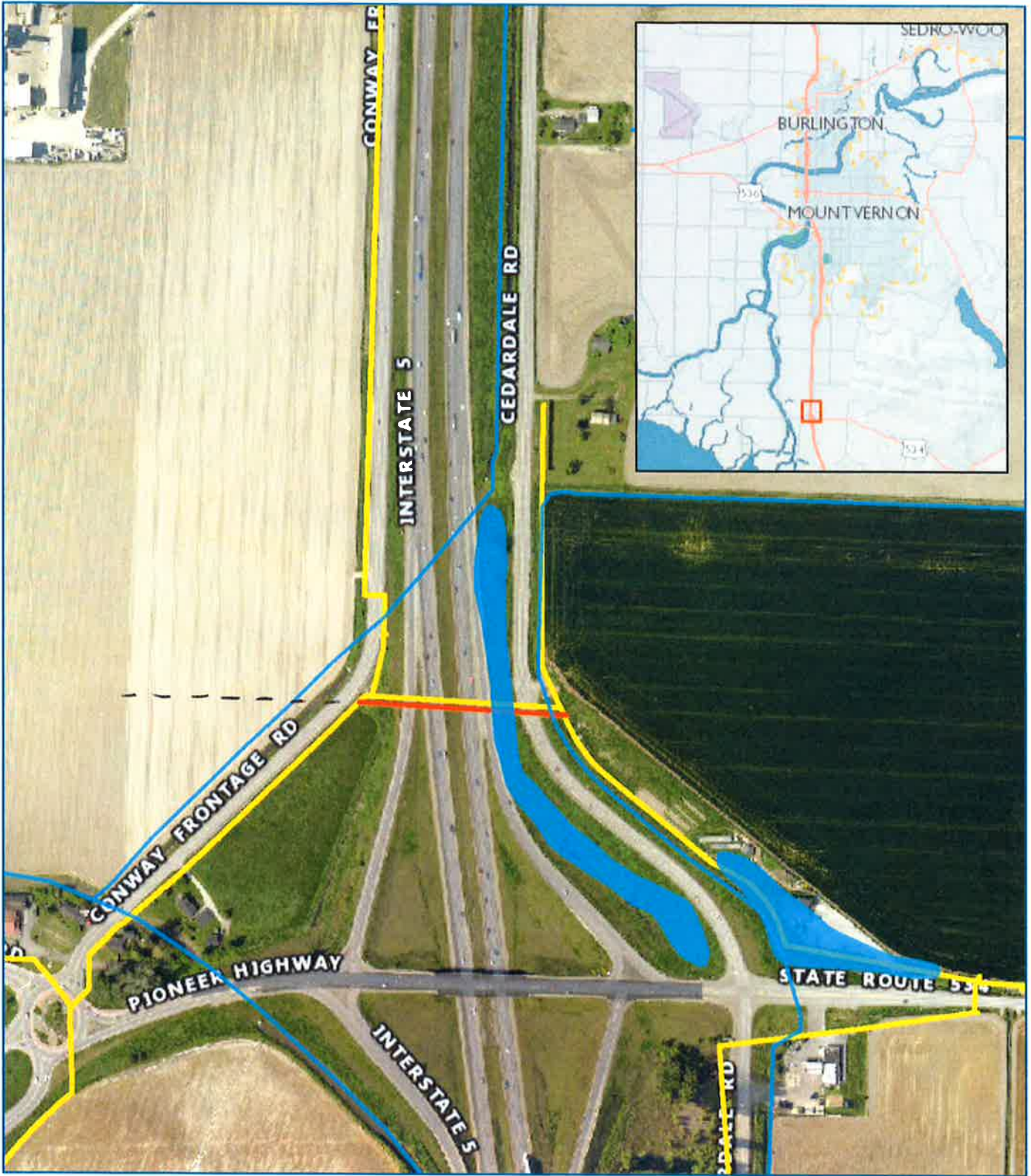
TRAFFIC CONTROL PLAN

- This work will not impede traffic, there will be no equipment, workers, or hazards in or near the traveled way.
- This work will affect traffic, a complete traffic control plan is attached with this application.

Traffic control plan information:

http://www.wsdot.wa.gov/NR/rdonlyres/7C537BEC-B174-4E13-8C26-B33B6BADADD8/0/WZSB_Traffic_Control_Plans.pdf

Document Path: I:\Project\Mapa1\Cart\Mapa1\Analysis\Features\Conway_5_Interchange_Hydro_Wetlands.mxd



Conway I-5 Interchange Streams and Wetlands



0 125 250 500 Feet
NAD 1983 StatePlane Washington North FIPS 4601 Feet
Author: Wilson
2/22/2018

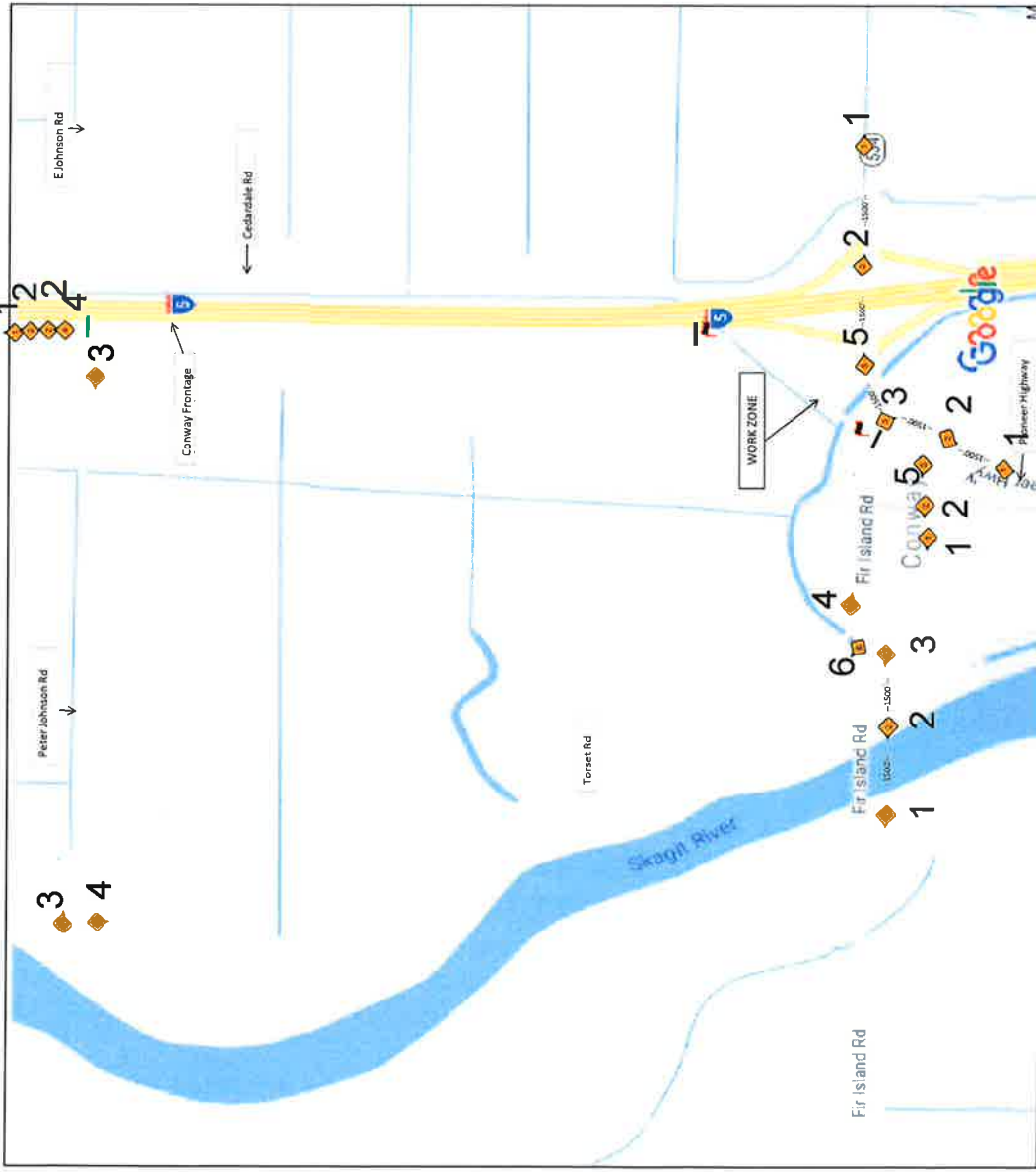
- WADNR Streams
- USFWS Wetlands
- Line Replacement
- Existing Mains

This map was created from available public records and existing map sources, not from field surveys. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. The relative positioning of map features to one another results from combining different map sources without field verification.

The PUD #1 of Skagit County disclaims any warranty of merchantability or warranty of fitness of this map for any particular purpose, either expressed or implied. No representation or warranty is made concerning the accuracy, currency, completeness or quality of data depicted on this map. Any user of this map assumes responsibility for use thereof, and further agrees to hold the PUD #1 of Skagit County harmless from any damage, loss, or liability arising from the use of this map.



TC PLAN FOR SMOGHT COUNTY PUD - CONWAY I-5 CROSSING, DETOUR- CONWAY FRONTAGE
DATE AND TIME: TBD



SIGN LEGEND	
1	Conway Frontage Road Closed Ahead
2	W26-3 MOD
3	W26-2
4	Detour Ahead
5	Detour Left
6	Detour Right
7	Detour Straight
8	Detour U/R
9	Flagger
10	Type III Barricade with RCTTT Sign
11	Type III Barricade with Road Closed Sign
12	R11-4
13	R11-2

CHANNELIZING DEVICE SPACING			
POSTED SPEED (MPH)	IN TAPER (FEET)	IN TANGENT (FEET)	
25	70	60	
35	105	90	
45	140	120	
55	175	150	
65	210	180	
75	245	210	
85	280	240	
95	315	270	
105	350	300	


LEGEND	
▲	FLAGGING STATION
■	SIGN LOCATION
■	CHANNELIZING DEVICES
→	SEQUENTIAL ARROW SIGN
⊞	PROTECTIVE VEHICLE ~ RECOMMENDED

MINIMUM TAPER LENGTH = L (FEET)	
LANE WIDTH (FEET)	POSTED SPEED (MPH)
10	25 30 35 40 45 50 55 60 65 70
11	105 150 200 270 450 500 550 - -
12	115 145 225 294 495 500 605 660 - -
13	125 180 245 320 540 600 660 720 780 840

SIGN SPACING = X(D)	
POSTED SPEED (MPH)	MINIMUM SIGN SPACING (FEET)
25	100
35	150
45	200
55	250
65	300
75	350
85	400
95	450
105	500

CONFORMANCE TABLE	
CONFORMANCE TABLE	CONFORMANCE TABLE
CONFORMANCE TABLE	CONFORMANCE TABLE
CONFORMANCE TABLE	CONFORMANCE TABLE

NOTES:
The drilling contractor will assemble a casing and water pipeline in the field west of the Conway Frontage Road. After the horizontal bore under the freeway has been completed, the contractor will pull the casing and water pipeline across the Conway Frontage Road. Therefore, the Conway Frontage Road will be closed for approximately 12 hours or less. This work will be performed at night.
Flaggers will be on-site to open protect closure and open the road back up when work is complete.
All Traffic Control Devices will be 48" X 48" Fluorescent and meet MUTCD requirements.


 Dated: 08/2018 REV1
 Prepared by: J. J. J. J.
 Phone: 360 733 2860
 Fax: 360 733 2860
 E-mail: jna@safety-signs.com



December 27, 2018

Legend

-  County Boundary
-  City Names
-  Road Labels
-  Hydro Labels
-  Regional Labels

1:1,128








Data Accuracy Warning: All GIS data was created from available public records and existing map sources. Map features have been adjusted to achieve a best-fit registration. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. Map discrepancies can be as great as 300 feet.

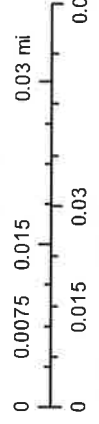


December 27, 2018

Legend

-  County Boundary
-  Hydro Labels
-  City Names
-  Regional Labels
-  Road Labels

1:1,128



Data Accuracy Warning: All GIS data was created from available public records and existing map sources. Map features have been adjusted to achieve a best-fit registration. While great care was taken in this process, maps from different sources rarely agree as to the precise location of geographic features. Map discrepancies can be as great as 300 feet.



HYDRAULIC PROJECT APPROVAL

Washington Department of
Fish & Wildlife
PO Box 43234
Olympia, WA 98504-3234
(360) 902-2200

Issued Date: August 22, 2018
Project End Date: April 19, 2023

Permit Number: 2018-4-610+01
FPA/Public Notice Number: N/A
Application ID: 14069

PERMITTEE	AUTHORIZED AGENT OR CONTRACTOR
Public Utility District No. 1 of Skagit County ATTENTION: Mark Handzlik PO Box 1436 Mount Vernon, WA 98273	Public Utility District No. 1 of Skagit County ATTENTION: Wendy LaRocque 1415 Freeway Dr, PO Box 1436 Mount Vernon, WA 98273-2429

Project Name: Conway I-5 Crossing

Project Description: Public Utility District No. 1 of Skagit County (District) is proposing to install approximately 500 linear feet (LF) of 12-inch water pipeline in a 24-inch casing via a trenchless boring technique (horizontal direction drilling or horizontal auger boring). This waterline will replace the 6-inch waterline located 10' north. A 4-inch PVC fiber optic conduit will also be installed within the new casing. If horizontal directional drilling (HDD) method is chosen, the bore path will include a non-fish bearing stream / ditch.

PROVISIONS

- 1. TIMING LIMITATIONS:** The project may begin immediately, and shall be completed by April 19, 2023. Do not work during heavy precipitation events or muddy conditions.
2. Work shall be accomplished per plans and specifications approved by the Washington Department of Fish and Wildlife entitled Standard Application, and dated March 27, 2018, and revised plans sent August 21, 2018 by Wendy LaRocque, except as modified by this Hydraulic Project Approval. A copy of these plans shall be available on site during construction.
- 3. INVASIVE SPECIES CONTROL:** Follow Level 1 Decontamination protocol for low risk locations. Thoroughly remove visible dirt and organic debris from all equipment and gear (including drive mechanisms, wheels, tires, tracks, buckets and undercarriage) before arriving and leaving the job site to prevent the transport and introduction of invasive species. Properly dispose of any water and chemicals used to clean gear and equipment. For contaminated or high risk sites please refer to the Level 2 Decontamination protocol. You can find this and additional information in the Washington Department of Fish and Wildlife's "Invasive Species Management Protocols", available online at <http://wdfw.wa.gov/publications/search.php?Cat=Aquatic Invasive Species>.
- 4. FISH KILL/ WATER QUALITY PROBLEM NOTIFICATION:** If a fish kill occurs or fish are observed in distress at the job site, immediately stop all activities causing harm. Immediately notify the Washington Department of Fish and Wildlife of the problem. If the likely cause of the fish kill or fish distress is related to water quality, also notify the Washington Military Department Emergency Management Division at 1-800-258-5990. Activities related to the fish kill or fish distress must not resume until the Washington Department of Fish and Wildlife gives approval. The Washington Department of Fish and Wildlife may require additional measures to mitigate impacts.
5. Stop all hydraulic project activities except those needed to control erosion and siltation, if flow or precipitation conditions arise that will result in erosion or siltation of waters of the state.
6. Establish staging areas (used for equipment storage, vehicle storage, fueling, servicing, and hazardous material



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storage) in a location and manner that will prevent contaminants such as petroleum products, hydraulic fluid, fresh concrete, sediments, sediment-laden water, chemicals, or any other toxic or harmful materials from entering waters of the state.

6. Design and locate new temporary access roads to prevent erosion and sediment delivery to waters of the state.
7. If it is absolutely necessary to work when wet or muddy conditions exist in or near a riparian zone or wetland area, use equipment that reduces ground pressure.
8. Check equipment daily for leaks and complete any required repairs in an upland location before using the equipment in or near the water.
9. Conduit alignment shall be as nearly perpendicular to the stream as possible.
10. Avoid areas of groundwater upwelling or locations within one hundred feet upstream of documented fish spawning areas.
11. The conduit shall be installed at sufficient depth, a minimum of 10 feet, so that subsequent disturbance of the streambed is avoided. Design the drill path to an appropriate depth below the watercourse to minimize the risk of frac-out, and to a depth to prevent exposure of the line from natural scouring of the stream bed.
12. Locate the drill entry and exit points away from the banks of the watercourse to minimize impact on these areas. This provision differs from the diagram submitted with the application, which will need to be updated for the contract.
13. Isolate pits from surface water flow to prevent bore hole collapse. Before discharging wastewater to state waters, route wastewater from project activities and dewatering to an area outside the watercourse to allow removal of fine sediment and other contaminants.
14. The streambed shall not be disturbed. If the streambed collapses and flow enters the boring area, work activities shall cease and the Area Habitat Biologist listed below shall be contacted immediately for additional approval to restore the streambed and finish the project.

DEMOBILIZATION

15. Protect all disturbed areas from erosion. Maintain erosion and sediment control until all work and cleanup of the job site is complete
16. All erosion control materials that will remain onsite must be composed of 100% biodegradable materials.
17. Before the end of the in-water work period, abandon temporary roads in wet or flood-prone areas.
18. Straw used for erosion and sediment control, must be certified free of noxious weeds and their seeds.
19. Upon completion of the project, restore the disturbed bed, banks, and riparian zone to preproject condition to the extent possible.
20. Seed areas disturbed by construction activities with a native seed mix suitable for the site that has at least one quick-establishing plant species. Monitor for three years, and maintain plants as needed.
21. Complete replanting of vegetation in disturbed areas during the first dormant season (late fall through late winter) after project completion. Maintain plantings for at least three years to ensure at least eighty percent of the plantings



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survive.

22. Upon project completion, remove all materials and equipment from the site, and deposit waste material from the project, such as construction debris, silt, excess dirt, or overburden, in an upland area above the limits of anticipated floodwater.

23. Deposit all trash from the project at an appropriate upland disposal location.

24. Remove temporary erosion and sediment control methods after job site is stabilized or within three months of project completion, whichever is sooner.

LOCATION #1:	Site Name: Conway I-5 , Mount Vernon, WA 98274					
WORK START:	August 1, 2018			WORK END:	April 19, 2023	
<u>WRIA</u>	<u>Waterbody:</u>			<u>Tributary to:</u>		
03 - Skagit Lower - Samish	Maddox Creek			Unnamed		
<u>1/4 SEC:</u>	<u>Section:</u>	<u>Township:</u>	<u>Range:</u>	<u>Latitude:</u>	<u>Longitude:</u>	<u>County:</u>
	17	33 N	04 E	48.344	-122.335	Skagit
<u>Location #1 Driving Directions</u>						

APPLY TO ALL HYDRAULIC PROJECT APPROVALS

This Hydraulic Project Approval pertains only to those requirements of the Washington State Hydraulic Code, specifically Chapter 77.55 RCW. Additional authorization from other public agencies may be necessary for this project. The person(s) to whom this Hydraulic Project Approval is issued is responsible for applying for and obtaining any additional authorization from other public agencies (local, state and/or federal) that may be necessary for this project.

This Hydraulic Project Approval shall be available on the job site at all times and all its provisions followed by the person (s) to whom this Hydraulic Project Approval is issued and operator(s) performing the work.

This Hydraulic Project Approval does not authorize trespass.

The person(s) to whom this Hydraulic Project Approval is issued and operator(s) performing the work may be held liable for any loss or damage to fish life or fish habitat that results from failure to comply with the provisions of this Hydraulic Project Approval.



HYDRAULIC PROJECT APPROVAL

Washington Department of
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PO Box 43234
Olympia, WA 98504-3234
(360) 902-2200

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FPA/Public Notice Number: N/A
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Failure to comply with the provisions of this Hydraulic Project Approval could result in a civil penalty of up to one hundred dollars per day and/or a gross misdemeanor charge, possibly punishable by fine and/or imprisonment.

All Hydraulic Project Approvals issued under RCW 77.55.021 are subject to additional restrictions, conditions, or revocation if the Department of Fish and Wildlife determines that changed conditions require such action. The person(s) to whom this Hydraulic Project Approval is issued has the right to appeal those decisions. Procedures for filing appeals are listed below.

MINOR MODIFICATIONS TO THIS HPA: You may request approval of minor modifications to the required work timing or to the plans and specifications approved in this HPA unless this is a General HPA. If this is a General HPA you must use the Major Modification process described below. Any approved minor modification will require issuance of a letter documenting the approval. A minor modification to the required work timing means any change to the work start or end dates of the current work season to enable project or work phase completion. Minor modifications will be approved only if spawning or incubating fish are not present within the vicinity of the project. You may request subsequent minor modifications to the required work timing. A minor modification of the plans and specifications means any changes in the materials, characteristics or construction of your project that does not alter the project's impact to fish life or habitat and does not require a change in the provisions of the HPA to mitigate the impacts of the modification. If you originally applied for your HPA through the online Aquatic Protection Permitting System (APPS), you may request a minor modification through APPS. A link to APPS is at <http://wdfw.wa.gov/licensing/hpa/>. If you did not use APPS you must submit a written request that clearly indicates you are seeking a minor modification to an existing HPA. Written requests must include the name of the applicant, the name of the authorized agent if one is acting for the applicant, the APP ID number of the HPA, the date issued, the permitting biologist, the requested changes to the HPA, the reason for the requested change, the date of the request, and the requestor's signature. Send by mail to: Washington Department of Fish and Wildlife, PO Box 43234, Olympia, Washington 98504-3234, or by email to HPAapplications@dfw.wa.gov. You should allow up to 45 days for the department to process your request.

MAJOR MODIFICATIONS TO THIS HPA: You may request approval of major modifications to any aspect of your HPA. Any approved change other than a minor modification to your HPA will require issuance of a new HPA. If you originally applied for your HPA through the online Aquatic Protection Permitting System (APPS), you may request a major modification through APPS. A link to APPS is at <http://wdfw.wa.gov/licensing/hpa/>. If you did not use APPS you must submit a written request that clearly indicates you are requesting a major modification to an existing HPA. Written requests must include the name of the applicant, the name of the authorized agent if one is acting for the applicant, the APP ID number of the HPA, the date issued, the permitting biologist, the requested changes to the HPA, the reason for the requested change, the date of the request, and the requestor's signature. Send your written request by mail to: Washington Department of Fish and Wildlife, PO Box 43234, Olympia, Washington 98504-3234. You may email your request for a major modification to HPAapplications@dfw.wa.gov. You should allow up to 45 days for the department to process your request.

APPEALS INFORMATION



HYDRAULIC PROJECT APPROVAL

Washington Department of
Fish & Wildlife
PO Box 43234
Olympia, WA 98504-3234
(360) 902-2200

Issued Date: August 22, 2018
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Permit Number: 2018-4-610+01
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Application ID: 14069

If you wish to appeal the issuance, denial, conditioning, or modification of a Hydraulic Project Approval (HPA), Washington Department of Fish and Wildlife (WDFW) recommends that you first contact the department employee who issued or denied the HPA to discuss your concerns. Such a discussion may resolve your concerns without the need for further appeal action. If you proceed with an appeal, you may request an informal or formal appeal. WDFW encourages you to take advantage of the informal appeal process before initiating a formal appeal. The informal appeal process includes a review by department management of the HPA or denial and often resolves issues faster and with less legal complexity than the formal appeal process. If the informal appeal process does not resolve your concerns, you may advance your appeal to the formal process. You may contact the HPA Appeals Coordinator at (360) 902-2534 for more information.

A. INFORMAL APPEALS: WAC 220-660-460 is the rule describing how to request an informal appeal of WDFW actions taken under Chapter 77.55 RCW. Please refer to that rule for complete informal appeal procedures. The following information summarizes that rule.

A person who is aggrieved by the issuance, denial, conditioning, or modification of an HPA may request an informal appeal of that action. You must send your request to WDFW by mail to the HPA Appeals Coordinator, Department of Fish and Wildlife, Habitat Program, PO Box 43234, Olympia, Washington 98504-3234; e-mail to HPAapplications@dfw.wa.gov; fax to (360) 902-2946; or hand-delivery to the Natural Resources Building, 1111 Washington St SE, Habitat Program, Fifth floor. WDFW must receive your request within 30 days from the date you receive notice of the decision. If you agree, and you applied for the HPA, resolution of the appeal may be facilitated through an informal conference with the WDFW employee responsible for the decision and a supervisor. If a resolution is not reached through the informal conference, or you are not the person who applied for the HPA, the HPA Appeals Coordinator or designee may conduct an informal hearing or review and recommend a decision to the Director or designee. If you are not satisfied with the results of the informal appeal, you may file a request for a formal appeal.

B. FORMAL APPEALS: WAC 220-660-470 is the rule describing how to request a formal appeal of WDFW actions taken under Chapter 77.55 RCW. Please refer to that rule for complete formal appeal procedures. The following information summarizes that rule.

A person who is aggrieved by the issuance, denial, conditioning, or modification of an HPA may request a formal appeal of that action. You must send your request for a formal appeal to the clerk of the Pollution Control Hearings Boards and serve a copy on WDFW within 30 days from the date you receive notice of the decision. You may serve WDFW by mail to the HPA Appeals Coordinator, Department of Fish and Wildlife, Habitat Program, PO Box 43234, Olympia, Washington 98504-3234; e-mail to HPAapplications@dfw.wa.gov; fax to (360) 902-2946; or hand-delivery to the Natural Resources Building, 1111 Washington St SE, Habitat Program, Fifth floor. The time period for requesting a formal appeal is suspended during consideration of a timely informal appeal. If there has been an informal appeal, you may request a formal appeal within 30 days from the date you receive the Director's or designee's written decision in response to the informal appeal.

C. FAILURE TO APPEAL WITHIN THE REQUIRED TIME PERIODS: If there is no timely request for an appeal, the WDFW action shall be final and unappealable.



HYDRAULIC PROJECT APPROVAL

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Permit Number: 2018-4-610+01
FPA/Public Notice Number: N/A
Application ID: 14069

Habitat Biologist

Wendy.Cole@dfw.wa.gov

A handwritten signature in cursive script that reads "Wendy Cole".

for Director

Wendy Cole

360-466-4345, Ext:272

WDFW



State of Washington
Department of Fish and Wildlife

Mailing Address: PO Box 43234, Olympia, WA 98504-3234, (360) 902-2200, TDD (360) 902-2207
Main Office Location: Natural Resources Building, 1111 Washington Street SE, Olympia, WA

August 24, 2018

Public Utility District No. 1 of Skagit County
Wendy LaRocque
1415 Freeway Dr PO Box 1436
Mount Vernon, WA 98273-2429

Dear Wendy LaRocque:

**SUBJECT: YOUR APPLICATION FOR CONWAY I-5 CROSSING, WDFW APPLICATION
ID: 14069**

On March 27, 2018, Washington Department of Fish and Wildlife (WDFW) first received your application materials for a Hydraulic Project Approval (HPA) for the project referenced above.

Your request for a minor modification of your existing HPA has been approved.
You are authorized to conduct work through April 19, 2023.

The HPA needs to be changed as follows:

Project Description: Public Utility District No. 1 of Skagit County (District) is proposing to install approximately 500 linear feet (LF) of 12-inch water pipeline in a 24-inch casing via a trenchless boring technique (horizontal direction drilling). This waterline will replace the 6-inch waterline located 10' north. A 4-inch PVC fiber optic conduit will also be installed within the new casing. The bore path will include a non-fish bearing stream / ditch.

Provision #12 should read: Locate the drill entry and exit points away from the banks of the watercourse to minimize impact on these areas.

Please attach this letter to your HPA on-site.

If you have any questions, please call me at 360-466-4345 Ext:272.

Sincerely,

Wendy Cole
Habitat Biologist

COPY



**Washington State
Department of Transportation**

Northwest Region/Mount Baker Area
Skagit, Island, San Juan, &
Whatcom Counties
1019 Andis Road
Burlington, WA 98233
360-757-5999
TTY: 1-800-833-6388
www.wsdot.wa.gov

December 20, 2018

Mark Handzlik
Public Utility District No. 1 of Skagit County
PO Box 1436
Mount Vernon, WA 98273

Subject: I-5 MP 221.2 24" waterline crossing
Utility Franchise UF 10322C AM 1

Dear Mr. Handzlik,

Enclosed is your approved Utility Franchise for the connection of a 24 inch waterline crossing on I-5 at MP 221.2. The Utility Franchise UF 10322C AM 1 supersedes Utility Permit UP 20588. The Principal and Surety Bond No. 2019-00-617 herby consent to Utility Franchise UF10322CAM1. Construction of your utility must begin within one calendar year and be completed within three years of the date of approval shown on the application. Please note that the Traffic Control Plan for work within WSDOT right-of-way, Exhibit 'E', was approved as noted on 12/13/18 and is valid for four months from that date. The Traffic Control Plan requires 5-day notice be provided to Ken Seguin at WSDOT's Construction Traffic Coordination Office:

Ken Seguin
Construction Traffic Coordination Office 15700 Dayton Ave. N., NB82-120
P.O. Box 330310
Seattle, WA 98133-9710
206-440-4454
SEGUINK@wsdot.wa.gov

Prior to any construction equipment or personnel entering WSDOT right-of-way, a pre-construction conference is required with WSDOT's inspector, Michael Gallop. The utility shall notify Mike Gallop a minimum of 5 working days in advance:

Mike Gallop
NW Local Agency & Development Services Office
4100 Cedardale Road
Mount Vernon, WA 98274-9599
360-848-7243/206-940-2736
GALLOPM@wsdot.wa.gov

Contact WSDOT NW Region Radio at (206) 440-4490 five minutes prior to start of all traffic closures and again upon reopening to traffic. A copy of the approved Utility Franchise must be on-site.

COPY

Public Utility District No. 1 of Skagit County
UF 10322C AM 1

12/20/18

Please note, WSDOT invoice account number JZ0133 will continue to be charged for personnel time for inspection activities and attendance to the pre-construction conference.

For your convenience, here is the link to the WSDOT's Standard Specifications of Road, Bridge, and Municipal Construction:
<http://<W\\ .wsdot.wa.go/Publications/Manuals/M4 I-I O.htm>

If you have any questions regarding your application, please contact me at 360-757-5944 or JOHANSP@wsdot.wa.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Paul Johansen', followed by a long horizontal line extending to the right.

Paul Johansen
Mt Baker Area Utility Engineer

PJ:pj
Enclosure

cc: Mike Gallop
Gary Claybo
Tom Chi
Maria Mayrhofer
Ken Seguin



Application for Utility Permit or Franchise

Permit/Franchise No. **UF 10322C AM 1**

Applicant - Please print or type all information

Application is Hereby Made For:

<input type="checkbox"/> Permit	<input checked="" type="checkbox"/> Category 1 \$500.00
<input checked="" type="checkbox"/> Franchise	<input type="checkbox"/> Amendment
<input type="checkbox"/> Franchise Renewal \$250.00	<input type="checkbox"/> Category 2 \$300.00
<input type="checkbox"/> Franchise Consolidation \$300.00	<input type="checkbox"/> Category 3 \$150.00

Intended Use of State Right of Way is to Construct, Operate, and Maintain a:
 24"x500' casing for 12" (replacement) PVC water pipeline and 4" PVC fiber optic conduit
 on a portion of
 State Route 5 (at/from) Mile Post 221.2 to Mile Post 221.2 in Skagit County County,
 to begin in the SE 1/4 Section 18 Township 33 North: Range 4E West/East W.M.
 and end in the SW 1/4 Section 17 Township 33 North: Range 4E West/East W.M.

Fees in the amount of \$500.00 are paid to cover the basic administrative expenses incident to the processing of this application according to WAC 468-34 and RCW 47.44 and amendments thereto. The applicant promises to pay any additional costs incurred by the Washington State Department of Transportation (Department) on the behalf of the applicant.

Check or Money Orders are to made payable to "Washington State Department of Transportation"

Public Utility District No. 1 of Skagit County

Applicant (Referred to as Utility)

PO Box 1436

Address

Mount Vernon WA 98273

City State Zip Code

360-424-4451

Telephone

larocque@skagitpud.org

Email

17-03707

Applicant Reference (WO) Number

Applicant Authorized Signature

Mark Handzlik, PE

Print or Type Name

Engineering Manager

Title

Dated this 2 day of March, 2018

91-6001038

Federal Tax ID or Social Security

Authorization to Occupy Only if Approved Below

The Department hereby grants this Permit or Franchise, as applicable, subject to the terms and conditions stated in the General Provisions, and Exhibits attached hereto and by this reference made a part hereof.

For Department Use Only

Exhibits Attached

Exhibit "A" Special Provisions for Permits and Franchises	Pages 1-5
Exhibit "B" Utility Facility Description	Page 1-1
Exhibit "C" Right Of Way Plan	Page 1-1
Exhibit "D" Utility Work Plan	Pages 1-2
Exhibit "E" Traffic Control Plan	Page 1-2
Exhibit "F" Photographs	Page 1-2
Exhibit "G" Pre-Construction Notification	Page 1-1
Exhibit "H" Maintenance Notification	Page 1-1

Department Approval

By: Tom Chi Lead NW Utilities

Engineer For Maria Mayrhofer

Title: NW Region Utilities Manager

Date: 12/19/2018

Expiration Date: 06/28/2024

Department Accounting Reference Number

JZ 0133

In accepting this Franchise Amendment No. 1 to Franchise No. 10322C, Utility agrees that the General Provisions to the original Franchise and any previous Amendments shall be replaced in their entirety with the General Provisions as included with this Amendment. All other terms and conditions shall remain in full force and effect.

COPY



**Washington State
Department of Transportation**

General Provisions for the Utility Accommodation Application

This Permit or Franchise is issued pursuant to the terms of RCW 47.32, RCW 47.44, and WAC 468-34, and amendments thereto. Renewal of a Franchise must be by application prior to expiration of this Franchise as required by RCW 47.44.020(3).

1. A copy of this Permit or Franchise must be on the job site, protected from the elements, at all times during any construction authorized by this Permit or Franchise.
2. The Utility agrees to pay the reasonable costs for investigating, handling, and granting the Permit or Franchise, including, but not limited to basic overhead charges and for providing an inspector during construction and/or maintenance of the Utility's facilities. Further, the Utility agrees that it shall be responsible for and pay the Department's expended direct and indirect costs associated with applicable provisions of the Permit or Franchise. The Department will assign a reimbursable account to the Utility as a means of invoicing the Utility for the costs associated with this Permit or Franchise.
 - (a) The Department will assign a reimbursable account to the Utility as a means of invoicing the Utility for the costs associated with this Permit or Franchise.
 - (b) The Department will invoice the Utility and the Utility agrees to pay the Department within thirty (30) calendar days of receipt of an invoice.
3. Upon approval of this Permit or Franchise, the Utility shall diligently proceed with the Work and comply with all General and Special provisions herein. Construction of facilities proposed under this Permit or Franchise shall begin within one (1) year and must be completed within three (3) years from date of Department approval. "Work" under this Permit or Franchise shall mean construction, operation, and maintenance of the Utility's facilities as authorized herein.
4. The Utility shall notify the Department representative in special provision 1 of the name, address, and telephone number of its contractor when Work outlined herein is going to be performed with other than its own forces. When the Utility uses a contractor, an authorized representative of the Utility shall be present at all times unless otherwise agreed to by the Department representative. A list of authorized representatives shall be submitted prior to the construction start date. (Authorized representatives are defined as persons having signatory authority for the Utility and or the authority to control the Work as needed for any issues identified by the Department.)
5. The Utility agrees to schedule and perform its Work in such a manner as not to delay the Department's contractor's work when the Department has a contractor performing work in the vicinity of the Utility's Work.
6. All contact between the Department and the Utility's contractor shall be through the Utility representative. Where the Utility chooses to perform the Work with its own forces, it may elect to appoint one of its own employees engaged in the Work as its representative. The Utility, at its own expense, shall adequately police and supervise all Work performed by itself, its contractor, subcontractor, agent, and/or others, so as not to endanger or injure any person or property.
7. The Utility shall contact the identified Department representative two (2) weeks prior to conducting Work, to determine the location of survey control monuments within the area in which the Utility will be working. In the event any monument or right of way marker will be altered, damaged, or destroyed by the Utility, the Department, prior to Utility Work, will reference or reset the monument or right of way marker. During the Work, upon discovery of a monument or right of way marker, the Utility shall cease Work in that area and immediately notify the Department of the discovery. The Department will coordinate with the Utility to ensure that the monument or right of way marker is recorded or replaced. The Utility agrees to pay all Department costs to perform monument or right of way marker work, as provided in this provision, in accordance with general provision 2.
8. In the event any milepost, fence, or guardrail is located within the limits of the Utility's Work and will be disturbed during Utility Work, the Utility agrees to carefully remove these highway facilities prior to Utility Work and reset or replace these highway facilities after the Utility Work, to the Department's sole satisfaction and at the sole cost of the Utility. The Utility agrees that all highway signs and traffic control devices shall not be removed or disturbed during Utility Work.

COPY

9. The Utility agrees that all Work shall be done to the satisfaction of the Department. All material and workmanship shall conform to the Department's Standard Specifications for Road, Bridge, and Municipal Construction, current edition, and amendments thereto, and shall be subject to Department inspection. All Department acceptance and inspections are solely for the benefit of the Department and not for the benefit of the Utility, the Utility's contractor (if any), or any third party. The Utility agrees that it shall pay all Department inspection costs in accordance with general provision 2.
10. The Utility shall comply with the Manual on Uniform Traffic Control Devices for Streets and Highways (Federal Highway Administration) and the State of Washington modifications thereto (chapter 468-95 WAC) while it performs the Work. If the Department requires, the Utility shall submit a signing and traffic control plan to the Department's representative for approval prior to construction or maintenance Work. No lane closures shall be allowed except as approved by the Department's representative. Approvals may cause revision of Special Provisions of this Permit or Franchise, including hours of operation.
11. This Permit or Franchise may not be amended or modified without the Department's prior review and approval. Upon completion of the Work, the Utility shall provide a written notice of completion of the Work to the Department's representative within ten (10) calendar days of the completion of the Work so that the Department may make its final inspection. Further, the Utility shall provide the Region Utilities Engineer with detailed as-built drawings within ninety (90) calendar days of Work completion, if the originally approved Permit or Franchise construction plans have been revised during the course of construction.
12. If the Department, at its sole discretion, shall determine that any or all of the Utility's facilities must be modified, removed from, or relocated within the state-owned highway right of way as necessary, incidental, or convenient for the construction, alteration, improvement, repair, relocation, or maintenance of the state highway, or for the safety of the traveling public, the Utility, its successors and assigns, shall, at its sole cost and expense, upon written notice by the Department, modify, relocate, or remove any or all of its facilities within or from the state-owned highway right of way as required by the Department. The Utility shall perform in a timely manner all facility modifications, relocations, and/or removals as the Department directs, to avoid highway project impacts or delays and in such manner as will cause the least disruption of traffic or interference with the Department's continued operation and/or maintenance of the highway.
13. Should the Utility fail or refuse to comply with the Department's direction, pursuant to general provision 12, to modify, remove, or relocate any Utility facility, the Department may undertake and perform any modification, removal, or relocation of the Utility facility that the Department, in its sole discretion, deems necessary. The Utility agrees to pay the Department's expended costs and expenses for performing the work, in accordance with general provision 2.
14. If the Department determines in good faith that emergency maintenance work on the Utility's facility is needed to (a) protect any aspect of the state highway right of way, or (b) secure the safety of the traveling public due to a failure of the Utility's facility, the Department may perform the necessary work without the Utility's prior approval, and the Utility agrees to pay the Department's expended costs and expenses for performing the work in accordance with general provision 2. The Department will notify the Utility of the emergency work performed as soon as practicable.
15. The Department may amend, revoke, or cancel this Permit or Franchise at any time by giving written notice to the Utility. If the Permit or Franchise is amended, the Utility will have thirty (30) calendar days to modify the facility as the Permit or Franchise amendment(s) require. If the facility modifications cannot be made within thirty (30) calendar days, the Utility shall respond to the Department, in writing, as to when the facility modifications can be made. If the Permit or Franchise is revoked or canceled, the Utility shall immediately remove all facilities from the right of way. Any facilities remaining upon the right of way thirty (30) calendar days after written notice of Permit or Franchise revocation or cancellation may be removed by the Department at the expense of the Utility. The Utility agrees to pay the Department's expended costs and expenses for performing the work in accordance with general provision 2.
16. Should the Utility breach any of the conditions and requirements of this Permit or Franchise, or should the Utility fail to proceed with due diligence and in good faith with the Work as authorized by this Permit or Franchise, the Department may cancel or revoke the Permit or Franchise upon thirty (30) calendar days written notice to the Utility.
17. The Utility shall not excavate or place any obstacle within the state-owned highway right of way in such a manner as to interfere with the Department's construction, operation, and maintenance of the state-owned highway right of way or the public's travel thereon without first receiving the Department's written authorization.
18. The Utility agrees to maintain, at its sole expense, its facilities authorized by this Permit or Franchise in a condition satisfactory to the Department.

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19. The Utility agrees that it is financially responsible to the Department for all necessary expenses incurred in inspecting the construction and restoring the highway pavement or related transportation equipment or facilities to a permanent condition suitable for travel as determined by the Department, as well as financially responsible to the Department for trenching work not completed and for compensating the Department for the loss of useful pavement life caused by trenching as required by RCW 47.44.020.
20. Upon completion of all Work, the Utility shall immediately remove all rubbish and debris from the state- owned highway right of way, leaving the state-owned highway right of way in a neat, presentable, and safe condition to the Department's satisfaction. Any Workrelated rubbish and debris clean up, or any necessary slope treatment to restore and/or protect the state-owned right of way, not done within one (1) week of Work completion, unless otherwise negotiated, will be done by the Department at the expense of the Utility. The Utility agrees to pay the Department's expended costs and expenses for performing the work in accordance with general provision 2.
21. For the benefit and safety of the traveling public, the Utility voluntarily agrees to permit the Department to attach and maintain upon any Utility facility under this Permit or Franchise any required traffic control devices, such as traffic signals, luminaires, and overhead suspended signs, when the use of such devices or attachments does not interfere with the use for which the facility was constructed. The Department shall bear the cost of attachment and maintenance of such traffic control devices, including the expended cost of any extra Utility infrastructure construction beyond what is necessary for the Utility's facility; such extra cost to be jointly determined by the Department and the Utility. The Department shall not share in the Utility facilities' cost of installation, operation, or maintenance of any of the facilities installed under this Permit or Franchise
22. The Utility shall comply with the Department's Temporary Erosion and Sediment Control Manual (M 3103.01) and any revisions thereto, for erosion control and/or to mitigate any erosion occurring as a result of the Work. If the Utility Work performed under this Permit alters, modifies, changes, or interferes in any way with the drainage of the state-owned highway right of way, the Utility shall, at its own expense, make all corrections and/or provisions the Department requires to fix and restore the state-owned right of way drainage to its original condition and function prior to the Utility's Work. Any flows from the Utility shall not exceed the flows discharging to WSDOT drainage prior to the new work. Any flows discharged to state- owned highway right of way shall meet the requirements for quantity and water quality according to the current version Highway Runoff Manual (M 31-16). Should the Utility not make the required drainage restoration, the Department reserves the right to make such changes as necessary to restore the original drainage function at the sole cost of the Utility, and the Utility agrees to pay the Department's expended costs and expenses for performing the work in accordance with Stormwater Discharge General Provision 2.
23. The Utility shall be responsible for securing all necessary permits, including but not limited to, federal, state, and local regulatory, tribal, environmental, archeological, and railroad permits and permits from the Washington State Department of Ecology, the Washington State Department of Fish and Wildlife, and/ or the U.S. Army Corps of Engineers prior to beginning the Work authorized by this Permit or Franchise. The Utility shall be responsible for mitigation measures where wetlands have been disturbed and agrees that it is responsible for any fines imposed for noncompliance with the permit(s) conditions or for failure to obtain the required permits. In addition, the Utility, on behalf of itself and its contractors, officers, officials, employees, and agents, agrees to indemnify, hold harmless, and defend, at its sole cost and expense, the Department and its officers, officials, employees, and agents from any and all fines, costs, claims, judgments, and/or awards of damages (to regulatory agencies, persons, and/or property), arising out of, or in any way resulting from, the Utility's failure to (1) obtain any required permit for the Utility Work or (2) comply with permit conditions. Further, the Utility shall be responsible for compliance with all federal, state, and local laws, regulations.
24. For any of the Utility's Work that requires permit coverage under the "CONSTRUCTION STORMWATER GENERAL PERMIT – National Pollutant Discharge Elimination System and State Waste Discharge General Permit for Stormwater Discharges Associated with Construction Activity" (Construction Stormwater General Permit), the Utility shall obtain said permit coverage and shall comply with all requirements of the Construction Stormwater General Permit. Upon the Department's request, the Utility shall provide a copy of the Construction Stormwater General Permit. In addition, the Utility, on behalf of itself and its contractors, officers, officials, employees, and agents, agrees to indemnify, hold harmless, and defend, at its sole cost and expense, the Department and its officers, officials, employees, and agents from any and all fines, costs, claims, judgments, and/or awards of damages (to regulatory agencies, persons, and/or property), arising out of, or in any way resulting from, the Utility's failure to (1) obtain coverage under the Construction Stormwater General Permit for Utility Work or (2) comply with the Construction Stormwater General Permit requirements.

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25. This Permit or Franchise does not authorize the Utility, or its employees, contractors, or agents, any right to cut, spray, retard, remove, destroy, disfigure, or in any way modify the physical condition of any vegetative material located on the state-owned highway right of way. Should the Utility anticipate that its Work will alter the appearance of the state-owned highway right of way vegetation, the Utility shall notify the Department representative listed in special provision 1 to obtain the Department's prior written approval of the Utility's proposed work. If the Department permits the Utility to modify the state-owned highway right of way vegetation, it agrees that any vegetation cutting and/or trimming activities shall be conducted in such a manner that the state-owned highway right of way vegetation appearance will not be damaged. Should the Utility damage the appearance of the state-owned highway right of way vegetation without the Department's prior written approval, the Utility is subject to penalties provided for in RCWs 47.40.070, 47.40.080, and 4.24.630, as applicable.
26. The Utility hereby certifies that its facilities described in this Permit or Franchise are (1) in compliance with the Control Zone Guidelines, or (2) for a franchise consolidation or renewal, a mitigation plan has been submitted and approved for any existing Location I or Location II utility objects to be corrected in accordance with the Control Zone Guidelines, pursuant to Chapter 9 of the Department's Utilities Manual (M 22-87) and any revisions thereto.
27. The Utility shall not assign or transfer this Permit or Franchise without the Department's prior written approval. The Utility understands that any assignment or transfer requires the assignee or transferee to have the means to assume all obligations, duties, and liabilities of the terms and conditions of this Permit or Franchise, and the Utility will advise the assignee or transferee of its obligation to apply for an updated or replacement Permit or Franchise. If the Department does not approve the assignment or transfer, this Permit or Franchise shall automatically terminate, and the facility occupying state-owned highway right of way shall be subject to the terms of RCW 47.44.060.
28. The Utility, its successors and assigns, shall indemnify, defend at its sole cost and expense, and hold harmless the State of Washington, its officers and employees, from all claims, demands, damages (both to persons and/or property), expenses, regulatory fines, and/or suits that (1) arise out of or are incident to any acts or omissions of the Utility, its agents, contractors, and/or employees, in the use of the state-owned highway right of way as authorized by the terms and conditions of this Permit or Franchise, or (2) are caused by the breach of any of the terms or conditions of this Permit or Franchise by the Utility, its successors and assigns, and its contractors, agents, and/or employees. The Utility, its successors and assigns, shall not be required to indemnify, defend, or hold harmless the State of Washington, its officers and/or employees, if the claim, suit, or action for damages (both to persons and/or property) is caused by the acts or omissions of the State of Washington, its officers and/or employees; provided that, if such claims, suits, or actions result from the concurrent negligence of (a) the State of Washington, its officers and/or employees, and (b) the Utility, its agents, contractors, and/or employees, or involves those actions covered by RCW 4.24.115, the indemnity provisions provided herein shall be valid and enforceable only to the extent of the acts or omissions of the Utility, its agents, contractors, and/or employees.
29. The Utility agrees that its obligations under this Permit or Franchise extend to any claim, demand, and/or cause of action brought by, or on behalf of, any of its employees or agents while performing Work under this Permit or Franchise while located on state-owned highway right of way. For this purpose, the Utility, by MUTUAL NEGOTIATION, hereby waives, with respect to the State of Washington only, any immunity that would otherwise be available to it against such claims under the Industrial Insurance provisions in chapter 51.12 RCW.
30. The indemnification and waiver provided for in general provisions 28 and 29 shall survive the termination of this Permit or Franchise.
31. Any action for damages against the State of Washington, its agents, contractors, and/or employees, arising out of damages to a utility or other facility located on state-owned highway right of way, shall be subject to the provisions and limitations of RCW 47.44.150.
32. This Permit or Franchise shall not be deemed or held to be an exclusive one and shall not prohibit the Department from granting rights of like or other nature to other public or private utilities, nor shall it prevent the Department from using any of the state-owned highway right of way or other properties for transportation purposes, or affect the Department's right to full supervision and control over all or any part of the state-owned highway right of way or properties, none of which is hereby surrendered. Further, the Department reserves the exclusive right to require that all utility facilities be subject to joint trenching and occupancy.



Special Provisions for Permits and Franchises

UF 10322C AM 1

Applicable provisions are denoted by (X)

- 1. No Work provided for herein shall be performed until the Utility is authorized by the following Washington State Department of Transportation (Department) Representative(s):

Name: <u>Mike Gallop</u>	Name: _____
Title: <u>Const. Oversight Utilities</u>	Title: _____
Street: <u>4100 Cedardale Rd.</u>	Street: _____
City: <u>Mt Vernon</u>	City: _____
State: <u>WA</u> Zip: <u>98274</u>	State: _____ Zip: _____
Phone: <u>360-848-7243</u> Cell: <u>2069402736</u>	Phone: _____ Cell: _____
Email: <u>GallopM@wsdot.wa.gov</u>	Fax: _____

The Utility shall notify in writing the identified Department representative(s) at least five (5) working days (Monday through Friday excluding any holidays), in advance of commencing Work on state-owned highway right of way.

- 2. Prior to beginning the Work, a pre-construction conference shall be held at which the Department, Utility's engineer, contractor, and inspector (as applicable) shall be present. The Utility shall give a minimum 5 working days (Monday through Friday excluding any holidays) notice to the Department's representative(s) (prior to the pre-construction conference)
- 3. Work within the state-owned highway right of way shall be restricted to _____ No Work shall be allowed on Saturday, Sunday, or holidays, without prior approval by the Department. In addition, the Utility shall be off the highway by noon the day prior to a holiday unless authorized by the Department. If a holiday falls on a Saturday, the preceding Friday is counted as the holiday, and the Utility shall be off the highway by noon Thursday. When the Holiday falls on a Monday the Utility shall be off the right of way at noon on the preceding Friday. Nothing in this section shall limit the authority of the Department to further restrict work within state-owned highway right of way at the Department's discretion. The hours of closure are subject to change if required by the Department.
- 4. During non-working hours equipment and materials shall not be located or stored within the work zone clear zone (WZCZ) area. Minimum WZCZ distances will be measured from the edge of the traveled way (the portion of the roadway intended for the movement of vehicles, exclusive of shoulders and lanes for parking, turning, and storage for turning) and will be determined as follows:

Minimum Work Zone Clear Zone Distance

Posted Speed	Distance From Traveled Way (ft)
35 mph or less	10
40 mph	15
45 to 55 mph	20
60 mph or greater	30

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5. In the event that during the course of this project an inadvertent discovery of historical/archeological objects, human remains, or a bone/bones of uncertain origin is made, the Utility shall immediately cease operations and contact the Department Representative in section 1 and the Department Archaeologist:
Name: Jason Cooper
Phone: Office 206-440-4525 Cell / Text 487-0604
E-mail: CoopJas@wsdot.wa.gov
Determination of necessary follow-up actions or the ability to continue work shall be at the sole discretion of the Department."
6. The Utility agrees that, in the event any construction and/or maintenance of the highway facility becomes necessary within the proximity of the utility installation, it is expressly understood that, upon request from the Department's representative, the Utility will promptly identify and locate by suitable field markings any and all of its underground facilities so that the Department or its contractor can be fully apprised at all times of their precise locations.
7. Construction of this facility will not be permitted from the shoulders or through the traffic lanes and/or ramps of SR _____. All construction access will be from _____.

BOND AND INSURANCE COVERAGE

8. The Utility has provided bond coverage for the Work under this Permit or Franchise by furnishing a blanket surety bond held by the Department at the WSDOT Headquarters Utilities Unit in Olympia, WA.
9. The Utility or its contractor shall provide a surety bond to the Department in the amount of \$ **150,000** , written by a surety company authorized to do business in the State of Washington, or shall set up a Department-approved escrow account prior to the start of construction to cover the Work under this Permit or Franchise. The surety bond or escrow account shall remain in force for a period of one (1) year after the written notice of completion of the Work (as provided in general provision 11), except that when the Work impacts the paved highway (open cuts, bores or damage to the highway surface), the Utility shall be required to maintain the surety bond or escrow account for a period of two (2) years after the notice of completion.
10. When the Utility chooses to perform the Work with other than its own forces and requires its contractor to provide a surety bond to the Department before performing any Work to ensure compliance with all of the terms and conditions of this Permit or Franchise, the bond shall be in the amount of \$ _____ , written by a surety company authorized to do business in the State of Washington and shall remain in force until all Work under this Permit or Franchise has been completed, and the Utility's contractor has restored any affected Department property and right of way to the satisfaction of the Department.
11. The Utility shall provide proof of insurance coverage prior to performing any Work within state-owned highway right of way, as follows:
- (a) Commercial General Liability covering the risks of bodily injury (including death), property damage, and personal injury, including coverage for contractual liability, with a limit of not less than \$3 million per occurrence and in the aggregate;
 - (b) Business Automobile Liability (owned, hired, or non-owned) covering the risks of bodily injury (including death) and property damage, including coverage for contractual liability, with a limit of not less than \$1 million per accident;
 - (c) Employers Liability covering the risks of Utility's employees' bodily injury by accident or disease, with limits of not less than \$1 million per accident for bodily injury by accident and \$1 million per employee for bodily injury by disease.

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Such insurance policies or related certificates of insurance shall name the Washington State Department of Transportation as an additional insured on all general liability, automobile liability, employers' liability, and excess policies. A forty-five (45) calendar day written notice shall be given to the Department prior to termination of or any material change to the policy(ies) as such relate(s) to this Permit or Franchise.

- 12. If the Utility is a city or county, it has provided verification of insurance coverage to the Department by providing proof of its coverage through a Risk Pool or verification that the city or county is self-insured, to comply with the insurance terms and conditions of this Permit or Franchise.

UNDERGROUND FACILITIES

- 13. The Utility shall completely remove all Deactivated Facilities (as defined in Washington State Department of Transportation *Utilities Manual M 22-87*).
- 14. Deactivated facilities left within the state owned right of way shall remain owned by the Utility, who shall continue to bear all responsibility for any future costs incurred for removal of the Deactivated facilities if required by the Department in its sole discretion.
- 15. For underground facilities, markers shall be placed at both ends of a crossing, and at all changes in offset distance from right of way line or centerline of the highway and placed approximately every 500 feet for longitudinal installations. Marker information as a minimum shall include owner name, pipeline or cable identification and station, and telephone number or other means to contact a local office. Markers must be in compliance with the Departments *Standard Specifications for Road, Bridge, and Municipal Construction Manual M 41-10, Division 9 (9-17 Flexible Guideposts)*, not create a safety hazard, and all markers shall be placed and maintained so as to minimize interference with Department maintenance operations. It is the Utility's responsibility to maintain its markers. Maintenance of markers includes but is not limited to update of Utility's name (if changed) or Utility's successors' or assigns' contact information, and replacement of damaged or missing markers.
- 16. All underground facilities shall include a component by which the utility can be located with conventional methods, provided that for all installations in trenches, the Utility shall install detector tape approximately 12 inches above the underground facility. The tape shall conform to the standards of the American Public Works Association Uniform Color Code.
- 17. Utility facilities or casings for facilities crossing under highways surfaced with oil, asphalt concrete pavement, or cement concrete pavement shall be by trenchless construction, using the appropriate equipment to jack, bore, or auger the facility through the highway prism with a minimum depth of 5 feet along any point from the top of facility to the lowest point of the finished highway grade, at a minimum of 3.5 feet depth from bottom of ditch/toe of slope to top of facility or casing.
- 18. If PVC or HDPE casings are utilized for crossings, they shall be greater than Schedule 80 or equivalent or as approved by the Department.
- 19. Casing requirements (WAC 468-34-210) for utilities are specified individually or in whole on the attached exhibits. Any variances to these casing requirements must be approved by the Department, in writing prior to installation.
- 20. Pipeline installation shall meet the provisions of chapter 480-93 WAC, Gas Companies- Safety, and amendments thereto.
- 21. Open trenching (cutting a trench for direct placement of a utility that does not include cutting an existing paved highway surface) will only be allowed at the locations identified on the plan sheets and/or listed on Exhibit(s) _____, with restoration to be performed as noted on the attached "Open Trench Detail," Exhibit _____.

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- 22. Open cuts (cutting a trench for direct placement of a utility that does include cutting the existing paved highway surface) of the highway are a variance to Department policy, requiring justification (Open Cut Variance Request) and approval by the Department prior to the Work beginning. Open cuts are only allowed at approved locations identified on the plan sheets and/or listed on Exhibit(s) _____, with restoration to be performed as noted on the attached "Open Cut Detail," Exhibit _____.
- 23. If determined necessary by the Department representative, any or all of the excavated material shall be removed and replaced with suitable material as specified by the Department. It is the Utility's responsibility to obtain any necessary permits or comply with applicable requirements to haul or dispose of any excavated material.
- 24. If determined by the Washington State Department of Labor and Industries and/or the Department representative that extra Shoring (beyond that specified in Section 7-08.3(1)B of the Department's Standard Specifications for Road, Bridge, and Municipal Construction) is necessary for the safety of the workers or the protection of the highway pavement, the trenching or excavation work shall be stopped and no Work in the trench or excavation area will be allowed until satisfactory modifications are made.
- 25. All trenches, boring or jacking pits, etc., shall be backfilled as soon as possible. If left open during nonworking hours, they shall be protected to the satisfaction of the Department. Methods of protection shall be submitted a minimum of _____ (_____) calendar days in advance for approval by the Department prior to use.

AERIAL/ABOVEGROUND FACILITIES

- 26. All facilities on joint use poles shall be relocated at the time the pole owner either moves or removes its poles. (The pole owner is the Permit or Franchise holder under which the poles were installed and is responsible for ensuring the removal of the pole.)
- 27. Neutral conductors associated with circuits of 0 to 22 Kilovolts, where the neutral is considered to be 0-750 Volts, shall have a minimum clearance of 24 feet Vertical Clearance as indicated in WAC 468-34-290, 20 feet provided the facility is grounded at each pole at each end of the crossing.

The Utility agrees to underground the aboveground facilities covered by this Franchise in Scenic Classes "A" and "B", as defined on the attached Exhibit(s) _____, either at the time of major construction of the facility, for that portion of facility to be reconstructed, or prior to expiration of this Franchise.
- 28. The Utility agrees to underground the aboveground facilities covered by this Franchise in Scenic Classes "A," "AX," "B," and/or "BX," as defined on the attached Exhibit(s) _____, at the time the pole owner undergrounds its facility. The existing aboveground facility may remain or be relocated as aboveground in Scenic Classes "AX" or "BX," if acceptable to the Department.
- 29. The Utility agrees to underground or relocate the existing aboveground facilities covered by this Franchise in Scenic Classes "A," "AX," "B," and/or "BX," as defined on the attached Exhibit(s) _____, to a location acceptable to the Department either at the time of reconstruction, for the portion of line to be reconstructed, or prior to the expiration of this Franchise. The existing aboveground facility may remain or be relocated as aboveground in Scenic Classes "AX" or "BX," if acceptable to the Department.

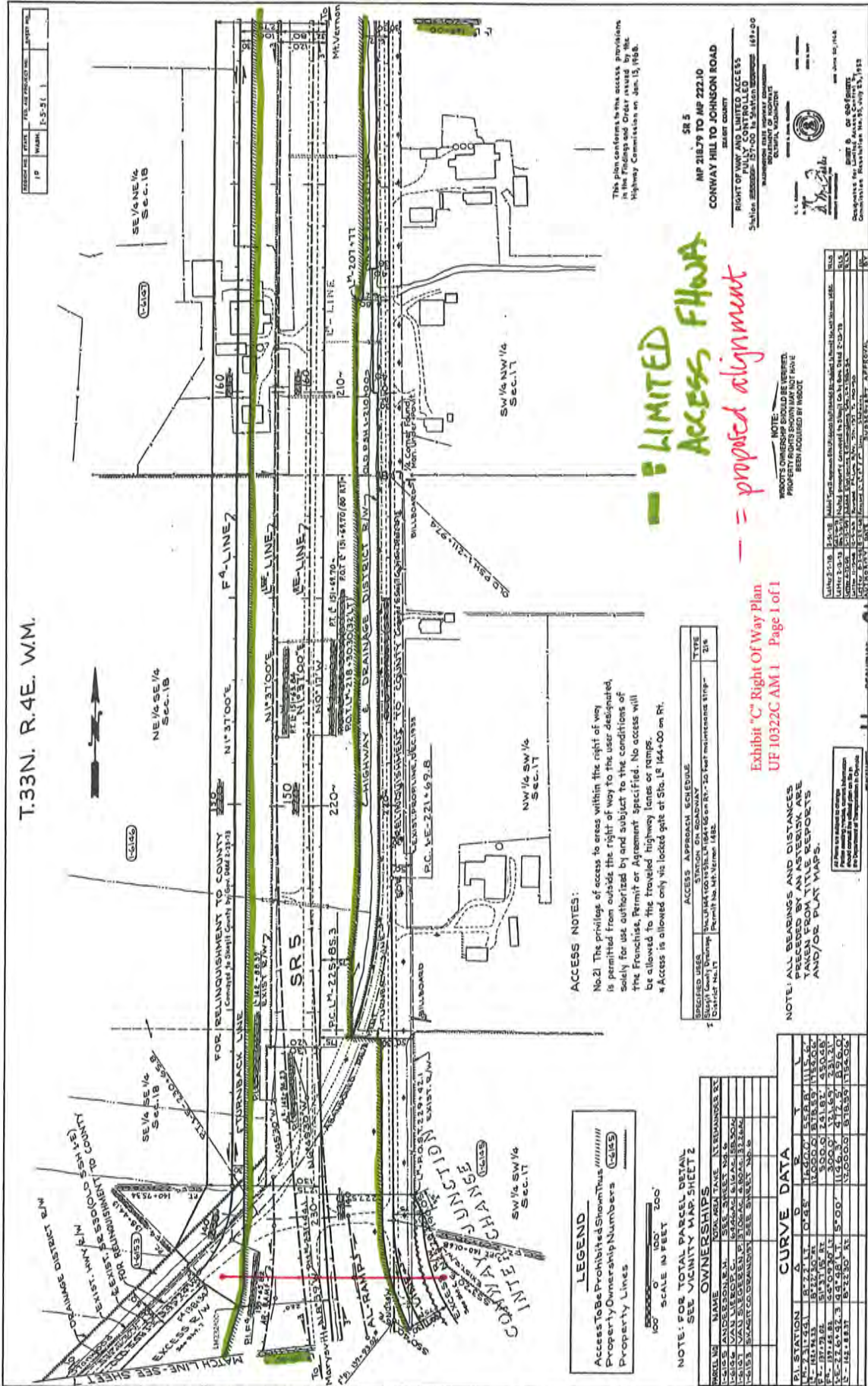
MAINTENANCE

- 31. No routine maintenance of the facility authorized by this Permit or Franchise will be allowed within the limited access area.
- 32. Maintenance access of this facility will not be permitted from the shoulders, thru-traffic lanes, and/or ramps of _____, and all service to this facility will be accessed from _____.
- 33. The Utility will notify the Department representative(s), listed in Special Provision 1, _____ (_____) working days (Monday through Friday excluding any holidays) prior to any scheduled maintenance work to be performed in the state-owned highway right of way.

UF 10322CAM1

- 34. Traffic control plans for this permit have been reviewed by the Department Construction Traffic Coordination Office (CTCO) and have been Approved/Approved As Noted, when applicable. The Grantee/Utility shall be required to follow the lane closure hours provided by Department Traffic Control Plan. See Exhibit 'E' for approved Traffic Control Plans. The applicant, or the applicant's contractor, shall contact the following Construction Traffic Engineer five (5) working days prior to traffic control set up for coordination:

Ken Seguin
Construction Traffic Coordination Office
15700 Dayton Ave. N., NB82-120
P.O. Box 330310
Seattle, WA 98133-9710
206-440-4454
SEGUINK@wsdot.wa.gov
- 35. The Utility shall notify the Department representative(s), listed in Exhibit 'H', ten (10) working days (Monday through Friday excluding any holidays) prior to any scheduled maintenance work to be performed in the state-owned highway right of way.
- 36. To prevent loss of ground and settlement, or possible damage to bridge structures the pipe installation operations shall be conducted in such a manner that restricts the excavation of materials to only those materials that are physically displaced by the casing. During the bore the Utility shall monitor and calculate the volume of the spoils quantities removed, taking in consideration the swelling factor for the material. This will be measured against the calculated volume of the casing to ensure over-excavation has not occurred. If caving or sloughing occurs, the Utility shall modify the construction method to prevent further sloughing or caving. The soil shall be stabilized and the void outside the pipe in the area of the caving shall be filled with grout or other approved material.
- 37. Removal of material from the pipe by washing or sluicing will not be permitted.
- 38. The pipes shall be installed without damage to traveled lanes and shoulders, or other facilities above the pipe. Damage to existing facilities as a result of the Utility's operations shall be repaired to the satisfaction of the Department at the Utility's expense. The repair procedure shall be proposed by the Utility and approved by the Department.
- 39. Settlement monitoring nails shall be placed at the location of the bore near the edge of the shoulder pavement prior to any work. The nails will be on placed the northbound and southbound shoulders – one nail each side of road shoulder of the southbound and northbound, for a total of 4 nails. Utility shall monitor for settlement, before, during and after the drilling operation. If settlement is greater than 1/4-inch is detected, drilling operations will be suspended and settlement will be reported to WSDOT inspector.
- 40. Installation of empty 4" fiber conduit and all future fiber installation in empty 4" fiber conduit shall be used for Skagit PUD facilities only, fiber installation for other purposes is not allowed.
- 41. The Utility Franchise UF 10322CAM1 supersedes Utility Permit UP 20588. The Principal and the Surety Bond No. 2019-00-617 hereby consent to Utility Franchise UF10322CAM1. See Special Provision #9.



T.33N. R.4E. W.M.

This plan conforms to the access provisions in the Findings and Order issued by the Highway Commission on Jan. 15, 1968.

SR 5
MP 218.79 TO MP 222.10
CONWAY HILL TO JOHNSON ROAD
SHERIDAN COUNTY

RIGHT OF WAY AND LIMITED ACCESS
PLAN FOR THE PROPOSED
PULASKI COUNTY
MANAGEMENT DISTRICT HIGHWAY
SHERIDAN COUNTY

LIMITED
Access Flow
= proposed alignment

NOTE:
PROOF OF OWNERSHIP SHOULD BE VERIFIED.
PROPERTY NOT YET ACQUIRED
HAS BEEN ACQUIRED BY PROJECT

ACCESS NOTES:

- No. 21 The privilege of access to areas within the right of way is permitted from outside the right of way to the uses designated solely for use authorized by and subject to the conditions of the Franchise, Permit or Agreement specified. No access will be allowed to the traveled highway lanes or ramps.
- * Access is allowed only via locked gate at Sta. 144+00 on R/W.

PROPERTY OWNER	ADDRESS	APPROXIMATE SCHEDULE	DATE
...

Exhibit "C" Right Of Way Plan
UF 10322C AM 1 Page 1 of 1

NOTE: ALL BEARINGS AND DISTANCES PRECEDED BY AN ASTERISK ARE TAKEN FROM TITLE REPORTS AND/OR PLAT MAPS.

LEGEND
Access To Be Prohibited Shown Thus: // // // // //
Property Ownership Numbers (C) 165
Property Lines

SCALE IN FEET
1" = 100'
1" = 200'

NOTE: FOR TOTAL PARCEL DETAIL SEE VICINITY MAP SHEET 2

OWNERSHIPS

PARCEL NO.	NAME	LOCAL AREA TRACT	NEEDS NUMBER
1-1-1-1	ANDERSON, J. W.	SEE SHEET NO. 6	
1-1-1-2	WAIN, S. L.	SEE SHEET NO. 6	
1-1-1-3	SWARTZ CO. DRAINAGE	SEE SHEET NO. 6	

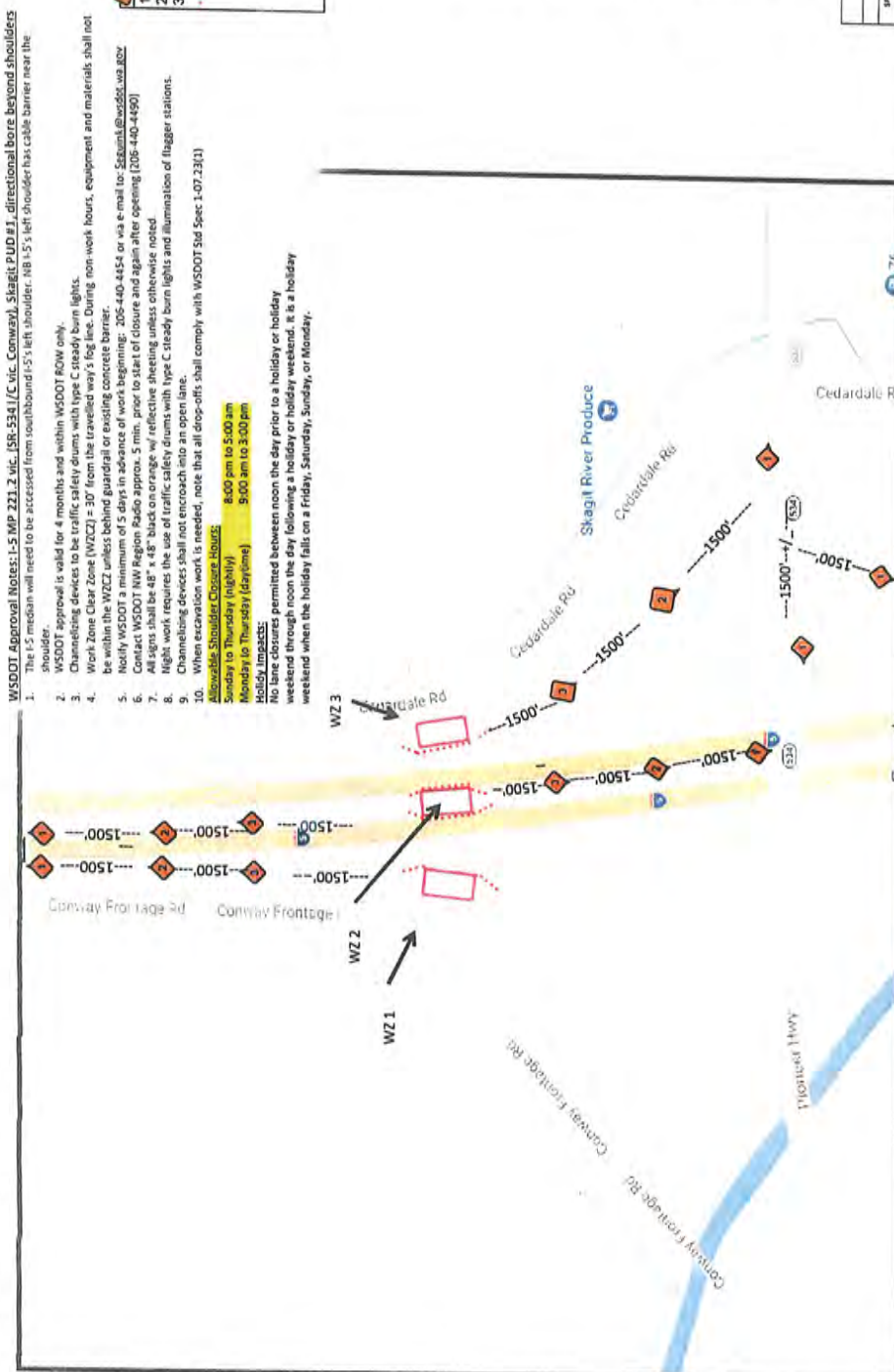
CURVE DATA

PI STATION	PC STATION	PT STATION	PI STATION	PC STATION	PT STATION
144+00	144+00	144+00	144+00	144+00	144+00
144+00	144+00	144+00	144+00	144+00	144+00

SR-5 10/20/21

SEQUENCE 01

TC PLAN FOR SKAGIT COUNTY PUD - I-5 RAMPS NEAR CONWAY & CEDARDALE/PROJECT # 3707
 SHOULDER CLOSURE TO BE PERFORMED: TBD



- WSDOT Approval Notes:** I-5 MP 221.2 vic. [58-534] (C vic. Conway), Skagit PUD #1, directional bore beyond shoulders
- The I-5 median will need to be accessed from southbound I-5's left shoulder. NB I-5's left shoulder has cable barrier near the shoulder.
 - WSDOT approval is valid for 4 months and within WSDOT ROW only.
 - Channelizing devices to be used in safety drums with type C steady burn lights.
 - Work Zone Clear Zone (WZCZ) = 30' from the traveled way's edge. During non-work hours, equipment and materials shall not be within the WZCZ unless behind guardrail or existing concrete barrier.
 - Notify WSDOT a minimum of 5 days in advance of work to start of closure and again after opening (206-440-4454 or via e-mail to: Seamus@wsdot.wa.gov).
 - Alert signs shall be 48" x 48" black on white reflective sheeting unless otherwise noted.
 - Night work requires the use of traffic safety drums with type C steady burn lights and illumination of flagger stations.
 - Channelizing devices shall not encroach into an open lane.
 - When excavation work is needed, note that all drop-offs shall comply with WSDOT 5th Spec 1-07.33(1).
- Allowable Shoulder Closure Hours:**
 Monday to Thursday (holiday) 8:00 am to 5:00 am
 Monday to Thursday (daytime) 9:00 am to 3:00 pm
- Holiday Impacts:**
 No lane closures permitted between noon the day prior to a holiday or holiday weekend through noon the day following a holiday or holiday weekend. If it is a holiday weekend when the holiday falls on a Friday, Saturday, Sunday, or Monday.

- NOTES:**
 Skagit County PUD will be working on the outside of shoulders. Work will include setup of wire loops to create a magnetic field that monitors the horizontal and vertical drill head. Work will be performed in 3 locations within one week. Work Zone 1, 2 and 3 are depicted on the site map. After completion of work zone 1 the riggers will transition to work zone 2, then transfer to work zone 3. All Traffic Control Devices will meet MUTCD requirements. All signs on Freeway will be 48x48" Fluorescent. **B/O**



SIGN LEGEND

1	Road Work Ahead	W20-1
2	Shoulder Work	W21-5
3	Shoulder Closed	M20-301

Drums with lights

CHANNELIZING DEVICE SPACING

POSTED SPEED (MPH)	IN TAPER (FEET)	IN TAPER (FEET)
30 / 20	40	60
35 / 25	50	75
40 / 30	60	90

- LEGEND**
- ▲ FLAGGING STATION
 - SIGN LOCATION
 - CHANNELIZING DEVICES
 - SEQUENTIAL APPROXIMATION
 - PROTECTIVE VEHICLE - RECOMMENDED

MINIMUM TAPER LENGTH = L (FEET)

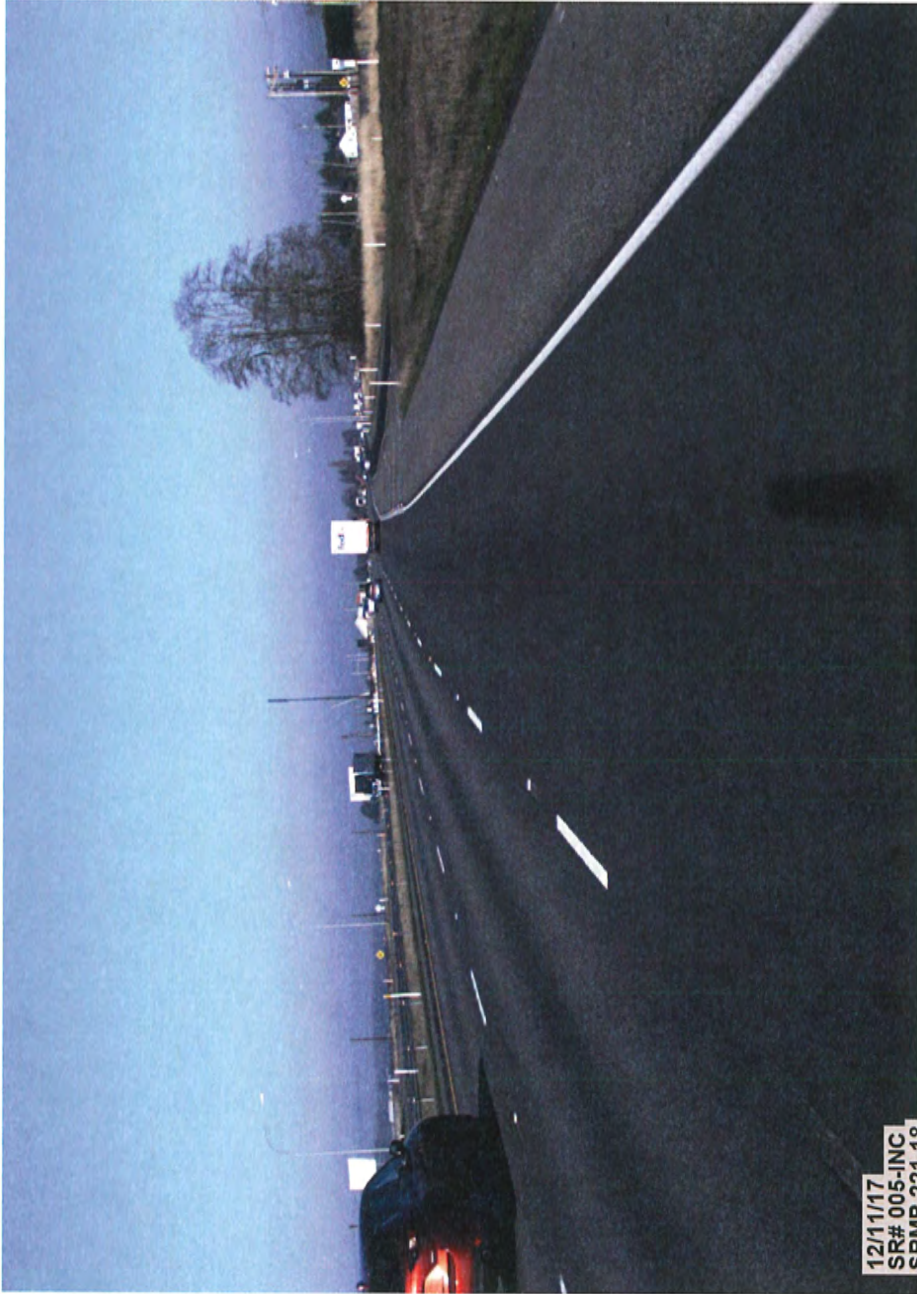
LANE WIDTH (FEET)	POSTED SPEED (MPH)	L (FEET)
25	35	45
30	40	50
35	45	60
40	50	75
45	55	90
50	60	105
55	65	120
60	70	135
65	75	150
70	80	165
75	85	180
80	90	195
85	95	210
90	100	225
95	105	240
100	110	255
105	115	270
110	120	285
115	125	300
120	130	315
125	135	330
130	140	345
135	145	360
140	150	375
145	155	390
150	160	405
155	165	420
160	170	435
165	175	450
170	180	465
175	185	480
180	190	495
185	195	510
190	200	525
195	205	540
200	210	555
205	215	570
210	220	585
215	225	600
220	230	615
225	235	630
230	240	645
235	245	660
240	250	675
245	255	690
250	260	705
255	265	720
260	270	735
265	275	750
270	280	765
275	285	780
280	290	795
285	295	810
290	300	825
295	305	840
300	310	855
305	315	870
310	320	885
315	325	900
320	330	915
325	335	930
330	340	945
335	345	960
340	350	975
345	355	990
350	360	1005
355	365	1020
360	370	1035
365	375	1050
370	380	1065
375	385	1080
380	390	1095
385	395	1110
390	400	1125
395	405	1140
400	410	1155
405	415	1170
410	420	1185
415	425	1200
420	430	1215
425	435	1230
430	440	1245
435	445	1260
440	450	1275
445	455	1290
450	460	1305
455	465	1320
460	470	1335
465	475	1350
470	480	1365
475	485	1380
480	490	1395
485	495	1410
490	500	1425
495	505	1440
500	510	1455
505	515	1470
510	520	1485
515	525	1500
520	530	1515
525	535	1530
530	540	1545
535	545	1560
540	550	1575
545	555	1590
550	560	1605
555	565	1620
560	570	1635
565	575	1650
570	580	1665
575	585	1680
580	590	1695
585	595	1710
590	600	1725
595	605	1740
600	610	1755
605	615	1770
610	620	1785
615	625	1800
620	630	1815
625	635	1830
630	640	1845
635	645	1860
640	650	1875
645	655	1890
650	660	1905
655	665	1920
660	670	1935
665	675	1950
670	680	1965
675	685	1980
680	690	1995
685	695	2010
690	700	2025
695	705	2040
700	710	2055
705	715	2070
710	720	2085
715	725	2100
720	730	2115
725	735	2130
730	740	2145
735	745	2160
740	750	2175
745	755	2190
750	760	2205
755	765	2220
760	770	2235
765	775	2250
770	780	2265
775	785	2280
780	790	2295
785	795	2310
790	800	2325
795	805	2340
800	810	2355
805	815	2370
810	820	2385
815	825	2400
820	830	2415
825	835	2430
830	840	2445
835	845	2460
840	850	2475
845	855	2490
850	860	2505
855	865	2520
860	870	2535
865	875	2550
870	880	2565
875	885	2580
880	890	2595
885	895	2610
890	900	2625
895	905	2640
900	910	2655
905	915	2670
910	920	2685
915	925	2700
920	930	2715
925	935	2730
930	940	2745
935	945	2760
940	950	2775
945	955	2790
950	960	2805
955	965	2820
960	970	2835
965	975	2850
970	980	2865
975	985	2880
980	990	2895
985	995	2910
990	1000	2925
995	1005	2940
1000	1010	2955
1005	1015	2970
1010	1020	2985
1015	1025	3000
1020	1030	3015
1025	1035	3030
1030	1040	3045
1035	1045	3060
1040	1050	3075
1045	1055	3090
1050	1060	3105
1055	1065	3120
1060	1070	3135
1065	1075	3150
1070	1080	3165
1075	1085	3180
1080	1090	3195
1085	1095	3210
1090	1100	3225
1095	1105	3240
1100	1110	3255
1105	1115	3270
1110	1120	3285
1115	1125	3300
1120	1130	3315
1125	1135	3330
1130	1140	3345
1135	1145	3360
1140	1150	3375
1145	1155	3390
1150	1160	3405
1155	1165	3420
1160	1170	3435
1165	1175	3450
1170	1180	3465
1175	1185	3480
1180	1190	3495
1185	1195	3510
1190	1200	3525
1195	1205	3540
1200	1210	3555
1205	1215	3570
1210	1220	3585
1215	1225	3600
1220	1230	3615
1225	1235	3630
1230	1240	3645
1235	1245	3660
1240	1250	3675
1245	1255	3690
1250	1260	3705
1255	1265	3720
1260	1270	3735
1265	1275	3750
1270	1280	3765
1275	1285	3780
1280	1290	3795
1285	1295	3810
1290	1300	3825
1295	1305	3840
1300	1310	3855
1305	1315	3870
1310	1320	3885
1315	1325	3900
1320	1330	3915
1325	1335	3930
1330	1340	3945
1335	1345	3960
1340	1350	3975
1345	1355	3990
1350	1360	4005
1355	1365	4020
1360	1370	4035
1365	1375	4050
1370	1380	4065
1375	1385	4080
1380	1390	4095
1385	1395	4110
1390	1400	4125
1395	1405	4140
1400	1410	4155
1405	1415	4170
1410	1420	4185
1415	1425	4200
1420	1430	4215
1425	1435	4230
1430	1440	4245
1435	1445	4260
1440	1450	4275
1445	1455	4290
1450	1460	4305
1455	1465	4320
1460	1470	4335
1465	1475	4350
1470	1480	4365
1475	1485	4380
1480	1490	4395
1485	1495	4410
1490	1500	4425
1495	1505	4440
1500	1510	4455
1505	1515	4470
1510	1520	4485
1515	1525	4500
1520	1530	4515
1525	1535	4530
1530	1540	4545
1535	1545	4560
1540	1550	4575

COPY



Exhibit "F" Photographs
UF 10322C AM 1Page 1 of 2

COPY



12/11/17
SR# 005-INC
SDMP 224 18

Exhibit "F" Photographs UF
10322C AM 1 Page 2 of 2

Pre-Construction Notification

In accordance with Washington State Department of Transportation (WSDOT) Special Provisions for Permits and Franchises, provide requested information to below-designated WSDOT construction contacts prior to the beginning of construction. Use Alternate Contact or surface mail if phone or e-mail are no longer in effect. This form is NOT for maintenance work.

No work shall take place until the Utility has participated in the Pre-Construction conference.

Accommodation No.:	UF 10322C AM 1	State Route No:	5
Expiration Date:	6/28/2024	From Mile Post:	221.20
WO/Charge Code:	JZ0133	To Mile Post:	221.20

WSDOT Construction Contacts

WSDOT Inspector (notify at least five (5) days prior to starting work)

NW LOCAL AGENCY & DEVELOPMENT SERVICES
OFFICE
15700 DAYTON AVE. N.
PO BOX 330310, MS 82-240
SEATTLE WA 98133-9710

NAME: Michael Gallop
TITLE: WSDOT Inspector
PHONE: 206-940-2736
E-MAIL: GALLOPM@wsdot.wa.gov

WSDOT Traffic Control (notify at least five (5) days prior to starting work)

CONSTRUCTION TRAFFIC CONTROL OFFICE
15700 DAYTON AVE. N.
P.O. BOX 330310, NB82-125
SEATTLE, WA 98133-9710

NAME: Ken Seguin
TITLE: WSDOT NWR CTCO Engineer
PHONE: 206-440-4454
E-MAIL: SEGUINK@wsdot.wa.gov

Construction Contacts and Schedule

Anticipated Start Date:	Estimated Duration:
--------------------------------	----------------------------

Permit/Franchise Holder

COMPANY	NAME:
STREET ADDRESS	TITLE:
CITY, STATE ZIP	PHONE:
OFFICE PHONE	E-MAIL:

Contractor

COMPANY	NAME:
STREET ADDRESS	TITLE:
CITY, STATE ZIP	PHONE:
OFFICE PHONE	E-MAIL:

THE PERMIT/FRANCHISE HOLDER OR THEIR REPRESENTATIVE SHALL NOTIFY NORTHWEST REGION UTILITIES IMMEDIATELY IF THEY ARE UNABLE TO START CONSTRUCTION ON THE DATE INDICATED ABOVE. FAILURE TO PROVIDE NOTIFICATION MAY RESULT IN INSPECTION CHARGES BEING INCURRED.

UF 10322C AM 1
EXHIBIT 'G'
PAGE 1 OF 1

UF10322C AM 1

NEW INSTALLATION ONLY

Maintenance Notification

Update and re-use this form as needed for in-kind repair or replacement of EXISTING primary and secondary facilities associated with the referenced utility permit or franchise number ONLY. Maintenance activities are subject to the general and special provisions of the referenced utility permit or franchise, a WSDOT-approved, site-specific Traffic Control Plan, and submittal of this Notification Form.

This form does NOT apply if there will be an upgrade, change in capacity, location/route, appurtenances, or subcontracted/ outsourced work. Please call the NW Region Utilities Office if you have questions.

No work shall take place until the Utility has received written or verbal authorization from WSDOT to proceed.

Accommodation No.:	UF10322C AM 1	State Route No:	5
Expiration Date:	6/28/2024	From Mile Post:	221.20
WO/Charge Code:	JZ0133	To Mile Post:	221.20

In accordance with Washington State Department of Transportation (WSDOT) Special Provisions for Permits and Franchises, provide the project information below to the following WSDOT representative ten (10) working days prior to the beginning of construction. Use Alternate Contact or surface mail if phone or e-mail are no longer in effect.

WSDOT NW REGION UTILITIES 15700 DAYTON AVE. N., NB82-113 P.O. BOX 330310 SEATTLE, WA 98133-9710	Contact: Paul Johansen Phone: 360-757-5944 E-Mail: JOHANSP@wsdot.wa.gov Alt. Contact: NWR Utilities Office Alt. Phone: 206.440.4120
--	---

Provide Description of Work Activity

Anticipated Start Date: _____ Estimated Duration: _____

Provide Utility Contacts

Permit/Franchise Holder

COMPANY _____
STREET ADDRESS _____
CITY, STATE ZIP _____
OFFICE PHONE _____

CONTACT NAME: _____
TITLE: _____
PHONE: _____
E-MAIL: _____

Contractor

COMPANY _____
STREET ADDRESS _____
CITY, STATE ZIP _____
OFFICE PHONE _____

CONTACT NAME: _____
TITLE: _____
PHONE: _____
E-MAIL: _____

WSDOT Authorization

NWR UTILITIES OFFICE _____
TITLE _____

SIGNATURE: _____
DATE: _____

THE PERMIT/FRANCHISE HOLDER OR THEIR REPRESENTATIVE SHALL NOTIFY NORTHWEST REGION UTILITIES IMMEDIATELY IF THEY ARE UNABLE TO START WORK ON THE DATE INDICATED ABOVE. FAILURE TO PROVIDE NOTIFICATION MAY RESULT IN INSPECTION CHARGES BEING INCURRED.

UF 10322C AM 1
EXHIBIT 'H'
PAGE 1 OF 1

UF 10322C AM 1

MAINTENANCE WORK ONLY

APPENDIX C

Easements

E A S E M E N T

728294

IN THE MATTER OF SR 5, MP 218.79 to MP 222.10, Conway Hill to Johnson Road.

THE STATE OF WASHINGTON, for and in consideration of MUTUAL BENEFITS (relocate existing facilities), hereby grants and conveys unto PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY, WASHINGTON, a Municipal Corporation, an easement to construct, operate and maintain pipelines, under, over and across the following described land situated in Skagit County, State of Washington:

A strip of land 15 feet in width in the Southwest quarter of the Southwest quarter (SW $\frac{1}{4}$ SW $\frac{1}{4}$) of Section 17, Township 33 North, Range 4 East, W.M., lying easterly, northeasterly and northerly of, parallel with and contiguous to the following described Lines 1 and 2:

LINE NO. 1:

Beginning at a point 227.5 feet easterly, when measured at right angles, from Highway Engineer's Station LM P.O.S.T. 229+42.1 on the center line survey of Primary State Highway No. 1, Conway Jct. Vicinity; thence South 25°28'30" East 55 feet, more or less, to a point which is 75 feet easterly, when measured at right angles, to the F2 Line of SR 5, Conway Hill to Johnson Road, and the beginning of this line; thence southeasterly along a line parallel to and 75 feet distant from said F2 Line to a point opposite Highway Engineer's Station F2 132+00; thence southeasterly to a point opposite Highway Engineer's Station F2 130+96.80 and 95 feet northeasterly therefrom; thence southeasterly parallel to said center line and 95 feet distant northeasterly therefrom to a point opposite Highway Engineer's Station F2 129+60 and the terminus of said line:

LINE NO. 2:

Beginning at a point opposite Highway Engineer's Station EH 43+80 on SR 5, Conway Hill to Johnson Road, and 50 feet northerly therefrom; thence westerly in a straight line to a point opposite Highway Engineer's Station F2 129+60 said F2 Line of SR 5 and 75 feet northeasterly therefrom and the terminus of said line; EXCEPTING, THEREFROM, any portion lying within the strip described above under Line No. 1:

AND, ALSO, EXCEPT any portion thereof lying northeasterly of the easterly right of way line of Primary State Highway No. 1 as it existed prior to June 20, 1968.

The lands herein described contain an area of 0.48 acre, more or less, the specific details concerning all of which are to be found within that certain map of definite location now of record and on file in the Office of the Director of Highways at Olympia, Washington, bearing date of June 20, 1968, revised December 5, 1968, and the center line of which is also shown of record in Volume "A" of Highway Plats, page 115, under Auditor's File No. 718672, records of Skagit County.

Official Records

VOL. 33 PAGE 78

SUBJECT, HOWEVER, to the following terms and conditions:

(1) This is a non-exclusive grant and the easement area described herein is also occupied by Puget Sound Power & Light Company, Pacific Northwest Bell Telephone Company and Washington Telephone Company.

(2) In the event that any portion or all of the lands herein described for easement purposes shall be hereafter vacated or abandoned for use as hereinabove designated, all rights herein granted as to such vacated or abandoned portion shall cease and terminate, and all interest in such portion shall immediately revert to and revest in the State, its successors or assigns.

(3) In the event the State Department of Highways requires said utility to relocate due to improvement of SR 5 or SR 534, the utility and State will share in costs of relocation in the percentages as outlined in Utility Agreement No. GC-2482 and referred to in the subordination of Easements held by the utility at the time of construction of State Project, Conway Hill to Johnson Road.

(4) On completion of said pipelines or pipeline installation, all rubbish, debris and surplus material shall be immediately removed and the entire area of this site shall be left neat, presentable and satisfactory to the State Highway Engineer.

(5) That the grantee herein, its successors or assigns, shall have no right of ingress and egress to, from and between SR 5 and the lands herein described between Highway Engineer's Station EH 38+35 and Highway Engineer's Station F2 125+75.

The easement rights hereby described are not required for State highway purposes and are granted pursuant to the provisions of RCW 47.12.080.

DATED at Olympia, Washington, this 18th day of June, 1969.

Received for record at June 30 1969 1:24 p.m.
at request of P.U.D. #1
A. H. JOHNSON, Auditor Skagit Co., Washington

APPROVED AS TO FORMS

By: [Signature]
Assistant Attorney General

STATE OF WASHINGTON

By: [Signature]

Governor

ATTEST:

By: [Signature]

Assistant Secretary of State

Parcel No. 10045
Official Records

RETURN TO:

*Public Utility District No. 1 of Skagit County
1415 Freeway Drive
P.O. Box 1436
Mount Vernon, WA 98273-1436*

TEMPORARY CONSTRUCTION EASEMENT & AGREEMENT

THIS AGREEMENT is made this 5th day of FEBRUARY, 2019, between **SKAGIT FARMERS SUPPLY**, a Washington Non-Profit Corporation, hereinafter referred to as "Grantor(s)", and **PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY, WASHINGTON**, a Municipal Corporation, hereinafter referred to as "District". Witnesseth:

WHEREAS, Grantor(s) are the owners of certain lands and premises situated in the County of Skagit, and described as follows:

Tax Parcel Number: P16824

Legal Description:

Lot 2, Short Plat No. 37-88, approved September 19, 1988, recorded September 20, 1988 in Book 8 of Skagit Plats, Page 67, under Auditor's File No. 8809200016 and being a portion of the Southeast ¼ of Section 18, Township 33 North, Range 4 East, W.M.

Subject to and together with easements, reservations, restrictions, covenants, liens, leases, court causes and other instruments of record.

Situated in the County of Skagit County, State of Washington.

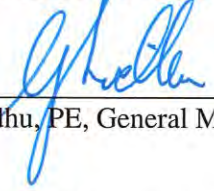
On a temporary construction easement described as follows (also see Exhibit A – Temporary Construction Easement Map):

Easement measuring 50 feet wide by 900 feet long meandering from the field access along the Conway Frontage Road to a point 574 feet west of the west right-of-way for the Conway Frontage Road and in line with the trenchless crossing of Interstate 5 to be used to pipe stringing and fabrication.

NOW, THEREFORE, in consideration of the premises, the Grantor(s) hereby grants to the District, its contractors, sub-contractors, successors, or assigns by this Temporary Construction Easement, the right to install temporary construction fencing and temporary construction-related facilities, locate pipe materials and equipment, and to work on the above-described land for the purpose of installing a casing, water pipeline, and appurtenances across Interstate 5 using trenchless methods.

The District shall remove the temporary construction fencing, temporary construction-related facilities and equipment, excess materials and debris from construction activities, return the area to original grades, and restore said premise to their original condition as near as reasonably can be done, as soon as conditions allow.

PUBLIC UTILITY DISTRICT NO. 1 OF SKAGIT COUNTY:


George Sidhu, PE, General Manager

Date: 2/5/19

STATE OF WASHINGTON)
) SS
COUNTY OF SKAGIT)

I certify that I know or have satisfactory evidence that **George Sidhu** is the person who appeared before me, and said person acknowledged that he signed this instrument, on oath stated he was authorized to execute the instrument and acknowledged it as the **General Manager** of **Public Utility District No. 1 of Skagit County** to be the free and voluntary act of such party for the uses and purposes mentioned in the instrument.

Date: 2/5/19


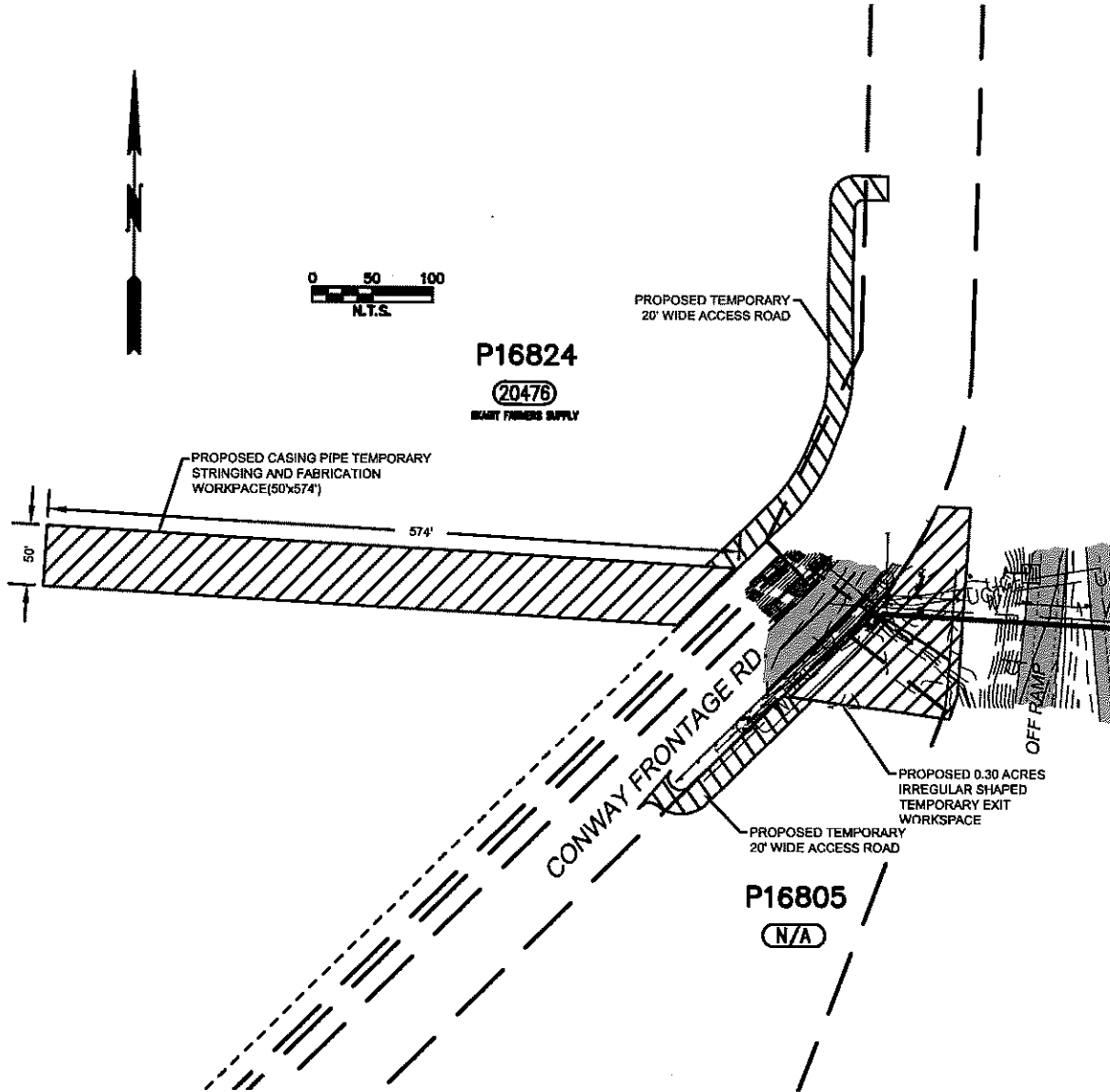
(Signature) 
Notary Public in and for the State of Washington
(Printed Name) KIM A. CARPENTER
My appointment expires: 08/09/21



Exhibit A
Temporary Construction Easement Map



APPENDIX D
Inadvertent Discovery Plan



1415 Freeway Drive
P.O. BOX 1436
Mount Vernon, WA 98273-1436
tel: (360) 424-7104
www.SkagitPUD.org

Owned by the people we serve.

Contractor Inadvertent Discovery Plan

I. Protocol

In the event that human remains and/or cultural or archaeological resources (see section II below) are encountered during the course of project construction, the following actions shall be taken:

- A. The contractor shall immediately stop work at and adjacent to the site of discovery, call back all haul trucks in transit containing loads of site soils, move any land-altering equipment to a reasonable distance from the discovery, completely secure the site, and contact the District.
- B. If the discovery consists of cultural or archaeological items that do not include human remains, the District shall notify the following parties:
 - 1) A professional archaeologist
 - 2) The Department of Archaeology and Historic Preservation (DAHP) (Gretchen Kaehler, office: 360-586-3088; cell: 360-628-2755)
 - 3) Swinomish Indian Tribal Community (Josephine Peters, 360-466-7352)
 - 4) Upper Skagit Tribe (Scott Schuyler, 360-982-8218)
 - 5) Samish Indian Nation (Jackie Ferry, 360-293-6404)
 - 6) Stillaguamish Tribe (Kerry Lyste, 360-657-3687 ext. 14)

If the discovery consists of human remains, the District shall immediately contact the following parties:

- 1) The Skagit County Sheriff's Department (non-emergency line: 360-428-3211) and the Skagit County Coroner, (Daniel Dempsey 360-336-9431) to determine if the remains are forensic in nature.
 - 2) If the remains are not forensic in nature, the District shall contact DAHP (Gretchen Kaehler 360-586-3088 and Guy Tasa 360-586-3534); who will take the lead on determining the appropriate method of treatment for the remains and will consult with the affected tribes.
- C. The District shall issue a written order to the contractor to cease all construction operations at the location of the potential cultural resources find. The order shall contain the following:

- 1) A clear description of the work to be suspended.
- 2) Any instructions regarding issuance of further orders by the contractor for material services.
- 3) Guidance as to action to be taken on the subcontracts.
- 4) Any suggestions to the contractor as to minimization of its costs.
- 5) Estimated duration of the temporary suspension.

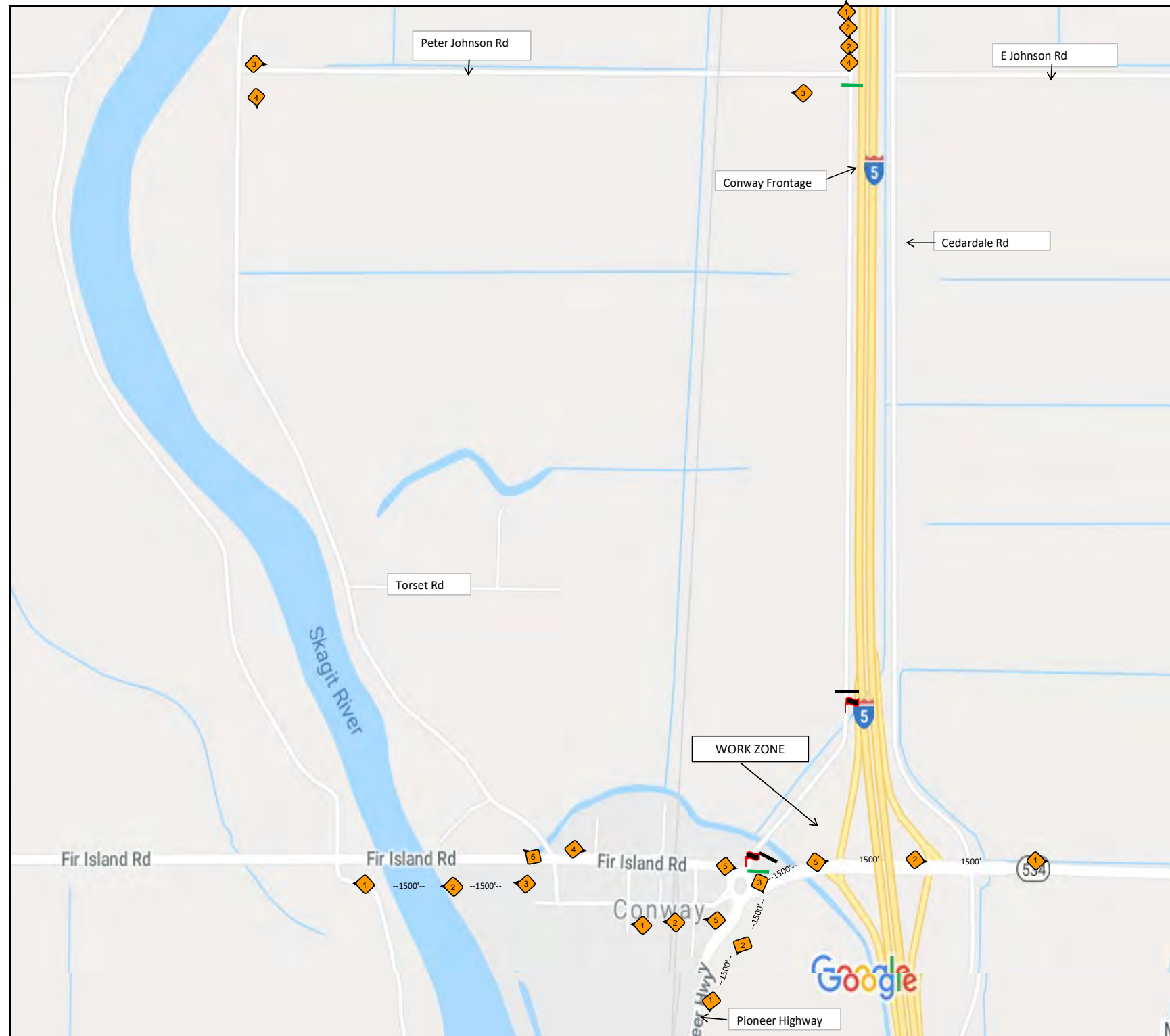
The work suspension order shall be effective until such time as a qualified archaeologist can be called by the District to assess the significance of the potential cultural resources and make recommendations to the State Historical Preservation Officer. If the archaeologist, in consultation with the State Historic Preservation Officer, determines that the potential find is a significant cultural resource, the District shall extend the duration of the work suspension order, in writing, and the contractor shall suspend work at the location of the find.

II. Protected Cultural or Archaeological Resources

Cultural material that may be protected by law could include but is not limited to:

- Buried layers of black soil with layers of shell, charcoal, and fish and/or mammal bones.
- Buried cobbles that may indicate a hearth feature;
- Non-natural sediment or stone deposits that may be related to activity areas of people;
- Stone, bone, shell, horn, or antler tools that may include projectile points, scrapers, cutting tools, wood working wedges or axes, and grinding stones;
- Stone tools or stone flakes;
- Perennially damp areas may have preservation conditions that allow for remnants of wood and other plant fibers; in these locations there may be remains including fragments of basketry, weaving, wood tools, or carved pieces; and
- Human remains.

APPENDIX E
Traffic Control Plans



SIGN LEGEND		
1	Conway Frontage Road Closed Ahead	W20-3 MOD
2	Detour Ahead	W20-2
3	Detour Left	M4-9L
4	Detour Right	M4-9R
5	Detour Straight	M4-9S
6	Detour L/R	M4-9L/R
	Flagger	
	Type III Barricade with RCTTT Sign	R11-4
	Type III Barricade with Road Closed Sign	R11-2

CHANNELIZING DEVICE SPACING		
POSTED SPEED (MPH)	IN TAPER (FEET)	IN TANGENT (FEET)
50 / 70	40	80
35 / 45	30	60
25 / 30	20	40

LEGEND	
	FLAGGING STATION
	SIGN LOCATION
	CHANNELIZING DEVICES
	SEQUENTIAL ARROW SIGN
	PROTECTIVE VEHICLE ~ RECOMMENDED

LANE WIDTH (FEET)	MINIMUM TAPER LENGTH = L (FEET)									
	POSTED SPEED (MPH)									
	25	30	35	40	45	50	55	60	65	70
10	105	150	205	270	450	500	550	-	-	-
11	115	165	225	294	495	550	605	660	-	-
12	125	180	245	320	540	600	660	720	780	840

SIGN SPACING = X(1)		
Freeways & Expressways	55 / 70 MPH	1500' +/-
RURAL HIGHWAYS	60 / 65 MPH	800' ±
RURAL ROADS	45 / 55 MPH	500' ±
RURAL ROADS & URBAN ARTERIALS	35 / 40 MPH	350' ±
RURAL ROADS, URBAN ARTERIALS, RESIDENTIAL & BUSINESS DISTRICTS	25 / 30 MPH	200' ± (2)
URBAN STREETS	25 MPH OR LESS	100' ± (2)

(1) ALL SIGN SPACING MAY BE ADJUSTED TO ACCOMMODATE AT-GRADE INTERSECTIONS, AND DRIVEWAYS.
 (2) THIS SIGN SPACING MAY BE REDUCED IN URBAN AREAS TO FIT ROADWAY CONDITIONS.

BUFFER DATA	
LONGITUDINAL BUFFER SPACE = B	
POSTED SPEED (MPH)	LENGTH (FT)
25	155
30	200
35	250
40	305
45	360
50	425
55	490
60	570
65	655
70	750

PROTECTIVE VEHICLE WITH TMA ROLL AHEAD DISTANCE

TYPICAL PROTECTIVE VEHICLE TYPE WITH TMA	TYPICAL PROTECTIVE VEHICLE (WITH TMA) LOADED WEIGHT (LBS)	STATIONARY OPERATION (FT)
4 YARD DUMP TRUCK	MINIMUM WEIGHT 15,000 LBS. (MAXIMUM WEIGHT SHALL BE IN ACCORDANCE WITH MANUFACTURER RECOMMENDATION)	30 MIN. 100' MAX.

ROLL AHEAD STOPPING DISTANCE ASSUMES DRY PAVEMENT
 * PROTECTIVE VEHICLE IS RECOMMENDED REGARDLESS IF TMA IS AVAILABLE IF NO TMA IS USED, THE PROTECTIVE VEHICLE SHALL BE STRATEGICALLY LOCATED IN THE FIELD TO SHELTER WORKERS AND NO ROLL AHEAD DISTANCE IS REQUIRED.

NOTES:
 The drilling contractor will assemble a casing and water pipeline in the field west of the Conway Frontage Road. After the horizontal bore under the freeway has been completed, the contractor will pull the casing and water pipeline across the Conway Frontage Road. Therefore, the Conway Frontage Road will be closed for approximately 12 hours or less. This work will be performed at night. Flaggers will be on-site to open protect closure and open the road back up when work is complete. All Traffic Control Devices will be 48" X 48" Fluorescent and meet MUTCD requirements.

Dated: 1/2/2019 REV2
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