BID BOOKLET
FOR BRIDGE CONSTRUCTION

LINN COUNTY ROAD DEPARTMENT
ALBANY, OREGON

BRIDGES AND ROADWAY

BERLIN ROAD: HAMILTON CREEK BRIDGE

BERLIN ROAD

LINN COUNTY

MARCH 31, 2020

CLASS OF PROJECT COUNTY

CLASS OF WORK BRIDGES AND STRUCTURES

BID OF _____

DESCRIPTION OF WORK

Bridges and Roadway
Berlin Road: Hamilton Creek Bridge
Berlin Road
Linn County

TIMES AND PLACES OF RECEIVING BIDS (BID CLOSING)

Bid Closing for the work described above will be 9:00:00 a.m. on the 31st day of March, 2020.

Before 9:00:00 a.m. on the day of Bid Closing, Bids shall be submitted to:

Ralph Wyatt, County Administrative Officer, Linn County Courthouse, 300 Fourth Avenue S.W., Room 201, Albany, Oregon 97321

Bids, Bid modifications, and Bid withdrawals will not be accepted on or after 9:00:00 a.m. on the day of Bid Closing.

PLACE, TIME, AND DATE OF READING BIDS (BID OPENING)

Bid Opening for the work described above will be opened and read at the Linn County Courthouse, Board of Commissioners, 300 Fourth Avenue S.W., Room 201, Albany, Oregon, beginning at approximately 9:35 a.m. on the day of Bid Closing.

COMPLETION TIME LIMIT

See Special Provisions Subsection 00180.50(h).

CLASS OF PROJECT

This is a County Project. Berlin Road is classified as a Rural Major Collector.

CLASS OF WORK

The Class of Work for this Project is: **Bridges and Structures**.

APPLICABLE SPECIAL PROVISIONS

The Special Provisions booklet applicable to the above-described work, for which Bids will be opened at the place, time, and date stated above, is that which contains the exact information as shown above on this page.

Bidders are cautioned against basing their Bids on a booklet bearing any different description, date(s), class of project, or class of work.

INSTRUCTIONS FOR MODIFYING BID

General - Bid modifications must be received in writing by hand delivery, mail, parcel delivery service, or by electronic facsimile (FAX) transmission prior to the time designated for Bid Closing. Bid modifications received after Bid Closing will not be considered. **Incomplete or late transmittals will not be accepted, regardless of reason.**

Bids will be modified at the Bid Opening according to the information received.

Instructions and Format - Make modifications to Bids according to the "Letter Format for Modifying Bid" document located in this Bid Booklet and the following:

- Prepare the modifications on the Bidder's letterhead stationery.
- Include the Project title and the Bidder's company name.
- Make changes (increase/decrease statement) for each affected Bid Item. (*Lumping the changes into one Bid Item may result in the Bid Item being unbalanced, causing the Bid to be considered irregular and constituting grounds for Bid rejection.*)
- List all decreased-in-Bid items in numerical order first, then list all increased-in-Bid items.
- Show the total difference in the Bid last. (*Do not refer to your original Bid total. Do not show a new Bid total. Do not include a new Bid Schedule.*)
- Print name and sign the letter by an individual authorized to execute Bids.

Hand Delivery, Mail, or Parcel Delivery Service - If delivering by hand, mail or parcel delivery service deliver to:

Ralph Wyatt, County Administrative Officer, Linn County Courthouse, 300 Fourth Avenue S.W., Room 201, Albany, Oregon 97321

FAX Transmittals - If using FAX as transmission, send them according to the following:

- Send the FAX to the FAX telephone number 541-926-8228. FAX transmittals will be accepted only at this number. (*Contractors will be responsible for the payment for the transmission of Bid modifications*.)
- The time of receipt of FAX transmittals by the County will be determined by the time which is electronically imprinted upon the Bid change by the County facsimile machine.
- The Agency is not responsible for any failed or partial FAX transmissions of Bid changes, caused by whatever reason, mechanical failure or otherwise.
- **Complete Bids will not be accepted by FAX**.

LETTER FORMAT FOR MODIFYING BID

(*NOTE: Text shown as "italic-underline" are instructions for preparing the letter for modifying Bids.*)

(Prepare on Bidders Letterhead Stationery)

(*Bid Opening Date*)

Attn: Ralph Wyatt, County Administrative Officer

Hand Delivery, Mail, or Parcel Delivery Service Address:

Linn County Courthouse
300 Fourth Avenue S.W., Room 201
Albany, Oregon 97321

SUBJECT: Modifications to Bid
(*Project Title*)
(*Bidders Company Name*)

(***For a decrease in a Bid amount:*** *Copy and paste the following line for each Bid Item reduction.*)

Reduce Bid Item No. _____ by $_____ per _____ (*Indicate unit of measurement, e.g., ton, cu. yd., sq. ft., etc.*)

(***For an increase in a Bid amount:*** *Copy and paste the following line for each Bid Item increase.*)

Increase Bid Item No. _____ by $_____ per _____ (*Indicate unit of measurement, e.g., ton, cu. yd., sq. ft., etc.*)

This will (increase/decrease) our total Bid by $_____. (*Only show the total increase or decrease of your Bid. Do not show a new Bid total.*)

_____
(*Printed name of individual signing below.)*

_____
(*Signed by an individual authorized to sign Bids and execute documents.*)

SPECIAL PROVISIONS
FOR BRIDGE CONSTRUCTION

LINN COUNTY ROAD DEPARTMENT
ALBANY, OREGON

BRIDGES AND ROADWAY

BERLIN ROAD: HAMILTON CREEK BRIDGE

BERLIN ROAD

LINN COUNTY

MARCH 31, 2020

DESCRIPTION OF WORK

Bridges and Roadway
Berlin Road: Hamilton Creek Bridge
Berlin Road
Linn County

TIMES AND PLACES OF RECEIVING BIDS (BID CLOSING)

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PLACE, TIME, AND DATE OF READING BIDS (BID OPENING)

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START DATE

No work included in this contract shall begin prior to the Preconstruction Meeting. Other Job Site Restrictions may apply as shown in Section 130.80 of these Specifications.

COMPLETION TIME LIMIT

See Subsection 00180.50(h).

CLASS OF PROJECT

This is a County Project. Berlin Road is classified as a Rural Major Collector.

CLASS OF WORK

The Class of Work for this Project is: **Bridges and Structures**.

PROJECT INFORMATION

Information pertaining to this Project may be obtained from the following:

Daineal Malone, P.E., Project Manager, Linn County Road Department,
3010 Ferry St, S.W., Albany, Oregon 97322; Phone 541-967-3919, Fax 541-924-0202.
Email: daineal.malone@co.linn.or.us

Andrew Potts, P.E., Project Engineer, Linn County Road Department,
3010 Ferry St, S.W., Albany, Oregon 97322; Phone 541-967-3919, Fax 541-924-0202.
Email: andrew.potts@co.linn.or.us

Chuck Knoll, P.E., Linn County Engineer, Linn County Road Department,
3010 Ferry Street, S.W., Albany, Oregon 97322; Phone 541-967-3919, Fax 541-924-0202. Email: cknoll@co.linn.or.us

TABLE OF CONTENTS FOR SPECIAL PROVISIONS

PROJECT WAGE RATES

Minimum Wage Requirements - This Project is subject to State prevailing wage rate requirements according to 00170.65(b).

Applicable Wages - Prevailing wage rates published in the wage determinations and any applicable modifications or amendments apply to this Project and are incorporated by reference:

(1) Oregon Bureau of Labor and Industries (BOLI), "Prevailing Wage Rates for Public Works Contracts in Oregon".

The applicable State prevailing wage rates last published prior to the time of Bid Opening, which is stated on the Description of Work page, apply to this Project.

Wage Rates are Internet-Accessible - The BOLI wage rates can be found on the Oregon Bureau of Labor and Industries website at:

http://www.oregon.gov/boli/WHD/PWR/Pages/index.aspx

Wage Rates are Subject to Change - Modifications or amendments to the BOLI wage rates applicable to this Project may occur at any time before Bid Opening. Bidders are responsible to monitor the respective web page(s) for modifications and amendments up until Bid Opening.

WEB SITE ADDRESSES

General Conditions for Construction for the Linn County Road Department:

http://www.co.linn.or.us/Roads/ContractConst.asp - Project Title

Plan Holder Registration (00120.05):

http://www.co.linn.or.us/Roads/Register.asp

Addenda Letters (00120.30):

http://www.co.linn.or.us/Roads/ContractConst.asp - Project Title

Notice of Intent to Award (00130.10):

http://www.co.linn.or.us/Roads/ContractConst.asp - Project Title

FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM INSTRUCTIONS

Instructions for Submitting Form

Submit the First-Tier Subcontractor Disclosure form not later than two working hours after the time set for Bid Closing (For example, before 11:00 a.m. after a 9:00 a.m. Bid Closing.) by any of the following methods:

- By filling out the Subcontractor Disclosure Form included in the Bid Booklet and submitting it together with the Bid at the time designated for receipt of Bids.
- Hand delivering it to: The Linn County Courthouse, 300 Fourth Avenue S.W., Room 201, Albany, OR 97321, or
- FAX it to 541-924-0202

The Department is not responsible for partial, failed, illegible, or partially legible FAX transmissions or electronic submissions.

Instructions for First-Tier Subcontractor Disclosure

Without regard to the amount of a Bidder's Bid, if the Agency's cost range for a public improvement Project in the "Notice to Contractors", or in other advertisement or solicitation documents is greater than $100,000 Bidders are required to disclose information about first-tier Subcontractors that will furnish labor or labor and materials (See ORS 279C.370). Specifically, when the contract amount of a first-tier Subcontractor is greater than or equal to: (1) 5% of the total project Bid, but at least $15,000, or (2) $350,000 regardless of the percentage of the total project Bid, you must disclose the following information about that Subcontractor not later than two working hours after the time set for opening Bids:

- The name of the Subcontractor
- The category of work that the Subcontractor will be performing
- The dollar amount of the subcontract

Total all work for each Subcontractor in making this determination.

If the Agency's cost range is greater than $100,000 and you will not be using any first-tier Subcontractors, you are still required to submit the form, with the appropriate box checked or enter "NONE" on the first line.

If the Agency's cost range is greater than $100,000 and you are not subject to the above disclosure requirements, you are still required to submit the form, with the appropriate box checked or enter "NONE" on the first line.

THE AGENCY MUST REJECT BIDS if the Bidder fails to submit the disclosure form with this information by the stated deadline.

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LINN COUNTY ROAD DEPARTMENT

SPECIAL PROVISIONS

FOR

Bridge and Roadway
Berlin Road: Hamilton Creek Bridge
Berlin Road
Linn County

PROFESSIONAL OF RECORD CERTIFICATION(s):

Seal w/signature	I certify the Special Provision Section(s) listed below are applicable to the design for the subject project for environmental and stormwater. Modified Special Provisions were prepared by me or under my supervision.
 Expires 06/30/2021	Section 00100, 00110, 00120, 00130, 00140, 00150, 00160, 00165, 00170, 00180, 00190, 00195, 00196, 00197, 00199, 00245, 00280, 00290, 01013, 01030, 01092, 03020 C. R. Knoll
Date Signed: 02/21/2020	

LINN COUNTY ROAD DEPARTMENT

SPECIAL PROVISIONS

FOR

Bridge and Roadway
Berlin Road: Hamilton Creek Bridge
Berlin Road
Linn County

PROFESSIONAL OF RECORD CERTIFICATION(s):

 Expires: 12/31/20	I certify the Special Provision Section(s) listed below are applicable to the design for the subject project for bridge and roadway. Modified Special Provisions were prepared by me or under my supervision. Section 00210, 00220, 00225, 00253, 00305, 00310, 00320, 00330, 00350, 00405, 00445, 00495, 00501, 00510, 00520, 00530, 00540, 00545, 00550, 00582, 00587, 00592, 00620, 00640, 00730, 00744, 00810, 00850, 00860, 00930, 00940, 01050, 02001, 02040, 02050, 02080, 02110, 02440, 02510, 02520, 02530, 02560, 02690, 02810, 02820, 02910
Date Signed: 02/21/2020	A.T. Potts

SPECIAL PROVISIONS

WORK TO BE DONE

The Work to be done under this Contract consists of the following:

1. Furnish, install, maintain, and remove traffic control and erosion control devices
2. Construct roadway approach widening
3. Perform grading, excavation/embankment, and riprap placement
4. Install storm pipes
5. Asphalt pavement saw cutting
6. Remove existing structure
7. Construct new driven piling and grade/cap beams
8. Construct bridge superstructure and other components to new bridge
9. Install stormwater facilities and bioslopes
10. Install asphalt concrete pavement
11. Install pavement markings
12. Install signage
13. Install mailboxes
14. Perform additional and incidental Work as called for by the Specifications and Plans

APPLICABLE SPECIFICATIONS

The Specifications that are applicable to the Work on this Project are the November 15, 2019 edition of the "General Conditions for Construction for the Linn County Road Department and the 2018 edition of the "Oregon Standard Specifications for Construction", as modified by these Special Provisions. All Sections in Part 00100 apply, whether or not modified or referenced in the Special Provisions.

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

CLASS OF PROJECT

This is a County Project. Berlin Road is classified as a Rural Major Collector.

SECTION 00100 - GENERAL CONDITIONS

Comply with Section 00100 of the General Conditions for Construction for the Linn County Road Department modified as follows:

SECTION 00110 - ORGANIZATION, CONVENTIONS, ABBREVIATIONS, AND DEFINITIONS

Comply with Section 00110 of the Standard Specifications modified as follows:

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

- American Traffic Safety Services Association (ATSSA)
  www.atssa.com
- ODOT Construction Section
  www.oregon.gov/odot/construction/pages/index.aspx

- ODOT Construction Section - Qualified Products List (QPL)
  www.oregon.gov/ODOT/Construction/Pages/Qualified-Products.aspx
- ODOT Estimating
  www.oregon.gov/ODOT/Business/Pages/Steel.aspx
- Oregon Legislative Counsel
  www.oregonlegislature.gov/lc
- ODOT Procurement Office - Construction Contracts Unit prequalification forms
  www.oregon.gov/odot/business/procurement/pages/bid_award.aspx
- Oregon Secretary of State: State Archives
  sos.oregon.gov/archives/Pages/default.aspx
- ODOT Traffic Control Plans Unit
  www.oregon.gov/ODOT/Engineering/Pages/Work-Zone.aspx
- ODOT Traffic Standards
  www.oregon.gov/ODOT/Engineering/Pages/Signals.aspx

SECTION 00120 - BIDDING REQUIREMENTS AND PROCEDURES

Comply with Section 00120 of the Standard Specifications modified as follows:

00120.05 Request for Plans, Special Provisions, and Bid Booklets -
Comply with Section 00120 of the Standard Specifications modified as follows:

00120.05 Request for Plans, Special Provisions, and Bid Booklets - Add the following to the end of this subsection:

The Plans, which are applicable to the Work to be performed under the Contract, bear title and date as follows

"Bridges and Roadway
Berlin Road: Hamilton Creek Bridge
Linn County Bridge No. BR0020B-0490
ODOT Bridge No. 23838
March 2020"

00120.10 Bid Booklet - In the paragraph that begins "The Bid Section includes all pages after…", add the following bullet to the bullet list:

- Certificate of nondiscrimination regarding ORS 279A.110 and certificate regarding policy and practice against sexual harassment, sexual assault and discrimination against employees who are members of a protected class as required by HB 3060 (2017)

00120.70 Rejection of Nonresponsive Bids - Add the following bullets to the end of the bullet list:

- The Bidder has liquidated and delinquent debt owed to the State or any department or agency of the State.

SECTION 00130 - AWARD AND EXECUTION OF CONTRACT

Comply with Section 00130 of the Standard Specifications.

SECTION 00140 - SCOPE OF WORK

Comply with Section 00140 of the Standard Specifications.

SECTION 00150 - CONTROL OF WORK

Comply with Section 00150 of the Standard Specifications modified as follows:

00150.30 Delivery of Notices - Add the following to the end of this subsection:

For purposes of this subsection, the time zone is Pacific Standard Time (PST) to determine time of receipt of notices and other documents. For purposes of this subsection, non-business days are Saturdays, Sundays and legal holidays as defined by ORS 187.010 and 187.020.

Following Notice to Proceed, all notices and other documents submitted to the Contractor by the Engineer, or to the Engineer by the Contractor, electronically under 00170.08.

Claims must be submitted on paper documents according to Section 00199.

00150.50(e) Notification - Add the following to the end of this subsection:

Add the following subsection:

00150.50(f) Utility Information (No Anticipated Relocations) - Within the Project limits, there are no anticipated relocations with the Utilities listed below. The Contractor shall contact those Utilities having buried facilities and request that they locate and mark them for their protection prior to construction.

Utility	Contact Person's Name, Address, Email, and Phone Number
Century Link	Kerry Pozder, Kerry.Pozder@centurylink.com, 541-259-7275
Consumers Power Inc	Adrian Smith, adrians@cpi.coop, 541-929-8636

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

Energized power lines overhang portions of the Work with a minimum vertical clearance of 10 feet. The Contractor shall maintain at least 10 feet of safety clearance. Exceptions require written approval from the Power Supplier(s) and may require an On-Site safety watcher, at no cost to the Contractor. The Contractor shall provide the Engineer a copy of the written approval of exception before beginning Work.

Add the following subsection:

(1) Consumers Power - "Power Supplier":

The Contractor shall notify the Power Supplier(s) in writing, with a copy to the Engineer, at least 14 Calendar Days before beginning Work within 10 feet of the power line(s).

The Contractor shall notify the Power Supplier in writing, with a copy to the Engineer, 14 Calendar Days before the Contractor is scheduled to begin performing any activities involving cranes or equipment with potential to foul the power lines located along the South side of the bridge. If further relocation is required, after the Power Supplier receives the notification, the Contractor shall then allow the Power Supplier 28 Calendar Days to schedule and complete the relocation and

adjustment work before the Contractor begins performing any work with potential to foul the Power utilities.

(2) Century Link - "Telecommunication Utility":

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

The Contractor shall coordinate Fiber Optic relocation work with the Telecommunication Utility due to potential restricted work dates.

00150.90(b) All Contract Work – Replace the bullet that reads “The Contractor has removed…” with the following bullet:

- The Contractor has removed all Equipment, other than that incorporated into the Work; and

00150.97 Responsibility for Materials and Workmanship - Add the following to the end of this subsection:

(c) Full or partial termination of the Contract under 00180.90 shall not relieve the Contractor of responsibility for completed or performed Work, or relieve the Contractor's Surety of the obligation for any just claims arising from the completed or performed Work.

SECTION 00160 - SOURCE OF MATERIALS

Comply with Section 00160 of the Standard Specifications modified as follows:

00160.20 Preferences for Materials - Add the following paragraph to the beginning of this subsection:

Section 1518 of Moving Ahead for Progress in the 21st Century Act provides that Buy America applies to all Contracts eligible for federal assistance under Title 23, United States Code, included within the scope of an applicable National Environmental Policy Act (NEPA) finding, determination or decision, regardless of the funding source of such Contracts, where at least one Contract is funded with Title 23 funds. This Contract includes Title 23 funds under such a NEPA finding, determination or decision and Buy America applies to this Contract.

00160.20(b) Buy Oregon – Replace the sentence that begins “This provision does not apply to…” with the following sentence:

This provision does not apply to contracts financed wholly or in part by federal funds.

00160.21 Cargo Preference Act Requirements - Add the following to the end of this subsection:

Additional information may be available at the following websites:

https://www.fhwa.dot.gov/construction/cqit/cargo.cfm

https://www.fhwa.dot.gov/construction/cqit/cargo/qa.cfm.

SECTION 00165 - QUALITY OF MATERIALS

Comply with Section 00165 of the Standard Specifications.

SECTION 00170 - LEGAL RELATIONS AND RESPONSIBILITIES

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

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

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

Insurance Coverages	Combined Single Limit per Occurrence	Annual Aggregate Limit
Commercial General Liability	$2,000,000	$4,000,000
Commercial Automobile Liability	$1,000,000	(aggregate limit not required)
Employee Liability	$500,000	(aggregate limit not required)

00170.70(c) Additional Insured - Delete the phrase “When federal transportation funding is involved,” .

00170.72 Indemnity/Hold Harmless – In the first sentence, delete the phrase “when federal transportation funding is involved,”.

Add the following paragraphs:

Any such indemnification shall also provide that neither Agency's contractor and subcontractor nor any attorney engaged by Agency's contractor and subcontractor shall defend any claim in the name of the State of Oregon or any agency of the State of Oregon, nor purport to act as legal representative of the State of Oregon or any of its agencies, without the prior written consent of the Oregon Attorney General. The State of Oregon may, at any time at its election assume its own defense and settlement in the event that it determines that Agency's contractor is prohibited from defending the State of Oregon, or that Agency's contractor is not adequately defending the State of Oregon's interests, or that an important governmental principle is at issue or that it is in the best interests of the State of Oregon to do so. The State of Oregon reserves all rights to pursue claims it may have against Agency's contractor if the State of Oregon elects to assume its own defense.

Contractor shall indemnify, defend and hold harmless State from and against all claims, suits, actions, losses, damages, liabilities, costs and expenses of any nature whatsoever resulting from, arising out of, or relating to the activities of Contractor or its officers, employees, sub-contractors, or agents under the resulting contract.

SECTION 00180 - PROSECUTION AND PROGRESS

Comply with Section 00180 of the Standard Specifications modified as follows:

00180.20(c)(3) Submittals – Replace the reference to “00180” to the reference “00180.20(a)”.

00180.40(b) On-Site Work - Add the following paragraph to the end of the subsection:

The Contractor shall not begin On-Site Work before a preconstruction conference has been held, unless approved by the Engineer.

Add the following subsection:

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

Limitations	Subsection
Cooperation with Utilities	00150.50
On-Site Work	00180.40(b)
Contract Time	00180.50(h)
Closed Lanes	00220.40(e)(1)
Regulated Work Areas	00290.34(a)
Noise Control	00290.32

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

00180.50(c) Beginning of Contract Time - Replace this subsection, except for the subsection number and title, with the following:

When the Contract Time is stated in Calendar Days, counting of Contract Calendar Days will begin on the day the Contractor begins On-Site Work as defined in 00110.20.

Add the following subsection:

00180.50(h) Contract Time - There is one Contract Time on this Project as follows:

The Contractor shall complete all Work to be done under the Contract before the elapse of 180 Calendar Days, or not later than October 23, 2020 whichever occurs first.

00180.70(b) Contractor's Responsibility during and after Suspension - Replace the reference to "00150.40(b)" to the reference "00150.40".

00180.85(b) Liquidated Damages – Add the following:

The liquidated damages for failure to complete the Work on time required by 00180.50(h) will be $1,150 per Calendar Day *.

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

Inclement weather encountered will not be considered a reason for further time extension to complete any of the remaining work after the completion date nor reason for any waiver of liquidated damages unless specifically allowed by the Engineer.

SECTION 00190 - MEASUREMENT OF PAY QUANTITIES

Comply with Section 00190 of the Standard Specifications.

SECTION 00195 - PAYMENT

Comply with Section 00195 of the Standard Specifications modified as follows:

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

No Pay Items under this Contract qualify for the steel escalation/de-escalation program for this Project.

00195.50(b) Retainage – Replace this Subsection, except for the Subsection number and title, with the following:

The Agency reserves the right in its sole discretion to not withhold retainage from progress payments or to begin withholding retainage at any time. If the Agency withholds retainage from progress payments, the amount to be retained from progress payments will be 2.5% of the value of Work accomplished, and will be retained in one of the forms specified in Subsection (c) below. If the Agency determines that satisfactory progress is not being made on the Work, the Agency may withhold up to 5% of the value of Work accomplished from subsequent progress payments. No retainage will be withheld from Work performed as Force Account Work, escalation/de-escalation, bonuses, or other items decided by the Agency.

As provided in 00170.65(b)(3) in addition to any retainage, a withholding of 25% of amounts earned will be withheld and released according to ORS 279C.845 when the Contractor fails to file the certified statements required in ORS 279C.845, FHWA Form 1273, and 00170.65.

00195.50(c) Forms of Retainage - Replace the paragraph that begins "Forms of acceptable retainage are specified below …" with the following paragraph:

If the Agency withholds retainage, forms of acceptable retainage are specified below in Subsections (1) through (3). Unless the Contractor requests and the Agency accepts a form of retainage under Subsections (2) or (3), the Agency will use the "Cash, Alternate A" in this Subsection. If the Agency incurs additional costs as a result of the Contractor's election to use a form of retainage other than Cash, Alternate A, the Agency may recover such costs from the Contractor by a reduction of the final payment.

00195.50(c)(1) Cash, Alternate A - Replace the paragraph that begins "The Agency will deposit the cash retainage …" with the following two paragraphs:

Except as otherwise provided, the Agency will deposit the cash retainage withheld in an interest-bearing escrow account as required by ORS 279C.570(2). The Contractor shall execute such documentation and instructions respecting the interest-bearing escrow account as the Agency may require to protect its interests, including but not limited to a provision that no funds may be paid from the account to anyone without the Agency's advance written authorization. Interest earned on the account shall accrue to the Contractor. Amounts retained and interest earned will be included in the final payment made according to 00195.90, unless otherwise specified in the Contract.

For a contract over $500,000, if the Contractor requests that the Agency deposit the retainage in an interest-bearing account under ORS 279C.560(5), the Agency will use the "Cash, Alternate A" in this Subsection. For a contract $500,000 or less, if the Contractor requests that the Agency deposit the retainage in an interest-bearing account under ORS 279C.560(5), the Agency will use an interest-bearing account (in a bank, savings bank, trust company, or savings association) as provided under ORS 279C.560(5).

00195.50(c)(2) Cash, Alternate B (Retainage Surety Bond) - Replace the paragraph that begins " Upon receipt of an approved retainage surety …" with the following paragraph:

Upon receipt of an approved retainage surety bond, the Agency will limit the amount of cash retainage withheld to $10,000, which will be deposited in an interest-bearing escrow account as described in

(1) above. The surety bond must be in the bond form provided by the Agency. The bond must be provided by the same Surety that provides the Performance and Payment Bonds.

Replace the paragraph that begins "Amounts of retainage withheld under …" with the following paragraph:

Amounts retained and interest earned will be included in the final payment made according to 00195.90, unless otherwise specified in the Contract.

00195.50(d) Release of Retainage - Add the following paragraph to the end of this Subsection:

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

00195.50(f) Prompt Payment Policy - Replace the paragraph that begins "Payments shall be made promptly …" with the following paragraph:

Payments shall be made promptly according to ORS 279C.570, ORS 279C.580 and other applicable legal requirements.

SECTION 00196 - PAYMENT FOR EXTRA WORK

Comply with Section 00196 of the Standard Specifications.

SECTION 00197 - PAYMENT FOR FORCE ACCOUNT WORK

Comply with Section 00197 of the Standard Specifications.

SECTION 00199 - DISAGREEMENTS, PROTESTS AND CLAIMS

Comply with Section 00199 of the Standard Specifications.

SECTION 00210 - MOBILIZATION

Comply with Section 00210 of the Standard Specifications.

SECTION 00220 - ACCOMMODATIONS FOR PUBLIC TRAFFIC

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

00220.40(e)(1) Closed Lanes - Replace this subsection, except for the subsection number and title, with the following:

One or more Traffic Lanes may be closed on the Berlin Road when allowed, shown, directed, or as indicated in 00220.40(f):

00220.40(e)(1) Closed Lanes - Add the following to the end of this section:

- Portable changeable message signs meeting the requirements of section 00225.16(b) shall be installed for a minimum period of 14 Calendar Days prior to the road closure.

Add the following subsection:

00220.40(f) Limited Duration Road Closure - The Contractor will be permitted to close all Traffic Lanes for periods not to exceed 120 Calendar Days during construction activities.

Add the following subsection:

00220.41 Bridge Work – When work is being done while Berlin Road is open to traffic in the project limits, before starting any grading or pavement removal at bridge ends or removal of pavement from bridge decks, arrange so that all equipment, labor, and materials required to complete the pavement replacement work and bridge deck waterproofing work are on hand or are guaranteed to be delivered. Once grading and pavement removal begins, vigorously prosecute and complete this work. Complete paving and membrane waterproofing work in the shortest possible time.

Temporarily taper or bevel longitudinal and transverse grade changes or drop-offs resulting from grading and pavement removal and membrane waterproofing work with asphalt concrete mixture to provide a smooth and safe transition. Construct tapers according to 00620.40.

Add the following subsection:

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

The road closure will not be allowed until the area and the detour route are signed according to the TCP and the requirements of Section 00225.

00220.45 Load Restrictions on Bridges - Limit the combined weight of construction vehicles, equipment, and daily material usage to 65,000 pounds for every 1,000 square feet of surface area plus the weight of long term storage of materials to 25,000 pounds for every 100 square feet of surface area of the bridge or a total of 200,000 pounds for each span of the bridge, whichever is less.

The Contractor may request alternate loadings by submitting, 30 Calendar Days before proposed loadings, stamped loading calculations and data according to 00150.35.

SECTION 00225 - WORK ZONE TRAFFIC CONTROL

Comply with Section 00225 of the Standard Specifications modified as follows:

00225.02(a) Temporary Signs - Add the following to the end of this subsection:

Install two sign flag boards, as shown on the Standard Drawings, above the following detour and road closed advance warning signs, where applicable:

- "DETOUR AHEAD", "DETOUR XXXX FT", "DETOUR X/X MILE" (W20-2) signs.
- "ROAD CLOSED AHEAD", "ROAD CLOSED XXXX FT", "ROAD CLOSED X/X MILE" (W20-3) signs.

00225.12(g) Water Filled Barrier – Furnish water filled jersey barriers from the QPL, as shown on the plans, or approved by the Engineer.

00225.32(b) Traffic Control Inspection Without TCS - Add the following bullet(s) to the end of the bullet list:

- Shall report to the Project Site within 1 hour after being notified in the event of a Work Zone incident during non-work periods.

00225.98 Flaggers and Traffic Control Supervisors - Replace this subsection, except for the subsection number and title, with the following:

No separate or additional payment will be made for flaggers.

SECTION 00245 - TEMPORARY WATER MANAGEMENT

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

Description

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

00245.01 Abbreviations:

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

00245.02 Definitions:

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

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

Include the following minimum information in the TWMP:

- The sequence and schedule for dewatering and re-watering. This sequence and schedule must include when to contact the Engineer prior to dewatering and re-watering.
- How the Work area is isolated from the active stream flow upstream, through, and downstream.
- How the stream flow is routed and conveyed around or through the isolated Work area.
- How fish passage is provided around the Work area, if required.
- How the isolated Work area is de-watered.
- How the pumped water is treated, if necessary, before it is discharged downstream.
- Description of all construction stages, including appropriate contact points for each stage.
- A list of on-site backup Materials and Equipment.
- Provide the name of the TWM Subcontractor and Contractor's superintendent, and their 24-hour contact phone number 10 Days before the pre-Work meeting. If changes in the appointment of the TWM Subcontractor or Contractor's superintendent occur during the term of the Contract, provide written notice to the Engineer within 5 Calendar Days of the change.
- Calculations of water withdraw pumps capacity.

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

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

00245.04 Pre-Work Meeting - Before beginning any TWM work, attend a pre-work meeting at the Project Site with the Engineer at least 8 Calendar Days prior to implementation of TWM. Required attendees include:

- Engineer
- Contractor
- TWM Subcontractors

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

No pumping, dewatering, or removal of water from the active flowing stream will be allowed without the specific written approval of the Engineer.

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

Furnish pumps that are:

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

Construction

00245.40 Fish Removal - Qualified Agency, ODFW, or ODOT consultant biologists will remove fish and other aquatic organism from the isolation Work areas. Coordinate fish removal with the Engineer at least 28 Calendar Days before beginning Work in regulated Work areas. Allow access into the isolation Work areas before, during and after installation of the TWMF to perform the specified tasks as follows:

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

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

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

00245.42 Operation - Operate temporary water management as follows:

- Protect fish and fish habitat according to 00290.34.
- Maintain and control water flow downstream of the isolated Work area for the duration of the diversion to prevent downstream de-watering.
- Clean, maintain and repair water intake screening to ensure adequate flows and protection of aquatic organism.
- In the event of containment failure immediately notify the Engineer so arrangements can be made to remove fish and aquatic organism from the isolation Work areas prior to the continuation of Work within the ordinary high water limits.
- When using a pump for bypassing water during temporary water management, the pump must be monitored and maintained at all times. This includes during non-work hours. A back-up pump must be on-site and ready for use as necessary.

Maintenance

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

Finishing and Cleaning Up

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

Measurement

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

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

Sandbags @ 3 Foot Depth..... 156 Feet

Payment

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

Payment will be payment in full for furnishing and placing all Materials, and for furnishing all Equipment, labor, and incidentals necessary to complete the Work as specified.
Turbidity monitoring will be paid according to 00290.90.

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

SECTION 00253 - TEMPORARY WORK ACCESS AND CONTAINMENT

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

Provide temporary work access and containment systems for bridge removal work on all spans.

00253.01 General - Add the following paragraph to the end of this subsection:

Work platforms and containment are allowed on the bridge only above ordinary high water level or existing active channel, whichever is greater.

Add the following subsection:

00253.02 Definitions:

Dead Load - Self-weight of a structure, such as a work platform, scaffolding, and containment.

Factor of Safety - Component ultimate failure load divided by the maximum working load combination applied to the component.

Live Load - The weight of personnel, equipment, materials, debris, and vehicles.

Point Load - A force applied to a structure at a single point.

Span - A section of bridge superstructure between piers.

00253.03 Submittals - Add the following paragraph and bullets to the end of this subsection:

Submit the following:

- Stamped Working Drawings clearly defining dimensional limits and loading limits that satisfy the conditions listed in 00253.09 for exemption from design calculations for the bridge structural members. Identify the work platform, scaffolding, and containment system dead load (in pounds per square foot) in the loading note, and identify the maximum allowable accumulations of collected debris or water (inches depth) allowed in conjunction with the number of workers allowed and the concentrated loads (in pounds) of equipment and materials to be used within the structure. Identify the maximum wind speed at which containment wall materials remains on the structure.
- Stamped work platform and scaffolding Working Drawings, specifications and design calculations.
- Stamped calculations showing that equipment, vehicles, and supplies placed in a closed lane do not exceed the equivalent of 80,000 GVW or HS-20 loading.
- Stamped work platform and scaffolding Working Drawings, specifications and design calculations showing the maximum allowed debris loading and water depth allowed on the containment.

Add the following subsection:

00253.09 Work Platform, Scaffolding and Containment Structural Design Requirements -

For containment structures positioned symmetrically on any span, design calculations for the bridge structural members are not required if all of the following conditions are satisfied:

- Total combined live load and dead load of all work platforms and containment structures supported by the span, including all personnel, equipment, materials, and collected debris or water, does not exceed 20 pounds per square foot.

SECTION 00280 - EROSION AND SEDIMENT CONTROL

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

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

The Agency's NPDES 1200-CA Permit is applicable to the Project.

Add the following subsection:

00280.01 National Pollutant Discharge Elimination System - Add the following:

A copy of the General Construction Permit, NPDES 1200CA, is available at the Linn County Road Department, 3010 Ferry Street, SW, Albany, Oregon 97322, and will also be made available on site for review by the Linn County Road Department project manager.

00280.04 Erosion and Sediment Control Plan on Agency Controlled Lands - Add the following three paragraphs:

The erosion control plans as shown in the plans, have been developed for anticipated site conditions. The Contractor shall submit a revised ESCP plan for approval which represents actual staging conditions for this project. Submit an initial ESCP for review and approval ten Calendar Days before the pre-construction conference, as stipulated in section 00280.02. The plan may be developed and submitted in stages for each type of work shown in the Contractor's schedule. When submitted in stages, each type of work will not begin until the Engineer approves the ESCP.

At the preconstruction conference, the Engineer will present an evaluation of the submitted Erosion and Sediment Control Plan (ESCP) or submitted ESCP modifications, and their implementation schedules. Update plan as revisions are implemented or changes are made in the original plan. During the life of the contract, submit proposed changes to the approved ESCP or schedule to the Engineer for approval before implementing the changes.

Other erosion control measures may be required depending on the Contractor's methods of operations and scheduling.

00280.15(f)(1) Filter Sock Material - Add the following sentence to the end of this subsection:

Furnish filter sock material with a diameter of 12 inches.

SECTION 00290 - ENVIRONMENTAL PROTECTION

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

00290.00 Scope - Add the following paragraphs:

The contractor shall be solely responsible for environmental contamination related to their equipment and work.

Do not discharge contaminated water directly into any waters of the State until it has been satisfactorily treated.

Inspect and clean all equipment prior to operating it within 150 feet of the Regulated work Area. check all equipment for fluid leaks.

Maintain hazardous material containment kits and spill containment kits on-site to facilitate the cleanup of hazardous material spills for both dry-land spill and spills that could reach nearby

waterways. Install hazardous material containment kits in instances where there is a potential for release of petroleum or other toxicants.

00290.10 Staging and Disposal Sites - Add the following to the end of this subsection:

Use the following staging site:

- **Site Type** - Staging
- **Location** – Berlin Road
- **Access** – Ingress/egress
- **Available Area** – Existing roadway and gravel shoulders within project limits. Do not restrict access to property owners.

No other sites may be used on this Project, including non-Agency sites. Delineate the limits of the site with orange plastic mesh fencing from the QPL for the duration of the Project. Remove the fencing when the Project is complete and the site has been restored to preconstruction conditions.

Replace the paragraph that begins "Locate staging areas and disposal…" with the following paragraphs:

Locate staging areas and disposal sites in previously improved or disturbed sites, including existing Roadways, pullouts, turnouts, parking lots, and storage yards that have been compacted, and graveled or paved unless otherwise specified in Section 00236 or Section 00237 or approved, in writing, by the Engineer.

Do not stage Equipment, park Equipment or store Materials in any City, County, State, or Federal park, wayside or recreational facility.

Restore the site by:

- Removing all imported fabric, rock, and other construction debris.
- Smoothing the ground.
- Reseeding all disturbed earth.

00290.30(a) Pollution Control Measures - Add the following subsections and bullets:

(7) Water Quality:

- Do not discharge contaminated or sediment-laden water, including drilling fluids and waste, or water contained within a work area isolation, directly into any waters of the State or U.S. until it has been satisfactorily treated (using a best management practice such as a filter, settlement pond, bio-bag, dirt-bag, or pumping to a vegetated upland location).
- Do not use permanent stormwater quality treatment facilities to treat construction runoff unless prescribed by an ESCP approved under Section 00280
- Construction discharge water is not allowed to be released into an outfall, diffusor port, or into the active channel.
- Do not use explosives under water.
- Implement containment measures adequate to prevent pollutants or construction and demolition materials, such as waste spoils, fuel or petroleum products, concrete cure water, silt, welding slag and grindings, concrete saw cutting by-products and sandblasting abrasives, from entering waters of the State or U.S.

- Implement containment measures adequate to prevent flowing stream water from coming into contact with concrete or grout within the first 24 hours after placement.
- Do not end-dump riprap into the waters of the State or U.S. Place riprap from above the ordinary high water line.
- Cease project operations under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
- The Engineer retains the authority to temporarily halt or modify the Work in case of excessive turbidity or damage to natural resources.
- If Work activities violate permit conditions or any requirement of this subsection, stop all in-water work activities and notify the Engineer.
- Cease project operations under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.
- The Project Manager retains the authority to temporarily halt or modify the Project in case of excessive turbidity or damage to natural resources.

(8) Visual Turbidity Monitoring - Perform visual turbidity monitoring each day when working in regulated work areas according to the following:

- Before beginning work, make in stream turbidity observation approximately 100 feet upstream and, based on the wetted stream width, at the compliance distance listed in Table 00290-1 downstream of the in-water work area.
- Make in stream turbidity observations upstream and downstream every four hours.
- If a turbidity plume is observed within the compliance distance downstream of the in-water work area, implement in-water best management practices (BMP). If a turbidity plume is still observed at the second four-hour observation, stop all in-water work and implement additional BMP. Resume in-water work activity the next morning.
- If a turbidity plume is observed beyond the compliance distance downstream of the in-water work area at any observation interval, stop all in-water work and implement additional BMP. Resume in-water work activity the next morning.

Table 00290-1

Wetted Stream Width	Compliance Distance
≤ 30 feet	50 feet
> 30 feet to 100 feet	100 feet
> 100 feet to 200 feet	200 feet
> 200 feet	300 feet
Lakes, Ponds, and Reservoirs	Lesser of 100 feet or max. surface dimension

Document all turbidity monitoring results including date, time, and location on the Agency provided form or another form approved by the Agency. Submit reports to the Engineer weekly when working in regulated work areas and keep copies of the reports at the project site.

If work activities violate permit conditions or cause water quality violations which may endanger the health of aquatic life or environment, stop all in-water work activities and notify the Engineer. Submit a written report of violations to the Engineer within 5 Calendar Days of violation.

00290.30(b) Pollution Control Plan - Replace the paragraph that begins “Develop and submit a PCP…” with the following:

Develop a PCP using ODOT Form 734-2445 and submit it for approval 10 Calendar Days before the preconstruction conference. Maintain a copy of the PCP on-site at all times during construction activities, readily available to employees and Inspectors. Ensure that all employees comply with the provisions of the PCP.

Delete the paragraph that begins “A Pollution Control Plan…”.

00290.32 Noise Control - Replace the first bullet with the following:

- Do not perform construction operations, including staging, within 1000 feet of any occupied dwelling unit on Sundays, legal holidays and between the hours of 8:00 p.m. and 7:00 a.m. on weekdays and between the hours of 8:00 p.m. and 8:00 a.m. on Saturdays, unless otherwise approved by the Engineer.

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

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

Perform work within the regulated work area only during the in-water work period. The in-water work period is from June 1, 2020 to October 15, 2020.

The total volume of material filled or discharged into waters of the state and waters of the U.S. shall not exceed 15 cubic yards.

The total volume of material excavated from the waters of the state and waters of the U.S. shall not exceed 30 cubic yards.

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

00290.34(b) Prohibited Operations - Replace this subsection, except for the subsection number and title, with the following:

Except where allowed by the Contract or by permit, do not:

- Blast underwater.
- Use water jetting.
- Release petroleum products or chemicals in the water.
- Disturb spawning beds.
- Obstruct stream channels.
- Cause silting or sedimentation of waters of the State or waters of the U.S.
- Use treated timbers within the regulated work area.
- Impede adult and juvenile fish passage, including intermittent streams.
- Allow equipment to be in or on the water.

Add the following subsection:

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

(1) General Requirements:

- Do not install fish ladders (for example: pool and weirs, vertical slots, fishways) or fish trapping systems.
- Do not apply surface fertilizer within 50 feet of any stream channel.

Use heavy equipment as follows:

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

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

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

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

Choose size and position of screens to meet the following criteria:

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

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

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

- Replant all damaged streambanks before the first April 15 following construction.
- If use of large wood, native topsoil, or native channel material is required for the site restoration according to the roadside development plans, stockpile all large wood, native vegetation, weed-free topsoil, and native channel material displaced by construction. Cut trees or large wood and trees into pieces of no less than 20 feet in length, or as shown on the roadside development plans or as directed. Stockpiled native wood and vegetation remain the property of the Agency.
- Stabilize all disturbed soils, including obliteration of temporary access roads, following any break in work unless construction will resume in 4 Calendar Days.

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

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

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

- Design, build, and maintain facilities to collect and treat all construction and drilling discharge water using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals, and other pollutants likely to be present. An alternate to treatment is collection and proper disposal offsite.

- Isolate drilling operations from wetted stream to prevent drilling fluids from contacting waters of the state or waters of the U.S.
- Use casing to prevent loss of drilling fluid to the subsurface formation. Do not drill open hole.
- If it is necessary to drill through an over-water bridge deck, use containment measures to prevent drilling debris from entering the stream channel.
- If drilling fluid or waste is released to surface water, wetland or other sensitive environment, cease all drilling pending written approval from appropriate regulatory agencies through the Project Manager to resume drilling.
- Recover all waste and spoils if precipitation is falling or imminent. Recover, recycle, or dispose of all drilling fluids and waste to prevent entry into flowing water.
    - Recycle drilling fluids using a tank instead of drill recovery/recycling pits, whenever feasible.
    - When drilling is completed, make attempts to remove the remaining drilling fluid from the sleeve (for example: by pumping) to reduce turbidity when the sleeve is removed.

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

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

(8) Piling Removal - Remove temporary or permanent piling according to the following:

- Dislodge the piling with a vibratory hammer, whenever feasible.
- Once loose, place the piling onto the construction barge or other appropriate dry storage site.

a. Non-Treated Piling - Use the following methods to remove non-creosote piling:

- If a pile in uncontaminated sediment cannot be removed or breaks, cut or push the pile or stump off at least 3 feet below the surface of the sediment and cover with a cap of clean, native substrates that match surrounding streambed materials.

b. Treated Piling - To minimize toxic release, sediment disturbance, and total suspended solids, use the following methods to remove treated piling:

- Install a floating surface boom to capture floating surface debris.
- Keep all equipment out of the water, grip piles above the waterline, and complete all work during low water and low current conditions.
- Dislodge the piling with a vibratory hammer, whenever feasible. Do not intentionally break a pile by twisting or bending.
- Slowly lift the pile from the sediment and through the water column.
- Place the pile in a containment basin on a barge deck, pier, or shoreline without attempting to clean or remove any adhering sediment.

(9) Disposal of Treated Timbers - Dispose of temporary or permanent treated timber piling at a DEQ approved landfill. Payment for disposal of treated timbers is incidental to section 00501.

(10) Ditch and Culvert Cleaning - Complete ditch cleaning, culvert and trash rack cleaning by working from the top of bank, unless work area isolation would result in less habitat disturbance.

- Do not work more than 20 feet upstream or downstream the culvert or trash rack.
- Remove only the minimum amount of wood, sediment, or other natural debris necessary to maintain the facility's function, without disturbing spawning gravel or changing the configuration of the original ditch, unless the new configuration is part of the project design.
- Place all large wood, cobbles, and gravels recovered from during culvert and trash rack cleaning downstream from the structure.
- Complete drift removal in the following priority, as directed:
  - Pull and release whole logs or trees downstream.
  - Pull whole logs and trees and place in the riparian area, as directed.
  - Remove whole logs or trees only if roadside development plans have been developed for replacement in-kind.
  - Pull, cut only as necessary, and release logs and trees downstream.

(11) Floating Structures - The following types of over-water or in-water structures are not allowed:

- boat house
- boat ramp made of asphalt
- buoy or float in an active anchorage or fleeting area
- covered moorage
- floating storage unit
- houseboat
- marine
- pier
- non-water related facilities (including staging areas) inside riparian management areas
- any other over-water structure more than 6-feet wide unless otherwise approved in writing by appropriate regulatory agencies through the Project Manager

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

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

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

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

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

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

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

Bird management activities to comply with the Migratory Bird Treaty Act (16 U.S.C. 703-712) have been performed by the Agency in preparation for construction of this project. This has included removal of vegetation from the project site and monitoring for prevention of nesting within the project site. Bird management activities will continue to be performed by the Agency on behalf of the Contractor during the contract. Ensure that the Agency and its permitted agents have access to the project area, including existing work platforms, as needed to prevent migratory bird nesting. Nesting prevention may include daily bird harassment and the installation and maintenance of devices that exclude birds.

The Contractor will attend an on-site pre-construction meeting with Agency environmental staff and its permitted agents to review activities that could harm nesting birds. The Contractor will notify the Engineer, in writing, a minimum of 10 calendar days prior to starting activities that could harm nesting birds during the March 1st through September 1st nesting season. If avoidance is not possible, obtain approval from the Engineer before falling trees or clearing vegetation that could disturb migratory bird nesting habitat between March 1 and September 1.

00290.41 Protection of Wetlands – Replace the title of this subsection with "**Protection of Waters of the U.S. or State"**

Delete the paragraph that begins with "For the purposes of this Section…".

00290.41(a) Identifying Wetlands – Replace the title of this subsection with "**Identifying Waters of the U.S. or State, Including Wetlands"**

00290.41(b) Disturbing Wetlands – Replace the title of this subsection with "**Disturbing Waters of the U.S. or State, Including Wetlands"**

Add the following to the end of this subsection:

Permits have been obtained for this project from the [US Army Corps of Engineers (Corps)] Nationwide Permit (NWP) NWP-2019-309 and the [Department of State Lands (DSL)] Permit No. 62102-GP. Keep a copy of Corps and DSL permits at the project site during construction.

These permits authorize the placement of 31 cubic yards of fill and removal within wetlands as located on the plans.

Add the following subsection:

00290.42 Work Containment Plan - A Work Containment Plan (WCP) is required on this Project for bridge removal activity.

Develop and submit a WCP for approval at least 21 Calendar Days prior to mobilization for bridge removal activity. Maintain a copy of the WCP on the Project Site at all times during construction, readily available to employees and inspectors. Ensure that all employees comply with the provisions of the WCP. Design the WCP to avoid or minimize disturbance to protected features (sensitive cultural or natural resources, Regulated Work Areas, aquatic life or habitat in Regulated Work Areas) related to Contractor operations.

Before developing the WCP, meet with Agency to review the Contractor's activities that require the WCP to ensure that all parties understand the locations of protected features to be avoided and the measures needed to avoid and protect them.

Notify the Project Manager at least 10 Calendar Days before beginning work access or containment construction activities.

The Agency reserves the right to stop work and require the Contractor to change the WCP methods and equipment before any additional Contract work, at no additional cost to the Agency, if and when, in the opinion of the Agency, such methods jeopardize sensitive cultural or natural resources, Regulated Work Areas, or aquatic life or habitat in Regulated Work Areas.

The WCP shall identify how the Contractor's construction operations will protect regulated features during mobilization, construction, maintenance, and demolition. Include a narrative describing compliance with Section 00290 as related to construction, operation, and demolition activities specified in Section 00253.

Design, construct, maintain, and remove temporary work access and containment systems according to Section 00253.

00290.90 Payment - Add the following paragraphs to the end of this subsection:

The work containment plan and the work containment system will be paid for at the Contract lump sum amount for the item "Work Containment Plan and System".

Partial Payments will be made as follows:

- When the initial WCP and WCS is approved.....20%
- When WCS has been installed……....40%

- When WCS has been removed and all equipment and materials have been removed from the site..…….....40%

Payment will be payment in full for furnishing all materials, equipment, labor, and incidentals necessary to complete the work as specified. Payment includes providing and updating the work containment plan and for designing, constructing, maintaining, and removing the containment system.

The accepted quantities of turbidity monitoring will be incidental to the Contract lump sum amount for the item "Temporary Water Management".

SECTION 00305 - CONSTRUCTION SURVEY WORK

Section 00305, which is not a Standard Specification, is included for this Project by Special Provision.

Description

00305.00 Scope - This work consists of all surveying activities necessary to control the many phases of work required to construct the Project to the lines and grades as shown, specified, or established.

Make all supporting computations and field notes required for control of the work and as necessary to establish the exact position, orientation, and elevation of the work from control stations, including furnishing and setting construction stakes and marks, reference marks, and additional control stations.

Plans, specifications and other data necessary to lay out the work will be available for inspection at the Project Manager's office. The Contractor will be furnished a copy of these documents.

00305.01 Definitions:

Confidence Points - Random points measured in the field within the boundary of a digital terrain model (DTM), the purposes of which are to verify the accuracy of the DTM and to provide evidence just prior to construction that the DTM is a reasonable representation of the original ground for computation of volumes and pay quantities. Similarly, confidence points are used to verify that a constructed grade has been built according to the design DTM. Additional information is available from the Engineer.

Confidence point locations follow these guidelines:

- Randomly selected without regard for the location of DTM points or triangles
- Evenly distributed over the entire DTM area to be validated
- Proportionately distributed between confidence point classifications as applicable
- At a density sufficient to validate the surface, generally ten per instrument location as used in collecting DTM data or if not applicable, as in data collected photogrammetrically, 2% of DTM points

Control Network - An array of control stations either established by the Contractor or provided by the Agency.

Control Station - Any item identified in the Project records as having a position and/or elevation on the Project datum and intended to be used to control the many phases of the construction work.

Digital Terrain Model (DTM) - An electronic computer model of the shape of the ground.

Reference Stakes - Stakes set away from but with information relating back to the intended location and/or grade.

Slope Catch - The location where a design slope intersects the existing ground and where excavation or embankment work should begin to provide the intended earthwork.

Slope Staking - The process of using measurements and calculations in the field to determine the slope catch. Slope staking shall normally include setting stakes to mark the slope catch and setting a reference stake for every catch stake.

Stakes - Stakes, nails, marks, string lines, or other devices or mechanisms set or established for the purpose of indicating or controlling the location, orientation, or grade of any feature intended for construction, or for the purpose of limiting or influencing the construction work.

Staking - The act of placing stakes.

Subgrade Area – The area of Subgrade from Subgrade shoulder to Subgrade shoulder.

Survey Marker - Any survey monument, control station, or stake.

Survey Monument - Any natural or man-made item specified or identified in a property deed, boundary survey, government document, or other instrument of public record, when the purpose of said item is to mark or reference a property boundary, geographical location, elevation, or other position.

Surveyor - The individual designated by the Contractor and licensed in the state of Oregon as a Professional Land Surveyor and placed in "responsible charge" of the survey work as defined in ORS 672.002(6)(b).

Temporary Bench Mark (TBM) - A control station established for the purpose of providing vertical control for the Project. A TBM may or may not have an established horizontal position.

00305.02 Pre-Survey Conference -The prime Contractor, subcontractors, surveyor, survey crew leader, and all surveying personnel who are to be involved in the survey work shall be present at the preconstruction meeting or shall schedule to meet with the Project Manager two weeks prior to beginning survey work. The purpose of this meeting will be to discuss methods and practices of accomplishing required survey work.

00305.03 Review by the Engineer -The Engineer may periodically review the notes, calculations and layout work, including field locations, for compliance with these specifications. Survey work that does not meet the tolerances in 00305.40 may be rejected, and the work redone at the Contractors expense to meet the tolerances.

Review by the Engineer does not constitute approval or acceptance of the work, nor does it relieve the Contractor of responsibility for performing work in conformance with the plans and specifications.

00305.04 Agency Responsibilities - The Agency Shall perform or provide the following items of work:

- Perform and provide a Pre-Construction Survey.
- Provide copies of plans and specifications.
- Establish initial horizontal and vertical control stations in the proximity of the Project.

- Provide horizontal and vertical alignment data.
- Provide cross section grade elevations to establish lines, grades, slopes, cross sections, and curve superelevation for each phase of roadwork.
- Evaluate grade for acceptance at each course of material.
- Perform measurements and calculations for pay quantities.
- Review Contractor's work and records periodically.

00305.05 Contractor Responsibilities - The Contactor shall perform or provide the following items of work:

- Make calculations, field notes and survey drawings for the layout and control of the work as are necessary to construct the Project as specified
- Provide original or copies of notes, calculations and drawings as requested.
- Preserve survey monuments and control stations according to 00305.71 and as governed by applicable law.
- Give the Engineer such facilities and assistance in establishing lines, grades and points as the Engineer may require.
- In the case of alterations, which involve any changes in stakes, the Contractor shall cooperate with the Engineer and facilitate the prompt re-establishment of field control for the altered or adjusted work.
- Replace and augment control stations as necessary to control the Project.
- Establish additional control stations as necessary to control the Project.
- Perform slope staking necessary for construction of earthwork including intersections and matchlines.
- Set stakes defining limits for clearing. Set stakes defining approximate right-of-way and easements.
- Set stakes to define construction centerline, centerline offsets, detour lines, or other lines necessary for control of the Project work.
- Set stakes to define the work, that may include but is not limited to the following:
    - Roadway location and grade. Set stakes and/or hubs at 50-foot intervals on tangents and 25-foot intervals on curves
    - Controls for sanitary and domestic water system
    - Fences and gates.
    - Guardrail, barrier, barricades, and associated features.
    - Traffic delineators, reflectors, and guide devices.
    - Temporary and permanent signing *
    - Temporary and permanent pavement striping and pavement marking devices.
    - Poles and footings, cabinets, junction boxes, sensors, and other features associated with illumination and signal facilities *
    - Curbs, walks, ADA ramps, stairs, walls, mailboxes, and other miscellaneous structures.*
    - Pipes, manholes, inlets, weirs, settlement basins and other storm water, drainage and water quality structures and facilities *

*This includes field verification of fit and functionality or as instructed by the Engineer.

- Landscaping items.
- Earthwork features including guardrail flares and mounds, berms, and mounds
- Buildings and other structures and facilities.
- Environmental impact mitigation features.
- Other incidental survey Work common to this type of construction project.

- Remove and dispose of all flagging, lath, stakes and other temporary staking material after the Project is completed.
- Perform final "as constructed" measurements.
- Complete a Post-Construction survey of monuments and control stations and submit as-built documentation to Linn County Surveyor's Office.

For bridge work, supply survey drawings depicting the location and elevations of the elements of substructure and superstructure and place stakes for features including, but not limited, to the following:

Substructure:

- Piling
- Footings
- Columns, walls, and abutments
- Pile caps and cross beams
- Bearing pads or devices

Superstructure:

- Horizontal alignment and deck edges
- Soffit grades
- Seismic restraints
- Wing walls and retaining walls
- Bridge end panels
- Deck elevations
- Railings
- Deck drains and other bridge drainage facilities

- Set reference stakes and elevations in the vicinity of the structure work, as are necessary for the Engineer to check the layout. This may include establishment of a control network.

00305.06 Survey Methods - Survey procedures shall be appropriate for the equipment being used and be according to current Agency practices.

New survey procedures that are not according to current Agency practices shall be submitted to the Engineer for review 21 days prior to conducting the work. The surveyor may be required to demonstrate the capabilities, accuracy, and reliability of the intended procedure. The Engineer will evaluate the procedure and intended application and provide approval or rejection within 21 days. Work may proceed immediately upon approval of procedures by the Engineer.

Survey equipment must be properly calibrated and kept in good repair.

00305.07 Survey Work Records - Contractor's survey personnel shall maintain a Project daily record of work performed by the survey crew. The daily record shall contain the date, crew names, type and location of work, and work accomplished. Upon request, furnish a copy of diary entries to the Engineer. Furnish a final copy of the diary when the Project is complete.

Contractor's survey personnel shall make all field notes and calculations in a manner consistent with current Agency practices and on forms provided or approved by the Engineer. Computations, survey notes and other records necessary to accomplish the work shall be neat, legible and complete. Furnish copies of computations, notes and other records when requested by the Engineer.

When a Project affects any permanent change to vertical clearances within the traveled way, complete and submit a Standard Vertical Clearance form (Form 734-2614) within 30 days of the change to the vertical clearance.

When a Project temporarily restricts any vertical clearances submit a Standard Vertical Clearance form (Form 734-2614) 28 days before the restriction takes effect.

For bridges, furnish all computations, layout notes, and drawings of the structure to the Engineer for review 7 Calendar Days before beginning construction.

Upon completion of construction staking and prior to final acceptance of the Contract, furnish to the Engineer, computations, survey notes, Project records and other data used to accomplish the work. Include an itemized list of the data.

All data and original documentation associated with the Project will become the property of the Agency.

00305.08 Communication with the Surveyor - The Engineer has the right to communicate directly with the surveyor.

00305.09 Electronic Data - The Engineer will not be responsible for any data translations. Compressed data provided by the Engineer or the Contractor will be in a "self-expanding executable" format. The method of exchange of electronic data will be mutually agreed upon at the pre-survey conference.

00305.10 File Formats for Digital Data Exchange - Below are the preferred formats for data exchanged between the Agency and the Contractor. Other formats may be used, but must be pre-approved by the Engineer.

- **CAD (graphics) Files** - AutoCAD Civil 3D 2012 (.DWG) format.
- **Alignments (Horizontal and Vertical)** - AutoCAD Civil 3D 2012 (.DWG) format.
- **Elevations** - ASCII Elevation File format.
- **DTM Data** - AutoCAD Civil 3D DTM or AutoCAD Civil 3D (.DWG) format.
- **Coordinates of Miscellaneous Survey Points Set** - ASCII Coordinate File format.

00305.12 Other Documents - Adobe Acrobat Portable Document Format (pdf) is the preferred format for exchanging documents such as reports, drawings and maps.

Materials

00305.20 Materials - Furnish all materials including supplies, clothing, and incidentals required to accomplish the work. Use materials of good quality and suitable for the purpose intended. Stakes,

hubs, and guinnies are to be of sufficient length to provide a solid set in the ground. Mark the stakes in such a way as to remain legible for the intended duration. Provide and use safety equipment required by State and federal regulations.

Equipment

00305.30 Survey Equipment - Furnish survey equipment required to accomplish the work that meets the following requirements:

- Components designed to work together.
- Suitable for the purpose intended.
- Capable of achieving specified tolerances.
- In good operating condition.
- Maintained to meet manufacturers specifications.
- Kept in proper adjustment throughout the duration of the Project.

Submit documentation on survey equipment that is new to the industry, to the Engineer for review 21 days prior to its use. The Engineer will evaluate the equipment and intended application and provide approval or rejection within 21 days. Equipment may be used immediately upon approval by the Engineer.

Labor

00305.40 Personnel - Provide technically qualified personnel capable of performing required tasks in a timely and accurate manner. Perform work under the direction and review of the Surveyor.

The Surveyor is responsible for:

- Maintaining registration as a Professional Land Surveyor in the State of Oregon.
- Performing or validating requirements for procedures and testing of equipment.
- Maintaining familiarity with the site conditions and progress of the Project.
- Becoming familiar with the plans and specifications.
- Determining notes and documentation required for types of survey work.
- Determining the accuracy required for each survey stake.
- Using appropriate equipment and methods.
- Keeping close communication with the Project inspector(s), Project Manager, and Agency survey crews working on the Project.
- Being familiar with the varying construction survey requirements of each aspect of the Project, including the various bridge construction techniques when applicable.
- Notifying the Project inspector of conflicts and changes necessary due to utilities, match point variations, design revisions, or other variables.

The survey crew leader is responsible for:

- Becoming familiar with the plans and specifications.
- Keeping close communication with the Project inspector(s), Project Manager working on the Project.

- Notifying the Project inspector of conflicts and changes necessary due to utilities, match point variations, design revisions, or other variables.

Construction

00305.50 Construction Staking Tolerances - Set stakes or other devices at an adequate frequency and within the following tolerances:

Item	Horizontal	Vertical
Box Culverts	± 0.10 ft	± 0.05 ft
Bridge Substructures	± 0.03 ft	± 0.03 ft
Bridge Superstructures	± 0.02 ft	± 0.02 ft
Clearing and Grubbing Stakes	± 1.00 ft	n/a
Construction Centerline Control Points	± 0.05 ft	n/a
Construction Centerline Station Points	± 0.10 ft	n/a
Curbs, Ramps, Walks, and Bike Paths	± 0.03 ft	± 0.02 ft
Engineering Stationing	± 1.00 ft	n/a
Grade Stakes - Roadway Subgrade	± 0.20 ft	± 0.05 ft
Grade Stakes - Top of Rock	± 0.20 ft	± 0.03 ft
All ACP Courses	± 0.10 ft	± 0.02 ft
Manholes, Inlets, and Culverts	± 0.10 ft	± 0.03 ft
PCC Pavement	± 0.10 ft	± 0.02 ft
Slope Stakes and References	± 0.30 ft	± 0.10 ft
Traffic Markings	± 0.20 ft	n/a
Walls - Retaining, MSE, Sound, etc.	± 0.10 ft	± 0.05 ft
Wetland Mitigation Control Stakes	± 0.20 ft	± 0.20 ft
Luminaire and Signal Poles (incl. footings)	± 0.20 ft	± 0.03 ft

Stakes for miscellaneous items not listed above will have a horizontal and vertical tolerance of 0.20 foot, unless otherwise directed. Features that are to be constructed flush to another surface should take on the same tolerance as that surface.

Staking tolerances for special circumstances will be discussed at the pre-construction meeting. These staking tolerances are not cumulative to the construction tolerances identified for the appropriate items in which construction tolerances are required.

In constructing the work, the contractor shall meet the appropriate construction tolerances for the material as specified in the special provisions or standard specifications, regardless of the construction staking tolerances, specific to the work item.

00305.51 Slope Stakes and References - Set slope stakes and references at even design stationing on both sides of centerline at 50-foot stations on tangents, at 25-foot stations on curves, and at terrain breaks and changes in the typical section. Establish slope stakes in the field as the actual point of intersection of the design roadway slope with the existing ground line. Direct staking of the theoretical (computer generated) slope stake catch point requires prior approval of the Engineer.

Set slope stake references farther out from centerline than the actual catch point. Include all reference point and slope stake information on the reference stakes.

If an automated slope staking routine is intended to be used, the system shall be able to perform the proper superelevation, lane transitions, and benching, as well as duplicate other details in the design surface. The system shall record field modifications made to the final catch slopes. Any modifications shall be recorded and provided to the Engineer.

Record the actual as staked (three dimensional) position of the slope and reference stakes. Prepare field notes showing slope stake and reference information, and provide to the Engineer.

00305.52 Clearing Limits - Set clearing limit stakes according to Section 00320. Space clearing limit stakes at intervals not greater than 50 feet on tangents and not greater than 25 feet on curves, or as directed.

00305.53 Grade Stakes - Set grade stakes or other control for grade elevation and horizontal alignment. Set grade stakes at each grade break line. Set additional points at intervals, as necessary, not to exceed the width of the grading equipment, or as approved by the Engineer. Set these rows at 50-foot stations on tangents and at 25-foot stations on curves, or as required in special situations, as in road connections and other areas where conditions require tighter spacing of grade stakes to assure grade and alignment.

Stakes and hubs shall be checked by the inspector as a representative of the Engineer. Do not begin placement of the next material course until the Engineer has accepted the grade and approval is given to proceed.

00305.54 Walls - Set stakes or other devices to control the location and elevation of walls, including retaining walls, geotextile walls, wing walls, sound walls and other walls as specified. Provide horizontal and vertical control for elements of wall(s) including but not limited to footings, leveling pads, batter slope and direction, and top elevation. Stake drainage facilities, electrical conduits water pipes and other items shown or identified that are to be integrated into the construction of the wall(s).

00305.55 Pipes and Culverts - Stake pipes and culverts to fit field conditions. Their location may be different from the plans. Perform the following:

- Determine the roadbed slope catch points at the inlet and outlet of pipes and culverts.
- Set reference point offsets to pipes and culverts. Record information necessary to determine structure length and end treatments.
- Stake ditches or grade to make pipes and culverts functional.
- Complete and submit a Culvert Data Sheet (Form 734-3247)
- Submit a copy of the field notes to the Engineer by the next working day following completion of the staking work.

00305.56 Manholes and Inlets - Determine the location of manholes, inlets, siphon boxes, slope protectors, and other similar structures. This may require an approved field adjustment to the planned location in order to avoid obstacles or assure placement at the low point. Determine the elevation of the center of the grate.

Set a stake referencing the center of the structure. Set a guard stake with the following information written on it:

- Type of structure
- Centerline station
- Centerline offset

- Reference distance
- Cut or fill to top of structure
- Center of structure elevation

Establish a reference line to control the alignment of the structure. Record data on the Culvert Data Sheet (Form 734-3247) containing staking information for the outlet pipe from the specific drainage structure.

00305.57 Box Culverts - Set stakes or other devices to control the location and elevation of box culverts as specified. Provide horizontal and vertical control for elements of the box culvert(s) including but not limited to footing, side walls, wing walls, weirs, fish ladders, apron and top elevation. Stake other drainage facilities, electrical conduits, water pipes, and other items shown or identified that are to be integrated into the construction of the box culvert(s). Stake ditches to make the box culverts(s) functional.

00305.58 Engineering Stationing - When required, establish engineering stationing at required intervals for the length of the project along the shoulder of the highway. The stationing shall be visible and maintained throughout the construction of the project.

00305.60 Horizontal Control - Establish horizontal control stations using Theodolite/EDM network or static GPS techniques. Least squares adjustments shall be applied to either method. The use of traverses will be permitted only if approved by the Engineer.

Preserve all Agency provided and Contractor established horizontal control stations for the life of the Project. If the horizontal control network cannot be preserved in its original position during construction or if the Agency provided control stations are not of adequate quantity or location, establish a secondary horizontal control network using the original control as a basis. This secondary control network may then be used by the Contractor to layout all construction items and may be used by the Agency for right-of-way monumentation and for other purposes.

(a) General Specifications - Horizontal control networks shall conform to these general requirements in addition to Theodolite/EDM or GPS specifications to follow.

(1) Equipment:

- Use tripods for all occupations with theodolite, target, or GPS antenna.
- Test all components and adjust according to manufacturer specifications.

(2) Procedures:

- Include in field notes a detailed point description and vicinity sketch for each control station and survey monument established or used.
- Perform a minimally and fully constrained Least Squares adjustment.
- Prior to using 2 points for the basis of bearing, perform an analysis to verify that the points are actually those indicated in the record.
- Control station monuments shall conform to the requirements of the Agency "Right-of-Way Monumentation Policy" available from the Engineer.
- If available, include at least three existing control stations in establishing any control network.

- Establish a point identifier for each control point within the range of 1 - 399. Alphanumeric point identifiers up to eight characters may be used. Inscribe the point identifier on the monument.

(3) Acceptance Standards - At least squares adjustment shall be accepted based on the following criteria for all specified tolerances.

- Two-thirds of all values shall be within the total tolerance.
- 100% of all values shall be within 3 times the total tolerance.
- Tolerance for confidence regions at the 95% level is 0.05 feet + 50 ppm based on the shortest distance to the nearest unadjusted control station.

(4) Data Requirements:

- Field notes containing a detailed point description and vicinity sketch for each control station and survey monument established or used.

(b) Terrestrial Networks:

(1) Equipment:

- Use Theodolites with a maximum angular standard of error no greater than ± 6 seconds.
- Use EDMs with a maximum distance standard error no greater than ± 0.02 feet ± 5 ppm.
- All components shall be of compatible accuracy and designed to be used together.

(2) Field Procedures:

- Include distance measurements with all observations unless impractical.
- Have at least one redundant observation for every point in the network.
- Triangulation, trilateration, and resection methods are acceptable.

(3) Acceptance Tolerances:

- Tolerance for angle residuals is ± 3 seconds.
- Tolerance for distance residuals is ± 0.02 feet ± 2 ppm.

(4) Data Requirements - Provide the following to the Engineer for each network or circuit established:

- **Raw Data Files** - These are electronic data files containing original measurements produced by the Theodolite (total station). The file shall contain:
    - Observation data for each measurement, including:
        - point identifier
        - direction, plate reading, or horizontal angle
        - vertical or zenith angle
        - slope distance
    - Supplemental measurement data, including:
        - distance units recorded

- angular units recorded
- curvature and refraction correction applied
- atmospheric correction applied
- prism correction applied

- Codes or instructions to the processing software on how to process the data.
- Atmospheric conditions at the time of the survey.
- Angular and distance units recorded, and whether the distance has been corrected for curvature and refraction and/or atmospheric conditions.

- **Set Reduction Report** - This report summarizes the reduction of the angle sets and mean distances.

- **Least Squares Adjustment Report** – These reports contain details of the least squares adjustment, including a list of all angular and distance residuals, confidence region values at a 95% confidence level, and final adjusted coordinates.

(c) GNSS Networks:

(1) Equipment:

- GNSS receivers shall be dual frequency geodetic receivers with a manufacturer-specified accuracy of $\pm$ 0.02 feet $\pm$ 1 ppm or better.
- All components shall be of compatible accuracy and designed to be used together.

(2) Field Procedures:

- Ensure that satellite geometry during the field observation phase is sufficient to produce accurate results. The geometric dilution of precision (GDOP) shall not be greater than 8.
- The number of healthy satellites being observed at any time shall be four or more.
- The elevation mask shall be not less than 15 degrees.
- Horizontal survey measurements, once completed, shall form a closed figure, and shall be connected to at least two existing horizontal control stations.
- Network shall be comprised entirely of independent baselines.
- Adjacent stations shall have direct connections.
- Every station shall be connected to two or more stations.
- Receiver documentation shall be followed for observation times and epoch intervals.
- Each control station shall be occupied no less than twice, of which two occupations shall be separated from each other by time. Separation shall be measured start-time to start-time. Separation shall be 90 minutes or more from initial occupation and 90 minutes or more from any 12-hour multiple thereafter for 30 days. Additional occupations beyond two are not subject to time restrictions.
- Back-to-back occupations of 90 minutes or more shall be separated by off leveling and re-setting the tripod and rotation of the tribrach or leveling equipment by 120 degrees or more.

- Stations closer together than 1,500 feet shall be connected with terrestrial observations.
- Inter-visible stations closer together than 3,000 feet shall be connected with terrestrial observations.

(3) Acceptance Tolerances:

- Tolerance for linear residuals in latitude, longitude, and elevation is ± 0.05 feet.

(4) Data Requirements - Provide the following to the Engineer for each network established:

- **Receiver Independent Exchange (RINEX) Data Files** - These are industry-standard non-proprietary electronic data files containing original data collected by the receiver. The provided files shall contain all data supported by both the RINEX file format and the equipment and software employed in the survey. Files provided shall include as a minimum:
  - GNSS observation data file
  - GNSS navigation message file
- **Observation Log Sheet** - This log includes, for each observation, start and stop times, and antenna height including measurement procedure.
- **Least Squares Adjustment Report** – These reports contain details of the least squares adjustment, including a list of all angular and distance residuals, confidence region values at a 95% confidence level, and final adjusted coordinates.

(d) Traverses:

(1) Equipment:

- Identical to requirements for Theodolite/EDM networks.

(2) Field Procedures:

- Include distance measurements with all observations unless impractical.
- Close both traverse for angle and distance.

(3) Acceptance Standards - Closure shall be a minimum of 1:20,000 after angular adjustment and prior to coordinate adjustment.

(4) Data Requirements - Provide the following to the Engineer for each traverse established:

- **Adjustment Report** - This report contains details of the traverse adjustment, including adjusted coordinates.
- **Other Reports** - All data required for Theodolite/EDM networks except least squares adjustment report.

00305.61 Vertical Control - Establish vertical control stations using differential leveling and third order or better equipment and techniques. The development of vertical control by techniques other than differential leveling must be approved by the Engineer. A least squares adjustment shall be applied to each network of acceptable level circuits.

The Agency provided and Contractor established vertical control stations shall be preserved for the life of the Project. If the vertical control network cannot be preserved in its original position during

construction or if the Agency provided control stations are not of adequate quantity or location, establish a secondary vertical control network using the original control as a basis. This secondary control network would then be used to layout all construction items and may be used by the Agency for other purposes.

(a) Field Procedures:

- Use a compensated (or "automatic") optical level or compensated digital level.
- Use precise non-adjustable rod(s) unless otherwise directed. Do not use "Lenker" or self-computing rods.
- Use a rod level with each rod.
- Include a minimum of two published bench marks in each circuit unless otherwise directed.
- If the circuit between benches does not close within the tolerance stated below, close circuit back to the starting point.
- If the use of one benchmark is approved, close circuit back to the starting point.
- Select turning points that are firm, solid objects with a defined high point. Set a nail, spike, or stake if no existing items are acceptable. Turning plates with a weight of not less than 4.5 pounds may be used.
- Balance backsight and foresight distances to within 30 feet on each setup and to within 30 feet on the entire circuit.
- Make a record of the rod reading(s) and the observation distance on each sighting
- Set TBMs near significant construction items (bridges, intersections, and other locations where elevations will be needed) and not more than 1,000 feet apart throughout the Project.
- Select TBM monuments that are firm, solid objects with a defined high point, not likely to be moved by human or natural influences, readily identifiable, and out of the path of construction. Do not use fire hydrants, guardrails, highway signs, or nails or spikes in utility poles or fence posts.
- Include detailed point descriptions and vicinity sketch in field notes.
- Take field notes when recording measurements electronically. Include data and information not electronically measured and recorded.
- Apply a vertical least squares adjustment to allowable errors. The use of proportional distribution of error may be used if approved by the Engineer.

(b) Acceptance Standards - Each leveling circuit shall be accepted based on the "point-to point" or "closed-loop" limits described below. A single least squares adjustment shall be applied to the observation in the leveling circuits meeting the acceptance standards.

- Accept point to point circuit based on the following. Error of closure shall be no greater than:

  $$\text{Allowable Error} = 0.05 \text{ ft.} \sqrt{D}$$

  D = Shortest level line distance in miles

- If a closed loop, the error of closure shall be no greater than:

  $$\text{Allowable Error} = 0.035 \text{ ft.} \sqrt{E}$$

  E = Perimeter of level loop in miles

(c) Data Requirements - Provide the following to the Engineer for each network or circuit established:

- **Raw Data** - These are hand written field notes or hand-written field notes accompanied by electronic data files containing original measurements produced by the level. The file shall contain:
    - Data for each measurement, including a:
        - point identifier (within a range of 400 - 499 and also inscribed on the monument)
        - rod reading
        - observation distance.
    - Supplemental measurement data, including:
        - distance units recorded
        - curvature and refraction correction applied

- **ASCII Point Elevation Data File**

00305.62 Bridges - Set stakes, nails, or other devices to control the location and elevation of the various parts of bridges and progressive phases of construction. Provide horizontal and vertical control for all elements of bridge construction. Stake drainage facilities, electrical conduits, water and sewer pipes, pedestrian and bicycle facilities, traffic signal and sign supports, illumination devices, and other items shown or identified that are to be integrated into the construction of the bridge.

Identify marks or provide field notes or reports to the Engineer. Such provision of information shall be adequate for the Engineer to review the location and elevation of the mark for the intended purpose prior to incorporating material that is based on the mark.

(a) Bridge Survey Control Stations - Use the smallest number of original Project control station s as is practical for establishing positions and reference points for bridge construction on one bridge. Use of multiple control station will increase the probability of incorporating error into the construction. Use control stations that are as closely related mathematically as practical. The Contractor may establish additional control stations as necessary to complete the survey work. Additional control stations shall be established in such a manner as to provide the accuracy needed to meet the tolerances in Section 00305.

Original Project stations shall be used only after the following evaluation is completed for each bridge:

- Supply a list of original Project horizontal and vertical control stations intended by the Contractor to be used in establishing positions on a given bridge.
- Measure relative positions of original Project horizontal control stations intended to be used.
- Measure elevation differences between original Project vertical control stations intended to be used.
- Supply horizontal and vertical measurement data to the Engine
- Compare measured values with those computed from original horizontal network coordinates and vertical network elevations.

- Any discrepancy of concern to either the Contractor or the Engineer will be resolved before that combination of control stations is used.

(b) Layout Marks and Reference Points:

(1) Substructure - Stake, reference, or otherwise identify locations, orientations, and elevations necessary for placement of substructure components, including but not limited to cofferdams, piling (including batter), drilled shafts, footings, columns, abutments, caps, cross beams, bearing devices, temporary supports or falsework, and excavations and embankments associated with any of the above.

Verify and document the locations, elevations and spatial relationships with adjacent substructure components. On bridges where prefabricated beams will be used, measure and document span lengths between bearing devices at each beam location as soon as practical. Supply a copy of such documentation to the Engineer for review before the next stage of construction.

Compute the final elevations after studying the plans, specifications, and shop drawings. Adjust the grades as needed to compensate for camber or prefabricated beams, chording of beams across the low side of superelevations, width of flat beams on superelevated surfaces, and any other factor resulting from design or construction methods.

(2) Superstructure - Stake, reference, or otherwise identify locations, orientations, and elevations necessary for placement of superstructure components, including but not limited to beams, girders, diaphragms, earthquake restraints, deck, rails, structure mounted traffic control and illumination devices, and concrete forms, temporary supports or falsework, and excavations and embankments associated with any of the above.

Stake alignment of structure as needed at each stage of construction. Stake alignment of poured-in-place items at 10-foot stations or as established by the Engineer. Stake alignment for the following items as needed to maintain the horizontal tolerance defined in section 00305.50:

- Outside edge of girder(s)
- Face(s) or centerline(s) of internal girders or stem walls
- Edge of deck
- Alignment of grade breaks
- Pedestrian and bicycle facilities
- Rails and railings

Stake grades at each stage of construction. Stake grade of poured-in-place items 10-foot stations, or as established by the Engineer. Apply corrections to design grades based on the dynamics of the evolving structure. Corrections that may be required depend upon the design of the bridge and the constriction methods employed. Provide correction values to the Engineer at least 15 working days prior to incorporating into the structure. The following list is examples of possible corrections:

- Design camber (upward adjustment to compensate for anticipated deflection)
- Structural deflection (deflection of the bridge under its own increasing weight)
- Structural shifting (dynamics of the bridge under eccentric loading)
- Falsework deflection (deflection of falsework beams under increasing weight)

- Falsework crush (compression of falsework supports under increasing weight)
- Form crush (compression of forms under increasing weight)
- Equipment deflection (deflection of deck finishing machine or deck rails)
- Other adjustments to staked value to achieve the design grade.

(c) Bridge Deck Grades - Set stakes or other devices to control the deck grade elevations. The exact process will depend upon the type of deck and the equipment being used.

(1) Portland Cement Concrete Deck - The surveyor and survey crew leader shall attend the first of the two deck pre-placement conferences, described in the Oregon Standard Specifications for Construction, subsection 00540.02(a), required for each deck placement.

Control of a PCC deck may involve significant work with the deck placement crew to establish control for a deck finishing machine. Rails for supporting the deck finishing machine are generally set up on either side of the deck. Each rail is held up by adjustable supports every 5 feet. Adjust the rail at each support to the desired grade while the rail is supporting the weight of the finishing machine. Corrections may need to be applied as listed in subsection 00305.52(c-2)

(2) Asphalt Concrete Deck - Control of an AC deck will not generally involve as many variables as PCC. An AC deck serves as a wearing surface, but not a structural component. Asphaltic concrete will frequently be used as filler to create the desired superelevations when flat beams form the superstructure. Stake control of the finish grade like any asphalt finish grade. Under some circumstances, design camber and structural deflection may need to be considered.

00305.63 Pavements - Set stakes or other control devices to control the location and elevation of asphalt and PCC pavement as shown. Provide surveying or survey-related activity necessary to control grade, thickness, and smoothness as required.

00305.64 Signs, Signals, Illumination and Fabricated Items - Determine the exact location and their relative location to roadway and bridge features as appropriate such as edge of pavement, curbs, islands, sidewalks, sidewalk ramps, lane lines, bridge columns, bridge decks, and other existing features for the following items:

- Posts and poles including foundations
- Cabinets
- Junction boxes
- Detectors
- Other similar sign, signal, and illumination appurtenances
- New fabricated items

Provide the following documentation to the Engineer before submitting working drawings:

- Field verified length of poles, posts, mast arms, and tenon locations
- Field verified orientation of triangular bases for poles
- Field verified measurements of all existing features including orientation and relationship to all other new appurtenances and new fabricated items.
- Plan, elevation, and side views

- Identification of all obstacles

Field adjustment to the planned location may be required in order to avoid obstacle and to ensure its placement in a functional location. Do not submit working drawings until the Engineer returns the field verified documents. The Engineer will return field verified documents within 21 Calendar Days after receipt of the documents.

Set a stake referencing the center of the item. Set a guard stake with the following information written on it:

- Description of item (by plan number if applicable)
- Centerline station
- Centerline offset
- Cut or fill from reference point (and what point the cut or fill is to)
- Intended elevation

If the orientation of the item is significant and is not clear, establish a reference line for the skew of the item.

Have bridge layout and roadway layout features staked, including referencing, no more than seven calendar days before submitting field verification documents.

00305.70 Temporary Protection and Direction of Traffic - For survey activities outside of the projects traffic control plan and lasting 3 days or less, provide work zone traffic control according to ODOT's "Oregon Temporary Traffic Control Handbook".

For survey activities outside of the projects traffic control plan and lasting longer than 3 days, provide work zone traffic control according to Oregon Standard Specifications for Construction Section 00225.

00305.71 Preservation of Survey Markers:

(a) Project Control Points Established by the Engineer - Maintain, relocate or replace existing survey monuments, control points, and stakes, as determined by the Engineer. Perform the work to produce the same level of accuracy as the original monument(s) in a timely manner, and at no additional cost to the Agency.

(b) Monuments of Record - Preserve survey monuments according to subsection 00170.82(c), ORS 209.140 and ORS 209.150. If such monuments are to be disturbed or destroyed, comply with requirements of these ORS at no additional cost to the Agency.

(c) Post Construction Survey - At the completion of the project, file a post construction survey with the Linn County Surveyor's Office. Provide the Engineer with a copy of the approved survey.

If no monuments were disturbed or destroyed during construction activities submit stamped, written verification to the Engineer.

00305.72 Project Monumentation - The Contractor will not be responsible for performing right-of-way monumentation.

00305.73 Pre-Construction Survey - The Contractor will not be responsible for performing a pre-construction Survey.

Measurement

00305.80 Measurement - No measurement of quantities will be made for work performed under this section.

Payment

00305.90 Payment - The accepted quantities of construction survey work will be paid for at the Contract lump sum amount for the item "Construction Survey Work".

Payment will be payment in full for furnishing all material, equipment, labor, and incidentals necessary to complete the work as specified.

No separate or additional payment will be made for temporary protection and direction of traffic measures including flaggers and signing necessary for the performance of the construction survey work.

No separate or additional payment will be made for preparing surveying documents including but not limited to office time, preparing and checking survey notes, and all other related preparation work.

The amount to be allowed for "Construction Survey Work" in the progress payments will not be in excess of the reasonable value of the surveying work performed under this specification as said reasonable value is estimated by the Engineer.

Costs incurred as a result of survey errors will be borne by the Contractor. Such costs include price adjustments for failure to meet requirements of the construction specifications, repair or removal and replacement of deficient product, and over-run of material.

In cases where changes, not due to the Contractor's operations, necessitate redesign of the work, increased Contractor survey costs due to these changes will be paid for as Extra Work.

SECTION 00310 - REMOVAL OF STRUCTURES AND OBSTRUCTIONS

Comply with Section 00310 of the Standard Specifications.

SECTION 00320 - CLEARING AND GRUBBING

Comply with Section 00320 of the Standard Specifications modified as follows:

00320.01 Areas of Work - Replace this subsection, except for the subsection number and title, with the following:

Clearing and grubbing will be required to the extents needed to complete the work unless otherwise shown on the plans or directed by the Engineer.

SECTION 00330 - EARTHWORK

Comply with Section 00330 of the Standard Specifications modified as follows:

00330.03 Basis of Performance - Add the following paragraph to the end of this subsection:

Perform all earthwork under this Section on the embankment basis.

Earthwork performed under this provision including excavation haul and embankment construction, unless otherwise specified, will be paid for by embankment measurement.

00330.92 Kinds of Incidental Earthwork - Add the following bullet to the end of the bullet list:

- Earthwork required for driveways and road approaches. Earthwork for driveways and road approaches will be that which is outside the neat line limits shown on the typical sections.

SECTION 00350 - GEOSYNTHETIC INSTALLATION

Comply with Section 00350 of the Standard Specifications.

SECTION 00405 - TRENCH EXCAVATION, BEDDING, AND BACKFILL

Comply with Section 00405 of the Standard Specifications modified as follows:

00405.12 Bedding - Replace this subsection, except for the subsection number and title with the following:

All pipe shall be placed on a bedding of a minimum of 6 inches of compacted 1"-0 or 3/4"-0 aggregate base material conforming to 02630.10.

00405.14 Trench Backfill - Delete this subsection, except for the subsection number and title, with the following:

Use Class B backfill, consisting of gravel or crushed rock meeting the requirements of Section 00640. Designated size shall be 1" - 0 or 3/4" - 0.

00405.14(b) Class B Backfill - Replace the words "Section 00641" with the words "Section 00640".

SECTION 00445 - SANITARY, STORM, CULVERT, SIPHON, AND IRRIGATION PIPE

Comply with Section 00445 of the Standard Specifications.

SECTION 00495 - TRENCH RESURFACING

Comply with Section 00495 of the Standard Specifications modified as follows:

00495.80 Measurement - Replace this subsection, except for the subsection number and title, with the following:

No separate measurement will be made for trench resurfacing.

SECTION 00501 - BRIDGE REMOVAL

Comply with Section 00501 of the Standard Specifications modified as follows:

00501.00 Scope - Add the following paragraph(s) to the end of this subsection:

Remove the existing bridge over Hamilton Creek on Berlin Road.

Add the following subsection:

00501.02 Plans – Partial plans of the existing structure are available for viewing at the office of the Engineer. Prints of these plans are available upon request.

Add the following subsection:

00501.03 Submittals - Provide unstamped bridge removal plans according to 00150.35 7 calendar days before beginning removal work.

Include the following information in the submittal:

- Removal sequence, including contractor staging and traffic staging.
- Detailed schedule of bridge removal work.
- Type of equipment that will be used, including size and capacity.
- Equipment location during removal operations.

Do not begin bridge removal work until the bridge removal plans have been approved.

SECTION 00510 - STRUCTURE EXCAVATION AND BACKFILL

Comply with Section 00510 of the Standard Specifications modified as follows:

00510.13 Granular Structure Backfill - Replace this subsection, except for the subsection number and title, with the following:

Furnish granular structure backfill meeting the requirements of 02630.10 and the following:

(1) Material Passing No. 200 Sieve - The amount of Materials passing the No. 200 sieve shall not exceed 15 percent by weight. Test according to AASHTO T 11.

(2) Plasticity Index - The plasticity index of the Material passing the No. 40 sieve shall not exceed 6. Test according to AASHTO T 90.

00510.41 Structure Excavation - Replace the paragraph that begins “If the Plans show…” with the following paragraph

Where the Plans show concrete in footings placed against undisturbed material, make excavation for footings as nearly as possible to the limits shown. Fill the space between the footing and remaining undisturbed material to the top of the footing with footing concrete or granular structure backfill material, as directed. Compact the granular structure backfill to 97 percent of maximum density, according to 00330.43.

00510.48(a) General - In the paragraph that begins “Place backfill and riprap…” replace the last sentence with the following sentence:

Prevent large lateral or wedging compaction forces from occurring directly against the concrete; for sloped excavations, step the slope or use other approved means to prevent the wedge action.

00510.48(b) Bridge Abutments and Retaining Walls - Replace this subsection with the following subsection:

00510.48(b) Bridge Abutments, Wing Walls, Retaining Walls, and End Panels - Backfill, at a minimum, to the pay limits shown. Backfill abutments, wing walls, retaining walls, and end panels with specified backfill to the pay limits shown, and as follows:

(1) Placement at Abutments - Do not place backfill at Bridge abutments until Superstructure elements are set, pinned and tensioned. Place backfill required at the front face of retaining walls

and wing walls before backfilling behind the wall unless shown otherwise. For single span Bridges with abutments, keep the backfill heights within 2 feet of each other.

(2) Placement at Weep Holes - Place granular wall backfill at all weep holes.

(3) Compaction Within 3 Feet Behind Abutments and Walls – Within 3 feet behind abutments, wing walls, and retaining walls, provide walk behind vibratory roller compactor with a single smooth drum, vibratory plate compactor, or rammer/tamper plate compactor; each with a gross static weight of not more than 1,000 pounds and a total compaction static plus dynamic force of not more than 5,000 pounds. Compact backfill to 95 percent of maximum density using the required number of passes determined according to the test pad method, and not less than three compaction Equipment passes.

a. Test Pad Method - Before placing the wall backfill, determine the number of Passes necessary to achieve the specified density by constructing a test pad that is at least 5 feet wide, 15 feet long, and 3 feet in final depth. Construct test pad fill in layers no more than 8 inches thick using the same Equipment and methods that will be used to compact the wall backfill. Perform at least one density test according to AASHTO T 310 on each test pad layer. Construct and test a new test pad when changes in Material occur or different Equipment is used during the construction of the wall backfill.

(4) Compaction More Than 3 Feet Behind Abutments and Walls - Greater than 3 feet behind abutments, wing walls, and retaining walls, provide vibratory roller compactor with a single smooth drum, vibratory plate compactor, or rammer/tamper plate compactor. Compact backfill to 95 percent of maximum density. Unless otherwise specified, test in-place field density according to AASHTO T 310. Test at the frequency required in the ODOT Manual of Field Test Procedures.

00510.80(b)(1) Lump Sum - Add the following to the end of this subsection:

The estimated quantity of structure excavation is:

Location	Structure Excavation (Cubic Yard)
New Bents and Wingwalls	123

00510.80(d) Granular Wall/Structure Backfill - Replace this subsection, except for the subsection number and title, with the following:

No measurement of quantities will be made for granular structure backfill. The estimated quantity of granular structure backfill is:

Location	Granular Wall/Structure Backfill (Cubic Yard)
New Bents and Wingwalls	27

00510.90(d) Granular Wall/Structure Backfill - Replace this subsection, except for the subsection number and title, with the following:

Granular structure backfill will be paid for at the Contract unit price, per unit of measurement, for the following item, as applicable:

Pay Item	Unit of Measurement
(a) Granular Structure Backfill	Lump Sum

SECTION 00520 - DRIVEN PILES

Comply with Section 00520 of the Standard Specifications modified as follows:

00520.11 Engineer's Estimated Length List - Add the following to the end of this subsection:

The Engineer's estimated lengths of steel piling are:

Location	Number	Length (feet)	Type and Size	Coating Top Elevation[1]	Coating Bottom Elevation[1]
Bent 1	6	55	PP 16 x 0.50	N/A	N/A
Bent 2	6	65	PP 16 x 0.50	N/A	N/A

[1] Protective coating system and color requirements according to 00594.10.

00520.42(d) Set Period and Redriving - Replace the sentence that begins "The "set period" shall be…" with the following sentence:

The "set period" shall be a minimum of 24 hours unless otherwise approved by the Engineer.

SECTION 00530 - STEEL REINFORCEMENT FOR CONCRETE

Comply with Section 00530 of the Standard Specifications modified as follows:

00530.45 Inspection and Repair of Epoxy Coated Rebar – Replace the sentence that begins" Before installation, patch all visual defects…" with the following sentence:

Before installation, patch all visual defects in the coating with a manufacturer recommended patching material according to ASTM A775.

00530.47(c) Installation – Replace the paragraph that begins "When using epoxy coated reinforcing bars…" with the following paragraph:

When using epoxy coated reinforcing bars, coat heads prior to installation according to ASTM A775. After the heads are attached to the rebar, coat exposed areas of bare steel and seal the rebar to head interface with a manufacturer recommended patching material according to ASTM A775.

00530.80(a) Lump Sum - Add the following to the end of this subsection:

The estimated quantity of reinforcement is:

Structure	Uncoated Reinforcement Quantity (Pound)			
	Grade 60	Grade 80	Grade 100	Stainless Steel Grade ____
23838	7,365			

The weight of miscellaneous metal, based on weights listed in 00530.80(b) and Project quantities, is included in the estimated quantity of uncoated reinforcement.

00530.90 Payment - Replace this subsection, except for the subsection number and title, with the following:

The accepted quantities of reinforcement will be paid for at the Contract unit price, per unit of measurement, for the following items:

(a) Reinforcement, Grade 60..... Lump Sum

Item (a) includes fabricating and placing uncoated reinforcement as specified.

Payment for reinforcement will be made when the reinforcement is incorporated into the concrete.

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

No separate or additional payment will be made for clips, wire, separators, wire chairs, and other Material used in fastening the reinforcement in place.

SECTION 00540 - STRUCTURAL CONCRETE

Comply with Section 00540 of the Standard Specifications modified as follows:

00540.17(a) Aggregate - Replace this entire subsection, including 00540.17(a)(1) and 00540.17(a)(2), with the following subsection:

00540.17(a) Aggregate - Acceptance of aggregate will be according to 02690.12.

00540.17(c)(2) Actual Strength Test Value - Replace this subsection, except for the subsection number and title, with the following:

The ASTV at 28 Days is the average compressive strength of the three cylinders tested. Discard all specimens that show definite evidence, other than low strength, of improper sampling, molding, handling, curing, or testing. The average strength of the remaining cylinders shall then be considered the test result.

00540.49(a)(1) Hot Weather - Replace the paragraph that begins "Maintain the concrete temperature…" with the following paragraph:

Maintain the concrete temperature during hot weather as specified. When concrete temperatures approach the maximum allowable temperature according to 02001.20(d), take appropriate action to lower the concrete temperature.

00540.51(a) General Requirements - Replace the paragraph that begins "Cure cast-in-place concrete…" with the following paragraph:

Cure cast-in-place concrete surfaces with water, wet burlap, and a layer of 4 mil polyethylene film, except polypropylene fabric may be used in place of wet burlap on horizontal surfaces. Begin curing as soon after placement as possible without damaging the freshly placed concrete. Continue curing for 7 Calendar Days (14 Calendar Days for bridge decks) after placement.

Add the following paragraph to the end of this subsection:

If the ambient temperature falls below 50 °F, or is forecasted to be below 50 °F, provide a 24-hour continuous recording thermometer and place it directly on the surface of the concrete. Once placed, the thermometer shall remain in place for the duration of the cure period. Use methods approved by the Engineer to maintain a concrete temperature of at least 50 °F during the cure period.

00540.53(b) Class 1 Surface Finish (Ground and Coated) - Replace this subsection with the following subsection:

00540.53(b) Class 1 Surface Finish (Ground, Sacked, and Coated) - After completion of the general surface finish, grind the surface with a power grinder or an equivalent method to remove laitance and surface film. Sack the surface to fill all holes using a paste of fine mortar sand, cement, water, and bonding agent. The ratio of bonding agent to water shall be one part bonding agent to two parts water, or as recommended by the manufacturer. Apply coating according to 00540.53(d).

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FALSEWORK DESIGN CHECKLIST

Instructions - This checklist was developed to facilitate the design, review, and erection of falsework to be used for Oregon Department of Transportation bridge construction projects. This checklist is intended to act as a reminder to design or check for specific important aspects of this construction. It is not a substitute for plan and/or design criteria or specification requirements.

The Checklist is to be completed and signed by the Falsework Design Engineer. Answer every question. Attach to the Checklist an explanation of any negative responses.

Submit the Checklist according to 00540.41(a).

		YES	NO	N/A
A.	**Contract Plans, Specifications, Permits, Etc.**			
1.	Are the falsework plans prepared, stamped and signed by an engineer registered to practice in Oregon?	____	____	____
2.	Have three complete sets (five if railroad approval is required) of the design calculations been included with the falsework drawings submittal?	____	____	____
3.	Are falsework plans in compliance with the requirements of the construction plans general notes?	____	____	____
4.	Are falsework plans in compliance with contract plan structural details?	____	____	____
5.	Are falsework plans in compliance with the requirements of the Oregon Standard Specifications for Construction, subsection 00150.35?	____	____	____
6.	Are all existing, adjusted or new utilities in proximity with the proposed falsework shown on the falsework plans and is protection of these utilities addressed?	____	____	____
7.	Are clearance requirements satisfied and shown on the falsework plans?	____	____	____
8.	For construction in or over navigable waters have all requirements for construction of falsework that are called for in the Coast Guard Permit been incorporated in the falsework design?	____	____	____
9.	Has possible damage from traffic been considered in the falsework design?	____	____	____

10. Has damage from stream drift been considered in the falsework design? ____ ____ ____

11. Is the concrete placing sequence shown and is it consistent with the contract plans? ____ ____ ____

B. Foundation Requirements

1. Are driven falsework piling provided as called for on the contract plans? ____ ____ ____

    a. Is a minimum pile tip elevation or penetration indicated on the drawings? ____ ____ ____

    b. If timber falsework piles are specified, are the recommended order lengths sufficient to virtually eliminate the possibility of pile splices? ____ ____ ____

    c. Is a detailed static pile capacity analysis included in the calculations? ____ ____ ____

    d. If lateral loads are applied to the piling by equipment, dead loads, flowing water, or drift, is a detailed lateral load analysis included in the calculations? ____ ____ ____

    e. When piling are in an active waterway, have the potential effects of scour on axial and lateral pile support been addressed in the calculations? ____ ____ ____

    f. Does the proposed falsework pile hammer meet the minimum field energy requirements as listed in 00520.20(d)(2)? ____ ____ ____

    g. Will a driving criteria graph [FHWA Gates Equation, in 00520.42(b)] plotting blow count versus stroke for an acceptable pile hammer be provided for the project inspector? ____ ____ ____

2. Is falsework supported on spread footings or mud sills? ____ ____ ____

    a. Are the spread footing elevations shown on the drawings? ____ ____ ____

    b. Has a rational method for determining the ultimate bearing capacity of the foundation materials been presented and described in the calculations? ____ ____ ____

c. Have the soil parameters used in calculating the ultimate bearing capacity been listed and confirmed by the designer? ____ ____ ____

d. Has an appropriate Factor of Safety been used for calculating the allowable bearing capacity of the foundation materials? ____ ____ ____

e. Are spread footing settlement estimates included in the calculations? ____ ____ ____

f. Have effective stresses been used in the calculations, when applicable? ____ ____ ____

g. When spread footings are founded near the top of a slope or in a slope, have the ultimate bearing capacity calculations been modified accordingly? ____ ____ ____

h. When spread footings may be subjected to flowing water, have the potential effects of scour on ultimate bearing capacity been addressed in the calculations? ____ ____ ____

C. Loads

1. Are the magnitude and location of all loads, equipment and personnel that will be supported by the falsework shown and noted on the falsework plans? ____ ____ ____

2. Has the mass of specific equipment units to be supported by the falsework been included in the calculations or on the falsework plans? ____ ____ ____

3. Is the deck finishing machine supported in a manner that will not impose load on concrete forms except deck overhang brackets? ____ ____ ____

4. Are design loads and material properties used to determine design stresses for each different falsework member shown on the falsework plans? ____ ____ ____

5. Is the worst loading and member property condition, rather than the average condition, used to obtain design loads? ____ ____ ____

6. Are deck forms for concrete box girders supported from the girder stem and not from the bottom slab? ____ ____ ____

7. Are diaphragm loads or other concentrated loads included in the analysis of supporting beams? ____ ____ ____

8. If sloping structural members exert horizontal forces on the falsework, is bracing or ties used to resist these loads? ____ ____ ____

D. Allowable Stresses

1. Has the method used for falsework design of all members except for manufactured assemblies been noted in the design calculations? ____ ____ ____

2. Are manufactured assemblies identified as to manufacturer, model, rated working capacity and ultimate capacity? ____ ____ ____

3. Is the allowable stress and the calculated stress listed in the summary for each different falsework member, except for manufactured assemblies? ____ ____ ____

E. Timber Falsework Construction

1. Are timber grades consistent with material to be delivered to the construction site, and noted on falsework drawings, and in accompanying calculations for all timber falsework material? ____ ____ ____

2. If "rough" lumber is specified for falsework by the falsework designer are the actual lumber dimensions used in calculations shown? ____ ____ ____

3. If plywood spans are governed by the strength of the plywood, are the allowable stress and the calculated stress shown on the submitted calculations? ____ ____ ____

4. If plywood spans are governed by the allowable spacing of supporting joists, are the allowable and the proposed spacing shown on the falsework plans? ____ ____ ____

5. Have timber stringers been checked for bending, shear, bearing stresses, and 1/240 of the span length deflection? ____ ____ ____

6. Are joists identified as being continuous over 3 or more spans when they are not analyzed as simple spans? ____ ____ ____

7. Have stringers and cap beams been checked for bearing stresses perpendicular to the grain as well as for bending and shear stresses? ____ ____ ____

8. Have posts been checked as columns as well as for compression parallel to the grain? ____ ____ ____

F. Steel Falsework Construction

1. Are steel structural shapes and plates identified by ASTM number on the falsework plans and in the calculations? ____ ____ ____

2. Have steel beams been checked for bending, shear, web crippling and buckling of the compression flange? ____ ____ ____

3. Has horizontal plane bracing been shown where required to limit compression flange buckling? ____ ____ ____

G. Deflections and Settlement

1. Is falsework deflection for concrete dead load shown on the plans for all falsework spans? ____ ____ ____

2. Is falsework deflection from concrete dead load limited to 1/240 of the span length for all falsework spans? ____ ____ ____

3. Do stringers supporting cast-in-place concrete compensate for estimated camber? ____ ____ ____

4. For beam spans with cantilevers, has the upward deflection of the cantilevers due to load placed on the main spans been investigated? ____ ____ ____

5. Are provisions shown for taking up falsework settlement? ____ ____ ____

H. Compression Members, Connections and Bracing

1. Has general buckling been evaluated for all compression members? ____ ____ ____

2. Has bracing been provided at all points of assumed support for compression members? ____ ____ ____

3. Was bracing in each direction considered in establishing the effective length used to check post capacity? ____ ____ ____

4. Is bracing strength and stiffness sufficient for the intended purpose? ____ ____ ____

5. If temporary bracing is required during intermediate stages of falsework erection, is it shown on the falsework plans? ____ ____ ____

6. Have all connections been designed and detailed? ____ ____ ____

7. Are web stiffeners required on steel cap beams to resist eccentric loads? ____ ____ ____

8. Are wedges required between longitudinal beams and cap beams to accommodate longitudinal slope or to reduce eccentric loading? ____ ____ ____

9.	Has the width to height ratio of wedge packs been verified to fall within the limits given in the special provisions?	____	____	____
10.	If overhang brackets are attached to unstiffened girder webs, has the need for temporary bracing to prevent longitudinal girder distortion been investigated?	____	____	____
11.	Have beams and stringers with height/width ratios greater than 2.5:1 been checked for stability?	____	____	____
12.	Have sloping falsework members that exert horizontal forces on the falsework been braced or tied to resist these loads?	____	____	____
13.	If beams supporting cast-in-place concrete have cantilever spans, have the falsework plans been noted to require the main spans be loaded before loading the cantilever spans?	____	____	____
14.	Have timber headers set on shoring towers been checked for eccentric loads, and for shear and bending stresses produced by the eccentricity?	____	____	____

_____ _____
Designer's Signature Date

SECTION 00545 - REINFORCED CONCRETE BRIDGE END PANELS

Comply with Section 00545 of the Standard Specifications modified as follows:

00545.10 Materials - Replace the bullet that begins "Furnish Class HPC4000 concrete…" with the following bullet:

- Furnish Class HPC4500 concrete for end panels, unless shown otherwise.

Replace the bullet that begins "Class V reinforced concrete…" with the following bullet:

- Class V reinforced concrete pipe meeting the requirements of 02410.10(g).

00545.44 Expansion Joints - Delete the paragraph that begins with "Saw cut the AC wearing Course…".

Delete the paragraph that begins with "Flush the saw cut thoroughly with…".

00545.46 AC Paving – Replace this subsection, except for the subsection number and title, with the following:

Compact AC abutting end panels according to Section 00744 and Section 00745, as applicable.

SECTION 00550 - PRECAST PRESTRESSED CONCRETE MEMBERS

Comply with Section 00550 of the Standard Specifications modified as follows:

00550.12(c)(3) Acceptance - Replace this subsection with the following two subsections:

(3) Actual Strength Test Value - The ASTV at 28 days is the average compressive strength of the three cylinders tested.

Discard all specimens that show definite evidence, other than low strength, of improper sampling, molding, handling, curing, or testing. The average strength of the remaining cylinders shall then be considered the test result.

(4) Acceptance - Hardened concrete members with an ASTV meeting or exceeding the specified design strength, f'_c, will be acceptable for strength.

If the ASTV is less than f'_c but at least 85 percent of f'_c, the Engineer may review the results to determine if the member is suitable for the intended purpose. If suitable, the concrete represented by an ASTV less than f'_c may be accepted subject to a price adjustment according to 00150.25.

Concrete that has an ASTV less than 85 percent of f'_c will not be accepted. All costs of removal, replacement, and all related work are the Contractor's responsibility.

00550.90 Payment - In the paragraph that begins "No separate or additional payment will be…", add the following bullet to the bullet list:

- surface finish on members

SECTION 00582 - BRIDGE BEARINGS

Comply with Section 00582 of the Standard Specifications.

SECTION 00587 - BRIDGE RAILS

Comply with Section 00587 of the Standard Specifications modified as follows:

00587.80 Measurement - Add the following to the end of this subsection:

The estimated quantity of bridge rail is:

Structure	Rail Type	Quantity (Foot)
Bridge No. 23838	Pedestrian Rail on Type “F” Concrete Bridge Rail	308

SECTION 00592 - ROLLED WATERPROOFING MEMBRANE

Section 00592, which is not a Standard Specification, is included in this Project by Special Provision.

Description

00592.00 Scope - This Work consists of preparing bridge decks and furnishing and placing rolled bridge deck waterproofing membrane on the decks of Bridges as shown.

00592.03 Submittals - Submit the following at least 7 Calendar Days before the pre placement meeting for each membrane proposed for use:

- The manufacturer’s product data sheet for the primer and rolled membrane.
- The manufacturer’s test certificate required in Section 00592.10(e).
- Submit a primer application plan according to 00592.41(h)(1), which includes a manufacturer’s letter indicating primer is compatible with the rolled membrane.
- A detailed work plan for the deck preparation, membrane installation sequence, and cleanup.
- Names of manufacturer approved supervisory personnel meeting the requirements of 00592.30.
- List of Equipment proposed for use in pressure rolling laps and membrane surface.
- Proposed methods of measuring the application rate of hot asphalt cement tack coat and primer to meet the specified application rates.
- For Bridges with curbs, drains, intermediate joints, or concrete rails, submit unstamped Working Drawings, according to 00150.35, detailing membrane placement at those locations.

Do not begin any Bridge membrane Work before the work plan and submittals have been approved.

00592.04 Pre-placement Conferences:

(a) Supervisory Personnel - Hold a pre-placement conference with the Engineer and all supervisory personnel, Subcontractors, Suppliers, and all other personnel who will be involved in the membrane Work. Meet at a mutually agreed time at least 14 Calendar Days before beginning the membrane Work. Present and discuss all phases of the membrane Work, including ACP placement.

If the Contractor’s manufacturer-approved personnel change, or if the Contractor proposes a significant revision to the work plan, hold an additional meeting before any additional Work is performed.

(b) Placement Crew - Before beginning membrane Work, hold a second pre-placement conference with the Engineer and the entire membrane work crew at the Project Site, 30 minutes before membrane Work begins, to discuss placement duties and procedures.

Materials

00592.10 Rolled Waterproofing Membrane System - Furnish a rolled waterproofing membrane system that is a sheet membrane conforming to ASTM D6153 Type III and meeting the following criteria:

Test	Test Method	Limit or Value
Grab Tensile Strength (for Geotextiles and Fabrics)	ASTM D4632 (Woven or Nonwoven)	200 pounds min.
Resistance to Puncture (Geotextiles and Fabrics)	ASTM E154	200 pounds min
Permeability	ASTM E96 (water method)	5.7 NG/PaSm2 (perms.0.1) Max
Pliability	ASTM D146	No Breaks

Furnish test result certificates showing physical tests for the rolled waterproofing membrane system according to 00165.35.

Provide a membrane that can be used for the maximum profile grades and super elevations shown. Profile grade and super elevation limitations are available from the manufacturer.

00592.11 Hot Asphalt Cement Tack Coat - Furnish PG 64-22, PG 70-22, PG 64-28, or PG70-28 hot asphalt cement tack coat unless otherwise approved. Do not use an emulsified asphalt tack coat.

00592.12 Mastic - If shown or specified, furnish mastic to seal edges, splices, and laps meeting requirements of ASTM D4586.

00592.13 Primer - Furnish a primer compatible with the rolled membrane according to the manufacturer's recommendations.

Equipment

00592.20 Equipment - Provide approved Equipment to place the membrane. Remove all Equipment that leaks oil or other contaminants from the work area until they are repaired.

Labor

00592.30 Personnel Qualifications - Provide supervisory personnel who are approved, in writing, by the rolled membrane material manufacturer as qualified and who shall oversee the placement. Provide qualifications to the Engineer. Do not begin Work on any Bridge membranes until the qualifications have been approved.

Construction

00592.40 Preparing Existing Bridge Decks - Prepare the entire deck surface, including the deck edge against the curb, to receive the membrane. Remove all grease, oil, paint, dirt, laitance, rust, and all other contaminants that would affect adhesion of the rolled membrane.

Perform surface preparation in accordance with Section 00504, modified as follows:

- After removing the existing asphalt concrete wearing surface according to Section 00503, ensure the deck is smooth and free of obstructions. Clean the bridge deck by thoroughly sweeping and blowing compressed air immediately prior to placing the hot asphalt cement tack coat.
- Class 1 Preparation according to 00504.41(b) is not required

00592.41 Placing Rolled Waterproofing Membrane:

(a) General - Do not begin membrane installation until qualified supervisory personnel and, all Materials and Equipment necessary to perform the installation and any required repairs are at the job site.

(b) Weather and Other Restrictions - Place hot asphalt cement tack coat, concrete patching, and waterproofing membrane when the deck is dry, the air temperature is between 40 °F and 90 °F, and the surface temperature of the deck is 40 °F minimum and rising. Do not place hot asphalt cement tack coat if the surface temperature exceeds 120 °F.

(c) Handling Materials - Store membrane indoors at a temperature between 60 °F and 120 °F until it is placed on the bridge deck. Do not allow the membrane to sit in direct sunlight longer than necessary.

(d) Area of Application - Apply the membrane starting at the low point working to the high point. Protect adjacent surfaces from spatter or coating.

On Bridges without curbs, apply waterproofing membrane from outside edge to outside edge of the deck, or within the limits of the AC wearing Course.

On Bridges having end panels with a saw cut and joint sealant end joints, extend the rolled membrane 5 feet beyond the bridge deck onto the end panel.

On Bridges with curbs or concrete rail, place a 12 inch continuous membrane strip, after applying hot asphalt cement tack coat, so that 2 inches is placed vertically along the curb or rail, with 10 inches placed horizontally on the deck surface.

00592.42 Installation:

(a) Tack Coat - Place hot asphalt cement tack coat as follows:

(1) Concrete Substrate - Place hot asphalt cement tack coat on the concrete substrate, below the ACP Base Course, to cover a maximum area of 60 square feet per gallon (0.15 gallons per square yard). Extend the tack coat 2 inches up the face of the curb.

(2) ACP Base Course - Place hot asphalt cement tack coat on the two inch ACP Base Course to cover a maximum area of 75 square feet per gallon (0.05 gallons per square yard). Primer may be substituted for the hot asphalt cement tack coat on the ACP Base Course according to 00592.42(e).

(3) Rolled Waterproofing Membrane - Place hot asphalt cement tack coat on the surface of the rolled membrane to cover a maximum area of 120 square feet per gallon (0.075 gallons per square yard).

(b) ACP Base Course - Place a 2 inch ACP Base Course, according to 00744 or 00745 to provide a uniform surface on which to apply the rolled membrane. Construct the ACP Base Course using the same ACP specified for the ACP wearing Course, unless otherwise shown or directed.

(c) Primer - Primer may be substituted for hot asphalt cement tack coat only for application on the ACP Base Course below the rolled waterproofing membrane, with a primer application plan, according to the following:

- When ambient temperatures are forecasted to be above 65 °F, follow minimum manufacturer primer cure times or allow primer to cure a minimum of two hours until the primer is sufficiently cured, as approved by the Engineer, prior to rolled membrane installation.

Do not use primer when ambient temperatures are forecasted to be, or fall below 65 °F at any time during rolled membrane placement.

Apply primer to cover a maximum area of 180 square feet per gallon on the Base Course by brush, roller or as approved, to result in a completely uniform wetted surface, without puddling.

(d) Rolled Waterproofing Membrane - Install rolled waterproofing membrane after the ACP Base Course, according to the following:

- Maintain 6 inches minimum overlap at all sides (longitudinal) joints or seams
- Maintain 12 inches minimum overlap at all end joints
- On Bridges with curbs or concrete rail, install the first rolled section overlapped 10 inches onto the pre-placement strip
- Roll press all lap joints
- Stagger butt splices a minimum of 10 feet
- Prior to applying hot asphalt cement tack coat, roll press the entire membrane surface with approved Equipment
- Release any bubbles or pockets of trapped air or vapor and repair with mastic or as approved
- Sewn splices are not allowed

(e) ACP Wearing Course - Construct the ACP wearing Course according to 00744 or 00745. Prior to placing the hot asphalt cement tack coat, and any ACP Course or waterproofing membrane, verify the underlying surface is free from loose rocks, or other debris. Clean the underlying surface by thoroughly sweeping and blowing compressed air immediately prior to placing the hot asphalt cement tack coat. Pave in the same direction as the membrane overlap end joints.

00592.43 Daily Report Requirements - Submit a written report to the Engineer by the end of each Day that Work is being performed under this Section. The daily written report shall include the following:

- Total gallons of hot asphalt cement tack coat applied to each Bridge
- Total gallons of primer applied to each Bridge
- Digital photographs documenting the existing bridge deck surface, application of the hot asphalt cement tack coat, installation of the membrane, the completed membrane installation, ACP paving operations
- Size and location of repair areas with digital photographs taken before and after placement of the membrane. Provide all digital photographs in a format acceptable to the Engineer.

00592.44 Protection During Construction - Traffic is not allowed on the membrane without prior written approval. Except for paving Equipment, do not allow Contractor Equipment on the membrane unless approved by the Engineer.

Immediately repair any damage to the membrane caused by the paving operation, or other Contractor operations, with mastic or as approved by the Engineer. Complete repairs before resuming paving.

Measurement

00592.80 Measurement - The quantities of waterproofing membrane will be measured on the area basis. Measurement will be the sealed surface area, excluding curb and rail faces and will be limited to the Neat Lines and dimensions shown.

Payment

00592.90 Payment - The accepted quantities of Work performed under this Section will be paid for at the Contract unit price, per square foot, for the item “Rolled Waterproof Membrane”.

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

ACP will be paid for according to 00744.90.

SECTION 00620 - COLD PLANE PAVEMENT REMOVAL

Comply with Section 00620 of the Standard Specifications.

SECTION 00640 - AGGREGATE BASE AND SHOULDERS

Comply with Section 00640 of the Standard Specifications modified as follows:

00640.10 Materials - Replace this subsection, except for the subsection number and title, with the following:

Aggregates shall be 1″-0 or ¾″-0 (as the Contractor elects) crushed quarry rock only. Crushed river rock will not be allowed. Base and shoulder aggregates shall meet the applicable requirements of Subsection 02630 and 02640, respectively.

Where required, rock shall be placed at driveways and field approaches in a manner that provides an adequate transition between the new surface and the existing surface, subject to approval by the Engineer.

SECTION 00730 - EMULSIFIED ASPHALT TACK COAT

Comply with Section 00730 of the Standard Specifications modified as follows:

00730.90 Payment - Replace the paragraph that begins "No separate or additional payment…" with the following paragraph:

No separate or additional payment will be made for water added to dilute the Emulsified Asphalt used for tack coat after delivery from the asphalt supplier.

SECTION 00744 - ASPHALT CONCRETE PAVEMENT

Comply with Section 00744 of the Standard Specifications modified as follows:

00744.11(a) Asphalt Cement - Add the following to the end of this subsection:

Provide 64-22 grade asphalt cement for this Project.

00744.42 Tack Coat - Add the following paragraph to the end of this subsection:

Treat all waterproofing membranes on and against which ACP is to be placed with an asphalt tack coat meeting the requirements of 00744.11(a) or as recommended by the membrane manufacturer.

00744.45(c) Bridge Deck Overlays - Replace the sentence that begins “Fill the joint with a poured…” with the following sentence:

Fill the saw cut joint with a hot applied joint sealant from the QPL.

00744.90 Payment - In the paragraph that begins "No separate or…" add the following bullet:

- Asphalt tack coat
- Unused, remaining, or excess ACP

SECTION 00810 - METAL GUARDRAIL

Comply with Section 00810 of the Standard Specifications modified as follows:

00810.10 Materials - In the list of materials, replace the line that begins "Wood Guardrail Blocks…" with the following line:

Guardrail Blocks 02110.20

00810.13 Guardrail Anchors - Add the following paragraph to the end of this subsection:

Furnish one guardrail anchor cable assembly per project for testing according to AASHTO M 30.

SECTION 00850 - COMMON PROVISIONS FOR PAVEMENT MARKINGS

Comply with Section 00850 of the Standard Specifications modified as follows:

00850.45 Installation - Add the following bullet before the bullet that begins “Place material according to…”:

- Place material between May 1 and October 15.

Replace the bullet that begins “Place material according to…” with the following bullet:

- Place material according to the manufacturer’s installation instructions.

SECTION 00860 - LONGITUDINAL PAVEMENT MARKINGS - PAINT

Comply with Section 00860 of the Standard Specifications.

SECTION 00930 - METAL SIGN SUPPORTS

Comply with Section 00930 of the Standard Specifications modified as follows:

00930.10 Materials - Replace the paragraph that begins “Furnish structural steel materials…” with the following paragraph:

Furnish perforated steel square tube slip base sign supports and perforated steel square tube anchor sign supports from the QPL. Furnish other structural steel materials meeting the applicable portions of Section 02530, with weights and sizes as shown or specified.

00930.40(e)(1) General – Add the following sentence to the end of the paragraph:

The installation will be rejected if the geometry does not satisfy the requirements of 02560.05.

00930.80 Measurement - Add the following to the end of this subsection:

The estimated quantities of structural steel are as follows:

Item	Estimated Quantity (Pound)
Perforated Steel Square Tube Slip Base Sign Supports	55

SECTION 00940 - SIGNS

Comply with Section 00940 of the Standard Specifications.

SECTION 01013 - WATER QUALITY BIOSLOPE

Section 01013, which is not a Standard Specification, is included for this Project by Special Provision.

Description

01013.00 Scope - This work consists of furnishing and installing a water quality bioslope as shown.

Materials

01013.10 Materials - Furnish material meeting the following requirements:

Permanent Seeding..... 01030
Imported Topsoil 01040.15

01013.11 Ecology Mix - Furnish an ecology mix composed of the following:

- 3/8" - No. 8 mineral Aggregate gradation meeting the requirements of Section 00680.
- Horticultural grade perlite, free of toxic materials meeting the following gradation:

Sieve Size	Percent Passing (by Volume)
No. 18	0 - 29
No. 30	0 - 10

- Agricultural grade calcium magnesium carbonate dolomite, free of toxic materials meeting the following gradation:

Sieve Size	Percent Passing (by Weight)
No. 8	95 - 100
No. 16	0 - 5

- Non-calcined agricultural grade hydrated calcium sulfate gypsum, free of toxic materials, meeting the following gradation:

Sieve Size	Percent Passing (by Weight)
No. 8	95 - 100
No. 16	0 - 5

Blend the mineral Aggregate, perlite, dolomite, and gypsum so that the mixture is composed of:

- 3 cubic yards of mineral Aggregate per 1 cubic yard of perlite
- 0.2 cubic yards of topsoil per 1 cubic yard of perlite
- 10 pounds of dolomite per 1 cubic yard of perlite
- 1.5 pounds of gypsum per 1 cubic yard of perlite

Mix the Aggregate, perlite, dolomite, and gypsum before delivery to the project. Mix the materials in the presence of the Project Manager. Provide at least 5 Calendar Days' notice to the Engineer before beginning mixing.

Construction

01013.40 General - Construct water quality bioslope facility as shown. Perform excavation and placement work only when the facility area is dry. Do not stockpile excavated material in the facility area.

(a) Compaction - After placing the ecology mix and shoulder Aggregate, compact by saturating with water.

Maintenance

01013.70 Cleaning - Remove all accumulated sediment and debris before completing the facility.

Measurement

01013.80 Measurement - No measurement of quantities will be made for Work performed under this Section. The estimated quantities of materials are:

Item	Quantity
Excavation	5 Cu. Yd.
Mineral Aggregate	16.5 Cu. Yd.
Perlite	5.5 Cu. Yd.
Dolomite	22 Lbs.
Topsoil	5.1 Cu. Yd.
Gypsum	33 Lbs.

Payment

01013.90 Payment - The accepted quantities of Work performed under this Section will be paid for at the Contract lump sum amount for the item "Bioslopes".

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

SECTION 01030 - SEEDING

Comply with Section 01030 of the Standard Specifications modified as follows:

01030.13(f) Types of Seed Mixes - Add the following to the end of this subsection:

Provide the following seed mix formulas:

- **Permanent Seeding:**

Botanical Name (Common Name)	PLS (lb/acre)	÷ (% Purity (minimum)	x % Germination) (minimum)	= Amount (lb/acre)
Festuca rubra (Creeping Red Fescue)	175	____	____	____
Lolium perenne (Perennial Ryegrass)	20	____	____	____
Deschampsia cespitosa (Tufted Hairgrass)	50	____	____	____

SECTION 01050 - FENCES

Comply with Section 01050 of the Standard Specifications.

SECTION 01092 - STORMWATER CONTROL FACILITY

Section 01092, which is not a Standard Specification, is included in this Project by Special Provision.

01092.00 Scope - This work consists of furnishing and installing the stormwater control facility as shown or directed.

01092.10 Water Quality Seeding – Furnish seed meeting the requirements of 01030.13(f).

01092.11 Blended Compost and Topsoil Mixture - Furnish compost meeting the requirements of 01013.11. Furnish Selected Topsoil, Imported Topsoil, or a combination of both that meets the requirements of Section 01013.

01092.14 Stone Trench Material – Furnish 3/4" – 0" uncrushed rock meeting requirements of 00730.

01092.16 Loose Riprap, Class 100 – Place loose riprap, Class 100 at pipe outlets in stormwater facility. Place from a 0-18" depth, as shown on the plans and meeting the requirements of 00390.

01092.17 Perforated PVC Pipe – Install perforated PVC pipe as shown on plans and meeting the requirements of 02415.20.

Construction

01092.40 General - Construct stormwater control facility as shown or directed. Perform any excavation work only when the area is dry. Place stone trench material at a maximum 2:1 slope. Ensure the toe of the facility reaches or extends beyond the back of any existing ditches shown in the plans. Place stone trench material around ditch pipe shown in the plans. Compact with application of water.

Install the shoulder rock required for the road at a 1.5:1 slope and follow all requirements in Section 00390. After compaction, installation for the Stormwater Control Facility may begin.

Install all pipe to daylight a minimum 1 foot beyond installed fill limits.

Maintenance

The project owner is Linn County, and the County will be responsible for maintenance and general upkeep of this feature after construction is complete. The planted will require frequent maintenance to assure successful vegetation growth followed by periodic maintenance to assure long term function.

01092.80 Measurement - No measurement of quantities will be made for work performed under this Section. The estimated quantities of materials are:

Stormwater Facility:

Item	Quantity
Blended Compost and Topsoil Mixture.....	115 Cubic Yards
4” Perforated PVC Pipe…….....	224 Feet
Stone Trench Material…… ….	290 Cubic Yards
Loose Riprap, Class 100……	1.0 Cubic Yards

Keep measurement for Aggregate Shoulders and Stormwater Control Facility separate. Construction shall be performed in a manner that allows measurement for each item to be done separately.

01092.90 Payment - The accepted quantities of work performed under this Section will be paid for at the Contract lump sum amount for the item "Stormwater Facility".

Payment will be payment in full for furnishing and placing all materials, and for furnishing all equipment, labor, and incidentals necessary to complete the work as specified

Seeding will be paid for under the item “Permanent Seeding”.

SECTION 02001 - CONCRETE

Comply with Section 02001 of the Standard Specifications modified as follows:

02001.01 General - Replace the sentence that begins “Provide quality control…”, with the following sentence:

Provide quality control according to Section 00165 and this Section.

02001.02 Abbreviations and Definitions - Replace this subsection, except for the subsection number and title, with the following:

ASTV - Actual Strength Test Value - average of test cylinder compressive strengths

f'_c - Minimum Specified Compressive Strength at 28 days

f'_{cr} - Average Compressive Strength Over-design. The average strength required to assure that, with normal variations, the concrete will meet f'c

GGBFS - Ground Granulated Blast Furnace Slag

HPC - High Performance Concrete

HRWRA - High-Range Water-Reducing Admixture (super-plasticizer)

PPCM - Precast prestressed concrete member

SCM - Supplementary Cementitious Materials

SSD - Saturated Surface-Dry

w/cm Ratio - Water-Cementitious Material Ratio

WRA - Water Reducing Admixture

Cementitious Materials - Portland cement and supplementary cementitious materials.

High Performance Concrete - Concrete designed for enhanced durability and performance characteristics. High performance concrete is identified by the letters "HPC" in front of the concrete class designation (for example, HPC4500 - 1 1/2).

Moderate Exposure - Elevations below 1,000 feet.

Pozzolans - Fly ash, silica fume, and metakaolin.

Severe Exposure - Elevations 1,000 feet and above.

Supplementary Cementitious Materials - Fly ash, silica fume, metakaolin, and ground granulated blast furnace slag.

02001.10 Materials - Replace this subsection, except for the subsection number and title, with the following:

Furnish Materials meeting the requirements of the following:

Aggregates	02690
Cement	02010
Chemical Admixtures	02040
Concrete Modifiers	02035
Supplementary Cementitious Materials	02030
Synthetic Fiber Reinforcing	02045
Water	02020

02001.20 Concrete Properties, Tolerances, and Limits - Replace the paragraph that begins “Provide concrete that is a workable…” with the following paragraph:

Provide concrete that is workable, placeable, uniform in composition and consistency, and having the following properties:

02001.20(a) Strength - Replace this subsection, except for the subsection number and title, with the following:

Provide concrete meeting the required Classes shown in the Contract Documents. The class of concrete designates the minimum required compressive strength, f'_c at 28 days.

Table 02001-1

Concrete Strength and Water/Cementitious Material (w/cm) Ratio		
Type of Concrete	**Strength (PSI)**	**Maximum w/cm Ratio**
Structural	3300	0.50
	3300 (Seal)	0.45
	4000	0.48
	HPC4500	0.40
	5000 and Above	0.40[1]
	HPC5000 and above	0.40
Drilled Shaft	4000	0.48
Paving	4000	0.44
[1] PPCM's with cast-in-place decks and no entrained air may have w/cm as follows: 5000 psi - 0.48; 5500 psi - 0.44; 6000 psi and up - 0.42		

(1) Required Over Design Strength (f'_{cr}) - Using the ASTV from either field results or trial batch cylinder's, provide calculations demonstrating compliance with one of the following:

- $f'_{cr} = f'_c$ x 1.20 for up to but not including Class 6000; $f'_{cr} = f'_c$ x 1.15 for Class 6000 and higher
- $f'_{cr} = f'_c + 1.34 \times S$[1] for up to but not including Class 6000; $f'_{cr} = f'_c + 1.28 \times S$[1] for Class 6000 and higher

[1] For current designs, S is the standard deviation of 28-Day cylinder strengths from the available data set. For new mix designs, the second option above may be used if there are at least 15 sets of 28-Day cylinders from a similar class (± 1,000 psi) mix design produced at the same plant.

(2) Flexural Beams - Flexural beams for paving concrete mix designs shall achieve 600 psi at 28 Days.

02001.20(c) Slump - Replace this subsection, except for the subsection number and title, with the following:

Provide concrete at the appropriate slump shown in Table 02001-3. Take corrective action to maintain a consistent slump at the point of discharge from the delivery vehicle.

Table 02001-3

Concrete Slump	
Condition	**Slump**
Concrete without WRA	4" max.
Concrete with WRA	5" max.
Concrete with HRWRA	5 1/2" ± 2 1/2"
Precast Prestressed Concrete with HRWRA	10" max.
Seal Concrete	8" ± 2"
Drilled Shaft Concrete	8 1/2" ± 1 1/2" [1]
[1] Maintain a minimum slump of 4 inches throughout drilled shaft placement, including temporary casing extraction.	

Add the following subsection:

02001.20(e) Durability - For HPC and SFC designs, except designs for precast bridge rail elements, the following additional requirements apply:

Test	Test Method	Acceptance Value
Length Change	ASTM C157	-0.045%
Permeability	AASHTO T 277	1,000 Coulombs (max.) at 90 days [1]

[1] Only required for alternate HPC designs. See 02001.30(b)(2).

02001.30 Concrete Mix Design - Replace this subsection with the following subsection:

02001.30 Concrete Constituents:

(a) Portland Cement - Use AASHTO M 85 or ASTM C150, Type I or II cement for structural or paving concrete. Use AASHTO M 85 or ASTM C150, Type III cement for precast prestressed concrete. Provide all cement from the QPL.

(b) Supplementary Cementitious Materials - SCM may be used separately or in combinations up to the specified maximum percentage by mass according to the following:

(1) General Limits - SCM may be used separately or in combination as shown:

Separate SCM	Maximum
Fly Ash + Other Pozzolans	25%
GGBFS	50%
Silica Fume	5%

Combined SCM	Maximum
Fly Ash + Other Pozzolans + GGBFS + Silica Fume	50%*
Fly Ash + Other Pozzolans + Silica Fume	30%*

* Fly ash + other pozzolans shall constitute no more than 25% and silica fume shall constitute no more than 5% of the total weight of cementitious materials.

When silica fume is added to truck mixed concrete, mix the batch a minimum of 100 revolutions at the mixing speed specified by the manufacturer before leaving the batch plant.

(2) HPC Cementitious Composition - Provide HPC with one of the following:

- Cementitious material with 66 percent portland cement, 30 percent fly ash, and 4 percent silica fume.
- Cement with SCM proportioned according to 02001.30(b)(1) and with trial batches performed to demonstrate that the proposed alternate mix design provides a maximum of 1,000 coulombs at 90 days when tested according to AASTHO T 277.

(c) Blended Hydraulic Cement - Blended hydraulic cement may be used subject to the limits of 02001.30(b) and 02010.20.

(d) Chemical Admixtures - Use chemical admixtures according to the manufacturer's recommendations. Use WRA in all seal concrete and in Class 5000 concrete or greater. Use HRWRA in all HPC.

Use a superset extender from the QPL in all concrete for bridge decks. Use an appropriate amount to extend the initial set time of the concrete by 90 minutes.

(e) Aggregate - If the nominal maximum size of the coarse Aggregate is not included as a part of the class of concrete, or shown on the Plans, any size from 1 1/2-inch to 3/8-inch nominal maximum size Aggregate may be used according to ACI guidelines except:

- Use 1 1/2 inch nominal maximum size Aggregates in bridge deck concrete.
- Use 1 1/2 inch nominal maximum size Aggregates in paving concrete unless otherwise indicated.
- Use 3/8 inch nominal maximum size Aggregates in drilled shafts unless otherwise indicated.

(f) Synthetic Fiber Reinforcing for Concrete - Use synthetic fiber reinforcing from the QPL and according to Section 02045 in all bridge deck and silica fume overlay concrete. Use synthetic fiber reinforcing according to the manufacturer’s recommendations at the rate designated on the QPL. Fiber packaging is not allowed in the mixed concrete.

Proportion all HPC for a minimum coarse Aggregate absolute solid volume according to Table 02001-4:

Table 02001-4

Absolute Solid Volume	
Maximum Nominal Aggregate Size	**Cu. Yd. (Aggregate) / Cu. Yd. (Concrete)**
3/8"	0.36
1/2"	0.38
3/4"	0.40
1"	0.42
1 1/2"	0.44

Two or more Aggregate products or sources meeting Specifications may be blended to improve concrete properties. Blending non-specification Aggregate Materials, except for gradation, with specification Materials is not allowed.

02001.31 Concrete Constituents - Replace this subsection with the following subsection:

02001.31 Concrete Mix Design - Submit new or current mix designs, prepared by a CCT, for each required class of structural or paving concrete to the Engineer for review. Allow 21 Calendar Days for the review. Design mixes by the volumetric method in ACI 211.1 to achieve the properties of 02001.20. Do not proceed with concrete placement until the Engineer has determined that the mix design complies with the Specifications. Review of concrete mix designs does not relieve the Contractor of the responsibility to provide concrete meeting the Specification requirements.

02001.32(a) Trial Batch - Replace this subsection, except for the subsection number and title, with the following:

Make at least one trial batch for each concrete mix design. Notify the Engineer at least 48 hours before making each trial batch. The Engineer may witness preparation and testing. Prepare and test trial batches using the same materials, at the same proportions, and having the same plastic properties of concrete that will be used in the Project. Simulate haul time and mixing conditions to ensure proper workability at the jobsite. Furnish all materials, Equipment and Work required for designing the mixes, testing Materials, and making trial batches to verify the final design for final use at no additional cost to the Agency.

02001.32(b) Plastic Concrete - Replace this subsection, except for the subsection number and title, with the following:

For each trial batch, test the temperature, slump, density, and air content and compute the w/cm ratio and yield according to the following test methods:

Test	Test Method
Sampling Fresh Concrete	WAQTC TM 2
Slump	AASHTO T 119 [1]
Density	AASHTO T 121
Yield	AASHTO T 121
Air Content	AASHTO T 152
Concrete Temperature	AASHTO T 309
Molding Concrete Specimens	AASHTO T 23 or R 39 [2]
Water-Cement Ratio	[3]

[1] For drilled shaft concrete test the slump retention characteristics by subsequent tests at half-hour intervals for the duration of the estimated drilled shaft placement, including temporary casing extraction. Report in table or graphical format.
[2] Cast cylinders in single-use plastic molds
[3] Use ODOT's Field Operating Procedure for AASHTO T 121 in the MFTP

02001.32(c) Strength Tests - Replace this subsection with the following subsection:

02001.32(c) Hardened Concrete - When applicable, test properties according to the following test methods:

Test	Test Method
Compressive Strength	AASHTO T 22
Flexural Strength	AASHTO T 97
Length Change	ASTM C157
Permeability	AASHTO T 277

(1) Compressive Strength Tests - For each trial batch, cast and cure at least three test cylinders according to AASHTO T 23 or AASHTO R 39, in 6 inch by 12 inch or 4 inch by 8 inch single use plastic molds. Test at 28 days according to AASHTO T 22.

(2) Flexural Strength Tests - For each paving concrete trial batch, cast and cure at least three flexural beams according to AASHTO T 23 or AASHTO R 39. Test flexural beams at 28 days according to AASHTO T 97.

(3) Length Change Tests - For all HPC and SFC mix designs, except for precast bridge rail elements, make at least three specimens from the trial batch for length change testing. Sample prisms shall have a square, 4 inch by 4 inch cross section. Wet cure the samples until they have reached an age of 28 days, including the period in the molds. Store and measure samples according to ASTM C157, Section 11.1.2. Report length change results at 28 days.

(4) Permeability Tests - For alternate HPC mix designs, make at least three specimens from the trial batch for permeability testing. Prepare, cure, dry and test according to AASHTO T 277. Report permeability in coulombs at 90 days.

02001.32(d) Length Change Tests - Delete this subsection.

02001.32(e) Permeability Tests - Delete this subsection.

02001.33 Required Over Design Strength (f'_{cr}) for New Mix Designs - Delete this subsection.

02001.34(a) Length Change Tests - Delete this subsection.

02001.34(b) Permeability Tests – Delete this subsection.

02001.35 Required Submittals for Mix Designs - Replace this subsection, except for the subsection number and title with the following subsection:

Submit the following information for each concrete mix design:

(a) Supplier's Information - Provide the supplier's unique mix design identification number and batch plant location.

(b) Mix Design Constituent Proportions:

- Weight per cubic yard (pounds per cubic yard) of cement, SCM, fine Aggregates and coarse Aggregates (SSD), mix water, concrete modifiers, and chemical admixtures
- Absolute volumes of cement, SCM, fine Aggregates and coarse Aggregates (SSD), mix water, air content, concrete modifiers, and chemical admixtures
- Dosage rates for chemical admixtures (ounces per cubic yard)
- w/cm ratio including all chemical admixtures

(c) Aggregates - Identify the Aggregate source by the ODOT source number. Report current values of the following:

- Bulk specific gravities (SSD)
- Fine Aggregate absorptions
- Coarse Aggregate absorptions
- Dry-rodded density of coarse Aggregates
- Average stockpile gradations
- Fineness modulus of sand used in the mix design calculations

(d) Cement - For each cement used, provide the following:

- Manufacturer
- Brand name
- Type
- Source or location plant
- QPL product number

(e) SCM - For each SCM used, provide the following:

- Manufacturer
- Brand name
- Source
- Class
- QPL product number

(f) Concrete Modifiers - For each concrete modifier used, provide the following:

- Manufacturer
- Brand name
- QPL product number

(g) Admixtures - For each admixture used, identify the following:

- Manufacturer
- Brand name
- Design dosage rate
- QPL product number

(h) Synthetic Fiber Reinforcing - For each synthetic fiber reinforcing used, provide:

- Manufacturer
- Brand name
- Design dosage rate
- QPL product number

(i) Water - Identify the source of water to be used and provide a certificate of compliance certifying that the water meets the requirements of 02020.10.

(j) Plastic Concrete Tests - Report the temperature, slump, density, air content, yield, and w/cm ratio of the trial batch or the average of these values for the cylinder sets presented for evaluation of a current mix design.

For drilled shaft concrete, report the following additional information:

- The total time estimate from initial batching through drilled shaft placement, including haul time, placing concrete, and temporary casing extraction.
- Initial slump test results and subsequent results at 15-minute intervals, verifying a minimum slump of 4 inches is maintained for the total time estimated for drilled shaft placement, including temporary casing extraction. Report data in a table or graph format.

(k) Compressive Strength Test Results - Report the individual test results and the ASTV of cylinders from the trial batch for new mix designs. For current designs, provide the individual tests and the average of the cylinder sets presented for evaluation.

(l) Strength Analysis - Provide an analysis, showing all calculations, demonstrating that the mix design meets the requirements of 02001.20(a).

(m) HPC and SFC Test Results - For all HPC and SFC designs, report the length change according to 02001.32(c)(3).

For alternate HPC designs, report the permeability according to 02001.32(c)(4). An SFC permeability report is not required.

HPC test results are not required for precast bridge rail elements.

(n) Quality Control Personnel - Provide the name and certification number of the CCT who prepared the mix design, the QCT who performed the plastic concrete tests and cast the test cylinders, the CSTT who tested the cylinders, and the ODOT certification number of the laboratory where the cylinders were tested.

02001.36 Adjusting Concrete Proportions - Replace this subsection, except for the subsection number and title, with the following:

After a mix design has been reviewed and accepted, submit any proposed adjustments to concrete proportions for review. Significant changes to the mix design, as determined by the Engineer, may require verification of performance by trial batch according to 02001.32. Significant changes include, but are not limited to the following:

- Decreases in cementitious material content.
- Changes in cement source.
- Increases in SCM quantity replacing cement.
- Changes in SCM source.
- Substitution of aggregates from a different source.
- Admixture product changes.
- Large admixture dosage adjustments.
- Excluding seasonal adjustments for air entraining agents and Type A or D water reducers (± 25 oz/cubic yard).

02001.37 Trial Batch Costs – Delete this subsection.

02001.50(a) Certified Aggregate Technician (CAgT) - Add the following bullet to the bullet list of duties:

- Notify the CCT whenever a fine aggregate fineness modulus varies by more than ± 0.20 from the mix design it is to be used in.

02001.50(b) Quality Control Technician (QCT) - Replace this subsection, except for the subsection number and title, with the following:

- Duties:
  - Attend pre-placement meetings for bridge deck pours and paving.
  - Be at the concrete placement site when concrete placement is in progress.
  - Have a copy of the mix design on site and available during concrete placement.
  - Obtain and check each batch ticket upon arrival of the concrete at the jobsite for the correct mix design.
  - Sample the concrete and test for ambient air temperature, plastic concrete temperature, slump, air content, density, w/cm ratio and yield at the frequencies required by and according to the tests listed in the MFTP, after concrete mixture proportions are adjusted in the field, and at such times as requested by the Engineer.
  - Notify the Contractor and the Engineer immediately when the concrete is not in compliance with the Specifications.
  - Be in direct contact with the CCT by telephone, radio or other means to convey information.
  - Notify the CCT of loads rejected and the reason for rejection.
  - Notify the CCT immediately whenever the w/cm ratio varies from the mix design target by more than ± 0.03.
  - Notify the CCT immediately whenever the air content varies from the mix design target by more than ± 1.5 percent.
  - Notify the CCT immediately whenever the slump varies from the allowable limits of Table 02001-3.
  - Notify the CCT immediately whenever the density of the plastic concrete varies from the mix design target by more than ± 3.0 pounds per cubic foot.

02001.50(c) Concrete Control Technician (CCT) - Replace this subsection, except for the subsection number and title, with the following:

- Duties:
  - Prepare new concrete mix designs.
  - Adjust current mix designs.
  - Notify the Engineer 48 hours prior to trial batching.
  - Control the quality of concrete during production.
  - Submit proposed adjustments of the mix design, in writing, to the Engineer for approval by the middle of the following work shift.
  - Ensure approved adjustments are implemented prior to proceeding with production.
  - Test the fine and coarse aggregates for total moisture content according to AASHTO T 255 before batching is started and when there is a significant change in the slump of the concrete. Moisture testing may be by an alternate method if approved by the Engineer. Provide moisture content test results to the Engineer upon request.

- Visually inspect the coarse aggregate for changes in moisture content throughout the day. Perform necessary testing for total moisture, and make mixture adjustments if necessary.
- Monitor concrete properties and compressive strength tests throughout the duration of the Project.
- Make adjustments to loads that fail to meet the air content or slump criteria of these Specifications prior to the 90-minute time limit. Adjustments shall comply with the provisions of ASTM C94.
- Make adjustments to maintain a satisfactory over-design f'_{cr}.
- Perform an analysis and verify the accuracy of coarse and fine aggregate moistures whenever the w/cm ratio varies from the mix design target by more than ± 0.03.
- Perform an analysis and make necessary adjustments whenever the unit weight of the plastic concrete varies from the mix design by more than ± 3.0 pounds per cubic foot.
- Perform an analysis whenever the fineness modulus of the fine aggregate varies by more than ± 0.20 from the established mix design. If necessary to maintain proper workability, ability to pump or ability to finish, make an adjustment to the coarse/fine aggregate ratio and submit to the Engineer by the middle of the following work shift.

SECTION 02040 - CHEMICAL ADMIXTURES

Comply with Section 02040 of the Standard Specifications modified as follows:

02040.10 Materials - Replace this subsection, except for the subsection number and title, with the following:

Furnish admixtures from the QPL.

SECTION 02050 - CURING MATERIALS

Comply with Section 02050 of the Standard Specifications modified as follows:

02050.10 Liquid Compounds - Delete the paragraph that begins “Furnish liquid membrane-forming curing…“ with the following paragraph:

Furnish liquid membrane-forming curing compounds from the QPL and meeting the requirements of ASTM C309.

Delete the paragraph that begins “Before using liquid compounds, submit…”.

02050.20 Polyethylene Films - Delete the paragraph that begins “Furnish clear or white…“ with the following paragraph:

Furnish clear or white polyethylene films for curing concrete meeting the requirements of ASTM C171.

SECTION 02080 - GROUT

Comply with Section 02080 of the Standard Specifications modified as follows:

002080.00 Scope - Replace this subsection, except for the subsection number and title, with the following:

This Section includes the requirements for grout.

02080.30 Keyway Grout – Replace the sentence that begins “Furnish keyway grout from the QPL…” with the following sentence:

Furnish keyway grout from the QPL.

02080.60 Structural Grout - Replace the sentence that begins “Furnish structural grout from the QPL…” with the following sentence:

Furnish structural grout from the QPL.

Add the following subsection:

02080.70 UHPC Grout - Furnish Ultra-High Performance Concrete (UHPC) grout used in the keyways of precast prestressed concrete members or other applications when shown. Furnish UHPC grout from the QPL.

SECTION 02110 - POSTS, BLOCKS, AND BRACES

Comply with Section 02110 of the Standard Specifications.

SECTION 02440 - JOINT MATERIALS

Comply with Section 02440 of the Standard Specifications modified as follows:

02440.19 Steel Bridging Plate - Replace this subsection, except for the subsection number and title, with the following:

Furnish ASTM A36 steel bridging plate with a minimum thickness of 1/4 inch and a width of 8 inches, cut in lengths of 4 to 8 feet. Drill spike holes at 12 inch centers along the centerline of the plate.

02440.20 Preformed Joint Seal - Replace this subsection, except for the subsection number, with the following:

02440.20 Strip Seal - Furnish strip seals from the QPL and conforming to ASTM D5973.

Add the following subsection:

02440.22 Preformed Compression Joint Seal - Furnish preformed compression joint seals from the QPL and conforming to the requirements of AASHTO M 297.

Add the following subsection:

02440.23 Precompressed Foam Silicone Joint Seal - Furnish precompressed foam silicone joint seals from the QPL.

02440.30 Hot Poured Joint Filler - Replace this subsection with the following subsection:

02440.30 Hot Applied Joint Sealant - Furnish hot applied joint sealant from the QPL.

02440.40 Gaskets for Concrete Pipe and Precast Manhole Section Joints - Replace this subsection, except for the subsection number and title, with the following:

(a) Preformed Flexible Joint Sealant - Furnish Materials for tongue and groove or key lock manhole joints conforming to the requirements of ASTM C990.

(b) Rubber Gaskets - Furnish Materials for O-ring manhole and concrete pipe joints conforming to ASTM C443.

02440.70(b) Rubber - Replace this subsection, except for the subsection number and title, with the following:

Provide rubber water stops to the dimension shown and conforming to the requirements of ASTM C923, ASTM C1478, or ASTM F2510 as appropriate for the specific structure and pipe types.

SECTION 02510 - REINFORCEMENT

Comply with Section 02510 of the Standard Specifications modified as follows:

02510.10 Deformed Bar Reinforcement - Replace this subsection, except for the subsection number and title, with the following:

Furnish deformed bar reinforcement from the QPL and conforming to the requirements of ASTM A 706, AASHTO M31 (ASTM A615), or AASHTO M334 (ASTM A1035 CS). Unless otherwise specified or shown, all reinforcing bars shall be Grade 60.

02510.20 Mechanical Splices - Replace this subsection, except for the subsection number and title, with the following:

Furnish mechanical splices from the QPL. Where bars of different sizes or strengths are connected, the governing strength shall be the strength of the smaller or weaker bar.

- Type 1 Mechanical Splices - Furnish Type 1 Mechanical Splices that develop at least 125 percent of the specified minimum yield strength of the reinforcing bars. Type 1 Mechanical Splices are not allowed for column bars.
- Type 2 Mechanical Splices - Furnish Type 2 Mechanical Splices that develop at least 125 percent of the specified minimum yield strength of the reinforcing bars and 100 percent of the specified tensile strength of the reinforcing bars.
- Total slip displacement - Measure displacement after loading in tension to 30.0 ksi and relaxing to 3.0 ksi. The displacement for bars up to No. 14 shall not exceed 0.01 inches. The displacement for No. 18 bar shall not exceed 0.03 inches.

02510.25 Headed Bar Reinforcement - Replace this subsection, except for the subsection number and title, with the following:

Furnish Class HA headed steel bar from the QPL for concrete reinforcement. The headed steel bar shall develop the specified minimum tensile strength of the reinforcing bars, according to ASTM A970. Ferrous-filler coupling sleeves and welded headed steel bars are not allowed for concrete reinforcement.

SECTION 02520 - STEEL AND CONCRETE PILES

Comply with Section 02520 of the Standard Specifications modified as follows:

02520.10(b) Steel Pipe Piles - Replace this subsection, except for the subsection number and title, with the following:

Steel pipe piles shall be either spirally welded or longitudinally welded, and shall be constant in section. Steel piles shall conform to ASTM A252 or API 5L and the grade shown.

SECTION 02530 - STRUCTURAL STEEL

Comply with Section 02530 of the Standard Specifications modified as follows:

02530.70 Galvanizing - Replace the paragraph that begins "Steel that will be finished by hot-dip galvanizing…" with the following paragraph:

Steel that will be finished by hot-dip galvanizing for use as sign bridges, illumination poles, traffic signal poles, sign supports, bridge rail and items designated on the Plans as "Galvanize - Control Silicon" shall have controlled silicon content. The silicon content shall be in either of the ranges 0 - 0.06 percent or 0.13 - 0.25 percent. Before galvanizing, submit mill test certificates verifying silicon content to the Engineer and the galvanizer.

SECTION 02560 - FASTENERS

Comply with Section 02560 of the Standard Specifications modified as follows:

02560.10(b) Nuts– Replace this subsection, except for the subsection number and title, with following:

Nuts for carbon steel bolts shall conform to the requirements of the following, or equivalent:

Plain (Noncoated) Bolts:

- 1/4" - 1 1/2" - ASTM A563, Grade A, hex
- Over 1 1/2" - 4" - ASTM A563, Grade A, heavy hex

Galvanized Bolts:

- All - ASTM A563, Grade A, C, D, or DH, heavy hex

02560.20(a) Bolts – Replace this subsection, except for the subsection number and title, with following:

High-strength bolts used in noncoated weathering steel connections shall be Type 3. High-strength bolts shall conform to the requirements of the following:

Heavy Hex Head:

- ASTM F3125, Grade A325

Twist-Off:

- ASTM F3125, Grade F1852

02560.20(b) Nuts – Replace this subsection, except for the subsection number and title, with following:

Nuts for high-strength bolts shall conform to the requirements of the following, or equivalent:

Type 1 Plain (Noncoated) Bolts:

- All - Heavy hex ASTM A563, Grade C, D, or DH

Type 1 Galvanized Bolts:

- All - Heavy hex ASTM A563, Grade DH

Type 3 Bolts:

- All - Heavy hex ASTM A563, Grade C3 or DH3

02560.20(f) Lock-Pin and Collar Fasteners - Delete this subsection.

02560.30(c) Nuts – Replace this subsection, except for the subsection number and title, with following:

Nuts for tie rods, anchor bolts, and anchor rods shall conform to the requirements of the following, or equivalent:

Plain Steel Tie Rods, Anchor Bolts, and Anchor Rods:

- All - Heavy hex ASTM A563, Grade A

Galvanized Steel Tie Rods, Anchor Bolts, and Anchor Rods:

- All - Heavy hex ASTM A563, Grade A, C, D, or DH

Plain Or Galvanized High-Strength Tie Rods, Anchor Bolts, or Anchor Rods:

- All - Heavy hex ASTM A563, Grade DH

02560.40 Galvanizing and Coating - Replace this subsection with the following subsection:

02560.40 Galvanizing and Coating:

(a) High Strength Fasteners - When specified, hot-dip galvanize Grade A325 fasteners or mechanically deposit zinc to Grade F1852 fasteners according to ASTM F3125.

(b) Tie Rods, Anchor Bolts, Anchor Rods and Carbon Fasteners - Hot-dip galvanize, tie rods, anchor bolts, anchor rods, nuts, washers and carbon fasteners according to ASTM F2329 as appropriate to the product.

Overtap nuts for galvanized fasteners, galvanized tie rods, galvanized anchor bolts, and galvanized anchor rods according to ASTM A563.

Measure the zinc thickness on the wrench flats or top of bolt head of galvanized bolts and on the wrench flats of galvanized nuts.

(c) Direct Tension Indicators – When specified, apply mechanically deposited zinc according to ASTM F959.

(d) Repair of Hot-Dip Galvanizing - Repair damaged hot-dip galvanizing according to ASTM A780. Minimum zinc content for Method A2 is 94 percent on the dry film.

02560.60(b) Other Test Requirements - In the paragraph that begins "Wedge test all bolts according…" replace the words "AASHTO M 164 (ASTM A325)" with the words "ASTM F3125, Grade A325 or Grade F1852".

02560.70 Lubricating Fasteners - Replace this subsection, except for the subsection number and title, with following:

Furnish all galvanized and coated fasteners with a factory applied commercial water-soluble wax that contains a visible dye of a color that contrasts with the color of galvanizing or coating. Black fasteners shall be "oily" to the touch when installed.

Field lubricate galvanized bolts in tapped holes, galvanized anchor rods, and galvanized tie rods with a lubricant from the QPL. Apply lubricant to threads and to bearing surfaces that will turn during installation.

Protect fasteners from dirt and moisture at the Project site.

Retest heavy hex head fasteners that do not pass the field rotational capacity test. Clean and relubricate heavy hex head fasteners with a lubricant from the QPL prior to retesting.

Relubrication of Twist-Off fasteners is not permitted.

SECTION 02690 - PCC AGGREGATES

Replace Section 02690 of the Standard Specifications with the following Section 02690:

SECTION 02690 - PCC AGGREGATES

Description

02690.00 Scope - This Section includes the requirements for coarse and fine aggregates for portland cement concrete.

02690.01 Definitions:

Coating - Foreign or deleterious substances found adhering to the aggregate particles.

Detrimental Materials - Materials that adversely affect concrete, including but not limited to clay, shale, mica, silt, bark, alkali, sticks, organic matter, soft and flaky particles.

Nominal Maximum Size Of Aggregate - One sieve larger than the first sieve that retains more than 10 percent of the material using an agency specified set of sieves based on cumulative percent retained. Where large gaps in specification sieves exist, intermediate sieves may be inserted to determine nominal maximum size.

Materials

02690.10 Materials - PCC Aggregates shall consist of natural or crushed rock that is hard, strong, durable and free from adherent coatings or other detrimental materials.

Produce, handle and store the aggregates in a way that will maintain passing material properties and avoid introducing deleterious materials or segregation prior to its use in portland cement concrete.

02690.11 Alternate Grading - The Contractor may request approval to produce coarse and fine aggregates in sizes other than those stated in 02690.20 and 02690.30. The request shall be in writing, and shall state the proposed target value and specified tolerances for each of the individual sieve sizes of the materials the Contractor proposes to produce.

02690.12 Acceptance of Aggregate - Acceptance of aggregate will be according to Section 00165 and based on the Contractor's quality control testing, if verified, according to Section 00165.

(a) Aggregate Gradation - A stockpile contains specification aggregate gradation when the quality level for each sieve size calculated according to 00165.40 is equal to or greater than the quality level indicated in Table 00165-2 for a PF of 1.00. Each required sample represents a sublot. When the quality level indicated in Table 00165-2 yields a PF of less than 1.00 for any constituent, the material is non-specification.

(b) Non-specification Aggregate Gradation - Stockpiled aggregates that contain non-specification aggregate gradation will be rejected by the Engineer unless non specification material is removed from the stockpile. Do not add additional material to the stockpile until enough non-specification material is removed so that the quality level for each constituent is equal to or greater than the quality level in Table 00165-2 for a 1.00 PF.

Reprocessing of non-conforming material and the testing required for acceptance will be at no additional cost to the Agency. Acceptance of reprocessed material will be based on passing test results or accepted visually by the Engineer.

02690.20 Coarse Aggregate:

(a) Harmful Substances - Harmful substances shall not exceed the following limits:

	Test Method		Percent
Test	**ODOT**	**AASHTO**	**(by Weight)**
Lightweight Pieces	–	T 113	1.0
Material passing No. 200 sieve	–	T 11	1.0
Wood Particles	TM 225	–	0.05

(b) Soundness - Coarse aggregates for concrete shall be tested for soundness using sodium sulfate salt, according to AASHTO T 104. The weighted percentage loss shall not exceed 12 percent by weight.

(c) Durability - Coarse aggregates shall meet the following durability requirements:

	Test Method		
Test	**ODOT**	**AASHTO**	**Requirements**
Abrasion	–	T 96	30.0% Max.
Oregon Air Aggregate Degradation:			
Passing No. 20 sieve	TM 208	–	30.0% Max.
Sediment Height	TM 208	–	3.0" Max.

(d) PCC Paving Aggregate - In addition to requirements above, comply with the following:

(1) Fracture - Provide aggregate with at least two fractured faces on at least 50 percent of the particles retained on the 3/8 inch, 1/2 inch, 3/4 inch, 1 inch, and 1 1/2 inch sieves, as determined by AASHTO T 335.

(2) Elongated Pieces - Provide aggregate with elongated pieces not exceeding 10 percent by weight of the material retained on the No. 4 sieve when tested according to ODOT TM 229 with the proportional caliper device set at a ratio of 5:1.

(e) Grading and Separation by Sizes for Prestressed Concrete - Sampling shall be according to AASHTO T 2 and sieve analysis shall be determined according to AASHTO T 27 and AASHTO T 11. PCC coarse aggregate shall conform to grading and separated sizes as follows:

(1) Where indicated in Table 02690-1, the coarse aggregate shall be separated into two sizes and each separated size shall be measured into the batch in the quantity determined by the mix design.

For each of the indicated maximum sizes of coarse aggregates, the separated sizes shall be as indicated in Table 02690-2:

Table 02690-1

Maximum Nominal Size of Aggregates	Separated Sizes
1"	1" - No. 4
3/4"	3/4" - No. 4
3/4"	3/4" - 1/2" and 1/2" - No. 4
3/4"	3/4" - 3/8" and 3/8" - No. 4

(2) The grading of each of the specified separated sizes of coarse aggregate shall conform to the following:

Table 02690-2

	Separated Sizes					
Sieve Size	**1" - No. 4**	**3/4"- No. 4**	**3/4"- 1/2"**	**3/4"- 3/8"**	**1/2"- No. 4**	**3/8"- No. 4**
	Percent Passing (by Weight)					
1 1/2"	100	–	–	–	–	–
1"	90 - 100	100	100	100	–	–
3/4"	50 - 80	90 - 100	85 - 100	85 - 100	100	100
1/2"	–	–	0 - 15	–	85 - 100	–
3/8"	15 - 40	20 - 50	–	0 - 15	35 - 65	85 - 100
No. 4	0 - 10	0 - 10	–	–	0 - 15	0 - 15
No. 200	*	*	*	*	*	*

* See 02690.20(a). Do not evaluate material passing the No. 200 sieve according to 00165.40.

(f) Grading and Separation by Sizes for Other Concrete - Sampling shall be according to AASHTO T 2. Sieve analysis shall be according to AASHTO T 27 and AASHTO T 11. Provide aggregates meeting the gradation requirements of Tables 02690-3 and 02690-4 for structural concrete. Provide a CAgT to perform sampling and testing when required.

Table 02690-3

Gradation of Coarse Aggregates

Sieve Size	Combined* Sizes 1 1/2" - No. 4	Separated Sizes 1 1/2" - 3/4"	Separated Sizes 1" - No. 4	Separated Sizes 3/4" - 1/2"
	Percent Passing (by Weight)			
2"	100	100	–	–
1 1/2"	90 - 100	90 - 100	100	–
1"	70 - 89	20 - 55	90 - 100	100
3/4"	35 - 70	0 - 15	–	85 - 100
1/2"	–	–	25 - 60	0 - 15
3/8"	10 - 30	0 - 5	–	–
No. 4	0 - 5	–	0 - 10	–
No. 8	–	–	0 - 5	–
No. 200	**	**	**	**

* For 1 1/2 inch coarse aggregate use two or more separated sizes which when combined shall meet the gradation limits for 1 1/2" - No. 4

** See 02690.20(a). Do not evaluate material passing the No. 200 sieve according to 00165.40.

Table 02690-4

Gradation of Coarse Aggregates

Sieve Size	Separated Sizes 3/4" - 3/8"	Separated or Combined Sizes 3/4" - No. 4	Separated Sizes 1/2" - No. 4	Separated Sizes 3/8" - No. 8
	Percent Passing (by Weight)			
1"	100	100	–	–
3/4"	90 - 100	90 - 100	100	–
1/2"	20 - 55	–	90 - 100	100
3/8"	0 - 15	20 - 55	40 - 70	85 - 100
No. 4	0 - 5	0 - 10	0 - 15	10 - 30
No. 8	–	0 - 5	0 - 5	0 - 10
No. 16	–	–	–	0 - 5
No. 200	*	*	*	*

* See 02690.20(a). Do not evaluate material passing the No. 200 sieve according to 00165.40.

02690.30 Fine Aggregates:

(a) Different Sources - Do not mix fine aggregates from different sources of supply, or store in the same pile. Do not use alternately in the same class of mix, without prior approval.

(b) Harmful Substances - The amount of harmful substances shall not exceed the following limits:

Test	Test Method (AASHTO)	Percent (by Weight)
Lightweight Pieces	T 113	2.0%
Material passing No. 200 sieve	T 11	3.0%

(c) Soundness - Fine aggregate shall be tested for soundness using sodium sulfate salt, according to AASHTO T 104. The weighted percentage loss shall not exceed 10 percent by weight.

(d) Organic Impurities - All fine aggregate shall meet the requirements of AASHTO M 6 for organic impurities.

(e) Sand Equivalent - Fine aggregate shall be tested according to AASHTO T 176 and shall have a sand equivalent of not less than 75.

(f) Sand for Mortar - Sand for mortar shall conform to the requirements of this Section.

(g) Grading - Sampling shall be according to AASHTO T 2. Sieve analysis shall be determined according to AASHTO T 27 and AASHTO T 11. Provide aggregates meeting the gradation requirements of Table 02690-5 for structural concrete. Provide a CAgT to perform sampling and testing when required.

Table 02690-5

Gradation of Fine Aggregate*

Sieve Size	Percent Passing (by Weight)
3/8"	100
No. 4	90 - 100
No. 8	70 - 100
No. 16	50 - 85
No. 30	25 - 60
No. 50	5 - 30
No. 100	0 - 10
No. 200	**

* Determine the fineness modulus according to AASHTO T 27 and AASHTO T 11. Maintain the fine aggregate fineness modulus within plus or minus 0.20 from the fineness modulus used in the Contractor's mix design. Fine aggregates in which the fineness modulus varies by more than 0.20 from the mix design target shall not be incorporated until an assessment is done to determine whether an adjustment in the aggregate proportions is necessary. Proportion changes must be performed by a CCT according to the provisions of ACI 211. Submit analysis of FM and mix design adjustments to the Engineer for approval.

** See 02690.30(b). Do not evaluate material passing No. 200 sieve according to 0165.40.

SECTION 02810 - BRIDGE RAIL

Comply with Section 02810 of the Standard Specifications modified as follows:

02810.10 Shapes, Plates, and bars - Replace this subsection, except for the subsection number and title, with the following:

Shapes, plates and bars shall conform to the following, or as shown or specified:

- ASTM A36
- ASTM A572 Grade 50
- ASTM F1554 Grade 105

The silicon content of all exposed shapes, plates and bars that are called out on drawings as "Galvanize - Control Silicon", shall be according to 02530.70.

Add the following subsection:

02810.15 Anchor Adhesive - Use one of the following epoxy adhesive from the QPL:

- Hilti HIT-HY200-A
- Hilti HIT-RE 500v3, Red Head C6+
- Ultrabond HS-1CC

SECTION 02820 - METAL GUARDRAIL

Comply with Section 02820 of the Standard Specifications modified as follows:

02820.40 Guardrail Anchor Hardware - Replace the paragraph that begins “Provide cable and fittings…” with the following paragraph:

Provide cable and fittings for guardrail anchors that conform to the requirements of AASHTO M 30, Class A, for Type II cable. Galvanize all fittings according to AASHTO M 111 (ASTM A123).

02820.50 Acceptance of Materials - Replace this subsection, except for the subsection number and title, with the following:

Acceptance of metal guardrail Materials will be according to Section 00165.35.

SECTION 02910 - SIGN MATERIALS

Comply with Section 02910 of the Standard Specifications modified as follows:

02910.20 Reflective and Retroreflective Sheeting - Replace the title of this subsection with “**Retroreflective Sheeting**”

02910.20(a) General - Replace the paragraph that begins “Use retroreflective sheeting Type…” with the following paragraph:

Use retroreflective sheeting from the QPL and the following:

02910.32(b) Retroreflective Sheeting Legend – Replace the paragraph that begins “The Silver-white or white letters…” with the following paragraph:

Removable legend shall be fabricated with sheeting conforming to 02910.20 that is permanently adhered to a flat aluminum frame.

02910.40 Hardware - Replace the paragraph that begins "The bolts, nuts, and washers…" with the following paragraph:

The bolts, nuts, and washers used to fabricate and erect signs shall be aluminum alloy, stainless steel, or hot-dip galvanized steel. Aluminum for bolts and nuts shall conform to ASTM B211, alloys 2024-T4 or 6061-T6 as the Contractor elects. Aluminum washers shall conform to ASTM B209, alloy Alclad 2024-T4. Stainless steel for bolts, nuts, and washers shall be Type 304 or Type 316. Galvanized steel bolts, nuts and washers shall be medium carbon steel. Galvanize steel hardware according to AASHTO M 232 (ASTM A153).

02910.75(a) Warranty Period – Replace the bullet that begins "For retroreflective Type III and Type IV …" with the following paragraph:

- For retroreflective ASTM Type III and Type IV sheeting used for permanent signs, the warranty period shall be for 10 years.

Replace the bullet that begins "For retroreflective Type IX sheeting used …" with the following paragraph:

- For retroreflective ASTM Type IX and Type XI sheeting used for permanent signs, the warranty period shall be for 12 years.

02910.75(b) Failure – Replace the bullet that begins "70 percent of minimum coefficient…" with the following paragraph:

- 70 percent of minimum coefficient of retroreflection for designated sheeting or cuttable film according to ASTM D4956 for the remaining 3 years of the warranty period for Type III and Type IV sheeting and remaining 5 years of the warranty period for Type IX and Type XI sheeting.

02910.75(c) Remedy – Replace the bullet that begins "For the remaining 3 years …" with the following paragraph:

- For the remaining 3 years (5 years for ASTM Type IX and Type XI sheeting), furnish replacement sheeting required to restore the sign panel to a condition that meets the Specifications.

SECTION 03020 - EROSION MATERIALS

Comply with Section 03020 of the Standard Specifications modified as follows:

03020.90 Acceptance – Delete the bullet that begins "Quality compliance certification…".

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APPENDIX A - PROJECT PLANS

Under Separate Cover

The Plans, which are applicable to the Work to be performed under this Contract, bear title and date as follows:

Bridges and Structures
Berlin Road: Hamilton Creek Bridge
Berlin Road
Linn County
March 2020

APPENDIX B - BID SECTION

ATTENTION:

DO NOT INCLUDE THE PLANS AND SPECIFICATIONS WHEN SUBMITTING YOUR BID PROPOSAL. SUBMIT ONLY THE ITEMS INCLUDED IN THE BID SECTION AND ANY ADDENDUM THAT MAY HAVE BEEN ISSUED FOR THIS PROJECT.

INCLUDED IN THIS SECTION:

- BID SCHEDULE
- PROPOSAL
- BID PROPOSAL BOND
- FIRST TIER SUBCONTRACTOR DISCLOSURE FORM

BID SCHEDULE

Berlin Road: Hamilton Creek Bridge
Bridges and Structures

Bid Opening: March 31, 2020 at approximately 9:35 a.m., P.D.T.

ITEM	UNIT	QUANT.	UNIT PRICE	TOTAL
1. Mobilization	LS	All	$	$
2. Temporary Work Zone Traffic Control, Complete	LS	All	$	$
3. Erosion Control	LS	All	$	$
4. Sediment Barrier	FOOT	890	$	$
5. Temporary Water Management	LS	All	$	$
6. Pollution Control Plan	LS	All	$	$
7. Work Containment Plan and System	LS	All	$	$
8. Construction Survey Work	LS	All	$	$
9. Asphalt Pavement Saw Cutting	FOOT	252	$	$
10. Clearing and Grubbing	LS	All	$	$
11. General Excavation	CUYD	370	$	$
12. Subgrade Geotextile	SQYD	538	$	$
13. 12 Inch Class V Concrete Pipe, 5 Ft Depth	FOOT	272	$	$
14. Bridge Removal Work	LS	All	$	$
15. Structure Excavation	LS	All	$	$
16. Granular Structure Backfill	LS	All	$	$
17. Furnish Pile Driving Equipment	LS	All	$	$
18. Furnish PP16x0.5 Steel Piles	FOOT	720	$	$
19. Drive PP16x0.5 Steel Piles	EACH	12	$	$
20. PP16x0.5 Steel Pile Splices	EACH	12	$	$
21. Furnish Sheet Pile Driving Equipment	LS	All	$	$
22. Furnish and Drive Steel Sheet Piling	SQYD	276	$	$
23. Reinforcement	LS	All	$	$
24. General Structural Concrete, Class 3300	CUYD	47	$	$
25. Reinforced Concrete Bridge End Panels	SQYD	163	$	$
26. 48” Precast Concrete Box Beams	FOOT	1017	$	$
27. Type “F” Concrete Rail with Pedestrian Rail	LS	All	$	$
28. Rolled Waterproofing Membrane	SQFT	3833	$	$
29. Cold Plane Pavement Removal, 0-2 Inch Deep	SQYD	335	$	$

30. Aggregate Base and Shoulders	TON	724	$	$
31. Level 3, ½ Inch ACP Mixture	TON	287	$	$
32. Extra for Driveway Approach	EACH	2	$	$
33. Guardrail, Type 3	FOOT	37.5	$	$
34. Guardrail, Type 4	FOOT	18.8	$	$
35. Guardrail Connector	EACH	4	$	$
36. Guardrail Transitions	EACH	4	$	$
37. Guardrail Terminals, Non-Flared	EACH	2	$	$
38. Guardrail Terminals, 15' Radius	EACH	1	$	$
39. Guardrail Terminal, BEAT-SSCC-32	EACH	1	$	$
40. Longitudinal Pavement Markings, Paint	FOOT	1875	$	$
41. PSST Slip Base Sign Supports	LS	All	$	$
42. Type "O" Signs in Place	SQFT	12	$	$
43. Permanent Seeding	ACRE	0.15	$	$
44. Remove and Rebuild Fence	FOOT	106	$	$
45. Bioslopes	LS	All	$	$
46. Stormwater Control Facilities	LS	All	$	$
PROJECT TOTAL			$	

By signing and submitted a bid on the work called for under this proposal, the bidder certifies he will abide by the provisions of ORS 279.350 regarding prevailing rate of wages on public contracts.

Authorized Signature _____ Date _____

Print _____

Company Name _____

Address _____

City _____ State _____ Zip Code _____

Fax Number _____ Phone _____

Email _____ Oregon CCB Number _____

PROPOSAL

TO: COUNTY BOARD OF COMMISSIONERS, LINN COUNTY, OREGON

The undersigned, as bidder, declares that:

This bid is for the work described on the "Description of Work" sheet bound in this bid.

This bid has been prepared from documents obtained from Linn County Road Department website at: http://www.co.linn.or.us/Roads/ContractConst.asp - Project Title

The only persons or parties interested in this bid as principals are those named in this bid.

The bidder submits this bid in accordance with and subject to the terms and conditions stated in Sections 00120 and 00130 of the specifications.

The bidder has obtained and become acquainted with the applicable standard specifications, special provisions, plans, and other required provisions applicable to the particular work for which the bid is submitted.

The bidder has personally inspected the location and the site of the work and has become acquainted with all conditions, local and otherwise, affecting it.

The bidder has obtained and become acquainted with the forms of contract and bond which are to be signed by the successful bidder.

The bidder is satisfied as to the quantities and conditions and understands that in signing this bid the bidder waives all right to claim any misunderstanding regarding these quantities and conditions.

The bid guaranty submitted with this bid, if a bid bond, is by this reference made a part of this bid.

The bidder also proposes and agrees that:

If this bid is accepted, the bidder will execute the contract form furnished by the Agency, will provide all necessary machinery, equipment, tools, apparatus, labor and other means of construction, and will do all work and furnish all the materials specified in or called for by the contract in the manner and time prescribed in the contract and according to the requirements of the Engineer as given in the contract.

The bidder will accept, as full payment for the work performed and the materials, labor, equipment, machinery, tools, apparatus and other means of construction furnished, the amount earned under the contract as computed in the manner described in the specifications from the quantities of the various classes of work performed and the respective unit prices bid as these prices are given in the "Bid Schedule" bound in this bid.

Any contract awarded to the bidder shall include the provisions required by ORS 279C.830 or 40 U.S.C. 276a.

The bidder also certifies to the following:

A. Noncollusion:

The price(s) and amount of this bid have been arrived at independently and without consultation, communication, or agreement with any other contractor, bidder, or potential bidder except as disclosed on a separately attached statement.

Neither the price(s) nor the amount of this bid, and neither the approximate price(s) nor approximate amount of this bid has been disclosed to any other firm or person who is a bidder or potential bidder, and they will not be disclosed before the opening of bids.

No attempt has been made or will be made to induce any firm or person to refrain from bidding on this contract, to submit a bid higher than this bid, or to submit any intentionally high or noncompetitive bid or other form of complementary bid.

This bid is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary or other noncompetitive bid.

The bidder, its affiliates, subsidiaries, officers, directors, and employees are not currently under investigation by any governmental agency and have not in the last four years been convicted of or found liable for any act, prohibited by State or Federal law in any jurisdiction, involving conspiracy or collusion with respect to bidding on any public contract except as described on a separately attached statement.

The bidder understands and acknowledges that the above representations are material and important and will be relied on by the Agency, in awarding the contract(s) for which this bid is submitted. The bidder understands that any misstatement in this certification is and shall be treated as fraudulent concealment from the Agency, of the true facts relating to the submission of bids for this contract.

B. Noninvolvement in Any Debarment and Suspension:

The bidder, its owners, directors, and officers:

Are not presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions by any Federal department or agency.

Have not within a three-year period preceding this bid been convicted of or had a civil judgment rendered against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State, or local) transaction or contract under a public transaction; violation of Federal or State antitrust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.

Are not presently indicted for or otherwise criminally or civilly charged by a government entity (Federal, State, or local) with commission of any of the offenses enumerated in the preceding paragraph of this certification.

Have not within a three-year period preceding this bid had one or more public transactions (Federal, State, or local) terminated for cause or default.

Where the prospective primary participant is unable to certify to any of the statements in this certification, the prospective primary participant shall attach an explanation to this bid.

List exceptions. (For each exception noted, indicate to whom the exception applies, initiating agency, and dates of action. If additional space is required, attach another page with the following heading: Certification Exceptions continued, Bid Insert.)

Exceptions will not necessarily result in denial of award, but will be considered in determining bidder responsibility. Providing false information may result in criminal prosecution or administrative sanctions.

C. Lobbying Activities:

To the best of my knowledge and belief, that:

No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an employee of any Federal agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.

If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any Federal agency, a Member of Congress, an officer of employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying" to the Agency.

This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by Section 1352, Title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.

The prospective participant also agrees by submitting his or her bid that he or she shall require that the language of this certification be inserted in all lower tier subcontracts, which exceed $100,000 and that all such subrecipients shall certify and disclose accordingly.

D. Compliance With Oregon Tax Laws:

By signature on this bid, the undersigned hereby certifies under penalty of perjury that the undersigned is authorized to act on behalf of bidder, that the undersigned has authority and knowledge regarding bidder’s payment of taxes, and that bidder is, to the best of the undersigned's knowledge, not in violation of any Oregon Tax Laws. For purposes of this certification, "Oregon Tax Laws" means a state tax imposed by ORS 320.005 to 320.150 (Amusement Device Taxes), ORS 403.200 to 403.250 (Tax For Emergency Communications),

and ORS Chapters 118 (Inheritance Tax), 314 (Income Tax), 316 (Personal Income Tax), 317 (Corporation Excise Tax), 318 (Corporation Income Tax), 321 (Timber And Forestland Tax), 323 (Cigarettes And Tobacco Products Tax), and the elderly rental assistance program under ORS 310.657, and any local taxes administered by the Department of Revenue under ORS 305.620.

E. Employee Drug Testing Program:

Pursuant to ORS 279C.505(2), that the bidder has an employee drug testing program in place, and will maintain such program for the entire period of this contract. Failure to maintain such program shall constitute a material breach of contract.

F. Nondiscrimination:

Pursuant to ORS 279A.110, that the bidder has not discriminated and will not discriminate against a disadvantaged business enterprise, a minority-owned business, a woman-owned business, a business that a service-disabled veteran owns, or an emerging small business in obtaining any required subcontracts. The bidder understands that it may be disqualified from bidding on this public improvement project if the Agency finds that the bidder has violated subsection (1) of ORS 279A.110.

G. Use of Registered Subcontractors:

That all subcontractors performing work on this public improvement contract will be registered with the Construction Contractors Board or licensed by the State Landscape Contractors Board in accordance with ORS Chapter 701 before the subcontractors commence work under this contract.

H. Incorporation of All Addenda:

The bidder has incorporated into this bid all addenda issued for this Project.

The bidder understands and acknowledges that the Agency will provide all addenda only by publishing them on the Agency's website. Addenda may be downloaded from the Agency's website.

The bidder shall be responsible for diligently checking the Agency's website for addenda. Bidders should check the website at least weekly until the week of Bid Closing and daily during the week of Bid Closing.

By submitting this bid, the bidder assumes all risks associated with its failure to access all addenda and waives all claims, suits, and actions against the State, the Transportation Commission, the Department of Transportation and their members, officers, agents, and employees that may arise out of the bidder's failure to access all addenda, in spite of any contingencies such as website failure, down-time, service interruptions, and corrupted, inaccurate, or incomplete addenda or information.

The party by whom this proposal is submitted, and by whom the contract will be entered into in case the award is made to bidder is:

_____
["An Individual," "A Partnership," "A Corporation," "An Association"]

doing business under the name of _____

at _____
[Street] [City] [State] [Zip Code]

which address is the address to which all communications concerning this bid and the contract should be sent.

The name of the surety by which the Performance Bond and Payment Bond covering the contract, if awarded, will be furnished and the name and address of the surety's local agent are as follows:

Name of Surety _____

Name of Agent _____

Accompanying this proposal is _____
["Proposal Bond," "Cashier' s Check," "Certified Check"]

in the amount of _____ percent of the bid.

The bidder further proposes to accept as full payment for the work proposed herein the amount computed under the provision of the contract documents and based on the unit price amounts, under Bid Schedule bound herein, it being expressly understood that the unit prices are independent of the exact quantities involved. The bidder agrees that the unit prices represent a true measure of the labor and materials required to perform the work, including all allowances for overhead and profit for each type and unit of work called for in these contract documents.

If this proposal shall be accepted and the undersigned shall fail or neglect to contract as aforesaid, and to give bonds in the amount specified, with surety satisfactory to the Linn County Board of Commissioners, within ten (10) days [not including Sunday], from the date of receiving from the Board of Commissioners the contract and prepared and ready for execution, the Board of Commissioners may, at its option, determine that the bidder has abandoned the contract, and thereupon forfeiture of the guaranty accompanying the bid shall operate and the same shall be the property of the Linn County Board of Commissioners.

_____ Dated _____, 20___
Bidder

By: _____ By: _____

BID PROPOSAL BOND

KNOW ALL MEN BY THESE PRESENTS, THAT WE, _____, as principal, and the _____, duly organized under the laws of the State of Oregon, as surety, are held and firmly bound unto the County Board of Commissioners as an obligee, in the full and penal sum of ten percent (10%) of the total amount of the proposal of said principal for the work hereinafter described, for the payment of which well and truly to be made, we bind ourselves, our heirs, executors, administrators, and assigns, and successors and assigns, firmly by these presents.

The condition of this bond is such that, thereas the principal herein is herewith submitting its proposal for the following work, to wit:

_____

_____

_____

Said proposal, be reference hereto, being hereby made a part hereof;

NOW, THEREFORE, if the said proposal submitted by the said principal be accepted, and the contract for said work be awarded to said principal, and if the said principal shall enter into and execute the said contract and shall furnish bond as required by the Linn County Board of Commissioners within the time fixed by said Board, then this obligation shall be void; otherwise to remain in full force and effect.

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

_____
Principal

_____
Company

Countersigned at _____, this_____, day of _____, 20____

_____
Surety

By: _____

_____
Agent Address

_____
Agent Phone Agent Fax

FIRST-TIER SUBCONTRACTOR DISCLOSURE FORM

Project Name Berlin Road: Hamilton Creek Bridge
Highway Berlin Road
County Linn
Bid Opening Date March 31, 2020

Name of Bidding Contractor _____
Email Address _____

☐ *CHECK THIS BOX IF YOU WILL NOT BE USING ANY FIRST-TIER SUBCONTRACTORS OR IF YOU ARE NOT SUBJECT TO THE DISCLOSURE REQUIREMENTS (SEE INSTRUCTIONS).*

FIRST-TIER SUBCONTRACTORS

Firm Name	Dollar Amount
Category of Work	

Firm Name	Dollar Amount
Category of Work	

Firm Name	Dollar Amount
Category of Work	

Firm Name	Dollar Amount
Category of Work	

Firm Name	Dollar Amount
Category of Work	

Firm Name	Dollar Amount
Category of Work	

Firm Name	Dollar Amount
Category of Work	

(Attach additional sheets as necessary)