Tacoma Boulevard Pump Station Upgrade Contract Documents

Prepared for

CITY OF PACIFIC

March 2020

Prepared by

Parametrix

TACOMA BOULEVARD PUMP STATION UPGRADE

PACIFIC, WASHINGTON

Bid Number SS1801

Prepared by:

City of Pacific
100 3rd Avenue SE
Pacific, Washington 98047

March 2020

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

JOEL STEPHEN LINKE
STATE OF WASHINGTON
48954
REGISTERED
PROFESSIONAL ENGINEER

3/25/2020

Prepared by Joel S. Linke, P.E.
(WSDOT Special Provisions, Division 1; CSI Specifications, Divisions 1-22, 33)

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3/25/2020

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I. Invitation to Bid

INVITATION TO BID

BID

Notice is hereby given that sealed proposals will be received by the City of Pacific at City Hall, 100 3rd Avenue SE, Pacific, Washington 98047 until 11:30 a.m. local time on **June 5, 2020**, for the Tacoma Boulevard Pump Station Upgrade located on the northeast corner of the intersection of Tacoma Boulevard S and 5th Avenue SW in Pacific, WA. Bids received after that date and time, even if mailed earlier, will not be accepted. Any questions may be referred to: Jim Morgan, Public Works Manager, (253) 929-1113.

GENERAL SCOPE OF WORK

There will be a **non-mandatory** pre-bid conference at **9:00 a.m. on May 27, 2020**, at the Tacoma Boulevard Pump Station site. Prospective bidders are not required to attend. All COVID-19 safety provisions, including social distancing, must be abided by. The City encourages anyone who would like to attend in person to wear a mask.

The work to be performed will include all labor, materials, equipment, permits, agency and public notifications, disposal fees, and incidentals necessary to upgrade the Tacoma Boulevard Pump Station located on the northeast corner of the intersection of Tacoma Boulevard S and 5th Avenue SW. The following is a partial list of the renovations required:

- Demolition of existing pump station dry well, the top of the wet well,
- Wet well risers if needed;
- Installation of the Owner-purchased wet-well-mounted vacuum prime pump skid (See Appendix B for equipment pre-purchase contract);
- Pump station suction and discharge piping;
- Connection to the existing force main;
- Reroute the power service to underground from the next pole to the east;
- Electrical and instrumentation upgrades;
- Testing, commissioning, O&M manuals, and warranty.

Estimated Bid Range: $180,000 - $230,000

BID FORM

Each Bid must be submitted on the prescribed forms. All Bids must be submitted in a sealed envelope that is marked with the Bid Number SS1801, and the Project: TACOMA BOULEVARD PUMP STATION UPGRADE. The envelope must also show the bidder's name and address.

BID SECURITY

The Bid must be accompanied by a Bid Bond, certified check or a cashier's check in an amount not less than five (5) percent of the base bid, not including Washington State Sales Tax.

The Bid Bond is a guarantee that the lowest responsive bidder will, within 15 calendar days of the Notice of Award, execute a contract document with the City of Pacific. Should the selected bidder fail to execute the contract documents within the specified time, the Bid Bond shall be subject to forfeit.

ACCEPTANCE OR REJECTION OF BIDS

The City of Pacific reserves the right to reject any or all bids, waive any irregularities or technicalities, and to accept any bid if that action is believed to be in the best interest of the City. The City of Pacific reserves the right to select any item(s) or reject any or all item(s).

BID WITHDRAWAL

All bids shall be valid for a period of 60 calendar days following and including the day of bid opening, and **no** bids may be withdrawn for 30 days after bid opening without the expressed **written** consent of the City of Pacific.

PROJECT SPECIFICATIONS

Electronic bid documents (plans and specifications) are available at the City of Pacific website for download http://www.bxwa.com/) posted projects, public works, City of Pacific).

SCHEDULE

The selected bidder must be able to begin Work within ten (10) working days after receiving a Notice to Proceed. Anticipated Notice to Proceed is **June 5, 2020**. Substantial Completion must be completed within fifteen (15) calendar days of the delivery of the pump skid to the site.

Due to the COVID-19 emergency, work on the project will commence only when instructed in writing by the City. If the City does not instruct the contractor to commence work within 90 days of the City Council awarding the contract, then, unless otherwise agreed to by the parties, the contract will terminate with no damages, cost, or penalties to either party. This work is considered essential as defined in Governor Inslee's Proclamations 20-25 and 20-25.1.

STATE/LOCAL REQUIREMENTS

State, and local E.E.O., Affirmative Action, Labor Standards, and Prevailing Wage Laws and all other requirements are applicable to all activities related to this project, and must be complied with by all contractors, subcontractors, and lower tier subcontractors.

AFFIRMATIVE ACTION ON BID

The City of Pacific is an Equal Opportunity Employer. Women and Minority contractors, King County businesses, and King County lower income residents, whom are qualified to perform all or part of the required services, are encouraged to participate by bidding the project, or by offering their services to other bidders as subcontractors or suppliers.

II. Legal Documents

BID BOND

KNOW ALL MEN BY THESE PRESENTS that we, the undersigned, _____, as Principal, and _____, as Surety, are hereby held and firmly bound unto the City of Pacific, Washington, as Owner in the penal sum of _____, for the payment of which, well and truly made, we hereby jointly and severally bind ourselves, our heirs, executors, administrators, successors, and assigns.

SIGNED this _____ day of _____, 20____.

The condition of the above obligation is such that whereas the Principal has submitted to the City of Pacific (Owner) a certain Bid, attached hereto and hereby made a part hereof to enter into a contract in writing for the: TACOMA BOULEVARD PUMP STATION UPGRADE.

NOW, THEREFORE,

a) If said Bid shall be rejected, or in the alternate,

b) If said Bid shall be accepted and the Principal shall execute and deliver a Contract in the Form of Contract attached hereto (properly completed in accordance with said Bid) and shall furnish a bond for his faithful performance of said Contract, and for the payment of all persons performing labor or furnishing materials in connection therewith, and shall in all other respects perform the agreement created by the acceptance of said Bid, then this obligation shall be void, otherwise the same shall remain in force and effect; it being expressly understood and agreed that the liability of the Surety for any claims hereunder shall, in no event, exceed the penal amount of this obligation as herein stated.

The Surety, for value received, hereby stipulates and agrees that the obligations of said Surety and its bond shall be in no way impaired or affected by any extension of the time within which the Owner may accept such Bid; and said Surety does hereby waive notice of any extension.

IN WITNESS WHEREOF: The Principal and the Surety have hereunto set their hands and seals, and such of them as are corporations have caused their corporate seals to be hereto affixed and these presents to be signed by their proper officers, the day and year first set forth above.

_____
(Principal)

SEAL

_____
(Surety)

By:_____

IMPORTANT: Surety companies executing BONDS must appear on the Treasury Department's most current list (Circular 570 as amended) and be authorized to transact business in the state where the project is located.

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STATEMENT OF QUALIFICATIONS

Similar Project Completed:

Name of Project	Address	Date Completed	Type of Improvement	Value of Contract

Similar Projects Under Contract:

Name of Project	Address	Date Completed	Type of Improvement	Value of Contract

Proposed Equipment to be used on Project:

Name	Make	Size	Condition

Firm:_____

Name:_____

Signature:_____

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LETTER OF SUBCONTRACTOR
(TO BE SUBMITTED PRIOR TO CONTRACT AWARD DATE)

We, the undersigned, intend to employ the following subcontractors in order to fully perform the work outlined in these specifications.

We intend to employ the firm of:

Trade	Subcontractor Name/Address	Washington Contractor's Registration No.

And represent and warrant that the work will be performed by said subcontractors in a good and workmanlike manner and under our direct supervision. We further represent and warrant that the work to be performed by them constitutes approximately _____ percent of the total dollar value of said Contract.

Firm:_____

Name:_____

Address:_____

Telephone:_____

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CERTIFICATION OF EQUAL EMPLOYMENT OPPORTUNITY REPORT

Certification with regard to Performance of Previous Contracts or Subcontracts subject to the Equal Opportunity Clause and the filing of Required Reports.

The bidder _____, proposed subcontractor _____, hereby certifies that he/she has __, has not __, participated in a previous contract or subcontract subject to the equal opportunity clause, as required by Executive Orders 10925, 11114, or 11246, and that he/she has _, has not _, filed with the Joint Reporting Committee, the Director of the Office of Federal Contract Compliance, a Federal Government Contracting or administering agency, or the former President's Committee on Equal Employment Opportunity, all reports due under the applicable filing requirements.

_____
(Company)

By:

_____
(Title)

Date: _____

NOTE: The above certification is required by the Equal Employment Opportunity Regulations of the Secretary of Labor (41 CFR 60-1.7 [b][1]), and must be submitted by bidders and proposed subcontractors which are exempt from the equal opportunity clause are set forth in 41 CFR 60-1.5. Generally only contracts or subcontracts of $10,000 or under are exempt.

Currently, Standard for 100 (EEO-1) is the only report required by the Executive Order or their implementing regulations.

Proposed prime contractors and subcontractors who have participated in a previous contract or subcontract subject to the Executive Orders and have not filed the required reports should note that 41 CFR 60-1.7(b) (1) prevents the award of contracts and subcontracts unless such contractor submits a report covering the delinquent period or such other period specified by the Federal Highway Administration or by the Director, Office of Federal Contract Compliance, U.S. Department of Labor.

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NON-COLLUSION AFFIDAVIT CERTIFICATE

STATE OF WASHINGTON)
)ss.
County of _____)

_____, being first duly sworn, on his/her oath says that the bid above submitted is a genuine and not a collusive bid, or made in the interest or on behalf of any person not therein named; and he/she further says that the said bidder has not directly or indirectly induced or solicited any bidder on the above work or supplies to put in a sham bid, or any other person or corporation to refrain from bidding; and that said bidder has not in any manner sought by collusion to secure to his/herself an advantage over any other bidder or bidders.

_____
(Contractor)

Subscribed and sworn to before me this _____ day of _____, 20____.

_____
Notary Public in and for the State
of Washington, residing at _____.

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PROPOSAL

TACOMA BOULEVARD PUMP STATION UPGRADE

City of Pacific
100 3rd Avenue SE
Pacific, Washington 98047

Gentlemen:

1. The undersigned hereby certifies that he has examined the location and construction detail work as outlined on the Plans and Specifications for the City of Pacific *TACOMA BOULEVARD PUMP STATION UPGRADE* is familiar with the local conditions at the location of the work to be done, and has read and thoroughly understands the Plans and Specifications and the Contract governing the work and the method by which payment will be made for said work in accordance with said Plans, Specifications, and Contract at the following scheduled unit prices. All items shall be filled out showing unit prices and total amount of each item.

2. The Contract amount shall be the unit price of each item. Correct extensions based on unit prices bid and the approximate quantities shown are for the comparison for bid only and payments for unit priced items will be based on actual quantities measured in accordance with the requirements of the Contract Specifications. Limits of lump sum priced items will be as described in the Contract Drawings and Specifications.

The undersigned has checked the above amounts and understands that the Owner will not be responsible for any errors or omissions on the part of the undersigned in making up this proposal.

In order for the Owner to consider a proposal, all items on the proposal must be filled in completely.

3. It is agreed that this proposal may not be withdrawn within a period of thirty (30) days after the date set for the opening thereof.

4. In accordance with the Specifications, the undersigned further agrees to so plan the work and to prosecute it with such diligence that said work shall be commenced on the date provided in the Notice to Proceed. Substantial Completion on this project shall be completed within 15 working days of delivery of the Owner-purchased wet-well-mounted vacuum prime pump skid to the site. See Appendix B for equipment pre-purchase contract.

_____ _____
(Contractor's License No.) (Contractor's UBI No.)

By: _____
(Authorized Official)

_____
(Address)

_____

Receipt of the following Addenda to the Plans and/or Specifications is hereto acknowledged:

Addendum No.	Addendum Receipt Date	Signed Acknowledgement
1.		
2.		
3.		

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SCHEDULE OF PRICES

TACOMA BOULEVARD PUMP STATION UPGRADE

ITEM NO.	ESTIMATED QUANTITY	DESCRIPTION OF ITEM	UNIT PRICE	AMOUNT
		BASE BID		
1	Lump Sum	Mobilization	$	$
2	Lump Sum	Trench Safety	$	$
3	Lump Sum	Installation, testing, and commissioning of Owner Supplied Wet Well Mounted Vacuum Prime Pump Skid	$	$
4	Lump Sum	Tacoma Blvd Pump Station Upgrade and Associated Site Work (not including Bid Items 1-3)	$	$
5	Force Account	Minor Changes	$10,000	$10,000
		Subtotal (Bid Items 1-5)	$	$
		Washington State Sales Tax (10.00%)	$	$
		TOTAL	**$**	**$**

Owner reserves the right to reject any or all bids. The basis of award shall be as stated in the Invitation to Bid.

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III. Contract

CONTRACT
CITY OF PACIFIC
TACOMA BOULEVARD PUMP STATION UPGRADE
CONTRACT NO. SS1801

THIS AGREEMENT is entered into between the City of Pacific (the "City") and _____ of _____, Washington, (the "Contractor"), for the project known as TACOMA BOULEVARD PUMP STATION UPGRADE (the "Project"), Contract Number _____.

PROJECT DESCRIPTION. This Project provides for: All labor, materials, equipment, permits, agency and public notifications, disposal fees, and incidentals necessary to upgrade the Tacoma Boulevard Pump Station Upgrade located on the northeast corner of the intersection of Tacoma Boulevard S and 5th Avenue SW in a good workmanlike manner, and to the satisfaction of the City, the public works project known as TACOMA BOULEVARD PUMP STATION UPGRADE.

IN CONSIDERATION OF THE TERMS AND CONDITIONS CONTAINED HEREIN, THE PARTIES AGREE AS FOLLOWS:

CITY RESPONSIBILITIES. The City agrees to engage the Contractor to perform all work necessary to complete the Project according to the Project plans and specifications under the terms and conditions contained in this Agreement. The City agrees to pay the Contractor according to the Project plans and specifications and the schedule of unit or itemized prices outlined in the Contractor's bid proposal at the time, in the manner, and upon the conditions provided for in this agreement. The contract bid amount is $_____, which includes any applicable sales or use tax.

CONTRACTOR RESPONSIBILITIES. The Contractor shall perform all work and furnish and bear the expense of all tools, materials, equipment and labor as may be required for the transfer of materials and for construction and completion of the Project, except as is otherwise designated in the Project plans and specifications. The Contractor agrees to perform any necessary alterations in or additions to the work as required by the City. The Contractor shall complete the Project in accordance with and as described in the Project plans and specifications, and the edition of the Washington State Standard Specifications for Road, Bridge, and Municipal Construction (WSDOT Specifications) referenced in the Project specifications. Contractor binds himself, his heirs, executors, administrators, successors and assigns.

PROJECT TIMELINE. Work on the Project shall begin on the date provided in the Notice to Proceed and shall reach Substantial Completion within 15 working days of delivery of the owner purchased pump skid. The pump skid is anticipated to be delivered to the site June 1, 2020. The City will keep the Contractor updated regarding the actual delivery date to the site. Physical Completion shall be reached within 10 working days of Substantial Completion. Project Completion shall be reached within 10 working days of Physical Completion, as outlined in the Project specifications. This Project is deemed essential as defined in Governor Inslee's Proclamations 20-25 and 20-25.1, and as such, no extention of time or additional funds will be extended due to any COVID-19 related claim.

LIQUIDATED DAMAGES. If the Project is not completed within the allotted working days, the Contractor agrees to pay to the City liquidated damages in the amount calculated per the WSDOT Specifications for each day the Project remains incomplete after expiration of the Project timeline.

DOCUMENTS INCORPORATED BY REFERENCE. The documents incorporated by reference, as if fully set forth in this Agreement, include the Project plans and specifications, the Contractor's bid proposal, the edition of the Washington State Standard Specifications for Road, Bridge, and Municipal Construction referenced in the Project Specifications, and all laws, orders, and proclamations related to the COVID-19 emergency. Contractor will comply with all COVID-19 related safety protocols, and will provide the City with an acceptable COVID-19 safety plan, which must be accepted by the City before work can begin.

INDEMNIFICATION. The Contractor agrees to indemnify, defend, and hold harmless the City and its officers and employees, from any claims, suits, actions, damages or liability whatsoever which may result from or arise out of the Contractor's work under this Agreement. This provision shall not apply to those claims or damages that are determined to have been caused by the sole negligence of the City, its officers, or employees.

EFFECTIVE DATE. The parties to this Agreement have caused it to be fully executed on the date of the last authorizing signature below.

CITY OF PACIFIC:	CONTRACTOR: I certify by signing below that I am a duly authorized signatory for the Contractor:
MAYOR, Leanne Guier Date	(Signature) Date
Approved as to form:	(Print Name)
City Attorney Date	(Printed Title)

CITY OF PACIFIC
PUBLIC WORKS PROJECT
PERFORMANCE BOND

City Project #: SS1801
Surety Bond #: _____
DATE POSTED: _____
ANTICIPATED PROJECT COMPLETION DATE: October 18, 2020

RE: Project Name: TACOMA BOULEVARD PUMP STATION UPGRADE
Owner/Developer/Contractor: _____
Project Address: _____

The City of Pacific (City) has awarded to _____ (Principal), a contract for the construction of the project designated as _____ (Contract), and said Principal is required to furnish a bond for performance of all obligations under the Contract.

The Principal, and _____ (Surety), a corporation, organized under the laws of the State of _____ and licensed to do business in the State of Washington as surety and named in the current list of "Surety Companies Acceptable in Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasury Dept., are jointly and severally held and firmly bound to the City of Pacific, in the sum of _____ US Dollars ($_____) Total Contract Amount, subject to the provisions herein.

This statutory performance bond shall become null and void, if and when the Principal, its heirs, executors, administrators, successors, or assigns shall well and faithfully perform and complete all of the Principal's obligations, conditions, and duties under the Contract and in addition shall indemnify, defend, and protect the City against any claim of direct or indirect loss resulting from the failure of the Principal (or any of the employees, Subcontractors, or lower tier subcontractors of the Principal) to faithfully perform all obligations, conditions, and duties under the Contract; or resulting from the failure of the Principal (or Subcontractors or lower tier subcontractors of the Principal) to pay all laborers, mechanics, Subcontractors, lower tier subcontractors, material person, or any other person who provides supplies or provisions for carrying out the Work; or to fulfill all the terms and conditions of all duly authorized modifications, additions, and changes to said Contract that may hereafter be made, at the time and in the manner therein specified; and if such obligations, conditions, and duties have not been fulfilled, this bond shall remain in full force and effect.

The Surety for value received agrees that no change, extension of time, alteration or addition to the terms of the Contract, the specifications accompanying the Contract, or to the work to be performed under the Contract shall in any way affect its obligation on this bond, and waives notice of any change, extension of time, alteration or addition to the terms of the Contract or the work performed. The Surety agrees that modifications and changes to the terms and conditions of the Contract that increase the total amount to be paid the Principal shall automatically increase the obligation of the Surety on this bond and notice to Surety is not required for such increased obligation.

This bond may be executed in two (2) original counterparts, and shall be signed by the parties' duly authorized officers. This bond will only be accepted if it is accompanied by a fully executed and authentic power of attorney for the officer executing on behalf of the surety.

PRINCIPAL	SURETY
Principal Signature Date	Surety Signature Date
Printed Name	Printed Name
Title	Title

CITY OF PACIFIC
PUBLIC WORKS PROJECT
PAYMENT BOND

City Project #: SS1801
Surety Bond #: _____
DATE POSTED: _____
ANTICIPATED PROJECT COMPLETION DATE: October 18, 2020

RE: Project Name: TACOMA BOULEVARD PUMP STATION UPGRADE
Owner/Developer/Contractor: _____
Project Address: _____

The City of Pacific (City) has awarded to _____ (Principal), a contract for the construction of the project designated as _____ (Contract), and said Principal is required under the terms of that Contract to furnish a payment bond in accord with Title 39.08 Revised Code of Washington (RCW) and (where applicable) 60.28 RCW.

The Principal, and _____ (Surety), a corporation organized under the laws of the State of _____ and licensed to do business in the State of Washington as surety and named in the current list of "Surety Companies Acceptable in Federal Bonds" as published in the Federal Register by the Audit Staff Bureau of Accounts, U.S. Treasury Dept., are jointly and severally held and firmly bound to the City, in the sum of _____ US Dollars ($_____) Total Contract Amount, subject to the provisions herein.

This statutory payment bond shall become null and void, if and when the Principal, its heirs, executors, administrators, successors, or assigns shall pay all persons in accordance with RCW Titles 39.08, and 39.12 including all workers, laborers, mechanics, subcontractors, and materialmen, and all persons who shall supply such contractor or subcontractor with provisions and supplies for the carrying on of such work, and if such payment obligations have not been fulfilled, this bond shall remain in full force and effect.

The Surety for value received agrees that no change, extension of time, alteration or addition to the terms of the Contract, the specifications accompanying the Contract, or to the work to be performed under the Contract shall in any way affect its obligation on this bond, except as provided herein, and waives notice of any change, extension of time, alteration or addition to the terms of the Contract or the work performed. The Surety agrees that modifications and changes to the terms and conditions of the Contract that increase the total amount to be paid the Principal shall automatically increase the obligation of the Surety on this bond and notice to Surety is not required for such increased obligation.

This bond may be executed in two (2) original counterparts, and shall be signed by the parties' duly authorized officers. This bond will only be accepted if it is accompanied by a fully executed and authentic power of attorney for the officer executing on behalf of the surety.

PRINCIPAL	SURETY
Principal Signature Date	Surety Signature Date
Printed Name	Printed Name
Title	Title

Name, address, and telephone of local office/agent of Surety Company is:

CITY OF PACIFIC
PUBLIC WORKS PROJECT
MAINTENANCE BOND

Pacific Project #: SS1801
Surety Bond #: _____
Date Posted: _____
Expiration Date: October 18, 2022

RE: Project Name: Tacoma Boulevard Pump Station Upgrade
Owner/Developer/Contractor: _____
Project Address: Northeast corner of Tacoma Boulevard S and 5th Avenue SW, Pacific, WA 98047

KNOW ALL PERSONS BY THESE PRESENTS: That we, _____ (hereinafter called the "Principal"), and _____, a corporation organized under the laws of the State of _____, and authorized to transact surety business in the State of Washington (hereinafter called the "Surety"), are held and firmly bound unto the City of Pacific, Washington, in the sum of _____ dollars ($_____), lawful money of the United States of America, for the payment of which sum we and each of us bind ourselves, our heirs, executors, administrators, successors and assigns, jointly and severally, by these presents. THE CONDITIONS of the above obligation are such that:

WHEREAS, the above named Principal has constructed and installed certain improvements on public property in connection with a project as described above within the City of Pacific; and

WHEREAS, in accordance with the contract between the Principal and the City of Pacific, the Principal is required to post a bond for the 24 months following project completion in order to ensure that the project does not contain defects that require repair and to cover the cost of repair during that 24-month period; and

WHEREAS, such bond is needed in order to provide security for the obligation of the Principal to repair and/or replace said improvements against defects in workmanship, materials or installation for a period of twenty-four (24) months after written and final acceptance of the same and approval by the City;

NOW, THEREFORE, this Maintenance Bond has been secured and is hereby submitted to the City. It is understood and agreed that this obligation shall continue in effect until released in writing by the City of Pacific, but only after the Principal has performed and satisfied the following conditions:

A. The work or improvements installed by the Principal and subject to the terms and conditions of this Bond are as described in the Invitation to Bid and the Contract Documents.

B. The Principal and Surety agree that the work and improvements installed in the above-referenced project shall remain free from defects in material, workmanship and installation (or, in the case of landscaping, shall survive,) for a period of twenty-four (24) months after written and final acceptance of the same and approval by the City. Maintenance is defined as acts carried out to prevent a decline, lapse or cessation of the state of the project or improvements as accepted by the City during the twenty-four (24) month period after final and written acceptance, and includes, but is not limited to, repair or replacement of defective workmanship, materials or installations.

C. The Principal shall, at its sole cost and expense, carefully replace and/or repair any damage or defects in workmanship, materials or installation to the City-owned real property on which improvements have been installed, and leave the same in as good condition as it was before commencement of the work.

D. The Principal and the Surety agree that in the event any of the improvements or restoration work installed or completed by the Principal as described herein, fail to remain free from defects in materials, workmanship or installation (or in the case of landscaping, fail to survive), for a period of twenty-four (24) months from the date of acceptance of the work by the City, the Principal shall repair and/replace the same within ten (10) days of demand by the City, and if the Principal should fail to do so, then the Surety shall:

1. Within twenty (20) days of demand of the City, make written commitment to the City that it will either:

a). remedy the default itself with reasonable diligence pursuant to a time schedule acceptable to the City; or

b). tender to the City within an additional ten (10) days the amount necessary, as determined by the City, for the City to remedy the default, up to the total bond amount.

Upon completion of the Surety's duties under either of the options above, the Surety shall then have fulfilled its obligations under this bond. If the Surety elects to fulfill its obligation pursuant to the requirements of subsection D(1)(b), the City shall notify the Surety of the actual cost of the remedy, upon completion of the remedy. The City shall return, without interest, any overpayment made by the Surety, and the Surety shall pay to the City any actual costs which exceeded the City's estimate, limited to the bond amount.

2. In the event the Principal fails to make repairs or provide maintenance within the time period requested by the City, then the City, its employees and agents shall have the right at the City's sole election to enter onto said property described above for the purpose of repairing or maintaining the improvements. This provision shall not be construed as creating an obligation on the part of the City or its representatives to repair or maintain such improvements.

E. Corrections. Any corrections required by the City shall be commenced within ten (10) days of notification by the City and completed within thirty (30) days of the date of notification. If the work is not performed in a timely manner, the City shall have the right, without recourse to legal action, to take such action under this bond as described in Section D above.

F. Extensions and Changes. No change, extension of time, alteration or addition to the work to be performed by the Principal shall affect the obligation of the Principal or Surety on this bond, unless the City specifically agrees, in writing, to such alteration, addition, extension or change. The Surety waives notice of any such change, extension, alteration or addition thereunder.

G. Enforcement. It is specifically agreed by and between the parties that in the event any legal action must be taken to enforce the provisions of this bond or to collect said bond, the prevailing party shall be entitled to collect its costs and reasonable attorney fees as a part of the reasonable costs of securing the obligation hereunder. In the event of settlement or resolution of these issues prior to the filing of any suit, the actual costs incurred by the City, including reasonable attorney fees, shall be considered a part of the obligation hereunder secured. Said costs and

reasonable legal fees shall be recoverable by the prevailing party, not only from the proceeds of this bond, but also over and above said bond as a part of any recovery (including recovery on the bond) in any judicial proceeding. The Surety hereby agrees that this Agreement shall be governed by the laws of the State of Washington. Venue of any litigation arising out of this Agreement shall be in King County Superior Court.

H. Bond Expiration. This bond shall remain in full force and effect until the obligations secured hereby have been fully performed and until released in writing by the City at the request of the Surety or Principal. The obligations of the Contractor and Surety under this bond are in addition to and do not limit or replace the obligations and duties under the Contract or otherwise.

I. Bond Execution. This bond may be executed in two (2) original counterparts, and shall be signed by the parties' duly authorized officers. This bond will only be accepted if it is accompanied by a fully executed and authentic power of attorney for the officer executing on behalf of the surety.

DATED this _____ day of _____, 2020.

SURETY COMPANY	CONTRACTOR
By: _____	By _____
Its _____	Its _____
Business Name: _____	Business Name: _____
Business Address: _____	Business Address: _____
City/State/Zip Code: _____	City/State/Zip Code: _____
Telephone Number: _____	Telephone Number: _____

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CERTIFICATE OF INSURANCE

This certifies to the City of Pacific, Pacific, Washington, that the following described policies have been issued to:

Insured: _____ Insured: _____
Address: _____ Address: _____
_____ _____

Location of operations insured:

Description of work:

Policies and Insurees	Bodily Injury	Property Damage	Policy No.	Expiration Date

Worker's Compensation _____ Employer's Liability _____
(Insurer)

Comprehensive General Liability	Each Person	Each Occurrence
	Each Occurrence	Aggregate

COMBINED SINGLE LIMIT

All policies are in effect at this time and will not be canceled, limited, or allowed to expire without renewal until after thirty (30) days' written notice has been given to the Certificate Holder named on the top line. Any coverage afforded the Certificate Holder as an additional insured shall apply as primary and not excess to any insurance issued in the name of the Certificate Holder.

NOTE TO CONTRACTOR: City of Pacific and its authorized agents shall be named as additional insured for this policy.

CERTIFICATE OF INSURANCE (SAMPLE)

ACORD **CERTIFICATE OF LIABILITY INSURANCE** PF ID SU PARIN-1

DATE (MM/DD/YY) 10/02/00

PRODUCER

Hurley, Atkins & Stewart, Inc.
1800 Ninth Ave., #1500
Seattle WA 98101
Phone: 206-682-5656

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURERS AFFORDING COVERAGE

INSURED

INSURER A:
INSURER B:
INSURER C:
INSURER D:
INSURER E:

COVERAGES

THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. AGGREGATE LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY				EACH OCCURRENCE	$
	COMMERCIAL GENERAL LIABILITY				FIRE DAMAGE (Any one fire)	$
	CLAIMS MADE OCCUR				MED EXP (Any one person)	$
					PERSONAL & ADV INJURY	$
					GENERAL AGGREGATE	$
	GEN'L AGGREGATE LIMIT APPLIES PER:				PRODUCTS - COMP/OP AGG	$
	POLICY PRO-JECT LOC					
	AUTOMOBILE LIABILITY				COMBINED SINGLE LIMIT (Ea accident)	$
	ANY AUTO					
	ALL OWNED AUTOS				BODILY INJURY (Per person)	$
	SCHEDULED AUTOS					
	HIRED AUTOS				BODILY INJURY (Per accident)	$
	NON-OWNED AUTOS					
					PROPERTY DAMAGE (Per accident)	$
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	ANY AUTO				OTHER THAN AUTO ONLY: EA ACC	$
					AGG	$
	EXCESS LIABILITY				EACH OCCURRENCE	$
	OCCUR CLAIMS MADE				AGGREGATE	$
						$
	DEDUCTIBLE					$
	RETENTION $					$
	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				WC STATU-TORY LIMITS / OTH-ER	
					E.L. EACH ACCIDENT	$
					E.L. DISEASE - EA EMPLOYEE	$
					E.L. DISEASE - POLICY LIMIT	$
	OTHER					

SAMPLE

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/EXCLUSIONS ADDED BY ENDORSEMENT/SPECIAL PROVISIONS

CERTIFICATE HOLDER | N | ADDITIONAL INSURED; INSURER LETTER: ____

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING INSURER WILL ~~ENDEAVOR TO~~ MAIL _____ DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT. ~~BUT FAILURE TO DO SO SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE INSURER, ITS AGENTS OR REPRESENTATIVES.~~

ACORD 25-S (7/97)

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Department of Labor and Industries
Prevailing Wage
(360) 902-5335
www.lni.wa.gov/TradesLicensing/PrevWage

STATEMENT OF INTENT TO PAY PREVAILING WAGES

Public Works Contract
$40.00 Filing Fee Required

Intent ID # (Assigned by L&I)_____

- This form must be typed or printed in ink.
- Fill in all blanks or form will be returned for correction (see back).
- Please allow a minimum of 10 working days for processing.
- Once approved, your form will be posted online at the website above.

APPROVED FORM WILL BE MAILED TO THIS ADDRESS

Contractor, company or agency name, address, city, state & ZIP+4

Project Name | Contract Number

Contract Awarding Agency (public agency - not federal or private)

Awarding Agency Address

City | State | ZIP+4

Awarding Agency Project Contact Person | Phone Number

County where work will be performed | City where work will be performed

Bid due date (mm/dd/yy) | Date contract awarded (mm/dd/yy)

Prime Contractor (has contract with the public agency) | Prime's Phone Number

Will **all** work be subcontracted? ❑ Yes ❑ No

Do you intend to use subcontractors? ❑ Yes ❑ No

Prime's Contractor Registration Number | Prime's UBI Number

Responding "Yes" to either of the questions above will then require you to list the subcontractor, their UBI #, and Contractor Registration # (if they are required to have one) on **Addendum B** of the Affidavit of Wages Paid form.

Number of Owner/Operators that own at least 30% of the company who will perform work on the project: _____

Will employees perform work on this project? ❑ Yes ❑ No If "Yes", please list worker's craft/trade/occupation below. (If you choose "No" and this changes later, you certify that you will submit a new form listing workers.)

Expected job start date (mm/dd/yy)

Do you intend to use apprentice employees? ❑ Yes ❑ No

Craft/trade/occupation. (Do **NOT** list apprentices.) When using employees in more than one craft, each craft transition must be accurately recorded on the time sheet.	**Estimated number of workers**	**Rate of hourly pay**	**Rate of hourly fringe benefits**

Sample

Company Name

Address

City | State | ZIP+4

Contractor Registration Number | UBI Number

Industrial Insurance Account Number

Email Address | Phone Number

For L&I Use Only

APPROVED: Department of Labor and Industries

By _____
Industrial Statistician

Indicate total dollar amount of your contract (including Sales Tax) or time and materials, if applicable. **$**

I hereby certify that the information, including any addendums, is correct and that all workers I employ on this Public Works Project will be paid no less than the Prevailing Wage Rate(s) as determined by the Industrial Statistician of the Department of Labor and Industries.

Title | Signature

For L&I Use Only

Check Number: _____ ❑ **$40** or **$** _____

Issued By: _____

F700-029-000 statement of intent to pay prevailing wages 05-08

DO NOT SEPARATE FORMS PRIOR TO APPROVAL BY L&I
(White & canary copies must be submitted-canary will be retained by L&I after approval.)

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IV. Amendments to the Standard Specifications

INTRO.AP1

INTRODUCTION

The following Amendments and Special Provisions shall be used in conjunction with the 2018 Standard Specifications for Road, Bridge, and Municipal Construction.

AMENDMENTS TO THE STANDARD SPECIFICATIONS

The following Amendments to the Standard Specifications are made a part of this contract and supersede any conflicting provisions of the Standard Specifications. For informational purposes, the date following each Amendment title indicates the implementation date of the Amendment or the latest date of revision.

Each Amendment contains all current revisions to the applicable section of the Standard Specifications and may include references which do not apply to this particular project.

1-01.AP1

Section 1-01, Definitions and Terms
August 6, 2018
1-01.3 Definitions

The following new term and definition is inserted before the definition for “Shoulder”:

> **Sensitive Area** – Natural features, which may be previously altered by human activity, that are present on or adjacent to the project location and protected, managed, or regulated by local, tribal, state, or federal agencies.

The following new term and definition is inserted after the definition for “Working Drawings”:

> **WSDOT Form** – Forms developed and maintained by WSDOT that are required or available for use on a project. These forms can be downloaded from the forms catalogue at:
>
> http://wsdot.wa.gov/forms/pdfForms.html

1-02.AP1

Section 1-02, Bid Procedures and Conditions
June 3, 2019
1-02.4(1) General

This section is supplemented with the following:

> Prospective Bidders are advised that the Contracting Agency may include a partially completed Washington State Department of Ecology (Ecology) Transfer of Coverage (Ecology Form ECY 020-87a) for the Construction Stormwater General Permit (CSWGP) as part of the Bid Documents. When the Contracting Agency requires the transfer of coverage of the CSWGP to the Contractor, an informational copy of the Transfer of Coverage and the associated CSWGP will be included in the appendices. As a condition of Section 1-03.3, the Contractor is required to complete sections I, III, and VIII of the Transfer of Coverage and return the form to the Contracting Agency.
>
> The Contracting Agency is responsible for compliance with the CSWGP until the end of day that the Contract is executed. Beginning on the day after the Contract is executed, the Contractor shall assume complete legal responsibility for compliance with the

CSWGP and full implementation of all conditions of the CSWGP as they apply to the Contract Work.

1-02.5 Proposal Forms

The first sentence of the first paragraph is revised to read:

At the request of a Bidder, the Contracting Agency will provide a physical Proposal Form for any project on which the Bidder is eligible to Bid.

1-02.6 Preparation of Proposal

Item number 1 of the second paragraph is revised to read:

1. A unit price for each item (omitting digits more than two places to the right of the decimal point),

In the third sentence of the fourth paragraph, “WSDOT Form 422-031” is revised to read “WSDOT Form 422-031U”.

The following new paragraph is inserted before the last paragraph:

The Bidder shall submit with their Bid a completed Contractor Certification Wage Law Compliance form (WSDOT Form 272-009). Failure to return this certification as part of the Bid Proposal package will make this Bid Nonresponsive and ineligible for Award. A Contractor Certification of Wage Law Compliance form is included in the Proposal Forms.

1-02.13 Irregular Proposals

Item 1(h) is revised to read:

h. The Bidder fails to submit Underutilized Disadvantaged Business Enterprise Good Faith Effort documentation, if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to demonstrate that a Good Faith Effort to meet the Condition of Award was made;

Item 1(i) is revised to read the following three items:

i. The Bidder fails to submit a UDBE Bid Item Breakdown form, if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to meet the requirements of the Special Provisions;

j. The Bidder fails to submit UDBE Trucking Credit Forms, if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to meet the requirements of the Special Provisions; or

k. The Bid Proposal does not constitute a definite and unqualified offer to meet the material terms of the Bid invitation.

1-03.AP1

Section 1-03, Award and Execution of Contract
January 2, 2018

1-03.3 Execution of Contract

The first paragraph is revised to read:

Within 20 calendar days after the Award date, the successful Bidder shall return the signed Contracting Agency-prepared Contract, an insurance certification as required by

Section 1-07.18, a satisfactory bond as required by law and Section 1-03.4, the Transfer of Coverage form for the Construction Stormwater General Permit with sections I, III, and VIII completed when provided, and shall be registered as a contractor in the state of Washington.

1-03.5 Failure to Execute Contract

The first sentence is revised to read:

Failure to return the insurance certification and bond with the signed Contract as required in Section 1-03.3, or failure to provide Disadvantaged, Minority or Women's Business Enterprise information if required in the Contract, or failure or refusal to sign the Contract, or failure to register as a contractor in the state of Washington, or failure to return the completed Transfer of Coverage for the Construction Stormwater General Permit to the Contracting Agency when provided shall result in forfeiture of the proposal bond or deposit of this Bidder.

1-05.AP1

Section 1-05, Control of Work
August 6, 2018
1-05.5 Vacant

This section, including title, is revised to read:

1-05.5 Tolerances

Geometrical tolerances shall be measured from the points, lines, and surfaces defined in Contract documents.

A plus (+) tolerance increases the amount or dimension to which it applies, or raises a deviation from level. A minus (-) tolerance decreases the amount or dimension to which it applies, or lowers a deviation from level. Where only one signed tolerance is specified (+ or -), there is no specified tolerance in the opposing direction.

Tolerances shall not be cumulative. The most restrictive tolerance shall control.

Tolerances shall not extend the Work beyond the Right of Way or other legal boundaries identified in the Contract documents. If application of tolerances causes the extension of the Work beyond the Right of Way or legal boundaries, the tolerance shall be reduced for that specific instance.

Tolerances shall not violate other Contract requirements. If application of tolerances causes the Work to violate other Contract requirements, the tolerance shall be reduced for that specific instance. If application of tolerances causes conflicts with other components or aspects of the Work, the tolerance shall be reduced for that specific instance.

1-05.9 Equipment

The following new paragraph is inserted before the first paragraph:

Prior to mobilizing equipment on site, the Contractor shall thoroughly remove all loose dirt and vegetative debris from drive mechanisms, wheels, tires, tracks, buckets and undercarriage. The Engineer will reject equipment from the site until it returns clean.

This section is supplemented with the following:

Upon completion of the Work, the Contractor shall completely remove all loose dirt and vegetative debris from equipment before removing it from the job site.

1-06.AP1

Section 1-06, Control of Material
January 7, 2019

1-06.1(3) Aggregate Source Approval (ASA) Database

This section is supplemented with the following:

Regardless of status of the source, whether listed or not listed in the ASA database the source owner may be asked to provide testing results for toxicity in accordance with Section 9-03.21(1).

1-06.2(2)D Quality Level Analysis

This section is supplemented with the following new subsection:

1-06.2(2)D5 Quality Level Calculation – HMA Compaction

The procedures for determining the quality level and pay factor for HMA compaction are as follows:

1. Determine the arithmetic mean, X_m, for compaction of the lot:

$$X_m = \frac{\sum x}{n}$$

Where:
x = individual compaction test values for each sublot in the lot.
$\sum x$ = summation of individual compaction test values
n = total number test values

2. Compute the sample standard deviation, "S", for each constituent:

$$S = \left[\frac{n\sum x^2 - \left(\sum x\right)^2}{n(n-1)} \right]^{\frac{1}{2}}$$

Where:
$\sum x^2$ = summation of the squares of individual compaction test values
$(\sum x)^2$ = summation of the individual compaction test values squared

3. Compute the lower quality index (Q_L):

$$Q_L = \frac{X_m - LSL}{S}$$

Where:
LSL = 92.0

4. Determine P_L (the percent within the lower Specification limit which corresponds to a given Q_L) from Table 1. For negative values of Q_L, P_L is equal to 100 minus the table P_L. If the value of Q_L does not correspond exactly to a figure in the table, use the next higher value.

5. Determine the quality level (the total percent within Specification limits):

   Quality Level = P_L

6. Using the quality level from step 5, determine the composite pay factor (CPF) from Table 2.

7. If the CPF determined from step 6 is 1.00 or greater: use that CPF for the compaction lot; however, the maximum HMA compaction CPF using an LSL = 92.0 shall be 1.05.

8. If the CPF from step 6 is not 1.00 or greater: repeat steps 3 through 6 using an LSL = 91.5. The value thus determined shall be the HMA compaction CPF for that lot; however, the maximum HMA compaction CPF using an LSL = 91.5 shall be 1.00.

1-06.2(2)D1 Quality Level Analysis

The following new sentence is inserted after the first sentence:

> The quality level calculations for HMA compaction are completed using the formulas in Section 1-06.2(2)D5.

1-06.2(2)D4 Quality Level Calculation

The first paragraph (excluding the numbered list) is revised to read:

> The procedures for determining the quality level and pay factors for a material, other than HMA compaction, are as follows:

1-06.6 Recycled Materials

The first three sentences of the second paragraph are revised to read:

> The Contractor shall submit a Recycled Material Utilization Plan on WSDOT Form 350-075A within 30 calendar days after the Contract is executed. The plan shall provide the Contractor's anticipated usage of recycled concrete aggregates for meeting the requirements of these Specifications. The quantity of recycled concrete aggregate will be provided in tons and as a percentage of the Plan quantity for eligible material listed in Section 9-03.21(1)E Table on Maximum Allowable percent (By Weight) of Recycled Material.

The last paragraph is revised to read:

> Within 30 calendar days after Physical Completion, the Contractor shall report the quantity of recycled concrete aggregates that were utilized in the construction of the project for each eligible item listed in Section 9-03.21(1)E. The Contractor's report shall be provided on WSDOT Form 350-075A, Recycled Materials Reporting.

1-06.6(1)A General

Item 1(a) in the second paragraph is revised to read:

a. The estimated costs for the Work for each material with 25 percent recycled concrete aggregate. The cost estimate shall include for each material a documented price quote from the supplier with the lowest total cost for the Work.

1-07.AP1

Section 1-07, Legal Relations and Responsibilities to the Public
April 1, 2019
1-07.5 Environmental Regulations

This section is supplemented with the following new subsections:

1-07.5(5) U.S. Army Corps of Engineers

When temporary fills are permitted, the Contractor shall remove fills in their entirety and the affected areas returned to pre-construction elevations.

If a U.S. Army Corps of Engineers permit is noted in Section 1-07.6 of the Special Provisions, the Contractor shall retain a copy of the permit or the verification letter (in the case of a Nationwide Permit) on the worksite for the life of the Contract. The Contractor shall provide copies of the permit or verification letter to all subcontractors involved with the authorized work prior to their commencement of any work in waters of the U.S.

1-07.5(6) U.S. Fish/Wildlife Services and National Marine Fisheries Service

The Contracting Agency will provide fish exclusion and handling services if the Work dictates. However, if the Contractor discovers any fish stranded by the project and a Contracting Agency biologist is not available, they shall immediately release the fish into a flowing stream or open water.

1-07.5(1) General

The first sentence is deleted and replaced with the following:

No Work shall occur within areas under the jurisdiction of resource agencies unless authorized in the Contract.

The third paragraph is deleted.

1-07.5(2) State Department of Fish and Wildlife

This section is revised to read:

In doing the Work, the Contractor shall:

1. Not degrade water in a way that would harm fish, wildlife, or their habitat.

2. Not place materials below or remove them from the ordinary high water line except as may be specified in the Contract.

3. Not allow equipment to enter waters of the State except as specified in the Contract.

4. Revegetate in accordance with the Plans, unless the Special Provisions permit otherwise.

5. Prevent any fish-threatening silt buildup on the bed or bottom of any body of water.

6. Ensure continuous stream flow downstream of the Work area.

7. Dispose of any project debris by removal, burning, or placement above high-water flows.

8. Immediately notify the Engineer and stop all work causing impacts, if at any time, as a result of project activities, fish are observed in distress or a fish kill occurs.

If the Work in (1) through (3) above differs little from what the Contract requires, the Contracting Agency will measure and pay for it at unit Contract prices. But if Contract items do not cover those areas, the Contracting Agency will pay pursuant to Section 1-09.4. Work in (4) through (8) above shall be incidental to Contract pay items.

1-07.5(3) State Department of Ecology

This section is revised to read:

In doing the Work, the Contractor shall:

1. Comply with Washington State Water Quality Standards.

2. Perform Work in such a manner that all materials and substances not specifically identified in the Contract documents to be placed in the water do not enter waters of the State, including wetlands. These include, but are not limited to, petroleum products, hydraulic fluid, fresh concrete, concrete wastewater, process wastewater, slurry materials and waste from shaft drilling, sediments, sediment-laden water, chemicals, paint, solvents, or other toxic or deleterious materials.

3. Use equipment that is free of external petroleum-based products.

4. Remove accumulations of soil and debris from drive mechanisms (wheels, tracks, tires) and undercarriage of equipment prior to using equipment below the ordinary high water line.

5. Clean loose dirt and debris from all materials placed below the ordinary high water line. No materials shall be placed below the ordinary high water line without the Engineer's concurrence.

6. When a violation of the Construction Stormwater General Permit (CSWGP) occurs, immediately notify the Engineer and fill out WSDOT Form 422-011, Contractor ECAP Report, and submit the form to the Engineer within 48 hours of the violation.

7. Once Physical Completion has been given, prepare a Notice of Termination (Ecology Form ECY 020-87) and submit the Notice of Termination

electronically to the Engineer in a PDF format a minimum of 7 calendar days prior to submitting the Notice of Termination to Ecology.

8. Transfer the CSWGP coverage to the Contracting Agency when Physical Completion has been given and the Engineer has determined that the project site is not stabilized from erosion.

9. Submit copies of all correspondence with Ecology electronically to the Engineer in a PDF format within four calendar days.

1-07.5(4) Air Quality

This section is revised to read:

The Contractor shall comply with all regional clean air authority and/or State Department of Ecology rules and regulations.

The air quality permit process may include additional State Environment Policy Act (SEPA) requirements. Contractors shall contact the appropriate regional air pollution control authority well in advance of beginning Work.

When the Work includes demolition or renovation of any existing facility or structure that contains Asbestos Containing Material (ACM) and/or Presumed Asbestos-Containing Material (PACM), the Contractor shall comply with the National Emission Standards for Hazardous Air Pollutants (NESHAP).

Any requirements included in Federal and State regulations regarding air quality that applies to the “owner or operator” shall be the responsibility of the Contractor.

1-07.7(1) General

The first sentence of the third paragraph is revised to read:

When the Contractor moves equipment or materials on or over Structures, culverts or pipes, the Contractor may operate equipment with only the load-limit restrictions in Section 1-07.7(2).

The first sentence of the last paragraph is revised to read:

Unit prices shall cover all costs for operating over Structures, culverts and pipes.

1-07.9(1) General

The last sentence of the sixth paragraph is revised to read:

Generally, the Contractor initiates the request by preparing standard form 1444 Request for Authorization of Additional Classification and Rate, available at https://www.dol.gov/whd/recovery/dbsurvey/conformance.htm, and submitting it to the Engineer for further action.

1-07.9(2) Posting Notices

The second sentence of the first paragraph (up until the colon) is revised to read:

The Contractor shall ensure the most current edition of the following are posted:

The revision dates are deleted from all items in the numbered list.

The following new items are inserted after item number 1:

2. **Mandatory Supplement to EEOC P/E-1** published by US Department of Labor. Post for projects with federal-aid funding.

3. **Pay Transparency Nondiscrimination Provision** published by US Department of Labor. Post for projects with federal-aid funding.

Item number 2 through 12 are renumbered to 4 through 14, respectively.

1-07.11(2) Contractual Requirements

In this section, "creed" is revised to read "religion".

Item numbers 1 through 9 are revised to read 2 through 10, respectively.

After the preceding Amendment is applied, the following new item number 1 is inserted:

1. The Contractor shall maintain a Work site that is free of harassment, humiliation, fear, hostility and intimidation at all times. Behaviors that violate this requirement include but are not limited to:

    a. Persistent conduct that is offensive and unwelcome.

    b. Conduct that is considered to be hazing.

    c. Jokes about race, gender, or sexuality that are offensive.

    d. Unwelcome, unwanted, rude or offensive conduct or advances of a sexual nature which interferes with a person's ability to perform their job or creates an intimidating, hostile, or offensive work environment.

    e. Language or conduct that is offensive, threatening, intimidating or hostile based on race, gender, or sexual orientation.

    f. Repeating rumors about individuals in the Work Site that are considered to be harassing or harmful to the individual's reputation.

1-07.11(5) Sanctions

This section is supplemented with the following:

Immediately upon the Engineer's request, the Contractor shall remove from the Work site any employee engaging in behaviors that promote harassment, humiliation, fear or intimidation including but not limited to those described in these specifications.

1-07.11(6) Incorporation of Provisions

The first sentence is revised to read:

The Contractor shall include the provisions of Section 1-07.11(2) Contractual Requirements (1) through (5) and the Section 1-07.11(5) Sanctions in every subcontract including procurement of materials and leases of equipment.

1-07.15(1) Spill Prevention, Control, and Countermeasures Plan

The last sentence of the first paragraph is revised to read:

> An SPCC Plan template and guidance information is available at http://www.wsdot.wa.gov/environment/technical/disciplines/hazardous-materials/spill-prevent-report.

1-07.16(2)A Wetland and Sensitive Area Protection

The first sentence of the first paragraph is revised to read:

> Existing wetland and other sensitive areas, where shown in the Plans or designated by the Engineer, shall be saved and protected through the life of the Contract.

1-07.18 Public Liability and Property Damage Insurance

Item number 1 is supplemented with the following new sentence:

> This policy shall be kept in force from the execution date of the Contract until the Physical Completion Date.

1-08.AP1

Section 1-08, Prosecution and Progress

January 7, 2019

1-08.1 Subcontracting

The first sentence of the seventh paragraph is revised to read:

> All Work that is not performed by the Contractor will be considered as subcontracting except: (1) purchase of sand, gravel, crushed stone, crushed slag, batched concrete aggregates, ready-mix concrete, off-site fabricated structural steel, other off-site fabricated items, and any other materials supplied by established and recognized commercial plants; or (2) delivery of these materials to the Work site in vehicles owned or operated by such plants or by recognized independent or commercial hauling companies hired by those commercial plants.

The following new paragraph is inserted after the seventh paragraph:

> The Contractor shall not use businesses (material suppliers, vendors, subcontractors, etc.) with federal purchasing exclusions. Businesses with exclusions are identified using the System for Award Management web page at www.SAM.gov.

1-08.5 Time for Completion

Item number 2 of the sixth paragraph is supplemented with the following:

f. A copy of the Notice of Termination sent to the Washington State Department of Ecology (Ecology); the elapse of 30 calendar days from the date of receipt of the Notice of Termination by Ecology; and no rejection of the Notice of Termination by Ecology. This requirement will not apply if the Construction Stormwater General Permit is transferred back to the Contracting Agency in accordance with Section 8-01.3(16).

1-08.7 Maintenance During Suspension

The fifth paragraph is revised to read:

> The Contractor shall protect and maintain all other Work in areas not used by traffic. All costs associated with protecting and maintaining such Work shall be the responsibility of the Contractor.

1-09.AP1

Section 1-09, Measurement and Payment
August 6, 2018

1-09.2(1) General Requirements for Weighing Equipment

The last paragraph is supplemented with the following:

> When requested by the Engineer, the Contractor's representative shall collect the tickets throughout the day and provide them to the Engineer's designated receiver, not later than the end of shift, for reconciliation. Tickets for loads not verified as delivered will receive no pay.

1-09.2(2) Specific Requirements for Batching Scales

The last sentence of the first paragraph is revised to read:

> Batching scales used for concrete or hot mix asphalt shall not be used for batching other materials.

1-09.10 Payment for Surplus Processed Materials

The following sentence is inserted after the first sentence of the second paragraph:

> For Hot Mix Asphalt, the Plan quantity and quantity used will be adjusted for the quantity of Asphalt and quantity of RAP or other materials incorporated into the mix.

2-01.AP2

Section 2-01, Clearing, Grubbing, and Roadside Cleanup
April 1, 2019

2-01.2(3) Disposal Method No. 3 – Chipping

Item number 2 of the first paragraph is revised to read:

> 2. Chips shall be disposed outside of sensitive areas, and in areas that aren't in conflict with permanent Work.

2-02.AP2

Section 2-02, Removal of Structures and Obstructions
April 2, 2018

2-02.3(3) Removal of Pavement, Sidewalks, Curbs, and Gutters

In item number 3 of the first paragraph, the second sentence is revised to read:

> For concrete pavement removal, a second vertical full depth relief saw cut offset 12 to 18 inches from and parallel to the initial saw cut is also required, unless the Engineer allows otherwise.

2-03.AP2

Section 2-03, Roadway Excavation and Embankment
April 1, 2019
2-03.3(14)F Displacement of Unsuitable Foundation Materials

This section, including title, is revised to read:

2-03.3(14)F Vacant

2-09.AP2

Section 2-09, Structure Excavation
April 1, 2019
2-09.2 Materials

In the first paragraph, the references to "Portland Cement" and "Aggregates for Portland Cement Concrete" are revised to read:

Cement	9-01
Fine Aggregate for Concrete	9-03.1(2)

2-09.3(3)B Excavation Using Open Pits – Extra Excavation

The last two paragraphs are deleted and replaced with the following:

The excavation height (Ht) shall be calculated within a vertical plane as the difference between the lowest elevation in the excavation and the highest elevation of the ground surface immediately adjacent to the excavation. Pavement thickness and other surface treatments existing at the time of the excavation shall be included in the height calculation.

Submittals and Design Requirements

Excavations 4-feet and less in height do not require design and submittals. The Contractor shall provide a safe work environment and shall execute the work in a manner that does not damage adjacent pavements, utilities, or structures. If the Engineer determines the Contractor's work may potentially affect adjacent traffic, pavements, utilities, or structures, the Engineer may request a Type 1 Working Drawing from the Contractor. The Contractor shall explain in the Type 1 Working Drawing how the Engineer's concerns will be addressed, why infrastructure will not be damaged by the work, and how worker safety will be preserved.

For excavations that have soil types and slope geometries defined in WAC 296-155 part N and are between 4-feet and 20-feet in height, the Contractor shall submit Type 2 Working Drawings. Required submittal elements include, at a minimum, the following:

1. A plan view showing the limits of the excavation and its relationship to traffic, structures, utilities and other pertinent project elements. If the stability of the excavation requires no-load zones or equipment setback distances, those shall be shown on the plan view.

2. A typical or controlling cross section showing the proposed excavation, original ground line, and locations of traffic, existing structures, utilities, site constraints, surcharge loads, or other conditions that could affect the stability

of the slope. If the stability of the excavation requires no-load zones or equipment setback distances, those shall be shown in cross section.

3. A summary clearly describing subsurface conditions, soil type for WAC 296-155 part N, and groundwater conditions, sequencing considerations, and governing assumptions.

Where WAC 296-155 part N requires an engineer's design, the Contractor shall submit Type 2E Working Drawings. Required submittal elements include, at a minimum, the three items above and the following additional items:

4. Supporting calculations for the design of the excavation, the soil and material properties selected for design, and the justification for the selection for those properties, in accordance with the WSDOT *Geotechnical Design Manual* M 46-03.

5. Safety factors, or load and resistance factors used, and justification for their selection, in accordance with the WSDOT *Geotechnical Design Manual* M 46-03, and referenced AASHTO design manuals.

6. A monitoring plan to evaluate the excavation performance throughout its design life.

7. Any supplemental subsurface explorations made by the Contractor to meet the requirements for geotechnical design of excavation slopes, in accordance with the WSDOT *Geotechnical Design Manual* M 46-03.

2-09.3(3)D Shoring and Cofferdams

The first sentence of the sixth paragraph is revised to read:

Structural shoring and cofferdams shall be designed for conditions stated in this Section using methods shown in Division I Section 5 of the AASHTO *Standard Specifications for Highway Bridges* Seventeenth Edition – 2002 for allowable stress design, or the AASHTO *LRFD Bridge Design Specifications* for load and resistance factor design.

3-01.AP3

Section 3-01, Production from Quarry and Pit Sites
April 2, 2018
3-01.1 Description

The first paragraph is revised to read:

This Work shall consist of manufacturing and producing crushed and screened aggregates including pit run aggregates of the kind, quality, and grading specified for use in the construction of concrete, hot mix asphalt, crushed surfacing, maintenance rock, ballast, gravel base, gravel backfill, gravel borrow, riprap, and bituminous surface treatments of all descriptions.

4-04.AP4

Section 4-04, Ballast and Crushed Surfacing
April 2, 2018
4-04.3(5) Shaping and Compaction

This section is supplemented with the following new paragraph:

> When using 100% Recycled Concrete Aggregate, the Contractor may submit a written request to use a test point evaluation for compaction acceptance testing in lieu of compacting to 95% of the standard density as determined by the requirements of Section 2-03.3(14)D. The test point evaluation shall be performed in accordance with SOP 738.

5-01.AP5

Section 5-01, Cement Concrete Pavement Rehabilitation
January 7, 2019
5-01.2 Materials

The reference for Concrete Patching Material is revised to read:

Concrete Patching Material, Grout, and Mortar	9-20.1

5-01.3(1)A1 Concrete Patching Materials

In this section, each reference to “9-20” is revised to read “9-20.1”.

5-01.3(4) Replace Cement Concrete Panel

This section’s content is deleted and replaced with the following new subsections:

5-01.3(4)A General

Curing, cold weather work, concrete pavement construction in adjacent lines, and protection of pavement shall meet the requirements of Section 5-05.3(13) through Section 5-05.3(15). The Contractor, at no cost to the Contracting Agency, shall repair any damage to existing pavement caused by the Contractor’s operations.

5-01.3(4)B Sawing and Dimensional Requirements

Concrete slabs to be replaced as shown in the Plans or staked by the Engineer shall be at least 6.0 feet long and full width of an existing pavement panel. The portion of the panel to remain in place shall have a minimum dimension of 6 feet in length and full panel width; otherwise the entire panel shall be removed and replaced. There shall be no new joints closer than 3.0 feet to an existing transverse joint or crack. A vertical full depth saw cut is required along all longitudinal joints and at transverse locations and, unless the Engineer allows otherwise, an additional vertical full depth relief saw cut located 12 to 18 inches from and parallel to the initial longitudinal and transverse saw cut locations is also required. Removal of existing cement concrete pavement shall not cause damage to adjacent slabs that are to remain in place. In areas that will be ground, slab replacements shall be performed prior to pavement grinding.

Side forms shall meet the requirements of Section 5-05.3(7)B whenever a sawed full depth vertical face cannot be maintained.

5-01.3(4)C Dowel Bars and Tie Bars

For the half of a dowel bar or tie bar placed in fresh concrete, comply with the requirements of Section 5-05.

For the half of a dowel bar or tie bar placed in hardened concrete, comply with the Standard Plans and the following.

After drilling, secure dowel bars and tie bars into the existing pavement with either an epoxy bonding agent Type I or IV as specified in Section 9-26.1, or a grout Type 2 for non-shrink applications as specified in Section 9-20.3.

Dowel bars shall be placed at the mid depth of the concrete slab, centered over the transverse joint, and parallel to the centerline and to the roadway surface, within the tolerances in the table below. Dowel bars may be adjusted to avoid contact with existing dowel bars in the transverse joint at bridge approach slabs or existing panels provided the adjusted dowel bars meet the tolerances below.

Tie bars shall be placed at the mid depth of the concrete slab, centered over the joint, perpendicular to centerline, and parallel to the roadway surface, within the tolerances in the table below. The horizontal position of tie bars may be adjusted to avoid contact with existing tie bars in the longitudinal joint where panel replacement takes place, provided the adjusted tie bars meet the tolerances below.

Placement Tolerances		
	Dowel Bars	**Tie Bars**
Vertical: Center of Bar to Center of Slab Depth	± 1.00 inch max	± 1.00 inch max
Dowel Bar Centered Over the Transverse Joint	± 1.00 inch max	N/A
Tie Bar Centered Over the Longitudinal Joint	N/A	± 1.00 inch max
Parallel to Centerline Over the Length of the Dowel Bar	± 0.50 inch max	N/A
Perpendicular to Longitudinal Joint Over the Length of the Tie Bar	N/A	± 1.00 inch max
Parallel to Roadway Surface Over the Length of the Bar	± 0.50 inch max	± 1.00 inch max

Dowel bars and tie bars shall be placed according to the Standard Plan when multiple panels are placed. Panels shall be cast separately from the bridge approach slab.

Dowel bars to be drilled into existing concrete or at a new transverse contraction joint shall have a parting compound, such as curing compound, grease, or other Engineer accepted equal, applied to them prior to placement.

Clean the drilled holes in accordance with the epoxy or grout manufacturer's instructions. Holes shall be clean and dry at the time of placing the epoxy, or grout and tie bars. Completely fill the void between the tie bar and the outer limits of the drilled hole with epoxy or grout. Use retention rings to prevent leakage of the epoxy or grout and support the tie bar to prevent movement until the epoxy or grout has cured the minimum time recommended by the manufacturer.

5-01.3(4)D Foundation Preparation

The Contractor shall smooth the surfacing below the removed panel and compact it to the satisfaction of the Engineer. Crushed surfacing base course, or hot mix asphalt may be needed to bring the surfacing to grade prior to placing the new concrete.

If the material under the removed panel is uncompactable and the Engineer requires it, the Contractor shall excavate the Subgrade 2 feet, place a soil stabilization construction geotextile meeting the requirements of Section 9-33, and backfill with crushed surfacing base course. This Work may include:

1. Furnishing and hauling crushed surfacing base course to the project site.
2. Excavating uncompactable material.
3. Furnishing and placing a soil stabilization construction geotextile.
4. Backfilling and compacting crushed surfacing base course.
5. Removing, hauling and restocking any unused crushed surfacing base course.

5-01.3(4)E Concrete Finishing
Grade control shall be the responsibility of the Contractor.

All panels shall be struck off level with the adjacent panels and floated to a smooth surface.

Final finish texturing shall meet the requirements of Section 5-05.3(11).

In areas where the Plans do not require grinding, the surface smoothness will be measured with a 10-foot straightedge by the Engineer in accordance with Section 5-05.3(12). If the replacement panel is located in an area that will be ground as part of concrete pavement grinding in accordance with Section 5-01.3(9), the surface smoothness shall be measured, by the Contractor, in conjunction with the smoothness measurement done in accordance with Section 5-01.3(10).

5-01.3(4)F Joints
All transverse and longitudinal joints shall be sawed and sealed in accordance with Section 5-05.3(8). The Contractor may use a hand pushed single blade saw for sawing joints.

5-01.3(4)G Cracked Panels
Replacement panels that crack shall be repaired as specified in Section 5-05.3(22) at no cost to the Contracting Agency. When repairing replacement panels that have cracked, epoxy-coated dowel bars meeting the requirements of Section 9-07.5(1) may be substituted for the corrosion resistant dowel bars specified.

5-01.3(4)H Opening to Traffic
Opening to traffic shall meet the requirements of Section 5-05.3(17).

5-01.3(5) Partial Depth Spall Repair
The second sentence of the third paragraph is revised to read:

All sandblasting residue shall be removed.

5-01.3(7) Sealing Existing Concrete Random Cracks
The second sentence of the second paragraph is revised to read:

Immediately prior to sealing, the cracks shall be clean.

5-01.3(8) Sealing Existing Longitudinal and Transverse Joint

The first sentence of the fifth paragraph is revised to read:

Immediately prior to sealing, the cracks shall be clean.

5-01.3(10) Pavement Smoothness

This section is revised to read:

Pavement surface smoothness for cement concrete pavement grinding on this project will include International Roughness Index (IRI) testing. Ride quality will be evaluated using the Mean Roughness Index (MRI) calculated by averaging the IRI data for the left and right wheel path within the section.

Smoothness Testing Equipment and Operator Certification

Use an inertial profiler and operator that meet the requirements of Section 5-05.3(3)E.

Surface Smoothness

Operate the inertial profiler in accordance with AASHTO R 57. Collect two longitudinal traces, one in each wheel path. Collect the control profile at locations designated in Table 2 prior to any pavement rehabilitation Work on the areas to be tested. Collect an acceptance profile at locations designated in Table 2 after completion of all cement concrete pavement grinding on the project. Profiles shall be collected in a continuous pass including areas excluded from pay adjustments. Provide notice to the Engineer a minimum of seven calendar days prior to testing.

Table 2
Locations Requiring MRI Testing

Travel lanes where cement concrete grinding is shown in the plans	Control profile
Additional locations designated by the Engineer	Control profile
Travel lanes with completed cement concrete pavement grinding	Acceptance profile
Bridges, approach panels and 0.02 miles before and after bridges and approach panels and other excluded areas within lanes requiring testing	Control and acceptance profile
Ramps, Shoulders and Tapers	Do not test

Within 30 calendar days after the Contractor's testing, the Engineer may perform verification testing. If the verification testing shows a difference in MRI greater than the 10 percent, the following resolution process will be followed:

1. The profiles, equipment and procedures will be evaluated to determine the cause of the difference.

2. If the cause of the discrepancy cannot be resolved the pavement shall be retested with both profilers at a mutually agreed time. The two profilers will test the section within 30 minutes of each other. If the retest shows a difference in MRI equal or greater than the percentages shown in Table 2 of

AASHTO R 54 the Engineer's test results will be used for pavement smoothness acceptance.

The Contractor shall evaluate profiles for acceptance or corrective action using the current version of ProVAL and provide the results including the profile data in unfiltered electronic Engineering Research Division (ERD) file format to the Engineer within 3 calendar days of completing each days profile testing. If the profile data files are created using an export option in the manufacturer's software where filter settings can be specified, use the filter settings that were used to create data files for certification.

Analyze the entire profile. Exclude areas listed in Table 3.

Table 3
Areas Excluded from MRI Acceptance Requirements

Location	Exclude
Beginning and end of grinding	Pavement within 0.02 mile
Bridges and approach slabs	The bridge and approach slab and 0.02 mile from the ends of the bridge or approach slab
Defects in the existing roadway identified by the Contractor that adversely affect the MRI such as dips, depressions and wheel path longitudinal joints.[1]	0.01-mile section containing the defect and the 0.01-mile section following the section with the defect.
[1]The presence of defects is subject to verification by the Engineer	

Report the MRI results in inches per mile for each 0.01-mile section and each 0.10-mile section. Do not truncate 0.10-mile sections for areas excluded from MRI acceptance requirements. MRI requirements will not apply to 0.10-mile sections with more than three 0.01 mile-sections excluded. MRI requirements for the individual 0.01-mile sections shall still apply. The Engineer will verify the analysis.

The MRI for each 0.10 mile of ground lane will comply with the following:

Control Profile MRI per 0.10 Mile	Maximum MRI of Acceptance Profile per 0.10 Mile
≤130 inches/mile	78 inches/mile
>130 inches/mile	0.6 x Control Profile MRI

The MRI for each 0.01 mile of the completed cement concrete grinding shall not exceed 160 inches/mile.

All Work is subject to parallel and transverse 10-foot straightedge requirements, corrective work and disincentive adjustments.

Surface smoothness of travel lanes including areas subject to MRI testing shall not vary more than ⅛ inch from the lower edge of a 10-foot straightedge placed on the surface parallel to the centerline.

The smoothness perpendicular to the centerline will be measured with a 10-foot straightedge within the lanes. There shall be not vertical elevation difference of more than a ¼ inch between lanes.

Pavement that does not meet these requirements will be subject to corrective Work. All corrective Work shall be completed at no additional expense, including traffic control, to the Contracting Agency. Pavement shall be repaired by one or more of the following methods:

1. Diamond grinding.

2. By other method accepted by the Engineer.

Repair areas shall be re-profiled to ensure they no longer require corrective Work. With concurrence of the Engineer, a 10-foot straight edge may be used in place of the inertial profiler.

If correction of the roadway as listed above either will not or does not produce satisfactory results as to smoothness or serviceability the Engineer may accept the completed pavement and a credit will be calculated in accordance with Section 5-01.5. Under these circumstances, the decision whether to accept the completed pavement or to require corrective work as described above shall be vested entirely in the Engineer.

5-01.5 Payment

This section is supplemented with the following:

"Grinding Smoothness Compliance Adjustment", by calculation.
Grinding Smoothness Compliance Adjustments will be based on the requirements in Section 5-01.3(10) and the following calculations:

A smoothness compliance adjustment will be calculated in the sum of minus $100 for each and every section of single traffic lane 0.01 mile in length and $1,000 for each and every section of single traffic lane 0.10 mile in length that does not meet the requirements in Section 5-01.3(10) after corrective Work.

5-02.AP5

Section 5-02, Bituminous Surface Treatment
April 1, 2019
5-02.3(5) Application of Aggregates

The first sentence of the eleventh paragraph is revised to read:

The Contractor shall use a pickup broom in all curbed areas, on all bridges, within city limits, within sensitive areas, and where shown in the Plans both before the application of emulsified asphalt and during the final brooming operation.

5-04.AP5

Section 5-04, Hot Mix Asphalt
April 1, 2019
5-04.1 Description

The last sentence of the first paragraph is revised to read:

The manufacture of HMA may include additives or processes that reduce the optimum mixing temperature (Warm Mix Asphalt) or serve as a compaction aid in accordance with these Specifications.

5-04.2 Materials

The reference to “Warm Mix Asphalt Additive” is revised to read “HMA Additive”.

5-04.2(1) How to Get an HMA Mix Design on the QPL

The last bullet in the first paragraph is revised to read:

- Do not include HMA additives that reduce the optimum mixing temperature or serve as a compaction aid when developing a mix design or submitting a mix design for QPL evaluation. The use of HMA additives is not part of the process for obtaining approval for listing a mix design on the QPL. Refer to Section 5-04.2(2)B.

In the table, “WSDOT Standard Practice QC-8” is revised to read “WSDOT Standard Practice QC-8 located in the WSDOT Materials Manual M 46-01”.

5-04.2(1)C Mix Design Resubmittal for QPL Approval

Item number 3 of the first paragraph is revised to read:

3. Changes in modifiers used in the asphalt binder.

5-04.2(2)B Using Warm Mix Asphalt Processes

This section, including title, is revised to read:

5-04.2(2)B Using HMA Additives

The Contractor may, at the Contractor’s discretion, elect to use additives that reduce the optimum mixing temperature or serve as a compaction aid for producing HMA. Additives include organic additives, chemical additives and foaming processes. The use of Additives is subject to the following:

- Do not use additives that reduce the mixing temperature in accordance with Section 5-04.3(6) in the production of High RAP/Any RAS mixtures.

- Before using additives, obtain the Engineer’s approval using WSDOT Form 350-076 to describe the proposed additive and process.

5-04.3(3)A Mixing Plant

Item number 5 of the first paragraph is revised to read:

5. Provide HMA sampling equipment that complies with FOP for AASHTO T 168:

   - Use a mechanical sampling device accepted by the Engineer, or

   - Platforms or devices to enable sampling from the truck transport without entering the truck transport for sampling HMA.

5-04.3(4) Preparation of Existing Paved Surfaces

The first sentence of the fourth paragraph is revised to read:

Unless otherwise allowed by the Engineer, use cationic emulsified asphalt CSS-1, CSS-1h, or Performance Graded (PG) asphalt for tack coat.

5-04.3(6) Mixing

The first paragraph is revised to read:

> The asphalt supplier shall introduce recycling agent and anti-stripping additive, in the amount designated on the QPL for the mix design, into the asphalt binder prior to shipment to the asphalt mixing plant.

The seventh paragraph is revised to read:

> Upon discharge from the mixer, ensure that the temperature of the HMA does not exceed the optimum mixing temperature shown on the accepted Mix Design Report by more than 25°F, or as allowed by the Engineer. When an additive is included in the manufacture of HMA, do not heat the additive (at any stage of production including in binder storage tanks) to a temperature higher than the maximum recommended by the manufacturer of the additive.

5-04.3(7) Spreading and Finishing

The last row of the table is revised to read:

⅜ inch	0.25 feet	0.30 feet

5-04.3(8) Aggregate Acceptance Prior to Incorporation in HMA

The following new paragraph is inserted after the first paragraph:

> The Contracting Agency's combined aggregate bulk specific gravity (Gsb) blend as shown on the HMA Mix Design will be used for VMA calculations until the Contractor submits a written request for a Gsb test. The new Gsb will be used in the VMA calculations for HMA from the date the Engineer receives the written request for a Gsb retest. The Contractor may request aggregate specific gravity (Gsb) testing be performed by the Contracting Agency twice per project. The Gsb blend of the combined stockpiles will be used to calculate voids in mineral aggregate (VMA) of any HMA produced after the new Gsb is determined.

5-04.3(9)A1 Test Section – When Required, When to Stop

The following new row is inserted after the second row in Table 9:

VMA	Minimum PF_i of 0.95 based on the criteria in Section 5-04.3(9)B4[2]	None[4]

5-04.3(9)A2 Test Section – Evaluating the HMA Mixture in a Test Section

In Table 9a, the test property "Gradation, Asphalt Binder, and V_a" is revised to read "Gradation, Asphalt Binder, VMA, and V_a"

In Table 9a, the first column of the third row is revised to read:

Aggregates: Sand Equivalent Uncompacted Void Content Fracture

5-04.3(9)B3 Mixture Statistical Evaluation – Acceptance Testing

In Table 11, "V_a" is revised to read "VMA and V_a"

5-04.3(9)B5 Mixture Statistical Evaluation – Composite Pay Factors (CPF)

The following new row is inserted above the last row in Table 12:

Voids in Mineral Aggregate (VMA)	2

5-04.3(9)B7 Mixture Statistical Evaluation – Retests

The second to last sentence is revised to read:

> The sample will be tested for a complete gradation analysis, asphalt binder content, VMA and V_a, and the results of the retest will be used for the acceptance of the HMA mixture in place of the original mixture sublot sample test results.

5-04.3(10)A HMA Compaction – General Compaction Requirements

The last paragraph is revised to read:

> On bridge decks and on roadway approaches within five feet of a bridge/back of pavement seat, rollers shall not be operated in a vibratory mode, defined as a mode in which the drum vibrates vertically. However, unless otherwise noted on the plans, rollers may be operated in an oscillatory mode, defined as a mode in which the drum vibrates in the horizontal direction only.

5-04.3(10)C1 HMA Compaction Statistical Evaluation – Lots and Sublots

The bulleted item in the fourth paragraph is revised to read:

- For a compaction lot in progress with a compaction CPF less than 0.75 using an LSL = 91.5, a new compaction lot will begin at the Contractor's request after the Engineer is satisfied that material conforming to the Specifications can be produced. See also Section 5-04.3(11)F.

5-04.3(10)C2 HMA Compaction Statistical Evaluation – Acceptance Testing

In the table, "WSDOT FOP for AASHTO T 355" is revised to read "FOP for AASHTO T 355".

5-04.3(10)C3 HMA Statistical Compaction – Price Adjustments

In the first paragraph, "WSDOT FOP for AASHTO T 355" is revised to read "FOP for AASHTO T 355".

The first sentence in the second paragraph is revised to read:

> For each HMA compaction lot (that is accepted by Statistical Evaluation) which does not meet the criteria in the preceding paragraph, the compaction lot shall be evaluated in accordance with Section 1-06.2(2)D5 to determine the appropriate Composite Pay Factor (CPF).

The last two paragraphs are revised to read:

> Determine the Compaction Price Adjustment (CPA) from the table below, selecting the equation for CPA that corresponds to the value of CPF determined above.

Calculating HMA Compaction Price Adjustment (CPA)	
Value of CPF	**Equation for Calculating CPA**
When CPF > 1.00	CPA = [1.00 x (CPF – 1.00)] x Q x UP
When CPF = 1.00	CPA = $0
When CPF < 1.0	CPA = [0.60 x (CPF – 1.00)] x Q x UP

Where
CPA = Compaction Price Adjustment for the compaction lot ($)
CPF = Composite Pay Factor for the compaction lot (maximum is 1.05)
Q = Quantity in the compaction lot (tons)
UP = Unit price of the HMA in the compaction lot ($/ton)

5-04.3(10)C4 HMA Statistical Compaction – Requests for Retesting

The first sentence is revised to read:

For a compaction sublot that has been tested with a nuclear density gauge that did not meet the minimum of 91.5 percent of the theoretical maximum density in a compaction lot with a CPF below 1.00 and thus subject to a price reduction or rejection, the Contractor may request that a core, taken at the same location as the nuclear density test, be used for determination of the relative density of the compaction sublot.

5-04.3(13) Surface Smoothness

The second to last paragraph is revised to read:

When concrete pavement is to be placed on HMA, the surface tolerance of the HMA shall be such that no surface elevation lies above the Plan grade minus the specified Plan depth of concrete pavement. Prior to placing the concrete pavement, bring any such irregularities to the required tolerance by grinding or other means allowed by the Engineer.

5-04.5 Payment

The paragraph following the Bid item “Crack Sealing-LF”, per linear foot is revised to read:

The unit Contract price per linear foot for “Crack Sealing-LF” shall be full payment for all costs incurred to perform the Work described in Section 5-04.3(4)A.

5-05.AP5

Section 5-05, Cement Concrete Pavement
April 1, 2019

5-05.1 Description

In the first paragraph, “portland cement concrete” is revised to read “cement concrete”.

5-05.2 Materials

In the first paragraph, the reference to “Portland Cement” is revised to read:

Cement 9-01

In the first paragraph, the section reference for Concrete Patching Material is revised to read "9-20.1".

The second paragraph is revised to read:

> Cementitious materials are considered to be the following: portland cement, blended hydraulic cement, fly ash, ground granulated blast furnace slag and microsilica fume.

5-05.3(1) Concrete Mix Design for Paving

The table title in item number 4 is revised to read **Concrete Batch Weights**.

In item 4a, "Portland Cement" is revised to read "Cement".

5-05.3(3)E Smoothness Testing Equipment

This section is revised to read:

> Inertial profilers shall meet all requirements of AASHTO M 328 and be certified in accordance with AASHTO R 56 within the preceding 12 months.
>
> The inertial profiler operator shall be certified as required by AASHTO R 56 within three years preceding profile measurement.
>
> Equipment or operator certification by other states or a profiler certification facility will be accepted provided the certification meets the requirements of AASHTO R 56. Documentation verifying certification by another state shall be submitted to the Engineer a minimum of 14 calendar days prior to profile measurement. Equipment certification documentation shall include the information required by part 8.5 and 8.6 of AASHTO R 56. Operator documentation shall include a statement from the certifying state that indicates the operator is certified to operate the inertial profiler to be used on the project. The decision whether another state's certification meets the requirements of AASHTO R 56 shall be vested entirely in the Engineer.

5-05.3(4) Measuring and Batching Materials

Item number 2 is revised to read:

2. **Batching Materials** – On all projects requiring more than 2,500 cubic yards of concrete for paving, the batching plant shall be equipped to proportion aggregates and cement by weight by means of automatic and interlocked proportioning devices of accepted type.

5-05.3(4)A Acceptance of Portland Cement Concrete Pavement

This section's title is revised to read:

> **Acceptance of Portland Cement or Blended Hydraulic Cement Concrete Pavement**

The first sentence is revised to read:

> Acceptance of portland cement or blended hydraulic cement concrete pavement shall be as provided under statistical or nonstatistical acceptance.

5-05.3(7) Placing, Spreading, and Compacting Concrete

This section's content is deleted.

5-05.3(10) Tie Bars and Corrosion Resistant Dowel Bars

The first sentence of the last paragraph is revised to read:

The tie bar holes shall be clean before grouting.

5-05.3(12) Surface Smoothness

This section is revised to read:

Pavement surface smoothness for this project will include International Roughness Index (IRI) testing. The Contractor shall perform IRI testing on each through lane, climbing lane, and passing lane, greater than 0.25 mile in length and these lanes will be subject to incentive/disincentive adjustments. Ride quality will be evaluated using the Mean Roughness Index (MRI) calculated by averaging the IRI data for the left and right wheel path within the section.

Ramps, shoulders and tapers will not be included in MRI testing for pavement smoothness and will not be subject to incentive adjustments. All Work is subject to parallel and transverse 10-foot straightedge requirements, corrective work and disincentive adjustments.

Operate the inertial profiler in accordance with AASHTO R 57. Collect two longitudinal traces, one in each wheel path. Collect profile data after completion of all concrete paving on the project in a continuous pass including areas excluded from pay adjustments. Provide notice to the Engineer a minimum of seven calendar days prior to testing.

Within 30 calendar days after the Contractor's testing, the Engineer may perform verification testing. If the verification testing shows a difference in MRI greater than the percentages shown in Table 2 of AASHTO R 54 the following resolution process will be followed:

1. The profiles, equipment and procedures will be evaluated to determine the cause of the difference.

2. If the cause of the discrepancy cannot be resolved the pavement shall be retested with both profilers at a mutually agreed time. The two profilers will test the section within 30 minutes of each other. If the retest shows a difference in MRI equal or greater than the percentages shown in Table 2 of AASHTO R 54 the Engineer's test results will be used to establish pay adjustments.

Surface smoothness of travel lanes not subject to MRI testing will be measured with a 10-foot straightedge no later than 5:00 p.m. of the day following the placing of the concrete. The completed surface of the wearing course shall not vary more than ⅛ inch from the lower edge of a 10-foot straightedge placed on the surface parallel to the centerline.

Smoothness perpendicular to the centerline will be measured with a 10-foot straightedge across all lanes with the same cross slope, including shoulders when composed of cement concrete pavement. The overlapping 10-foot straightedge measurement shall be discontinued at a point 6 inches from the most extreme outside

edge of the finished cement concrete pavement. The completed surface of the wearing course shall not vary more than ¼ inch from the lower edge of a 10-foot straightedge placed on the surface perpendicular to the centerline. Any deviations in excess of the above tolerances shall be corrected.

The Contractor shall evaluate profiles for acceptance, incentive payments, disincentive payments, or corrective action using the current version of ProVAL and provide the results including the profile data in unfiltered electronic Engineering Research Division (ERD) file format to the Engineer within 2 calendar days of completing testing each section of pavement. If the profile data files are created using an export option in the manufacturer's software where filter settings can be specified, use the filter settings that were used to create data files for certification. Analyze the entire profile. Exclude any areas specifically identified in the Contract. Exclude from the analysis the first 100 feet after the start of the paving operations and last 100 feet prior to the end of the paving operation, the first 100 feet on either side of bridge Structures and bridge approach slab. Report the MRI results in inches per mile for each 52.8 foot section and horizontal distance measurements in project stationing to the nearest foot. Include pay adjustments in the results. The Engineer will verify the analysis.

Corrective work for pavement smoothness may be taken by the Contractor prior to MRI testing. After completion of the MRI testing the Contractor shall measure the smoothness of each 52.8-foot section with an MRI greater than 125 inches per mile with a 10-foot straightedge within 14 calendar days or as allowed by the Engineer. The Contractor shall identify all locations that require corrective work and provide the straight edge measurements at each location that exceeds the allowable limit to the Engineer. If all measurements in a 52.8-foot section comply with smoothness requirements, the Contractor shall provide the maximum measurement to the Engineer and a statement that corrective work is not required. Unless allowed by the Engineer, corrective work shall be taken by the Contractor for pavement identified by the Contractor or Engineer that does not meet the following requirements:

1. The completed surface shall be of uniform texture, smooth, uniform as to crown and grade, and free from defects of all kinds.

2. The completed surface shall not vary more than ⅛ inch from the lower edge of a 10-foot straightedge placed on the surface parallel to the centerline.

3. The completed surface shall vary not more than ¼ inch in 10 feet from the rate of transverse slope shown in the Plans.

All corrective work shall be completed at no additional expense, including traffic control, to the Contracting Agency. Corrective work shall not begin until the concrete has reached its design strength unless allowed by the Engineer. Pavement shall be repaired by one or more of the following methods:

1. Diamond grinding; repairs shall not reduce pavement thickness by more than ¼ inch less than the thickness shown in the Plans. When required by the Engineer, the Contractor shall verify the thickness of the concrete pavement by coring. Thickness reduction due to corrective work will not be included in thickness measurements for calculating the Thickness Deficiency in Section 5-05.5(1)A.

2. Removal and replacement of the cement concrete pavement.

3. By other method allowed by the Engineer.

For repairs following MRI testing the repaired area shall be checked by the Contractor with a 10-foot straightedge to ensure it no longer requires corrective work. With concurrence of the Engineer an inertial profiler may be used in place of the 10-foot straight edge.

If correction of the roadway as listed above either will not or does not produce satisfactory results as to smoothness or serviceability the Engineer may accept the completed pavement and a credit will be calculated in accordance with Section 5-05.5. The credit will be in addition to the price adjustment for MRI. Under these circumstances, the decision whether to accept the completed pavement or to require corrective work as described above shall be vested entirely in the Engineer.

5-05.3(22) Repair of Defective Pavement Slabs

The last sentence of the fourth paragraph is revised to read:

All sandblasting residue shall be removed.

5-05.4 Measurement

Item number 3 of the second paragraph is revised to read:

3. The depth shall be determined in accordance with Section 5-05.5(1). The depth utilized to calculate the volume shall not exceed the Plan depth plus 0.04 feet.

The third paragraph is revised to read:

The volume of cement concrete pavement in each thickness lot shall equal the measured length × width × thickness measurement.

The last paragraph is revised to read:

The calculation for cement concrete compliance adjustment is the volume of concrete represented by the CPF and the Thickness deficiency adjustment.

5-05.5 Payment

The paragraph following the Bid item “Cement Conc. Pavement”, per cubic yard is supplemented with the following:

All costs associated with performing the magnetic pulse induction thickness testing shall be included in the unit Contract price per cubic yard for “Cement Conc. Pavement”.

The Bid item “Ride Smoothness Compliance Adjustment”, by calculation, and the paragraph following this bid item are revised to read:

“Ride Smoothness Compliance Adjustment”, by calculation.

Smoothness Compliance Adjustments will be based on the requirements in Section 5-05.3(12) and the following calculations:

1. Final MRI acceptance and incentive/disincentive payments for pavement smoothness will be calculated as the average of the ten 52.8-foot sections in each 528 feet in accordance with the price adjustment schedule.

    a. For sections of a lane that are a minimum of 52.8 feet and less than 528 feet, the price adjustment will be calculated using the average of the

52.8 foot MRI values and the price adjustment prorated for the length of the section.

b. MRI values per 52.8-feet that were measured prior to corrective work will be included in the 528 foot price adjustment for sections with corrective work.

2. In addition to the price adjustment for MRI a smoothness compliance adjustment will be calculated in the sum of minus $1000.00 for each and every section of single traffic lane 52.8 feet in length in that does not meet the 10-foot straight edge requirements in Section 5-05.3(12) after corrective Work.

Price Adjustment Schedule

MRI for each 528 ft. section	Pay Adjustment Schedule
in. / mi.	**$ / 0.10 mi.**
< 30	2400
30	2400
31	2320
32	2240
33	2160
34	2080
35	2000
36	1920
37	1840
38	1760
39	1680
40	1600
41	1520
42	1440
43	1360
44	1280
45	1200
46	1120
47	1040
48	960
49	880
50	800
51	720
52	640
53	560
54	480
55	400
56	320
57	240
58	160
59	80
60	0
61	0
62	0
63	0
64	0
65	0

Price Adjustment Schedule

MRI for each 528 ft. section	Pay Adjustment Schedule
in. / mi.	**$ / 0.10 mi.**
66	0
67	0
68	0
69	0
70	0
71	0
72	0
73	0
74	0
75	0
76	-80
77	-160
78	-240
79	-320
80	-400
81	-480
82	-560
83	-640
84	-720
85	-800
86	-880
87	-960
88	-1040
89	-1120
90	-1200
91	-1280
92	-1360
93	-1440
94	-1520
95	-1600
96	-1680
97	-1760
98	-1840
99	-1920
100	-2000
101	-2080
102	-2160
103	-2240
104	-2320
105	-2400
106	-2480
107	-2560
108	-2640
109	-2720
110	-2800
111	-2880
112	-2960
113	-3040

Price Adjustment Schedule

MRI for each 528 ft. section	Pay Adjustment Schedule
in. / mi.	**$ / 0.10 mi.**
114	-3120
115	-3200
116	-3280
117	-3360
118	-3440
119	-3520
120	-3600
121	-3680
122	-3760
123	-3840
124	-3920
≥125	-4000

The bid item "Portland Cement Concrete Compliance Adjustment", by calculation, and the paragraph following this bid item are revised to read:

"Cement Concrete Compliance Adjustment", by calculation.

Payment for "Cement Concrete Compliance Adjustment" will be calculated by multiplying the unit Contract price for the cement concrete pavement, times the volume for adjustment, times the percent of adjustment determined from the calculated CPF and the Deficiency Adjustment listed in Section 5-05.5(1)A.

5-05.5(1) Pavement Thickness

This section is revised to read:

Cement concrete pavement shall be constructed in accordance with the thickness requirements in the Plans and Specifications. Tolerances allowed for Subgrade construction and other provisions, which may affect thickness, shall not be construed to modify such thickness requirements.

Thickness measurements in each lane paved shall comply with the following:

Thickness Testing of Cement Concrete Pavement	
Thickness Lot Size	15 panels maximum
Thickness test location determined by	Engineer will select testing locations in accordance with WSDOT TM 716 method B.
Sample method	AASHTO T 359
Sample preparation performed by	Contractor provides, places, and secures disks in the presence of the Engineer[1]
Measurement method	AASHTO T 359
Thickness measurement performed by	Contractor, in the presence of the Engineer[2]
[1]Reflectors shall be located at within 0.5 feet of the center of the panel. The Contractor shall supply a sufficient number of 300 mm-diameter round reflectors meeting the requirements of AASHTO T 359 to accomplish the required testing. [2]The Contractor shall provide all equipment and materials needed to perform the testing.	

Thickness measurements shall be rounded to the nearest 0.01 foot.

Each thickness test location where the pavement thickness is deficient by more than 0.04 foot, shall be subject to price reduction or corrective action as shown in Table 2.

Table 2 Thickness Deficiency	
0.04' < Thickness Deficiency ≤ 0.06'	10
0.06' < Thickness deficiency ≤ 0.08'	25
Thickness deficiency > 0.08'	Remove and replace the panels or the panels may be accepted with no payment at the discretion of the Engineer.

The price reduction shall be computed by multiplying the percent price reduction in Table 2 by the unit Contract price by the volume of pavement represented by the thickness test lot.

Additional cores may be taken by the Contractor to determine the limits of an area that has a thickness deficiency greater than 0.04 feet. Cores shall be taken at the approximate center of the panel. Only the panels within the limits of the deficiency area as determined by the cores will be subject to a price reduction or corrective action. The cores shall be taken in the presence of the Engineer and delivered to the Engineer for measurement. All costs for the additional cores including filling the core holes with patching material meeting the requirements of Section 9-20 will be the responsibility of the Contractor.

5-05.5(1)A Thickness Deficiency of 0.05 Foot or Less

This section, including title, is revised to read:

5-05.5(1)A Vacant

5-05.5(1)B Thickness Deficiency of More Than 0.05 Foot

This section, including title, is revised to read:

5-05.5(1)B Vacant

6-01.AP6

Section 6-01, General Requirements for Structures
January 7, 2019

This section is supplemented with the following new subsections:

6-01.16 Repair of Defective Work

6-01.16(1) General

When using repair procedures that are described elsewhere in the Contract Documents, the Working Drawing submittal requirements of this Section shall not apply to those repairs unless noted otherwise.

Repair procedures for defective Work shall be submitted as Type 2 Working Drawings. Type 2E Working Drawings shall be submitted when required by the Engineer. As an alternative to submitting Type 2 or 2E Working Drawings, defective Work within the limits of applicability of a pre-approved repair procedure may be repaired using that procedure. Repairs using a pre-approved repair procedure shall be submitted as a Type 1 Working Drawing.

Pre-approved repair procedures shall consist of the following:

- The procedures listed in Section 6-01.16(2)
- For precast concrete, repair procedures in the annual plant approval process documents that have been approved for use by the Contracting Agency.

All Working Drawings for repair procedures shall include:

- A description of the defective Work including location, extent and pictures
- Materials to be used in the repair. Repairs using manufactured products shall include written manufacturer recommendations for intended uses of the product, surface preparation, mixing, aggregate extension (if applicable), ambient and surface temperature limits, placement methods, finishing and curing.
- Construction procedures
- Plan details of the area to be repaired
- Calculations for Type 2E Working Drawings

Material manufacturer's instructions and recommendations shall supersede any conflicting requirements in pre-approved repair procedures.

The Engineer shall be notified prior to performing any repair procedure and shall be given an opportunity to inspect the repair work being performed.

6-01.16(2) Pre-Approved Repair Procedures

6-01.16(2)A Concrete Spalls and Poor Consolidation (Rock Pockets, Honeycombs, Voids, etc.)

This repair shall be limited to the following areas:

- Areas that are not on top Roadway surfaces (with or without an overlay) including but not limited to concrete bridge decks, bridge approach slabs or cement concrete pavement
- Areas that are not underwater
- Areas that are not on precast barrier, except for the bottom 4 inches (but not to exceed 1 inch above blockouts)
- Areas that do not affect structural adequacy as determined by the Engineer.

The repair procedure is as follows:

1. Remove all loose and unsound concrete. Impact breakers shall not exceed 15 pounds in weight when removing concrete adjacent to

reinforcement or other embedments and shall not exceed 30 pounds in weight otherwise. Operate impact breakers at angles less than 45 degrees as measured from the surface of the concrete to the tool and moving away from the edge of the defective Work. Concrete shall be completely removed from exposed surfaces of existing steel reinforcing bars. If half or more of the circumference of any steel reinforcing bar is exposed, if the reinforcing bar is loose or if the bond to existing concrete is poor then concrete shall be removed at least ¾ inch behind the reinforcing bar. Do not damage any existing reinforcement. Stop work and allow the Engineer to inspect the repair area after removing all loose and unsound concrete. Submit a modified repair procedure when required by the Engineer.

2. Square the edges of the repair area by cutting an edge perpendicular to the concrete surface around the repair area. The geometry of the repair perimeter shall minimize the edge length and shall be rectangular with perpendicular edges, avoiding reentrant corners. The depth of the cut shall be a minimum of ¾ inch, but shall be reduced if necessary to avoid damaging any reinforcement. For repairs on vertical surfaces, the top edge shall slope up toward the front at a 1-vertical-to-3-horizontal slope.

3. Remove concrete within the repair area to a depth at least matching the cut depth at the edges. Large variations in the depth of removal within short distances shall be avoided. Roughen the concrete surface. The concrete surface should be roughened to at least Concrete Surface Profile (CSP) 5 in accordance with ICRI Guideline No. 310.2R, unless a different CSP is recommended by the patching material manufacturer.

4. Inspect the concrete repair surface for delaminations, debonding, microcracking and voids using hammer tapping or a chain drag. Remove any additional loose or unsound concrete in accordance with steps 1 through 3.

5. Select a patching material in accordance with Section 9-20.2 that is appropriate for the repair location and thickness. The concrete patching material shall be pumpable or self-consolidating as required for the type of placement that suits the repair. The patching material shall have a minimum compressive strength at least equal to the specified compressive strength of the concrete.

6. Prepare the concrete surface and reinforcing steel in accordance with the patching material manufacturer's recommendations. At a minimum, clean the concrete surfaces (including perimeter edges) and reinforcing steel using oil-free abrasive blasting or high-pressure (minimum 5,000 psi) water blasting. All dirt, dust, loose particles, rust, laitance, oil, film, microcracked/bruised concrete or foreign material of any sort shall be removed. Damage to the epoxy coating on steel reinforcing bars shall be repaired in accordance with Section 6-02.3(24)H.

7. Construct forms if necessary, such as for patching vertical or overhead surfaces or where patching extends to the edge or corner of a placement.

8. When recommended by the patching material manufacturer, saturate the concrete in the repair area and remove any free water at the concrete surface to obtain a saturated surface dry (SSD) substrate. When recommended by the patching material manufacturer, apply a primer, scrub coat or bonding agent to the existing surfaces. Epoxy bonding agents, if used, shall be Type II or Type V in accordance with Section 9-26.1.

9. Place and consolidate the patching material in accordance with the manufacturer's recommendations. Work the material firmly into all surfaces of the repair area with sufficient pressure to achieve proper bond to the concrete.

10. The patching material shall be textured, cured and finished in accordance with the patching material manufacturer's recommendations and/or the requirements for the repaired component. Protect the newly placed patch from vibration in accordance with Section 6-02.3(6)D.

11. When the completed repair does not match the existing concrete color and will be visible to the public, a sand and cement mixture that is color matched to the existing concrete shall be rubbed, brushed, or applied to the surface of the patching material and the concrete.

6-01.10 Utilities Supported by or Attached to Bridges

In the third paragraph, "Federal Standard 595" is revised to read "SAE AMS Standard 595".

6-01.12 Final Cleanup

The second sentence of the first paragraph is revised to read:

> Structure decks shall be clean.

The second paragraph is deleted.

6-02.AP6

Section 6-02, Concrete Structures
April 1, 2019

6-02.1 Description

The first sentence is revised to read:

> This Work consists of the construction of all Structures (and their parts) made of portland cement or blended hydraulic cement concrete with or without reinforcement, including bridge approach slabs.

6-02.2 Materials

In the first paragraph, the references to "Portland Cement" and "Aggregates for Portland Cement Concrete" are revised to read:

Cement	9-01
Aggregates for Concrete	9-03.1

The reference to metakaolin is deleted.

6-02.3(2) Proportioning Materials

The second paragraph is revised to read:

> Unless otherwise specified, the Contractor shall use Type I or II portland cement or blended hydraulic cement in all concrete as defined in Section 9-01.2(1).

The last sentence of the fifth paragraph is revised to read:

> With the Engineer's written concurrence, microsilica fume may be used in all classifications of Class 4000, Class 3000, and commercial concrete and is limited to a maximum of 10 percent of the cementitious material.

6-02.3(2)A Contractor Mix Design

The last sentence of the last paragraph is revised to read:

> For all other concrete, air content shall be a minimum of 4.5 percent and a maximum of 7.5 percent for all concrete placed above the finished ground line unless noted otherwise.

6-02.3(2)A1 Contractor Mix Design for Concrete Class 4000D

Item number 5 of the first paragraph is deleted.

Item number 6 of the first paragraph (after the preceding Amendment is applied) is renumbered to 5.

6-02.3(2)B Commercial Concrete

The second paragraph is revised to read:

> Where concrete Class 3000 is specified for items such as, culvert headwalls, plugging culverts, concrete pipe collars, pipe anchors, monument cases, Type PPB, PS, I, FB and RM signal standards, pedestals, cabinet bases, guardrail anchors, fence post footings, sidewalks, concrete curbs, curbs and gutters, and gutters, the Contractor may use commercial concrete. If commercial concrete is used for sidewalks, concrete curbs, curbs and gutters, and gutters, it shall have a minimum cementitious material content of 564 pounds per cubic yard of concrete, shall be air entrained, and the tolerances of Section 6-02.3(5)C shall apply.

6-02.3(4) Ready-Mix Concrete

The first sentence of the first paragraph is revised to read:

> All concrete, except lean concrete, shall be batched in a prequalified manual, semi-automatic, or automatic plant as described in Section 6-02.3(4)A.

6-02.3(4)D Temperature and Time For Placement

The following is inserted after the first sentence of the first paragraph:

> The upper temperature limit for placement for Class 4000D concrete may be increased to a maximum of 80°F if allowed by the Engineer.

6-02.3(5)C Conformance to Mix Design

Item number 1 of the second paragraph is revised to read:

1. Cement weight plus 5 percent or minus 1 percent of that specified in the mix design.

6-02.3(6)A1 Hot Weather Protection

The first paragraph is revised to read:

The Contractor shall provide concrete within the specified temperature limits. Cooling of the coarse aggregate piles by sprinkling with water is permitted provided the moisture content is monitored, the mixing water is adjusted for the free water in the aggregate and the coarse aggregate is removed from at least 1 foot above the bottom of the pile. Sprinkling of fine aggregate piles with water is not allowed. Refrigerating mixing water or replacing all or part of the mixing water with crushed ice is permitted, provided the ice is completely melted by placing time.

The second sentence of the second paragraph is revised to read:

These surfaces include forms, reinforcing steel, steel beam flanges, and any others that touch the concrete.

6-02.3(7) Vacant

This section, including title, is revised to read:

6-02.3(7) Tolerances

Unless noted otherwise, concrete construction tolerances shall be in accordance with this section. Tolerances in this section do not apply to cement concrete pavement.

Horizontal deviation of roadway crown points, cross-slope break points, and curb, barrier or railing edges from alignment or work line: ±1.0 inch

Deviation from plane: ±0.5 inch in 10 feet

Deviation from plane for roadway surfaces: ±0.25 inch in 10 feet

Deviation from plumb or specified batter: ±0.5 inch in 10 feet, but not to exceed a total of ±1.5 inches

Vertical deviation from profile grade for roadway surfaces: ±1 inch

Vertical deviation of top surfaces (except roadway surfaces): ±0.75 inch

Thickness of bridge decks and other structural slabs not at grade: ±0.25 inch

Length, width and thickness of elements such as columns, beams, crossbeams, diaphragms, corbels, piers, abutments and walls, including dimensions to construction joints in initial placements: +0.5 inch, -0.25 inch

Length, width and thickness of spread footing foundations: +2 inches, -0.5 inch

Horizontal location of the as-placed edge of spread footing foundations: The greater of ±2% of the horizontal dimension of the foundation perpendicular to the edge and ±0.5 inch. However, the tolerance shall not exceed ±2 inches.

Location of opening, insert or embedded item at concrete surface: ±0.5 inch

Cross-sectional dimensions of opening: ±0.5 inch

Bridge deck, bridge approach slab, and bridge traffic barrier expansion joint gaps with a specified temperature range, measured at a stable temperature: ±0.25 inch

Horizontal deviation of centerline of bearing pad, oak block or other bearing assembly: ±0.125 inch

Horizontal deviation of centerline of supported element from centerline of bearing pad, oak block or other bearing assembly ±0.25 inch

Vertical deviation of top of bearing pad, oak block or other bearing assembly: ±0.125 inch

6-02.3(10)C Finishing Equipment

The first paragraph is revised to read:

The finishing machine shall be self-propelled and be capable of forward and reverse movement under positive control. The finishing machine shall be equipped with augers and a rotating cylindrical single or double drum screed. The finishing machine shall have the necessary adjustments to produce the required cross section, line, and grade. The finishing machine shall be capable of raising the screeds, augers, and any other parts of the finishing mechanical operation to clear the screeded surface, and returning to the specified grade under positive control. Unless otherwise allowed by the Engineer, a finishing machine manufacturer technical representative shall be on site to assist the first use of the machine on the Contract.

The first sentence of the second paragraph is revised to read:

For bridge deck widening of 20 feet or less, and for bridge approach slabs, or where jobsite conditions do not allow the use of the conventional configuration finishing machines, or modified conventional machines as described above; the Contractor may submit a Type 2 Working Drawing proposing the use of a hand-operated motorized power screed such as a “Texas” or “Bunyan” screed.

6-02.3(10)D4 Monitoring Bridge Deck Concrete Temperature After Placement

This section, including title, is revised to read:

6-02.3(10)D4 Vacant

6-02.3(10)D5 Bridge Deck Concrete Finishing and Texturing

In the third subparagraph of the first paragraph, the last sentence is revised to read:

The Contractor shall texture the bridge deck surface to within 3-inches minimum and 24-inches maximum of the edge of concrete at expansion joints, within 1-foot minimum

and 2-feet maximum of the curb line, and within 3-inches minimum and 9-inches maximum of the perimeter of bridge drain assemblies.

6-02.3(10)F Bridge Approach Slab Orientation and Anchors

The second to last paragraph is revised to read:

> The compression seal shall be a 2½ inch wide gland and shall conform to Section 9-04.1(4).

The last paragraph is deleted.

6-02.3(13)A Strip Seal Expansion Joint System

In item number 3 of the third paragraph, "Federal Standard 595" is revised to read "SAE AMS Standard 595".

6-02.3(13)B Compression Seal Expansion Joint System

The first paragraph is revised to read:

> Compression seal glands shall conform to Section 9-04.1(4) and be sized as shown in the Plans.

6-02.3(14)C Pigmented Sealer for Concrete Surfaces

This section is supplemented with the following new paragraph:

> Pigmented Sealer Materials shall be a product listed in the current WSDOT Qualified Products List (QPL). If the pigmented sealer material is not listed in the current WSDOT QPL, a sample shall be submitted to the State Materials Laboratory in Tumwater for evaluation and acceptance in accordance with Section 9-08.3.

6-02.3(20) Grout for Anchor Bolts and Bridge Bearings

The second, third and fourth paragraphs are revised to read:

> Grout shall be a workable mix with a viscosity that is suitable for the intended application. Grout shall not be placed outside of the manufacturer recommended range of thickness. The Contractor shall receive concurrence from the Engineer before using the grout.
>
> Field grout cubes and cylinders shall be fabricated and tested in accordance with Section 9-20.3 when requested by the Engineer, but not less than once per bridge pier or once per day.
>
> Before placing grout, the substrate on which it is to be placed shall be prepared as recommended by the manufacturer to ensure proper bonding. The grout shall be cured as recommended by the manufacturer. The grout may be loaded when a minimum of 4,000 psi compressive strength is attained.

The fifth paragraph is deleted.

6-02.3(23) Opening to Traffic

This section is supplemented with the following new paragraph:

> After curing bridge approach slabs in accordance with Section 6-02.3(11), the bridge approach slabs may be opened to traffic when a minimum compressive strength of 2,500 psi is achieved.

6-02.3(24)C Placing and Fastening

This section is revised to read:

The Contractor shall position reinforcing steel as the Plans require and shall ensure that the steel is set within specified tolerances. Adjustments to reinforcing details outside of specified tolerances to avoid interferences and for other purposes are acceptable when approved by the Engineer.

When spacing between bars is 1 foot or more, they shall be tied at all intersections. When spacing is less than 1 foot, every other intersection shall be tied. If the Plans require bundled bars, they shall be tied together with wires at least every 6 feet. All epoxy-coated bars in the top mat of the bridge deck shall be tied at all intersections, however they may be tied at alternate intersections when spacing is less than 1 foot in each direction and they are supported by continuous supports meeting all other requirements of supports for epoxy-coated bars. Other epoxy-coated bars shall also be tied at all intersections, but shall be tied at alternate intersections when spacing is less than 1 foot in each direction. Wire used for tying epoxy-coated reinforcing steel shall be plastic coated. **Tack welding is not permitted on reinforcing steel**.

Abrupt bends in the steel are permitted only when one steel member bends around another. Vertical stirrups shall pass around main reinforcement or be firmly attached to it.

For slip-formed concrete, the reinforcing steel bars shall be tied at all intersections and cross braced to keep the cage from moving during concrete placement. Cross bracing shall be with additional reinforcing steel. Cross bracing shall be placed both longitudinally and transversely.

After reinforcing steel bars are placed in a traffic or pedestrian barrier and prior to slip-form concrete placement, the Contractor shall check clearances and reinforcing steel bar placement. This check shall be accomplished by using a template or by operating the slip-form machine over the entire length of the traffic or pedestrian barrier. All clearance and reinforcing steel bar placement deficiencies shall be corrected by the Contractor before slip-form concrete placement.

Precast concrete supports (or other accepted devices) shall be used to maintain the concrete coverage required by the Plans. The precast concrete supports shall:

1. Have a bearing surface measuring not greater than 2 inches in either dimension, and

2. Have a compressive strength equal to or greater than that of the concrete in which they are embedded.

In slabs, each precast concrete support shall have either: (1) a grooved top that will hold the reinforcing bar in place, or (2) an embedded wire that protrudes and is tied to the reinforcing steel. If this wire is used around epoxy-coated bars, it shall be coated with plastic.

Precast concrete supports may be accepted based on a Manufacturer's Certificate of Compliance.

In lieu of precast concrete supports, the Contractor may use metal or all-plastic supports to hold uncoated bars. Any surface of a metal support that will not be covered by at least ½ inch of concrete shall be one of the following:

1. Hot-dip galvanized after fabrication in keeping with AASHTO M232 Class D;

2. Coated with plastic firmly bonded to the metal. This plastic shall be at least 3⁄32 inch thick where it touches the form and shall not react chemically with the concrete when tested in the State Materials Laboratory. The plastic shall not shatter or crack at or above -5°F and shall not deform enough to expose the metal at or below 200°F; or

3. Stainless steel that meet the requirements of ASTM A493, Type 302. Stainless steel chair supports are not required to be galvanized or plastic coated.

In lieu of precast concrete supports, epoxy-coated reinforcing bars may be supported by one of the following:

1. Metal supports coated entirely with a dielectric material such as epoxy or plastic,

2. Other epoxy-coated reinforcing bars, or

3. All-plastic supports.

Damaged coatings on metal bar supports shall be repaired prior to placing concrete.

All-plastic supports shall be lightweight, non-porous, and chemically inert in concrete. All-plastic supports shall have rounded seatings, shall not deform under load during normal temperatures, and shall not shatter or crack under impact loading in cold weather. All-plastic supports shall be placed at spacings greater than 1 foot along the bar and shall have at least 25 percent of their gross place area perforated to compensate for the difference in the coefficient of thermal expansion between plastic and concrete. The shape and configuration of all-plastic supports shall permit complete concrete consolidation in and around the support.

A “mat” is two adjacent and perpendicular layers of reinforcing steel. In bridge decks, top and bottom mats shall be supported adequately enough to hold both in their proper positions. If bar supports directly support, or are directly supported on No. 4 bars, they shall be spaced at not more than 3-foot intervals (or not more than 4-foot intervals for bars No. 5 and larger). Wire ties to girder stirrups shall not be considered as supports. To provide a rigid mat, the Contractor shall add other supports and tie wires to the top mat as needed.

Unless noted otherwise, the minimum concrete cover for main reinforcing bars shall be:

3 inches to a concrete surface deposited against earth without intervening forms.

2½ inches to the top surface of a concrete bridge deck or bridge approach slab.

2 inches to a concrete surface when not specified otherwise in this section or in the Contract documents.

1½ inches to a concrete barrier or curb surface.

Except for top cover in bridge decks and bridge approach slabs, minimum concrete cover to ties and stirrups may be reduced by ½ inch but shall not be less than 1 inch. Minimum concrete cover shall also be provided to the outermost part of mechanical splices and headed steel reinforcing bars.

Reinforcing steel bar location, concrete cover and clearance shall not vary more than the following tolerances from what is specified in the Contract documents:

Reinforcing bar location for members 12 inches or less in thickness: ±0.25 inch

Reinforcing bar location for members greater than 12 inches in thickness: ±0.375 inch

Reinforcing bar location for bars placed at equal spacing within a plane: the greater of either ±1 inch or ±1 bar diameter within the plane. The total number of bars shall not be fewer than that specified.

The clearance between reinforcement shall not be less than the greater of the bar diameter or 1 inch for unbundled bars. For bundled bars, the clearance between bundles shall not be less than the greater of 1 inch or a bar diameter derived from the equivalent total area of all bars in the bundle.

Longitudinal location of bends and ends of bars: ±1 inch

Embedded length of bars and length of bar lap splices:

No. 3 through No. 11: -1 inch

No. 14 through No. 18: -2 inches

Concrete cover measured perpendicular to concrete surface (except for the top surface of bridge decks, bridge approach slabs and other roadway surfaces): ±0.25 inch

Concrete cover measured perpendicular to concrete surface for the top surface of bridge decks, bridge approach slabs and other roadway surfaces: +0.25 inch, -0 inch

Before placing any concrete, the Contractor shall:

1. Clean all mortar from reinforcement, and

2. Obtain the Engineer's permission to place concrete after the Engineer has inspected the placement of the reinforcing steel. (Any concrete placed without the Engineer's permission shall be rejected and removed.)

6-02.3(25)H Finishing

The last paragraph is revised to read:

The Contractor may repair defects in prestressed concrete girders in accordance with Section 6-01.16.

6-02.3(25)I Fabrication Tolerances

Item number 12 of the first paragraph is revised to read:

12. Stirrup Projection from Top of Girder:

    Wide flange thin deck and slab girders: ± ½ inch

    All other girders: ± ¾ inch

6-02.3(27) Concrete for Precast Units

The last sentence of the first paragraph is revised to read:

Type III portland cement or blended hydraulic cement is permitted to be used in precast concrete units.

6-02.3(28)B Casting

In the second paragraph, the reference to Section 6-02.3(25)B is revised to read Section 6-02.3(25)C.

6-02.3(28)D Contractors Control Strength

In the first paragraph, "WSDOT FOP for AASHTO T 23" is revised to read "FOP for AASHTO T 23".

6-02.3(28)E Finishing

This section is supplemented with the following:

The Contractor may repair defects in precast panels in accordance with Section 6-01.16.

6-03.AP6

Section 6-03, Steel Structures
January 7, 2019
6-03.2 Materials

In the first paragraph, the material reference for Paints is revised to read:

Paints and Related Materials 9-08

6-03.3(25)A3 Ultrasonic Inspection

The first paragraph (up until the colon) is revised to read:

Complete penetration groove welds on plates 5/16 inch and thicker in the following welded assemblies or Structures shall be 100 percent ultrasonically inspected:

6-03.3(33) Bolted Connections

The first paragraph is supplemented with the following:

After final tightening of the fastener components, the threads of the bolts shall at a minimum be flush with the end of the nut.

The following is inserted after the third sentence of the fourth paragraph:

When galvanized bolts are specified, tension-control galvanized bolts are not permitted.

6-05.AP6

Section 6-05, Piling
January 2, 2018
6-05.3(9)A Pile Driving Equipment Approval

The fourth sentence of the second paragraph is revised to read:

> For prestressed concrete piles, the allowable driving stress in kips per square inch shall be $0.095 \cdot \sqrt{f'_c}$ plus prestress in tension, and $0.85f'_c$ minus prestress in compression, where f'_c is the concrete compressive strength in kips per square inch.

6-07.AP6

Section 6-07, Painting
January 7, 2019
6-07.1 Description

The first sentence is revised to read:

> This work consists of containment, surface preparation, shielding adjacent areas from work, testing and disposing of debris, furnishing and applying paint, and cleaning up after painting is completed.

6-07.2 Materials

The material reference for Paint is revised to read:

Paint and Related Materials	9-08

6-07.3(1)A Work Force Qualifications for Shop Application of Paint

This section is supplemented with the following new sentence:

> The work force may be accepted based on the approved facility.

6-07.3(1)B Work Force Qualifications for Field Application of Paint

The first two paragraphs are revised to read:

> The Contractor preparing the surface and applying the paint shall be certified under SSPC-QP 1 or NACE International Institute Contractor Accreditation Program (NIICAP) AS 1.
>
> The Contractor removing and otherwise disturbing existing paint containing lead and other hazardous materials shall be certified under SSPC-QP 2, Category A or NIICAP AS 2.

The third paragraph (up until the colon) is revised to read:

> In lieu of the above SSPC or NIICAP certifications, the Contractor performing the specified work shall complete both of the following actions:

Item number 2 of the third paragraph is revised to read:

2. The Contractor's quality control inspector(s) for the project shall be NACE-certified CIP Level 3 or SSPC Protective Coating Inspector (PCI) Level 3.

6-07.3(2) Submittals

The first paragraph is supplemented with the following:

Each component of the plan shall identify the specification section it represents.

6-07.3(2)B Contractor's Quality Control Program Submittal Component

The numbered list in the first paragraph is revised to read:

1. Description of the inspection procedures, tools, techniques and the acceptance criteria for all phases of work.

2. Procedure for implementation of corrective action for non-conformance work.

3. The paint system manufacturer's recommended methods of preventing defects.

4. The Contractor's frequency of quality control inspection for each phase of work.

5. Example of each completed form(s) of the daily quality control report used to document the inspection work and tests performed by the Contractor's quality control personnel.

6-07.3(2)C Paint System Manufacturer and Paint System Information Submittal Component

Item number 1 is revised to read:

1. Product data sheets and Safety Data Sheets (SDS) on the paint materials, paint preparation, and paint application, as specified by the paint manufacturer, including:

    a. All application instructions, including the mixing and thinning directions.

    b. Recommended spray nozzles and pressures.

    c. Minimum and maximum drying time between coats.

    d. Restrictions on temperature and humidity.

    e. Repair procedures for shop and field applied coatings.

    f. Maximum dry film thickness for each coat.

    g. Minimum wet film thickness for each coat to achieve the specified minimum dry film thickness.

6-07.3(2)D Hazardous Waste Containment, Collection, Testing, and Disposal Submittal Component

The first paragraph (up until the colon) is revised to read:

The hazardous waste containment, collection, testing, and disposal shall meet all Federal and State requirements, and the submittal component of the painting plan shall include the following:

6-07.3(2)E Cleaning and Surface Preparation Submittal Component

Item 1(b) of the first paragraph is revised to read::

b. Type, manufacturer, and brand of abrasive blast material and all associated additives, including Safety Data Sheets (SDS).

6-07.3(3)B Quality Control and Quality Assurance for Field Application of Paint

The last sentence of the first paragraph (excluding the numbered list) is revised to read:

The Contractor's quality control operations shall include a minimum monitoring and documenting the following for each working day:

Item number 1 in the fourth paragraph is revised to read:

1. Environmental conditions for painting in accordance with ASTM E 337.

Item number 4 in the fourth paragraph is revised to read:

4. Pictorial of surface preparation guides in accordance with SSPC-VIS 1, 3, 4, and 5.

Item number 5 in the fourth paragraph is revised to read:

5. Surface profile by Keanne-Tator comparator in accordance with ASTM D 4417 and SSPC PA17.

6-07.3(4) Paint System Manufacturer's Technical Representative

This section is revised to read:

The paint system manufacturer's representative shall be present at the jobsite for the pre-painting conference and for the first day of paint application, and shall be available to the Contractor and Contracting Agency for consultation for the full project duration.

6-07.3(5) Pre-Painting Conference

The second paragraph is revised to read:

If the Contractor's key personnel change between any work operations, an additional conference shall be held if requested by the Engineer.

6-07.3(6)A Paint Containers

In item number 2 of the first paragraph, "Federal Standard 595" is revised to read "SAE AMS Standard 595".

6-07.3(6)B Paint Storage

Item number 2 of the second paragraph is revised to read:

2. The Contractor shall monitor and document daily the paint material storage facility with a high-low recording thermometer device.

6-07.3(7) Paint Sampling and Testing

The first two paragraphs are revised to read:

The Contractor shall provide the Engineer 1 quart of each paint representing each lot. Samples shall be accompanied with a Safety Data Sheet.

If the quantity of paint required for each component of the paint system for the entire project is 20 gallons or less, then the paint system components will be accepted as specified in Section 9-08.1(7).

6-07.3(8)A Paint Film Thickness Measurement Gages

The first paragraph is revised to read:

Paint dry film thickness measurements shall be performed with either a Type 1 pull-off gage or a Type 2 electronic gage as specified in SSPC Paint Application Specification No. 2, Procedure for Determining Conformance to Dry Coating Thickness Requirements.

6-07.3(9) Painting New Steel Structures

The last sentence of the second paragraph is revised to read:

Welded shear connectors are not required to painted.

The last paragraph is revised to read:

Temporary attachments or supports for scaffolding, containment or forms shall not damage the paint system.

6-07.3(9)A Paint System

The first paragraph is revised to read:

The paint system applied to new steel surfaces shall consist of the following:

Option 1 (component based paint system):

Primer Coat – Inorganic Zinc Rich	9-08.1(2)C
Intermediate Coat – Moisture Cured Polyurethane	9-08.1(2)G
Intermediate Stripe Coat – Moisture Cured Polyurethane	9-08.1(2)G
Top Coat – Moisture Cured Polyurethane	9-08.1(2)H

Option 2 (performance based paint system):

Primer Coat – Inorganic Zinc Rich	9-08.1(2)M
Intermediate Coat – Epoxy	9-08.1(2)M
Intermediate Stripe Coat – Epoxy	9-08.1(2)M
Top Coat – Polyurethane	9-08.1(2)M

The following new paragraph is inserted after the first paragraph:

Paints and related materials shall be products listed in the current WSDOT Qualified Products List (QPL). Component based paint systems shall be listed on the QPL in the applicable sections of Section 9-08. Performance based systems shall be listed on the

current Northeast Protective Coatings Committee (NEPCOAT) Qualified Products List "A" as listed on the WSDOT QPL in Section 9-08.1(2)M. If the paint and related materials for the component based system is not listed in the current WSDOT QPL, a sample shall be submitted to the State Materials Laboratory in Tumwater for evaluation and acceptance in accordance with Section 9-08.

6-07.3(9)C Mixing and Thinning Paint

This section is revised to read:

The Contractor shall thoroughly mix paint in accordance with the manufacturer's written recommendations and by mechanical means to ensure a uniform and lump free composition. Paint shall not be mixed by means of air stream bubbling or boxing. Paint shall be mixed in the original containers and mixing shall continue until all pigment or metallic powder is in suspension. Care shall be taken to ensure that the solid material that has settled to the bottom of the container is thoroughly dispersed. After mixing, the Contractor shall inspect the paint for uniformity and to ensure that no unmixed pigment or lumps are present.

Catalysts, curing agents, hardeners, initiators, or dry metallic powders that are packaged separately may be added to the base paint in accordance with the paint manufacturer's written recommendations and only after the paint is thoroughly mixed to achieve a uniform mixture with all particles wetted. The Contractor shall then add the proper volume of curing agent to the correct volume of base and mix thoroughly. The mixture shall be used within the pot life specified by the manufacturer. Unused portions shall be discarded at the end of each work day. Accelerants are not permitted except as allowed by the Engineer.

The Contractor shall not add additional thinner at the application site except as allowed by the Engineer. The amount and type of thinner, if allowed, shall conform to the manufacturer's specifications. If recommended by the manufacturer and allowed by the Engineer, a measuring cup shall be used for the addition of thinner to any paint with graduations in ounces. No un-measured addition of thinner to paint will be allowed. Any paint found to be thinned by unacceptable methods will be rejected.

When recommended by the manufacturer, the Contractor shall constantly agitate paint during application by use of paint pots equipped with mechanical agitators.

The Contractor shall strain all paint after mixing to remove undesirable matter, but without removing the pigment or metallic powder.

Paint shall be stored and mixed in a secure, contained location to eliminate the potential for spills into State waters and onto the ground and highway surfaces.

6-07.3(9)D Coating Thickness

This section is revised to read:

Dry film thickness shall be measured in accordance with SSPC Paint Application Specification No. 2, *Procedure for Determining Conformance to Dry Coating Thickness Requirements*.

The minimum dry film thickness of the primer coat shall not be less than 2.5 mils.

The minimum dry film thickness of each coat (combination of intermediate and intermediate stripe, and top) shall be not less than 3.0 mils.

The dry film thickness of each coat shall not be thicker than the paint manufacturer's recommended maximum thickness.

The minimum wet film thickness of each coat shall be specified by the paint manufacturer to achieve the minimum dry film thickness.

Film thickness, wet and dry, will be measured by gages conforming to Section 6-07.3(8)A.

Wet measurements will be taken immediately after the paint is applied in accordance with ASTM D4414. Dry measurements will be taken after the coating is dry and hard in accordance with SSPC Paint Application Specification No. 2.

Each painter shall be equipped with wet film thickness gages and shall be responsible for performing frequent checks of the paint film thickness throughout application.

Coating thickness measurements may be made by the Engineer after the application of each coat and before the application of the succeeding coat. In addition, the Engineer may inspect for uniform and complete coverage and appearance. One hundred percent of all thickness measurements shall meet or exceed the minimum wet film thickness. In areas where wet film thickness measurements are impractical, dry film thickness measurements may be made. If a question arises about an individual coat's thickness or coverage, it may be verified by the use of a Tooke gage in accordance with ASTM D4138.

If the specified number of coats does not produce a combined dry film thickness of at least the sum of the thicknesses required per coat, if an individual coat does not meet the minimum thickness, or if visual inspection shows incomplete coverage, the coating system will be rejected and the Contractor shall discontinue painting and surface preparation operations and shall submit a Type 2 Working Drawing of the repair proposal. The repair proposal shall include documentation demonstrating the cause of the less-than-minimum thickness, along with physical test results, as necessary, and modifications to Work methods to prevent similar results. The Contractor shall not resume painting or surface preparation operations until receiving the Engineer's acceptance of the completed repair.

6-07.3(9)E Surface Temperature Requirements Prior to Application of Paint

This section, including title, is revised to read:

6-07.3(9)E Environmental Condition Requirements Prior to Application of Paint

Paint shall be applied only during periods when:

1. Air and steel temperatures are in accordance with the paint manufacturer's recommendations but in no case less than 35°F nor greater than 115°F.

2. Steel surface temperature is a minimum of 5°F above the dew point.

3. Steel surface is not wet.

4. Relative humidity is within the manufacturer's recommended range.

5. The anticipated ambient temperature will remain above 35°F or the manufacturer's minimum temperature, whichever is greater, during the paint drying and curing period.

Application will not be allowed if conditions are not favorable for proper application and performance of the paint.

Paint shall not be applied when weather conditions are unfavorable to proper curing. If a paint system manufacturer's recommendations allow for application of a paint under environmental conditions other than those specified, the Contractor shall submit a Type 2 Working Drawing consisting of a letter from the paint manufacturer specifying the environmental conditions under which the paint can be applied. Application of paint under environmental conditions other than those specified in this section will not be allowed without the Engineer's concurrence.

6-07.3(9)F Shop Surface Cleaning and Preparation

The last sentence is revised to read:

The entire steel surface to be painted, including surfaces specified in Section 6-07.3(9)G to receive a mist coat of primer, shall be cleaned to a near white condition in accordance with SSPC-SP 10, *Near-white Metal Blast Cleaning*, and shall be in this condition immediately prior to paint application.

6-07.3(9)G Application of Shop Primer Coat

The first paragraph is supplemented with the following:

Repairs of the shop primer coat shall be prepared in accordance with the painting plan. Shop primer coat repair paint shall be selected from the approved component based or performance based paint system in accordance with Section 6-07.3(10)H.

6-07.3(9)H Containment for Field Coating

This section is revised to read:

The Contractor shall use a containment system in accordance with Section 6-07.3(10)A for surface preparation and prime coating of all uncoated areas remaining, including bolts, nuts, washers, and splice plates.

During painting operations of the intermediate, stripe and top coats the Contractor shall furnish, install, and maintain drip tarps below the areas to be painted to contain all spilled paint, buckets, brushes, and other deleterious material, and prevent such materials from reaching the environment below or adjacent to the structure being painted. Drip tarps shall be absorbent material and hung to minimize puddling. The Contractor shall evaluate the project-specific conditions to determine the specific type and extent of containment needed to control the paint emissions and shall submit a containment plan in accordance with Section 6-07.3(2).

6-07.3(9)I Application of Field Coatings

This section is revised to read:

An on-site supervisor shall be present for each work shift at the bridge site.

Upon completion of erection Work, all uncoated or damaged areas remaining, including bolts, nuts, washers, and splice plates, shall be prepared in accordance with Section 6-07.3(9)F, followed by a field primer coat of a zinc-rich primer and final coats of paint selected from the approved component or performance based paint system in accordance with Section 6-07.3(10)H. . The intermediate, intermediate stripe, and top coats shall be applied in accordance with the manufacturer's written recommendations.

Upon completion of erection Work, welds for steel column jackets may be prepared in accordance with SSPC-SP 15, Commercial Grade Power Tool Cleaning.

The minimum drying time between coats shall be as shown in the product data sheets, but not less than 12 hours. The Contractor shall determine whether the paint has cured sufficiently for proper application of succeeding coats.

The maximum time between intermediate and top coats shall be in accordance with the manufacturer's written recommendations. If the maximum time between coats is exceeded, all newly coated surfaces shall be prepared to SSPC-SP 7, *Brush-off Blast Cleaning*, and shall be repainted with the same paint that was cleaned, at no additional cost to the Contracting Agency.

Each coat shall be applied in a uniform layer, completely covering the preceding coat. The Contractor shall correct runs, sags, skips, or other deficiencies before application of succeeding coats. Such corrective work may require re-cleaning, application of additional paint, or other means as determined by the Engineer, at no additional cost to the Contracting Agency.

Dry film thickness measurements will be made in accordance with Section 6-07.3(9)D.

All paint damage that occurs shall be repaired in accordance with the manufacturer's written recommendations. On bare areas or areas of insufficient primer thickness, the repair shall include field-applied zinc-rich primer and the final coats of paint selected from the approved component or performance based paint system in accordance with Section 6-07.3(10)H. On areas where the primer is at least equal to the minimum required dry film thickness, the repair shall include the application of the final two coats of the paint system. All paint repair operations shall be performed by the Contractor at no additional cost or time to the Contracting Agency.

6-07.3(10)A Containment

The first sentence of the third paragraph is revised to read:

Emissions shall be assessed by Visible Emission Observations (Method A) in SSPC Technology Update No. 7, *Conducting Ambient Air, Soil, and Water Sampling of Surface Preparation and Paint Disturbance Activities*, Section 6.2 and shall be limited to the Level A Acceptance Criteria Option Level 0 Emissions standard.

6-07.3(10)D Surface Preparation Prior to Overcoat Painting

The first paragraph is revised to read:

> The Contractor shall remove any visible oil, grease, and road tar in accordance with SSPC-SP 1, *Solvent Cleaning*.

The second paragraph is revised to read:

> Following any preparation by SSPC-SP1, all steel surfaces to be painted shall be prepared in accordance with SSPC-SP 7, *Brush-off Blast Cleaning*. Surfaces inaccessible to brush-off blast shall be prepared in accordance with SSPC-SP 3, *Power Tool Cleaning*, as allowed by the Engineer.

The first sentence of the third paragraph is revised to read:

> Following brush-off blast cleaning, the Contractor shall perform spot abrasive blast cleaning in accordance with SSPC-SP 6, *Commercial Blast Cleaning*.

The second to last sentence of the third paragraph is revised to read:

> For small areas, as allowed by the Engineer, the Contractor may substitute cleaning in accordance with SSPC-SP 15, *Commercial Grade Power Tool Cleaning*.

6-07.3(10)G Treatment of Pack and Rust Gaps

The second paragraph is revised to read:

> Pack rust forming a gap between steel surfaces of $\frac{1}{16}$ to ¼ inch shall be cleaned to a depth of at least one half of the gap width. The gaps shall be cleaned and prepared in accordance with SSPC-SP6. The cleaned gap shall be treated with rust penetrating sealer, prime coated, and then caulked to form a watertight seal along the top edge and the two sides of the steel pieces involved, using the rust penetrating sealer and caulk as accepted by the Engineer. The bottom edge or lowest edge of the steel pieces involved shall not be caulked.

The third paragraph is supplemented with the following:

> Caulk shall be a single-component urethane sealant conforming to Section 9-08.7.

The fifth paragraph is revised to read:

> At locations where gaps between steel surfaces exceed ¼ inch, the Contractor shall clean and prepare the gap in accordance SSPC-SP6, apply the rust penetrating sealer, apply the prime coat, and then fill the gap with foam backer rod material as accepted by the Engineer. The foam backer rod material shall be of sufficient diameter to fill the crevice or gap. The Contractor shall apply caulk over the foam backer rod material to form a watertight seal.

This section is supplemented with the following new paragraph:

> Caulk and backer rod, if needed, shall be placed prior to applying the top coat. The Contractor, with the concurrence of the Engineer, may apply the rust penetrating sealer after application of the prime coat provided the primer is removed in the areas to be

sealed. The areas to be sealed shall be re-cleaned and re-prepared in accordance with SSPC-SP6.

6-07.3(10)H Paint System

The first paragraph is revised to read:

The paint system applied to existing steel surfaces shall consist of the following five-coat system:

Option 1 (component based system):

Primer Coat – Zinc-filled Moisture Cured Polyurethane	9-08.1(2)F
Primer Stripe Coat - Moisture Cured Polyurethane	9-08.1(2)F
Intermediate Coat - Moisture Cured Polyurethane	9-08.1(2)G
Intermediate Stripe Coat - Moisture Cured Polyurethane	9-08.1(2)G
Top Coat - Moisture Cured Polyurethane	9-08.1(2)H

Option 2 (performance based system):

Primer Coat – Zinc-rich Epoxy	9-08.1(2)N
Primer Stripe Coat – Epoxy	9-08.1(2)N
Intermediate Coat – Epoxy	9-08.1(2)N
Intermediate Stripe Coat – Epoxy	9-08.1(2)N
Top Coat – Polyurethane	9-08.1(2)N

The following new paragraph is inserted after the first paragraph:

Paints and related materials shall be a product listed in the current WSDOT Qualified Products List (QPL). Component based paint systems shall be listed on the QPL in the applicable sections of Section 9-08. Performance based systems shall be listed on the current Northeast Protective Coatings Committee (NEPCOAT) Qualified Products List "B" as listed on the WSDOT QPL in Section 9-08.1(2)N. If the paint and related material for the component based system is not listed in the current WSDOT QPL, a sample shall be submitted to the State Materials Laboratory in Tumwater for evaluation and acceptance in accordance with Section 9-08.

6-07.3(10)J Mixing and Thinning Paint

This section is revised to read:

Mixing and thinning paint shall be in accordance with Section 6-07.3(9)C.

6-07.3(10)K Coating Thickness

This section is revised to read:

Coating thickness shall be in accordance with Section 6-07.3(9)D except the minimum dry film thickness of each coat (combination of primer and primer stripe, combination of intermediate and intermediate stripe, and top) shall not be less than 3.0 mils.

6-07.3(10)L Environmental Condition Requirements Prior to Application of Paint

This section is revised to read:

Environmental conditions shall be in accordance with Section 6-07.3(9)E.

6-07.3(10)M Steel Surface Condition Requirements Prior to Application of Paint

The third paragraph is revised to read:

> Edges of existing paint shall be feathered in accordance with SSPC-PA 1, *Shop, Field, and Maintenance Coating of Metals*, Note 15.20.

6-07.3(10)N Field Coating Application Methods

The third sentence is revised to read:

> The Contractor may apply stripe coat paint using spray or brush but shall follow spray application using a brush to ensure complete coverage around structural geometric irregularities and to push the paint into gaps between existing steel surfaces and around rivets and bolts.

6-07.3(10)O Applying Field Coatings

The second to last paragraph is revised to read:

> Each application of primer, primer stripe, intermediate, intermediate stripe, and top coat shall be considered as separately applied coats. The Contractor shall not use a preceding or subsequent coat to remedy a deficiency in another coat. The Contractor shall apply the top coat to at least the minimum specified top coat thickness, to provide a uniform appearance and consistent finish coverage.

6-07.3(10)P Field Coating Repair

The second sentence is revised to read:

> Repair areas shall be cleaned of all damaged paint and the system reapplied using all coats typical to the paint system and shall meet the minimum coating thickness.

6-07.3(11)A Painting of Galvanized Surfaces

This section is revised to read:

> All galvanized surfaces receiving paint shall be prepared for painting in accordance with the ASTM D 6386. The method of preparation shall be brush-off in accordance with SSPC-SP16 *Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals* or as otherwise allowed by the Engineer. The Contractor shall not begin painting until receiving the Engineer's acceptance of the prepared galvanized surface. For galvanized bolts used for replacement of deteriorated existing rivets, the Contractor, with the concurrence of the Engineer and after successful demonstration testing, may prepare galvanized surfaces in accordance with SSPC-SP1 followed by SSPC-SP2, *Hand Tool Cleaning* or SSPC-SP3, *Power Tool Cleaning*. The demonstration testing shall include adhesion testing of the first coat of paint over galvanized bolts, nuts, and washers or a representative galvanized surface. Adhesion testing shall be performed in accordance with ASTM D 4541 for 600 psi minimum adhesion. A minimum of 3 successful tests shall be performed on the galvanized surface prepared and painted using the same methods and materials to be used on the galvanized bolts, nuts and washers in the field.

6-07.3(11)A2 Paint Coat Materials

This section is revised to read:

The Contractor shall paint the dry surface as follows:

1. The first coat over a galvanized surface shall be an epoxy polyamide conforming to Section 9-08.1(2)E . In the case of galvanized bolts used for replacement of deteriorated existing rivets and for small surface areas less than or equal to one square foot, an intermediate moisture cured polyurethane conforming to Section 9-08.1(2)G may be used as a first coat. In both cases the first coat shall be compatible with galvanizing and as recommended by the top coat manufacturer.

2. The second coat shall be a top coat moisture cured aliphatic polyurethane conforming to Section 9-08.1(2)H or a top coat polyurethane conforming to Section 6-07.3(10)H Option 2 NEPCOAT performance based paint specification compatible with the first coat as recommended by the manufacturer.

Each coat shall be dry before the next coat is applied. All coats applied in the shop shall be dried hard before shipment.

6-07.3(11)B Powder Coating of Galvanized Surfaces

This section is revised to read:

Powder coating of galvanized surfaces shall consist of the following coats:

1. The first coat shall be an epoxy powder primer coat conforming to Section 9-08.2.

2. The second coat shall be a polyester finish coat conforming to Section 9-08.2.

6-07.3(11)B3 Galvanized Surface Cleaning and Preparation

The first three paragraphs are revised to read:

Galvanized surfaces receiving the powder coating shall be cleaned and prepared for coating in accordance with ASTM D 7803, and the project-specific powder coating plan.

Assemblies conforming to the ASTM D 7803 definition for newly galvanized steel shall receive surface smoothing and surface cleaning in accordance with ASTM D 7803, Section 5, and surface preparation in accordance with ASTM D 7803, Section 5.1.3.

Assemblies conforming to the ASTM D 7803 definition for partially weathered galvanized steel shall be checked and prepared in accordance with ASTM D 7803, Section 6, before then receiving surface smoothing and surface cleaning in accordance with ASTM D 7803, Section 5, and surface preparation in accordance with ASTM D 7803, Section 5.1.3.

The fourth paragraph (up until the colon) is revised to read:

Assemblies conforming to the ASTM D 7803 definition for weathered galvanized steel shall be prepared in accordance with ASTM D 7803, Section 7 before then receiving surface smoothing and surface cleaning in accordance with ASTM D 7803, Section 5,

and surface preparation in accordance with ASTM D 7803, Section 5.3 except as follows:

6-07.3(11)B5 Testing

Item number 4 in the first paragraph is revised to read:

4. Adhesion testing in accordance with ASTM D 4541 for 600 psi minimum adhesion for the complete two-component system.

The second sentence of the fourth paragraph is revised to read:

Rejected assemblies shall be repaired or recoated by the Contractor, at no additional expense to the Contracting Agency, in accordance with the powder coating manufacturer's recommendation as detailed in the project-specific powder coating plan, until the assemblies satisfy the acceptance testing requirements.

6-07.3(12) Painting Ferry Terminal Structures

This section is revised to read:

Painting of ferry terminal Structures shall be in accordance with Section 6-07.3 as supplemented below.

This section is supplemented with the following new subsections:

6-07.3(12)A Painting New Steel Ferry Terminal Structures

Painting of new steel Structures shall be in accordance with Section 6-07.3(9) except that all coatings (primer, intermediate, intermediate stripe, and top) shall be applied in the shop with the following exceptions:

1. Steel surfaces to be field welded.

2. Steel surfaces to be greased.

3. The length of piles designated in the Plans not requiring painting.

The minimum drying time between coats shall be as shown in the product data sheets, but not less than 12 hours. The Contractor shall determine whether the paint has cured sufficiently for proper application of succeeding coats.

6-07.3(12)A1 Paint Systems

Paint systems for Structural Steel, which includes vehicle transfer spans and towers, pedestrian overhead loading structures and towers, upland structural steel and other elements as designated in the Special Provisions shall be as specified in Section 6-07.3(9)A.

Paint systems for Piling, Landing Aids and Life Ladders shall be as specified in the Special Provisions.

6-07.3(12)A2 Paint Color

Paint colors shall be as specified in the Special Provisions.

6-07.3(12)A3 Coating Thickness
Coating thicknesses shall be as specified in the Special Provisions.

6-07.3(12)A4 Application of Field Coatings
An on-site supervisor shall be present for each work shift at the project site.

Upon completion of erection Work, all uncoated or damaged areas remaining, including bolts, nuts, washers, splice plates, and field welds shall be prepared in accordance with SSPC-SP 1, Solvent Cleaning, followed by SSPC-SP 11, *Power Tool Cleaning to Bare Metal*. Surface preparation shall be measured according to SSPC-VIS 3. SSPC-SP 11 shall be performed for a minimum distance of 1 inch from the uncoated or damaged area. In addition, intact shop-applied coating surrounding the area shall be abraded or sanded for a distance of 6 inches out from the properly prepared clean/bare metal areas to provide adequate roughness for application of field coatings. All sanding dust and contamination shall be removed prior to application of field coatings.

Field applied paint for Structural Steel shall conform to Section 6-07.3(10)H, as applicable. Field applied paint for Piling, Landing Aids and Life Ladders shall be as specified in the Special Provisions.

For areas above the tidal zone, the minimum drying time between coats shall be as shown in the product data sheets, but not less than 12 hours. For areas within the tidal zone, the minimum drying time between coats shall be as recommended by the paint system manufacturer. The Contractor shall determine whether the paint has cured sufficiently for proper application of succeeding coats.

The maximum time between intermediate and top coats shall be in accordance with the manufacturer's written recommendations. If the maximum time between coats is exceeded, all newly coated surfaces shall be prepared to SSPC-SP 3, *Power Tool Cleaning*, and shall be repainted with the same paint that was cleaned, at no additional cost to the Contracting Agency.

Each coat shall be applied in a uniform layer, completely covering the preceding coat. The Contractor shall correct runs, sags, skips, or other deficiencies before application of succeeding coats. Such corrective work may require re-cleaning, application of additional paint, or other means as determined by the Engineer, at no additional cost to the Contracting Agency.

Surface preparation for underwater locations shall consist of removing all dirt, oil, grease, loose paint, loose rust, and marine growth from the area that is to be repaired. The sound paint surrounding the damaged area shall be roughened to meet the requirements of the manufacturer. Paint for underwater applications shall be as specified in the Special Provisions and shall be applied in accordance with the manufacturer's recommendations.

6-07.3(12)B Painting Existing Steel Ferry Terminal Structures
Painting of existing steel structures shall be in accordance with Section 6-07.3(10) as supplemented by the following.

6-07.3(12)B1 Containment
Containment for full removal shall be in accordance with Section 6-07.3(10)A. Containment for overcoat systems shall be in accordance with all applicable Permits as required in the Special Provisions.

Prior to cleaning the Contractor shall enclose all exposed electrical and mechanical equipment to seal out dust, water, and paint. Non-metallic surfaces shall not be abrasive blasted or painted. Unless otherwise specified, the following metallic surfaces shall not be painted and shall be protected from abrasive blasting and painting:

1. Galvanized and stainless steel surfaces not previously painted,
2. Non-skid surfaces,
3. Unpainted intentionally greased surfaces,
4. Equipment labels, identification plates, tags, etc.,
5. Fire and emergency containers or boxes,
6. Mechanical hardware such as hoist sheaves, hydraulic cylinders, gear boxes, wire rope, etc.

The Contractor shall submit a Type 2 Working Drawing consisting of materials and equipment used to shield components specified to not be cleaned and painted. The Contractor shall shut off the power prior to working around electrical equipment. The Contractor shall follow the lock-out/tag-out safety provisions of the WAC 296-803 and all other applicable safety standards.

6-07.3(12)B2 Surface Preparation
For applications above high water and within the tidal zone, surface preparation for overcoat painting shall be in accordance with SSPC-SP 1, *Solvent Cleaning*, followed by SSPC-SP 3, *Power Tool Cleaning*. Use of wire brushes is not allowed. After SP 3 cleaning has been completed all surfaces exhibiting coating failure down to the steel substrate, and those exhibiting visible corrosion, shall be prepared down to clean bare steel in accordance with SSPC-SP 15, Commercial Grade *Power Tool Cleaning*. Surface preparation shall be measured according to SSPC-VIS 3. SSPC-SP 15 shall be performed for a minimum distance of 1 inch from the area exhibiting failure or visible corrosion. In addition, intact shop-applied coating surrounding the repair area shall be abraded or sanded for a distance of 6 inches out from the properly prepared clean/bare metal areas to provide adequate roughness for application of repair coatings. All sanding dust and contamination shall be removed prior to application of repair coatings. Surface preparation for full paint removal shall be in accordance with Section 6-07.3(10)E except SSPC-SP 11 will be permitted as detailed in the Contractor's painting plan and as allowed by the Engineer.

Surface preparation for underwater locations shall consist of removing all dirt, oil, grease, loose paint, loose rust, and marine growth from the area that is to be repaired. The sound paint surrounding the damaged area shall be roughened as required by the coating manufacturer.

Removed marine growth may be released to state waters provided the marine growth is not mixed with contaminants (paint, oil, rust, etc.) and it shall not accumulate on the sea bed. All marine growth containing contaminants shall be collected for proper disposal.

Surface preparation for the underside of bridge decks (consisting of either a steel grid system of main bars or tees and a light gauge metal form, in-filled with concrete or a corrugated light gauge metal form, infilled with concrete) shall be in accordance with SSPC-SP 2, *Hand Tool Cleaning* or SSPC-SP 3, *Power Tool Cleaning* with the intent of not causing further damage to the light gauge metal form. Following removal of any pack rust and corroded sections from the underside of the bridge deck, cleaning and flushing to remove salts and prior to applying the primer coat, the Contractor shall seal the entire underside of the deck system with rust-penetrating sealer. Damage to galvanized metal forms and/or grids shall be repaired in accordance with ASTM A 780, with the preferred method of repair using paints containing zinc dust.

6-07.3(12)B3 Paint Systems
Paints systems for Structural Steel, which includes vehicle transfer spans and towers, pedestrian overhead loading structures and towers, upland structural steel and other elements as designated in the Special Provisions shall be as specified in Section 6-07.3(10)H.

Paint systems for Piling, Landing Aids, Life Ladders, underside of vehicle transfer span bridge decks, non-skid surface treated areas, and anti-graffiti coatings shall be as specified in the Special Provisions.

6-07.3(12)B4 Paint Color
Paint colors shall be as specified in the Special Provisions.

6-07.3(12)B5 Coating Thickness
Coating thicknesses shall be as specified in the Special Provisions.

6-07.3(12)B6 Application of Field Coatings
Application of field coatings shall be in accordance with Section 6-07.3(10)O and Section 6-07.3(12)A2 except for the following:

1. All coatings applied in the field shall be applied using a brush or roller. Spray application methods may be used if allowed by the Engineer.

2. Applied coatings shall not be immersed until the coating has been cured as required by the coating manufacturer.

3. Non-skid surface treatment products shall be applied in accordance with the manufacturer's recommendations.

4. Anti-graffiti coatings shall be applied in one coat following application of the top coat, where specified in the Plans.

6-07.3(14)B Reference Standards

The second standard reference (to SSPC CS 23.00), and its accompanying title, is revised to read:

SSPC CS 23.00	Specification for the Application of Thermal Spray Coatings (Metallizing) of Aluminum, Zinc, and Their Alloys and Composites for the Corrosion Protection of Steel

6-08.AP6

Section 6-08, Bituminous Surfacing on Structure Decks
January 7, 2019

6-08.3(7)A Concrete Deck Preparation

The first sentence of the first paragraph is revised to read:

> The Contractor, with the Engineer, shall inspect the exposed concrete deck to establish the extent of bridge deck repair in accordance with Section 6-09.3(6).

6-08.3(8)A Structure Deck Preparation

The second sentence of the last paragraph is revised to read:

> Prior to applying the primer or sheet membrane, all dust and loose material shall be removed from the Structure Deck.

6-09.AP6

Section 6-09, Modified Concrete Overlays
January 7, 2019

6-09.3 Construction Requirements

This section is supplemented with the following new subsection:

> **6-09.3(15) Sealing and Texturing Concrete Overlay**
> After the requirements for checking for bond have been met, all joints and visible cracks shall be filled and sealed with a high molecular weight methacrylate resin (HMWM). Cracks 1⁄16 inch and greater in width shall receive two applications of HMWM. Immediately following the application of HMWM, the wetted surface shall be coated with sand for abrasive finish.
>
> After all cracks have been filled and sealed and the HMWM resin has cured, the concrete overlay surface shall receive a longitudinally sawn texture in accordance with Section 6-02.3(10)D5.
>
> Traffic shall not be permitted on the finished concrete until it has reached a minimum compressive strength of 3,000 psi as verified by rebound number determined in accordance with ASTM C805 and the longitudinally sawn texture is completed.

6-09.3(1)B Rotary Milling Machines

This section is revised to read:

> Rotary milling machines used to remove an upper layer of existing concrete overlay, when present, shall have a maximum operating weight of 50,000 pounds and conform to Section 6-08.3(5)B.

6-09.3(1)C Hydro-Demolition Machines

The first sentence of this section is revised to read:

> Hydro-demolition machines shall consist of filtering and pumping units operating in conjunction with a remote-controlled robotic device, using high-velocity water jets to remove sound concrete to the nominal scarification depth shown in the Plans with a single pass of the machine, and with the simultaneous removal of deteriorated concrete.

6-09.3(1)D Shot Blasting Machines

This section, including title, is revised to read:

> **6-09.3(1)D Vacant**

6-09.3(1)E Air Compressor

This section is revised to read:

> Air compressors shall be equipped with oil traps to eliminate oil from being blown onto the bridge deck.

6-09.3(1)J Finishing Machine

This section is revised to read:

> The finishing machine shall meet the requirements of Section 6-02.3(10) and the following requirements:
>
> > The finishing machine shall be equipped with augers, followed by an oscillating, vibrating screed, vibrating roller tamper, or a vibrating pan, followed by a rotating cylindrical double drum screed. The vibrating screed, roller tamper or pan shall be of sufficient length and width to properly consolidate the mixture. The vibrating frequency of the vibrating screed, roller tamper or pan shall be variable with positive control.

6-09.3(2) Submittals

Item number 1 and 2 are revised to read:

1. A Type 1 Working Drawing consisting of catalog cuts and operating parameters of the hydro-demolition machine selected by the Contractor for use in this project to scarify concrete surfaces.

2. A Type 1 Working Drawing consisting of catalog cuts, operating parameters, axle loads, and axle spacing of the rotary milling machine (if used to remove an upper layer of existing concrete overlay when present).

The first sentence of item number 3 is revised to read:

> A Type 2 Working Drawing of the Runoff Water Disposal Plan.

6-09.3(5)A General

The first sentence of the fourth paragraph is revised to read:

> All areas of the deck that are inaccessible to the selected scarifying machine shall be scarified to remove the concrete surface matrix to a maximum nominal scarification depth shown in the Plans by a method acceptable to the Engineer.

This section is supplemented with the following:

Concrete process water generated by scarifying concrete surface and removing existing concrete overlay operations shall be contained, collected, and disposed of in accordance with Section 5-01.3(11) and Section 6-09.3(5)C, and the Section 6-09.3(2) Runoff Water Disposal Plan.

6-09.3(5)B Testing of Hydro-Demolition and Shot Blasting Machines

This section's title is revised to read:

Testing of Hydro-Demolition Machines

The second paragraph is revised to read:

In the "sound" area of concrete, the equipment shall be programmed to remove concrete to the nominal scarification depth shown in the Plans with a single pass of the machine.

6-09.3(5)D Shot Blasting

This section, including title, is revised to read:

6-09.3(5)D Vacant

6-09.3(5)E Rotomilling

This section, including title, is revised to read:

6-09.3(5)E Removing Existing Concrete Overlay Layer by Rotomilling
When the Contractor elects to remove the upper layer of existing concrete overlay, when present, by rotomilling prior to final scarifying, the entire concrete surface of the bridge deck shall be milled to remove the surface matrix to the depth specified in the Plans with a tolerance as specified in Section 6-08.3(5)B. The operating parameters of the rotary milling machine shall be monitored in order to prevent the unnecessary removal of concrete below the specified removal depth.

6-09.3(6) Further Deck Preparation

The first paragraph is revised to read::

Once the lane or strip being overlaid has been cleaned of debris from scarifying, the Contractor, with the Engineer, shall perform a visual inspection of the scarified surface. The Contractor shall mark those areas of the existing bridge deck that are authorized by the Engineer for further deck preparation by the Contractor.

Item number 4 of the second paragraph is deleted.

The first sentence of the third paragraph is deleted.

6-09.3(6)A Equipment for Further Deck Preparation

This section is revised to read:

Further deck preparation shall be performed using either power driven hand tools conforming to Section 6-09.3(1)A, or hydro-demolition machines conforming to Section 6-09.3(1)C.

6-09.3(6)B Deck Repair Preparation

The second paragraph is deleted.

The last sentence of the second paragraph (after the preceding Amendment is applied) is revised to read:

> In no case shall the depth of a sawn vertical cut exceed ¾ inch or to the top of the top steel reinforcing bars, whichever is less.

The first sentence of the third to last paragraph is revised to read:

> Where existing steel reinforcing bars inside deck repair areas show deterioration greater than 20-percent section loss, the Contractor shall furnish and place steel reinforcing bars alongside the deteriorated bars in accordance with the details shown in the Standard Plans.

The last paragraph is deleted.

6-09.3(7) Surface Preparation for Concrete Overlay

The first seven paragraphs are deleted and replaced with the following:

> Following the completion of any required further deck preparation the entire lane or strip being overlaid shall be cleaned to be free from oil and grease, rust and other foreign material that may still be present. These materials shall be removed by detergent-cleaning or other method accepted by the Engineer followed by sandblasting.
>
> After detergent cleaning and sandblasting is completed, the entire lane or strip being overlaid shall be cleaned in final preparation for placing concrete.
>
> Hand tool chipping, sandblasting and cleaning in areas adjacent to a lane or strip being cleaned in final preparation for placing concrete shall be discontinued when final preparation is begun. Scarifying and hand tool chipping shall remain suspended until the concrete has been placed and the requirement for curing time has been satisfied. Sandblasting and cleaning shall remain suspended for the first 24 hours of curing time after the completion of concrete placing.
>
> Scarification, and removal of the upper layer of concrete overlay when present, may proceed during the final cleaning and overlay placement phases of the Work on adjacent portions of the Structure so long as the scarification and concrete overlay removal operations are confined to areas which are a minimum of 100 feet away from the defined limits of the final cleaning or overlay placement in progress. If the scarification and concrete overlay removal impedes or interferes in any way with the final cleaning or overlay placement as determined by the Engineer, the scarification and concrete overlay removal Work shall be terminated immediately and the scarification and concrete overlay removal equipment removed sufficiently away from the area being prepared or overlaid to eliminate the conflict. If the grade is such that water and contaminants from the scarification and concrete overlay removal operation will flow into the area being prepared or overlaid, the scarification and concrete overlay removal operation shall be terminated and shall remain suspended for the first 24 hours of curing time after the completion of concrete placement.

6-09.3(11) Placing Concrete Overlay

The first sentence of item number 3 in the fourth paragraph is revised to read:

> Concrete shall not be placed when the temperature of the concrete surface is less than 45°F or greater than 75°F, and wind velocity at the construction site is in excess of 10 mph.

6-09.3(12) Finishing Concrete Overlay

The third paragraph is deleted.

The last paragraph is deleted.

6-09.3(13) Curing Concrete Overlay

The first sentence of the first paragraph is revised to read:

> As the finishing operation progresses, the concrete shall be immediately covered with a single layer of clean, new or used, wet burlap.

The last sentence of the second paragraph is deleted.

The following two new paragraphs are inserted after the second paragraph:

> As an alternative to the application of burlap and fog spraying described above, the Contractor may propose a curing system using proprietary curing blankets specifically manufactured for bridge deck curing. The Contractor shall submit a Type 2 Working Drawing consisting of details of the proprietary curing blanket system, including product literature and details of how the system is to be installed and maintained.
>
> The wet curing regimen as described shall remain in place for a minimum of 42-hours.

The last paragraph is deleted.

6-09.3(14) Checking for Bond

The first sentence of the first paragraph is revised to read:

> After the requirements for curing have been met, the entire overlaid surface shall be sounded by the Contractor, in a manner accepted by and in the presence of the Engineer, to ensure total bond of the concrete to the bridge deck.

The last sentence of the first paragraph is deleted.

The second paragraph is deleted.

6-10.AP6

Section 6-10, Concrete Barrier
August 6, 2018

6-10.2 Materials

In the first paragraph, the reference to “Portland Cement” is revised to read:

Cement	9-01

6-10.3(6) Placing Concrete Barrier

The first two sentences of the first paragraph are revised to read:

> Precast concrete barriers Type 2, Type 4, Type F, precast single slope barrier, and transitions shall rest on a paved foundation shaped to a uniform grade and section. The foundation surface for precast concrete barriers Type 2, Type 4, Type F, precast single slope barrier, and transitions shall meet this test for uniformity: When a 10-foot straightedge is placed on the surface parallel to the centerline for the barrier, the surface shall not vary more than ¼ inch from the lower edge of the straightedge.

6-11.AP6

Section 6-11, Reinforced Concrete Walls

April 2, 2018

6-11.2 Materials

In the first paragraph, the reference to "Aggregates for Portland Cement Concrete" is revised to read:

> Aggregates for Concrete 9-03.1

6-12.AP6

Section 6-12, Noise Barrier Walls

August 6, 2018

6-12.2 Materials

In the first paragraph, the reference to "Aggregates for Portland Cement Concrete" is revised to read:

> Aggregates for Concrete 9-03.1

The first paragraph is supplemented with the following new material reference:

> Noise Barrier Wall Access Door 9-06.17

6-12.3(9) Access Doors and Concrete Landing Pads

The second paragraph is deleted and replaced with the following:

> All frame and door surfaces, except stainless steel surfaces, shall be painted in accordance with Section 6-07.3(9). Primer shall be applied to all non-stainless steel surfaces. All primer coated exposed metal surfaces shall be field painted with the remaining Section 6-07.3(9)A paint system coats. The top coat, when dry, shall match the color specified in the Plans or Special Provisions.

This section is supplemented with the following:

> Access door deadbolt locks shall be capable of accepting a Best CX series core. The Contractor shall furnish and install a spring-loaded construction core lock with each lock. The Engineer will furnish the permanent Best CX series core for the Contractor to install at the conclusion of the project.

6-13.AP6

Section 6-13, Structural Earth Walls
August 6, 2018
6-13.2 Materials

In the first paragraph, the reference to “Aggregates for Portland Cement Concrete” is revised to read:

Aggregates for Concrete	9-03.1

6-13.3(4) Precast Concrete Facing Panel and Concrete Block Fabrication

Item number 1 of the sixth paragraph is revised to read:

1. Vertical dimensions shall be ± 1⁄16 inch of the Plan dimension, and the rear height shall not exceed the front height.

Item number 3 of the sixth paragraph is revised to read:

3. All other dimensions shall be ± ¼ inch of the Plan dimension.

6-14.AP6

Section 6-14, Geosynthetic Retaining Walls
April 2, 2018
6-14.2 Materials

In the first paragraph, the references to “Portland Cement” and “Aggregates for Portland Cement Concrete” are revised to read:

Cement	9-01
Aggregates for Concrete	9-03.1

6-15.AP6

Section 6-15, Soil Nail Walls
January 7, 2019
6-15.3(7) Shotcrete Facing

The last paragraph is supplemented with the following:

After final tightening of the nut, the threads of the soil nail shall at a minimum be flush with the end of the nut.

6-16.AP6

Section 6-16, Soldier Pile and Soldier Pile Tieback Walls
April 2, 2018
6-16.2 Materials

In the first paragraph, the reference to “Aggregates for Portland Cement Concrete” is revised to read:

Aggregates for Concrete	9-03.1

6-18.AP6

Section 6-18, Shotcrete Facing
April 1, 2019
6-18.2 Materials
The reference to metakaolin is deleted.

6-18.3(3) Testing
In the last sentence of the first paragraph, “AASHTO T 24” is revised to read “ASTM C1604”.

6-18.3(3)B Production Testing
In the last sentence, “AASHTO T 24” is revised to read “ASTM C1604”.

6-18.3(4) Qualifications of Contractor’s Personnel
In the last sentence of the second paragraph, “AASHTO T 24” is revised to read “ASTM C1604”.

6-19.AP6

Section 6-19, Shafts
January 7, 2019
6-19.2 Materials
In the first paragraph, the references to “Portland Cement” and “Aggregates for Portland Cement Concrete” are revised to read:

Cement	9-01
Aggregates for Concrete	9-03.1

6-19.3(1)A Shaft Construction Tolerances
The last paragraph is supplemented with the following:

> The elevation of the top of the reinforcing cage for drilled shafts shall be within +6 inches and -3 inches from the elevation shown in the Plans.

6-19.3(2)D Nondestructive QA Testing Organization and Personnel
Item number 4 in the first paragraph is revised to read:

4. Personnel preparing test reports shall be a Professional Engineer, licensed under Title 18 RCW, State of Washington, and shall seal the report in accordance with WAC 196-23-020.

6-19.3(3)C Conduct of Shaft Casing Installation and Removal and Shaft Excavation Operations
The first paragraph is supplemented with the following:

> In no case shall shaft excavation and casing placement extend below the bottom of shaft excavation as shown in the Plans.

6-19.3(6)E Thermal Wire and Thermal Access Point (TAPS)
The third sentence of the third paragraph is revised to read:

> The thermal wire shall extend from the bottom of the reinforcement cage to the top of the shaft, with a minimum of 5-feet of slack wire provided above the top of shaft.

The following new sentence is inserted after the third sentence of the third paragraph:

All thermal wires in a shaft shall be equal lengths.

6-19.3(9)D Nondestructive QA Testing Results Submittal

The last sentence of the first paragraph is revised to read:

Results shall be a Type 2E Working Drawing presented in a written report.

7-02.AP7

Section 7-02, Culverts

April 2, 2018

7-02.2 Materials

In the first paragraph, the references to "Portland Cement" and "Aggregates for Portland Cement Concrete" are revised to read:

Cement	9-01
Aggregates for Concrete	9-03.1

7-02.3(6)A4 Excavation and Bedding Preparation

The first sentence of the third paragraph is revised to read:

The bedding course shall be a 6-inch minimum thickness layer of culvert bedding material, defined as granular material either conforming to Section 9-03.12(3) or to AASHTO Grading No. 57 as specified in Section 9-03.1(4)C.

7-05.AP7

Section 7-05, Manholes, Inlets, Catch Basins, and Drywells

August 6, 2018

7-05.3 Construction Requirements

The fourth sentence of the third paragraph is deleted.

7-08.AP7

Section 7-08, General Pipe Installation Requirements

April 2, 2018

7-08.3(3) Backfilling

The fifth sentence of the fourth paragraph is revised to read:

All compaction shall be in accordance with the Compaction Control Test of Section 2-03.3(14)D except in the case that 100% Recycled Concrete Aggregate is used.

The following new sentences are inserted after the fifth sentence of the fourth paragraph:

When 100% Recycled Concrete Aggregate is used, the Contractor may submit a written request to use a test point evaluation for compaction acceptance. Test Point evaluation shall be performed in accordance with SOP 738.

Section 8-01, Erosion Control and Water Pollution Control
April 1, 2019
8-01.1 Description

This section is revised to read:

This Work consists of furnishing, installing, maintaining, removing and disposing of best management practices (BMPs), as defined in the Washington Administrative Code (WAC) 173-201A, to manage erosion and water quality in accordance with these Specifications and as shown in the Plans or as designated by the Engineer.

The Contracting Agency may have a National Pollution Discharge Elimination System Construction Stormwater General Permit (CSWGP) as identified in the Contract Special Provisions. The Contracting Agency may or may not transfer coverage of the CSWGP to the Contractor when a CSWGP has been obtained. The Contracting Agency may not have a CSWGP for the project but may have another water quality related permit as identified in the Contract Special Provisions or the Contracting Agency may not have water quality related permits but the project is subject to applicable laws for the Work. Section 8-01 covers all of these conditions.

This section is supplemented with the following new subsection:

8-01.1(1) Definitions

1. pH Affected Stormwater

a. Stormwater contacting green concrete (concrete that has set/stiffen but is still curing), recycled concrete, or engineered soils (as defined in the Construction Stormwater General Permit (CSWGP)) as a natural process

b. pH monitoring shall be performed in accordance with the CSWGP, or Water Quality Standards (WQS in accordance with WAC 173-201A (surface) or 173-200C (ground)) when the CSWGP does not apply

c. May be neutralized and discharged to surface waters or infiltrated

2. pH Affected Non-Stormwater

a. Conditionally authorized in accordance with CSWGP Special Condition S.1.C., uncontaminated water contacting green concrete, recycled concrete, or engineered soils (as defined in the CSWGP)

b. Shall not be categorized as cementitious wastewater/concrete wastewater, as defined below

c. Shall be managed and treated in accordance with the CSWGP, or WQS when the CSWGP does not apply

d. pH adjustment and dechlorination may be necessary, as specified in the CSWGP or in accordance with WQS when the CSWGP does not apply

e. May be neutralized, treated, and discharged to surface waters in accordance with the CSWGP, with the exception of water-only shaft drilling slurry.

Water-only shaft drilling slurry may be treated, neutralized, and infiltrated but not discharged to surface waters (Refer to Special Conditions S1.C. Authorized Discharges and S1.d Prohibited Discharges of the CSWGP)

3. Cementitious Wastewater/Concrete Wastewater

a. Any water that comes into contact with fine cementitious particles or slurry; any water used in the production, placement and/or clean-up of cementitious products; any water used to cut, grind, wash, or otherwise modify cementitious products

b. When any water, including stormwater, commingles with cementitious wastewater/concrete wastewater, the resulting water is considered cementitious wastewater/concrete wastewater and shall be managed to prevent discharge to waters of the State, including ground water

c. CSWGP Examples include: water used for or resulting from concrete truck/mixer/pumper/tool/chute rinsing or washing, concrete saw cutting and surfacing (sawing, coring, grinding, roughening, hydro-demolition, bridge and road surfacing)

d. Cannot be neutralized and discharged or infiltrated

8-01.2 Materials

The first paragraph is revised to read:

Materials shall meet the requirements of the following sections:

Corrugated Polyethylene Drain Pipe	9-05.1(6)
Quarry Spalls and Permeable Ballast	9-13
Erosion Control and Roadside Planting	9-14
Construction Geotextile	9-33

The second paragraph is deleted.

8-01.3(1) General

This section is revised to read:

Adaptive management shall be employed throughout the duration of the project for the implementation of erosion and water pollution control permit requirements for the current condition of the project site. The adaptive management includes the selection and utilization of BMPs, scheduling of activities, prohibiting unacceptable practices, implementing maintenance procedures, and other managerial practices that when used singularly or in combination, prevent or reduce the release of pollutants to waters of the State. The adaptive management shall use the means and methods identified in this section and means and methods identified in the Washington State Department of Transportation's Temporary Erosion and Sediment Control Manual or the Washington State Department of Ecology's Stormwater Management Manuals for construction stormwater.

The Contractor shall install a high visibility fence along the lines shown in the Plans or as instructed by the Engineer.

Throughout the life of the project, the Contractor shall preserve and protect the delineated preservation area, acting immediately to repair or restore any high visibility fencing damaged or removed.

All discharges to surface waters shall comply with surface water quality standards as defined in Washington Administrative Code (WAC) Chapter 173-201A. All discharges to groundwater shall comply with groundwater quality standards WAC Chapter 173-200. The Contractor shall comply with the CSWGP when the project is covered by the CSWGP.

Work, at a minimum, shall include the implementation of:

1. Sediment control measures prior to ground disturbing activities to ensure all discharges from construction areas receive treatment prior to discharging from the site.

2. Flow control measures to prevent erosive flows from developing.

3. Water management strategies and pollution prevention measures to prevent contamination of waters that will be discharged to surface waters or the ground.

4. Erosion control measures to stabilize erodible earth not being worked.

5. Maintenance of BMPs to ensure continued compliant performance.

6. Immediate corrective action if evidence suggests construction activity is not in compliance. Evidence includes sampling data, olfactory or visual evidence such as the presence of suspended sediment, turbidity, discoloration, or oil sheen in discharges.

To the degree possible, the Contractor shall coordinate this Work with permanent drainage and roadside restoration Work the Contract requires.

Clearing, grubbing, excavation, borrow, or fill within the Right of Way shall never expose more erodible earth than as listed below:

Western Washington (West of the Cascade Mountain Crest)	
May 1 through September 30	17 Acres
October 1 through April 30	5 Acres

Eastern Washington (East of the Cascade Mountain Crest)	
April 1 through October 31	17 Acres
November 1 through March 31	5 Acres

The Engineer may increase or decrease the limits based on project conditions.

Erodible earth is defined as any surface where soils, grindings, or other materials may be capable of being displaced and transported by rain, wind, or surface water runoff.

Erodible earth not being worked, whether at final grade or not, shall be covered within the specified time period (see the table below), using BMPs for erosion control.

Western Washington (West of the Cascade Mountain Crest)	
October 1 through April 30	2 days maximum
May 1 to September 30	7 days maximum

Eastern Washington (East of the Cascade Mountain Crest)	
October 1 through June 30	5 days maximum
November 1 through March 31	10 days maximum

When applicable, the Contractor shall be responsible for all Work required for compliance with the CSWGP including annual permit fees.

If the Engineer, under Section 1-08.6, orders the Work suspended, the Contractor shall continue to comply with this division during the suspension.

8-01.3(1)A Submittals

This section's content is deleted.

This section is supplemented with the following new subsection:

8-01.3(1)A1 Temporary Erosion and Sediment Control Plan

Temporary Erosion and Sediment Control (TESC) Plans consist of a narrative section and plan sheets that meets the Washington State Department of Ecology's Stormwater Pollution Prevention Plan (SWPPP) requirement in the CSWGP. For projects that do not require a CSWGP but have the potential to discharge to surface waters of the state, an abbreviated TESC plan shall be used, which may consist of a narrative and/or plan sheets and shall demonstrate compliance with applicable codes, ordinances and regulations, including the water quality standards for surface waters; Chapter 173-201A of the Washington Administrative Code (WAC) and water quality standards for groundwaters in accordance with Chapter 173-200 WAC.

The Contractor shall either adopt the TESC Plan in the Contract or develop a new TESC Plan. If the Contractor adopts the TESC Plan in scenarios in which the CSWGP is transferred to the Contractor, the Contractor shall modify the TESC Plan to match the Contractor's schedule, method of construction, and to include all areas that will be used to directly support construction activity such as equipment staging yards, material storage areas, or borrow areas. TESC Plans shall include all high visibility fence shown in the Plans. All TESC Plans shall meet the requirements of the current edition of the WSDOT Temporary Erosion and Sediment Control Manual M 3109 and be adaptively managed throughout construction based on site inspections and required sampling to maintain compliance with the CSWGP, or WQS when no CSWGP applies. The Contractor shall develop a schedule for implementation of the TESC work and incorporate it into the Contractor's progress schedule.

The Contractor shall submit their TESC Plan (either the adopted plan or new plan) as Type 2 Working Drawings. At the request of the Engineer, updated TESC Plans shall be submitted as Type 1 Working Drawings.

8-01.3(1)B Erosion and Sediment Control (ESC) Lead

This section is revised to read:

The Contractor shall identify the ESC Lead at the preconstruction discussions and in the TESC Plan. The ESC Lead shall have, for the life of the Contract, a current Certificate of Training in Construction Site Erosion and Sediment Control from a course approved by the Washington State Department of Ecology. The ESC Lead must be onsite or on call at all times throughout construction. The ESC Lead shall be listed on the Emergency Contact List required under Section 1-05.13(1).

The ESC Lead shall implement the TESC Plan. Implementation shall include, but is not limited to:

1. Installing, adaptively managing, and maintaining temporary erosion and sediment control BMPs to assure continued performance of their intended function. Damaged or inadequate BMPs shall be corrected immediately.

2. Updating the TESC Plan to reflect current field conditions.

3. Discharge sampling and submitting Discharge Monitoring Reports (DMRs) to the Washington State Department of Ecology in accordance with the CSWGP.

4. Develop and maintain the Site Log Book as defined in the CSWGP. When the Site Log Book or portion thereof is electronically developed, the electronic documentation must be accessible onsite. As a part of the Site Log Book, the Contractor shall develop and maintain a tracking table to show that identified TESC compliance issues are fully resolved within 10 calendar days. The table shall include the date an issue was identified, a description of how it was resolved, and the date the issue was fully resolved.

The ESC Lead shall also inspect all areas disturbed by construction activities, all on-site erosion and sediment control BMPs, and all stormwater discharge points at least once every calendar week and within 24-hours of runoff events in which stormwater discharges from the site. Inspections of temporarily stabilized, inactive sites may be reduced to once every calendar month. The Washington State Department of Ecology's Erosion and Sediment Control Site Inspection Form, located at https://ecology.wa.gov/Regulations-Permits/Permits-certifications/Stormwater-general-permits/Construction-stormwater-permit, shall be completed for each inspection and a copy shall be submitted to the Engineer no later than the end of the next working day following the inspection.

8-01.3(1)C Water Management

This section is supplemented with the following new subsections:

8-01.3(1)C5 Water Management for In-Water Work Below Ordinary High Water Mark (OHWM)

Work over surface waters of the state (defined in WAC 173-201A-010) or below the OHWM (defined in RCW 90.58.030) shall comply with water quality standards for surface waters of the State of Washington.

8-01.3(1)C6 Environmentally Acceptable Hydraulic Fluid
All equipment containing hydraulic fluid that extends from a bridge deck over surface waters of the state or below the OHWM, shall be equipped with a biodegradable hydraulic fluid. The fluid shall achieve either a Pw1 Environmental Persistence Classification stated in ASTM D6046 (≥60% biodegradation in 28 days) or equivalent standard. Alternatively, hydraulic fluid that meets International Organization for Standardization (ISO 15380), the European Union Ecolabel, or equivalent certification will also be accepted.

The Contractor shall submit a Type 1 Working Drawing consisting of a manufacturer catalog cut of the hydraulic fluid used.

The designation of biodegradable hydraulic fluid does not mean fluid spills are acceptable. The Contractor shall respond to spills to land or water in accordance with the Contract, the associated SPCC Plan, and all applicable local, state, and federal regulations.

8-01.3(1)C7 Turbidity Curtain
All Work for the turbidity curtain shall be in accordance with the manufacturer's recommendations for the site conditions. Removal procedures shall be developed and used to minimize silt release and disturbance of silt. The Contractor shall submit a Type 2 Working Drawing, detailing product information, installation and removal procedures, equipment and workforce needs, maintenance plans, and emergency repair/replacement plans.

Turbidity curtain materials, installation, and maintenance shall be sufficient to comply with water quality standards.

The Contractor shall notify the Engineer 10 days in advance of removing the turbidity curtain. All components of the turbidity curtain shall be removed from the project.

8-01.3(1)C1 Disposal of Dewatering Water
This section is revised to read:

When uncontaminated groundwater is encountered in an excavation on a project it may be infiltrated within vegetated areas of the right of way not designated as Sensitive Areas or incorporated into an existing stormwater conveyance system at a rate that will not cause erosion or flooding in any receiving surface water.

Alternatively, the Contractor may pursue independent disposal and treatment alternatives that do not use the stormwater conveyance system provided it is in compliance with the applicable WACs and permits.

8-01.3(1)C2 Process Wastewater
This section is revised to read:

Wastewater generated on-site as a byproduct of a construction process shall not be discharged to surface waters of the State. Some sources of process wastewater may be infiltrated in accordance with the CSWGP. Some sources of process wastewater may be disposed via independent disposal and treatment alternatives in compliance with the applicable WACs and permits.

8-01.3(1)C3 Shaft Drilling Slurry Wastewater

This section is revised to read:

Wastewater generated on-site during shaft drilling activity shall be managed and disposed of in accordance with the requirements below. No shaft drilling slurry wastewater shall be discharged to surface waters of the State. Neither the sediment nor liquid portions of the shaft drilling slurry wastewater shall be contaminated, as detectable by visible or olfactory indication (e.g., chemical sheen or smell).

1. Water-only shaft drilling slurry or water slurry with accepted flocculants may be infiltrated on-site. Flocculants used shall meet the requirements of Section 9-14.5(1) or shall be chitosan products listed as General Use Level Designation (GULD) on the Washington State Department of Ecology's stormwater treatment technologies webpage for construction treatment. Infiltration is permitted if the following requirements are met:

    a. Wastewater shall have a pH of 6.5 – 8.5 prior to discharge.

    b. The amount of flocculant added to the slurry shall be kept to the minimum needed to adequately settle out solids. The flocculant shall be thoroughly mixed into the slurry.

    c. The slurry removed from the shaft shall be contained in a leak proof cell or tank for a minimum of 3 hours.

    d. The infiltration rate shall be reduced if needed to prevent wastewater from leaving the infiltration location. The infiltration site shall be monitored regularly during infiltration activity. All wastewater discharged to the ground shall fully infiltrate and discharges shall stop before the end of each work day.

    e. Drilling spoils and settled sediments remaining in the containment cell or tank shall be disposed of in accordance with Section 6-19.3(4)F.

    f. Infiltration locations shall be in upland areas at least 150 feet away from surface waters, wells, on-site sewage systems, aquifer sensitive recharge areas, sole source aquifers, well head protection areas, and shall be marked on the plan sheets before the infiltration activity begins.

    g. Prior to infiltration, the Contractor shall submit a Shaft Drilling Slurry Wastewater Management and Infiltration Plan as a Type 2 Working Drawing. This Plan shall be kept on-site, adapted if needed to meet the construction requirements, and updated to reflect what is being done in the field. The Working Drawing shall include, at a minimum, the following information:

        i. Plan sheet showing the proposed infiltration location and all surface waters, wells, on-site sewage systems, aquifer-sensitive recharge areas, sole source aquifers, and well-head protection areas within 150 feet.

ii. The proposed elevation of soil surface receiving the wastewater for infiltration and the anticipated phreatic surface (i.e., saturated soil).

iii. The source of the water used to produce the slurry.

iv. The estimated total volume of wastewater to be infiltrated.

v. The accepted flocculant to be used (if any).

vi. The controls or methods used to prevent surface wastewater runoff from leaving the infiltration location.

vii. The strategy for removing slurry wastewater from the shaft and containing the slurry wastewater once it has been removed from the shaft.

viii. The strategy for monitoring infiltration activity and adapting methods to ensure compliance.

ix. A contingency plan that can be implemented immediately if it becomes evident that the controls in place or methods being used are not adequate.

x. The strategy for cleaning up the infiltration location after the infiltration activity is done. Cleanup shall include stabilizing any loose sediment on the surface within the infiltration area generated as a byproduct of suspended solids in the infiltrated wastewater or soil disturbance associated with BMP placement and removal.

2. Shaft drilling mineral slurry, synthetic slurry, or slurry with polymer additives not allowed for infiltration shall be contained and disposed of by the Contractor at an accepted disposal facility in accordance with Section 2-03.3(7)C. Spoils that have come into contact with mineral slurry shall be disposed of in accordance with Section 6-19.3(4)F.

8-01.3(1)C4 Management of Off-Site Water

This section is revised to read:

Prior to clearing and grubbing, the Contractor shall intercept all sources of off-site surface water and overland flow that will run-on to the project. Off-site surface water run-on shall be diverted through or around the project in a way that does not introduce construction related pollution. It shall be diverted to its preconstruction discharge location in a manner that does not increase preconstruction flow rate and velocity and protects contiguous properties and waterways from erosion. The Contractor shall submit a Type 2 Working Drawing consisting of the method for performing this Work.

8-01.3(1)E Detention/Retention Pond Construction

This section is revised to read:

Permanent or temporary ponds shall be constructed before beginning other grading and excavation Work in the area that drains into that pond. Detention/retention ponds may be constructed concurrently with grading and excavation when allowed by the Engineer.

Temporary conveyances shall be installed concurrently with grading in accordance with the TESC Plan so that newly graded areas drain to the pond as they are exposed.

8-01.3(2) Seeding, Fertilizing, and Mulching

This section's title is revised to read:

8-01.3(2) Temporary Seeding and Mulching

8-01.3(2)A Preparation for Application

This section is revised to read:

A cleated roller, crawler tractor, or similar equipment, which forms longitudinal depressions at least 2 inches deep shall be used for compaction and preparation of the surface to be seeded. The entire area shall be uniformly covered with longitudinal depressions formed perpendicular to the natural flow of water on the slope. The soil shall be conditioned with sufficient water so the longitudinal depressions remain in the soil surface until completion of the seeding.

8-01.3(2)A1 Seeding

This section is deleted in its entirety.

8-01.3(2)A2 Temporary Seeding

This section is deleted in its entirety.

8-01.3(2)B Seeding and Fertilizing

This section, including title, is revised to read:

8-01.3(2)B Temporary Seeding

Temporary grass seed shall be a commercially prepared mix, made up of low growing grass species that will grow without irrigation at the project location, and accepted by the Engineer. The application rate shall be two pounds per 1000 square feet.

The Contractor shall notify the Engineer not less than 24 hours in advance of any seeding operation and shall not begin the Work until areas prepared or designated for seeding have been accepted. Following the Engineer's acceptance, seeding of the accepted slopes shall begin immediately.

Temporary seeding may be sown at any time allowed by the Engineer. Temporary seeding shall be sown by one of the following methods:

1. A hydro seeder that utilizes water as the carrying agent, and maintains continuous agitation through paddle blades. It shall have an operating capacity sufficient to agitate, suspend, and mix into a homogeneous slurry the specified amount of seed and water or other material. Distribution and discharge lines shall be large enough to prevent stoppage and shall be equipped with a set of hydraulic discharge spray nozzles that will provide a uniform distribution of the slurry.

2. Blower equipment with an adjustable disseminating device capable of maintaining a constant, measured rate of material discharge that will ensure an even distribution of seed at the rates specified.

3. Power-drawn drills or seeders.

4. Areas in which the above methods are impractical may be seeded by hand methods.

When seeding by hand, the seed shall be incorporated into the top ¼ inch of soil by hand raking or other method that is allowed by the Engineer.

Seed applied using a hydroseeder shall have a tracer added to visibly aid uniform application. This tracer shall not be harmful to plant, aquatic, or animal life. If Short-Term Mulch is used as a tracer, the application rate shall not exceed 250 pounds per acre.

Seed and fertilizer may be applied in one application provided that the fertilizer is placed in the hydroseeder tank no more than 1 hour prior to application.

8-01.3(2)D Mulching

This section, including title, is revised to read:

8-01.3(2)D Temporary Mulching

Temporary mulch shall be straw, wood strand, or HECP mulch and shall be used for the purpose of erosion control by protecting bare soil surface from particle displacement. Mulch shall not be applied below the anticipated water level of ditch slopes, pond bottoms, and stream banks. HECP mulch shall not be used within the Ordinary High Water Mark. Non-HECP mulches applied below the anticipated water level shall be removed or anchored down so that it cannot move or float, at no additional expense to the Contracting Agency.

Straw or wood strand mulch shall be applied at a rate to achieve at least 95 percent visual blockage of the soil surface.

Short Term Mulch shall be hydraulically applied at the rate of 2500 pounds per acre and may be applied in one lift.

Moderate Term Mulch and Long Term Mulch shall be hydraulically applied at the rate of 3500 pounds per acre with no more than 2000 pounds applied in any single lift.

Mulch sprayed on signs or sign Structures shall be removed the same day.

Areas not accessible by mulching equipment shall be mulched by accepted hand methods.

8-01.3(2)F Dates for Application of Final Seed, Fertilizer, and Mulch

This section is deleted in its entirety.

8-01.3(2)G Protection and Care of Seeded Areas

This section is deleted in its entirety.

8-01.3(2)H Inspection

This section is deleted in its entirety.

8-01.3(2)I Mowing

This section is deleted in its entirety.

8-01.3(3) Placing Biodegradable Erosion Control Blanket

This section's title is revised to read:

8-01.3(3) Placing Erosion Control Blanket

The first sentence of the first paragraph is revised to read:

Erosion Control Blankets are used as an erosion prevention device and to enhance the establishment of vegetation.

The second paragraph is revised to read:

When used to enhance the establishment of seeded areas, seeding and fertilizing shall be done prior to blanket installation.

8-01.3(4) Placing Compost Blanket

This section is revised to read:

Compost blankets are used for erosion control. Compost blanket shall be only be placed on ground surfaces that are steeper than 3-foot horizontal and 1-foot vertical though steeper slopes shall be broken by wattles or compost socks placed according to the Standard Plans. Compost shall be placed to a depth of 3 inches over bare soil. An organic tackifier shall be placed over the entire composted area when dry or windy conditions are present or expected. The tackifier shall be applied immediately after the application of compost to prevent compost from leaving the composted area.

Medium compost shall be used for the compost blanket. Compost may serve the purpose of soil amendment as specified in Section 8-02.3(6).

8-01.3(5) Plastic Covering

The first paragraph is revised to read:

Erosion Control – Plastic coverings used to temporarily cover stockpiled materials, slopes or bare soils shall be installed and maintained in a way that prevents water from intruding under the plastic and prevents the plastic cover from being damaged by wind. Plastic coverings shall be placed with at least a 12-inch overlap of all seams and be a minimum of 6 mils thick. Use soil stabilization and energy dissipation BMPs to minimize the erosive energy flows coming off sloped areas of plastic (e.g., toe of slope). When feasible, prevent the clean runoff from plastic from hitting bare soil. Direct flows from plastic to stabilized outlet areas.

8-01.3(7) Stabilized Construction Entrance

The first paragraph is revised to read:

Temporary stabilized construction entrance shall be constructed in accordance with the *Standard Plans*, prior to construction vehicles entering the roadway from locations that generate sediment track out on the roadway. Material used for stabilized construction entrance shall be free of extraneous materials that may cause or contribute to track out.

8-01.3(8) Street Cleaning

This section is revised to read:

> Self-propelled pickup street sweepers shall be used to remove and collect dirt and other debris from the Roadway. The street sweeper shall effectively collect these materials and prevent them from being washed or blown off the Roadway or into waters of the State. Street sweepers shall not generate fugitive dust and shall be designed and operated in compliance with applicable air quality standards. Material collected by the street sweeper shall be disposed of in accordance with Section 2-03.3(7)C.
>
> When allowed by the Engineer, power broom sweepers may be used in non-sensitive areas. The broom sweeper shall sweep dirt and other debris from the roadway into the work area. The swept material shall be prevented from entering or washing into waters of the State.
>
> Street washing with water will require the concurrence of the Engineer.

8-01.3(12) Compost Socks

The first two sentences of the first paragraph are revised to read:

> Compost socks are used to disperse flow and sediment. Compost socks shall be installed as soon as construction will allow but before flow conditions create erosive flows or discharges from the site. Compost socks shall be installed prior to any mulching or compost placement.

8-01.3(13) Temporary Curb

The last two sentences of the second paragraph are revised to read:

> Temporary curbs shall be a minimum of 4 inches in height. Temporary curb shall be installed so that ponding does not occur in the adjacent roadway.

8-01.3(14) Temporary Pipe Slope Drain

The third and fourth paragraphs are revised to read:

> The pipe fittings shall be water tight and the pipe secured to the slope with metal posts, wood stakes, or sand bags.
>
> The water shall be discharged to a stabilized conveyance, sediment trap, stormwater pond, rock splash pad, or vegetated strip, in a manner to prevent erosion and maintain water quality compliance.

The last paragraph is deleted.

8-01.3(15) Maintenance

This section is revised to read:

> Erosion and sediment control BMPs shall be maintained or adaptively managed as required by the CSWGP until the Engineer determines they are no longer needed. When deficiencies in functional performance are identified, the deficiencies shall be rectified immediately.

The BMPs shall be inspected on the schedule outlined in Section 8-01.3(1)B for damage and sediment deposits. Damage to or undercutting of BMPs shall be repaired immediately.

In areas where the Contractor's activities have compromised the erosion control functions of the existing grasses, the Contractor shall overseed at no additional cost to the Contracting Agency.

The quarry spalls of construction entrances shall be refreshed, replaced, or screened to maintain voids between the spalls for collecting mud and dirt.

Unless otherwise specified, when the depth of accumulated sediment and debris reaches approximately ⅓ the height of the BMP the deposits shall be removed. Debris or contaminated sediment shall be disposed of in accordance with Section 2-03.3(7)C. Clean sediments may be stabilized on-site using BMPs as allowed by the Engineer.

8-01.3(16) Removal

This section is revised to read:

The Contractor shall remove all temporary BMPs, all associated hardware and associated accumulated sediment deposition from the project limits prior to Physical Completion unless otherwise allowed by the Engineer. When the temporary BMP materials are made of natural plant fibers unaltered by synthetic materials the Engineer may allow leaving the BMP in place.

The Contractor shall remove BMPs and associated hardware in a way that minimizes soil disturbance. The Contractor shall permanently stabilize all bare and disturbed soil after removal of BMPs. If the installation and use of the erosion control BMPs have compacted or otherwise rendered the soil inhospitable to plant growth, such as construction entrances, the Contractor shall take measures to rehabilitate the soil to facilitate plant growth. This may include, but is not limited to, ripping the soil, incorporating soil amendments, or seeding with the specified seed.

At the request of the Contractor and at the sole discretion of the Engineer the CSWGP may be transferred back to the Contracting Agency. Approval of the Transfer of Coverage request will require the following:

1. All other Work required for Contract Completion has been completed.

2. All Work required for compliance with the CSWGP has been completed to the maximum extent possible. This includes removal of BMPs that are no longer needed and the site has undergone all Stabilization identified for meeting the requirements of Final Stabilization in the CSWGP.

3. An Equitable Adjustment change order for the cost of Work that has not been completed by the Contractor.

4. Submittal of the Washington State Department of Ecology Transfer of Coverage form (Ecology form ECY 020-87a) to the Engineer.

If the Engineer approves the transfer of coverage back to the Contracting Agency, the requirement in Section 1-07.5(3) for the Contractor's submittal of the Notice of Termination form to the Washington State Department of Ecology will not apply.

8-01.4 Measurement

This section's content is deleted and replaced with the following new subsections:

8-01.4(1) Lump Sum Bid for Project (No Unit Items)

When the Bid Proposal contains the item "Erosion Control and Water Pollution Prevention" there will be no measurement of unit or force account items for Work defined in Section 8-01 except as described in Sections 8-01.4(3) and 8-01.4(4). Also, except as described in Section 8-01.4(3), all of Sections 8-01.4(2) and 8-01.5(2) are deleted.

8-01.4(2) Item Bids

When the Proposal does not contain the items "Erosion Control and Water Pollution Prevention", Section 8-01.4(1) and 8-01.5(1) are deleted and the Bid Proposal will contain some or all of the following items measured as noted.

ESC lead will be measured per day for each day that an inspection is made and a report is filed.

Erosion control blanket and plastic covering will be measured by the square yard along the ground slope line of surface area covered and accepted.

Turbidity curtains will be measured by the linear foot along the ground line of the installed curtain.

Check dams will be measured per linear foot one time only along the ground line of the completed check dam. No additional measurement will be made for check dams that are required to be rehabilitated or replaced due to wear.

Stabilized construction entrances will be measured by the square yard by ground slope measurement for each entrance constructed.

Tire wash facilities will be measured per each for each tire wash installed.

Street cleaning will be measured by the hour for the actual time spent cleaning pavement, refilling with water, dumping and transport to and from cleaning locations within the project limits, as authorized by the Engineer. Time to mobilize the equipment to or from the project limits on which street cleaning is required will not be measured.

Inlet protections will be measured per each for each initial installation at a drainage structure.

Silt fence, gravel filter, compost berms, and wood chip berms will be measured by the linear foot along the ground line of the completed barrier.

Wattles and compost socks will be measured by the linear foot.

Temporary curbs will be measured by the linear foot along the ground line of the completed installation.

Temporary pipe slope drains will be measured by the linear foot along the flow line of the pipe.

Coir logs will be measured by the linear foot along the ground line of the completed installation.

Outlet protections will be measured per each initial installation at an outlet location.

Temporary seeding, temporary mulching, and tackifiers will be measured by the acre by ground slope measurement.

Compost blanket will be measured by the square yard by ground slope surface area covered and accepted.

8-01.4(3) Reinstating Unit Items with Lump Sum Erosion Control and Water Pollution Prevention

The Contract Provisions may establish the project as lump sum, in accordance with Section 8-01.4(1) and also include one or more of the items included above in Section 8-01.4(2). When that occurs, the corresponding measurement provision in Section 8-01.4(2) is not deleted and the Work under that item will be measured as specified.

8-01.4(4) Items not included with Lump Sum Erosion Control and Water Pollution Prevention

Compost blanket will be measured by the square yard by ground slope surface area covered and accepted.

Temporary mulch will be measured by the acre by ground slope surface area covered and accepted.

High visibility fence will be measured by the linear foot along the ground line of the completed fence.

8-01.5 Payment

This section's content is deleted and replaced with the following new subsections:

8-01.5(1) Lump Sum Bid for Project (No Unit Items)

Payment will be made for the following Bid item when it is included in the Proposal:

"Erosion Control and Water Pollution Prevention", lump sum.

The lump sum Contract price for "Erosion Control and Water Pollution Prevention" shall be full pay to perform the Work as described in Section 8-01 except for costs compensated by Bid Proposal items inserted through Contract Provisions as described in Section 8-01.4(2). Progress payments for the lump sum item "Erosion Control and Water Pollution Prevention" will be made as follows:

1. The Contracting Agency will pay 15 percent of the bid amount for the initial set up for the item. Initial set up includes the following:

    a. Acceptance of the TESC Plan provided by the Contracting Agency or submittal of a new TESC Plan,

b. Submittal of a schedule for the installation of the BMPs, and

c. Identifying water quality sampling locations.

2. 70 percent of the bid amount will be paid in accordance with Section 1-09.9.

3. Once the project is physically complete and copies of the all reports submitted to the Washington State Department of Ecology have been submitted to the Engineer, and, if applicable, transference of the CSWGP back to the Contracting Agency is complete, the remaining 15 percent of the bid amount shall be paid in accordance with Section 1-09.9.

8-01.5(2) Item Bids
"ESC Lead", per day.

"Turbidity Curtain", per linear foot.

"Erosion Control Blanket", per square yard.

"Plastic Covering", per square yard.

"Check Dam", per linear foot.

"Inlet Protection", per each.

"Gravel Filter Berm", per linear foot.

"Stabilized Construction Entrance", per square yard.

"Street Cleaning", per hour.

"Silt Fence", per linear foot.

"Wood Chip Berm", per linear foot.

"Compost Berm", per linear foot.

"Wattle", per linear foot.

"Compost Sock", per linear foot.

"Coir Log", per linear foot.

"Temporary Curb", per linear foot.

"Temporary Pipe Slope Drain", per linear foot.

"Temporary Seeding", per acre.

"Temporary Mulching", per acre.

"Compost Blanket", per square yard.

"Outlet Protection", per each.

"Tackifier", per acre.

"Erosion/Water Pollution Control", by force account as provided in Section 1-09.6.

Maintenance and removal of erosion and water pollution control devices including removal and disposal of sediment, stabilization and rehabilitation of soil disturbed by these activities, and any additional Work deemed necessary by the Engineer to control erosion and water pollution will be paid by force account in accordance with Section 1-09.6.

To provide a common Proposal for all Bidders, the Contracting Agency has entered an amount in the Proposal to become a part of the Contractor's total Bid.

8-01.5(3) Reinstating Unit Items with Lump Sum Erosion Control and Water Pollution Prevention
The Contract may establish the project as lump sum, in accordance with Section 8-01.4(1) and also reinstate the measurement of one or more of the items described in Section 8-01.4(2), except for Erosion/Water Pollution Control, by force account. When that occurs, the corresponding payment provision in Section 8-01.5(2) is not deleted and the Work under that item will be paid as specified.

8-01.5(4) Items not included with Lump Sum Erosion Control and Water Pollution Prevention
Payment will be made for the following Bid item when it is included in the Proposal:

"High Visibility Fence", per linear foot.

8-02.AP8

Section 8-02, Roadside Restoration
April 1, 2019

This section, including all subsections, is revised to read:

8-02.1 Description
This Work consists of preserving, maintaining, establishing and augmenting vegetation on the roadsides and within mitigation or sundry site areas. It includes vegetation preservation, weed and pest control, furnishing and placing topsoil, compost, and soil amendments, and furnishing and planting seed, sod and plants of all forms and container types. It includes performing plant establishment activities and soil bioengineering. Work shall be performed in accordance with these Specifications and as shown in the Plans or as designated by the Engineer.

Trees, whips, shrubs, ground covers, cuttings, live stakes, live poles, live branches, rhizomes, tubers, rootstock, and seedlings will hereinafter be referred to collectively as "plants" or "plant material". Grass, wildflowers, and other plant materials installed in seed form will hereinafter be referred to collectively as "seed".

8-02.2 Materials
Materials shall meet the requirements of the following sections:

Erosion Control and Roadside Planting	9-14
Water	9-25.2

Botanical identification and nomenclature of plant materials shall be based on descriptions by Hitchcock and Cronquist in “Flora of the Pacific Northwest”. Botanical identification and nomenclature of plant material not found in "Flora" shall be based on Bailey in “Hortus Third” or superseding editions and amendments or as referenced in the Plans.

8-02.3 Construction Requirements

8-02.3(1) Responsibility During Construction
The Contractor shall prepare, install, and ensure adequate and proper care of all roadside seeded, planted, and lawn areas on the project until all plant establishment periods required by the Contract are complete or until Physical Completion of the project, whichever is last.

Adequate and proper care shall include, but is not limited to, keeping all plant material in a healthy, growing condition by watering, pruning, and other actions deemed necessary for plant health. This Work shall include keeping the project area free from insect infestation, weeds or unwanted vegetation, litter, and other debris along with retaining the finished grades and mulch in a neat uniform condition.

Existing desirable vegetation shall be saved and protected unless removal is required by the Contract or allowed by the Engineer.

The Contractor shall have sole responsibility for the maintenance and appearance of the roadside restoration.

8-02.3(2) Work Plans
Three Work Plan submittals exist under this Section:

1. Roadside Work Plan: This plan is required when Work will disturb the roadside beyond 20 feet from the pavement or where trees or native vegetation will be removed, the Contractor shall submit a Type 2 Working Drawing.

2. Weed and Pest Control Plan: This plan is required when the proposal contains the item "Weed and Pest Control," and prior to application of any chemicals or weed control activities, the Contractor shall submit a Type 2 Working Drawing.

3. Plant Establishment Plan: This plan is required when the proposal contains the item "PSIPE__", and prior to completion of Initial Planting, the Contractor shall submit a Type 2 Working Drawing.

8-02.3(2)A Roadside Work Plan
The Roadside Work Plan shall define the expected impacts to the roadside and restoration resulting from Work necessary to meet all Contract

requirements. The Contractor shall define how the roadside restoration Work included in the Contract will be phased and coordinated with project Work such as earthwork, staging, access, erosion and water pollution control, irrigation, etc. The Roadside Work Plan shall include the following:

1. Limiting impacts to roadsides:

    a. Limits of Work including locations of staging or parking.

    b. Means and methods for vegetation protection (in accordance with Section 1-07.16(2)).

    c. Locations outside of clearing limits where vegetation shall be removed to provide access routes or other needs to accomplish the Work.

    d. Plans for removal, preservation and stockpile of topsoil or other native materials, if outside of clearing and grubbing limits and within the project limits.

2. Roadside Restoration:

    a. Plan for propagation and procurement of plants, ground preparation for planting, and installation of plants.

    b. Means and methods to limit soil compaction where seeding and planting are to occur, such as steel plates, hog fuel access roads, wood mats for sensitive areas (including removal) and decompaction for unavoidable impacts.

    c. Plan and timing to incorporate or remove erosion control items.

3. Lawn Installation:

    a. Schedule for lawn installation work.

    b. Establishment and maintenance of lawns.

8-02.3(2)B Weed and Pest Control Plan

The Weed and Pest Control Plan shall describe all weed and pest control needs for the project.

The plan shall be prepared and signed by a licensed Commercial Pest Control Operator or Consultant. The plan for control of weeds and pests on the Contract in accordance with Section 8-02.3(3) shall include the following:

1. Names of plan preparer and pesticide operators, including contact information. The Contractor shall furnish the Engineer evidence that all operators are licensed with appropriate endorsements, and that the pesticide used is registered for use by the Washington State Department of Agriculture.

2. Means and methods of weed control, including mechanical and/or chemical.

3. Schedule for weed control including re-entry times for pesticide application by pesticide type.

4. Proposed pesticide use in accordance with Section 8-02.3(3)A: name, application rate, and Safety Data Sheets of all proposed pesticides. Include a copy of the current product label for each pesticide to be used.

5. Plan to ensure worker safety until pesticide re-entry periods are met.

8-02.3(2)C Plant Establishment Plan

The Plant Establishment Plan shall describe activities necessary to ensure continued health and vigor of planted and seeded areas in accordance with the requirements of Sections 8-02.3(12) and 8-02.3(13). Should the plan become unworkable at any time during the first-year plant establishment, the Contractor shall submit a revised plan prior to proceeding with further Work. The Plant Establishment Plan shall include:

1. Proposed scheduling of joint inspection meetings, activities, materials, equipment to be utilized for the first-year plant establishment.

2. Proposed adaptive management activities to ensure successful establishment of seeded, sodded, and planted areas.

3. A contact person.

4. Management of the irrigation system, when applicable.

8-02.3(3) Weed and Pest Control

The Contractor shall control weed and pest species within the project limits using integrated pest management principles consisting of mechanical, biological, and chemical controls that are outlined in the Weed and Pest Control Plan or as designated by the Engineer. Controlling weeds consists of killing and removing weeds by chemical, mechanical, and hand methods.

8-02.3(3)A Chemical Pesticides

Chemical pesticides include, but are not restricted to, any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest, including but not limited to, insecticides, herbicides, fungicides, adjuvants, and additives, including plant regulators, defoliants and desiccants. The Contractor shall apply chemical pesticides in accordance with the label recommendations, the Washington State Department of Ecology, local sensitive area ordinances, and Washington State Department of Agriculture laws and regulations. Only those pesticides listed in the table Herbicides Approved for Use on WSDOT Rights of Way and accepted as part of the Weed and Pest Control Plan or by written authorization from the Engineer may be used (www.wsdot.wa.gov/maintenance/roadside/herbicide_use.htm).

The applicator shall be licensed by the State of Washington as a Commercial Applicator or Commercial Operator, with additional endorsements as required

by the Special Provisions or the proposed weed control plan. All chemical pesticides shall be delivered to the job site in the original containers, or if pre-mixed off-site, a certification of the components and formulation from the supplier is required. The licensed applicator or operator shall complete WSDOT Form 540-509, Commercial Pesticide Application Record, each day the pesticide is applied and furnish a copy to the Engineer by the following business day.

The Contractor shall ensure confinement of the chemicals within the designated areas. The use of spray chemical pesticides shall require the use of anti-drift and activating agents and a spray pattern indicator unless otherwise allowed by the Engineer.

The Contractor shall assume all responsibility for rendering any area unsatisfactory for planting by reason of chemical application. Damage to adjacent areas, either on or off the Highway Right of Way, shall be repaired to the satisfaction of the Engineer or the property owner at no additional cost to the Contracting Agency.

8-02.3(3)B Planting and Lawn Area Weed Control

Planting and lawn area weed control consists of controlling weeds and pests in planted and lawn areas shown in the Plans. This Work is included in the bid items for planting and lawn installation.

All planting and lawn areas shall be prepared so that they are weed and debris free at the time of planting and until completion of the project. The planting areas shall include the entire ground surface, regardless of cover, areas around plants, and those areas shown in the Plans.

Within planting or lawn areas, all species that are not shown in the Plans are unwanted and shall be controlled unless specifically allowed by the Engineer to remain.

Grass growing within the mulch ring of a plant, including grass applied in accordance with Sections 8-01.3(2)A1, 8-02.3(9) or 8-02.3(10), shall be considered a weed and shall be controlled on the project in accordance with the weed and pest control plan.

All applications of post-emergent herbicides shall be made while green and growing tissue is present. Residual herbicides shall not be used where rhizomatous species or perennial species are indicated.

Should unwanted vegetation reach the flowering and seed stage in violation of these Specifications, the Contractor shall physically remove and bag the seed heads prior to seed dispersion. All physically removed vegetation and seed heads shall be disposed of off-site at no cost to the Contracting Agency.

8-02.3(3)C Project Area Weed and Pest Control

The Contractor shall control weeds not otherwise covered in accordance with Section 8-02.3(3)B, in all areas within the project limits, including erosion control seeding areas and vegetation preservation areas, as designated by the Engineer.

When the Bid Item “Project Area Weed and Pest Control” is included in the Contract, the Contractor shall also control all weeds specified as noxious by the Washington State Department of Agriculture, the local Weed District, or the County Noxious Weed Control Board outside of planting areas within the project limits.

8-02.3(4) Topsoil

Topsoil shall not be worked or placed when the ground or topsoil is frozen, or excessively wet.

The Contractor shall protect topsoil stockpiled for project use to prevent erosion and weed growth. Weed growth on topsoil stockpile sites shall be immediately eliminated in accordance with the accepted Weed and Pest Control Plan and Section 8-02.3(3)C.

The subsoil where topsoil is to be placed shall be tilled to a depth of 1 foot or as specified in the Special Provisions or the Plans. Topsoil of the type specified shall be evenly spread over the specified areas to the depth shown in the Plans or as otherwise ordered by the Engineer. Topsoil depths greater than 6 inches shall be placed in lifts no more than 6 inches in depth. The first lift of topsoil shall be incorporated with sub-soil to a depth of 8 inches and subsequent lifts placed and lightly tamped between lifts. After the topsoil has been spread, all large clods, hard lumps, and rocks 2 inches in diameter and larger, and litter shall be raked up, removed, and disposed.

8-02.3(4)A Topsoil Type A

Topsoil Type A shall be as specified in the Special Provisions. The Contractor shall submit a certification by the supplier that the contents of the Topsoil meet the requirements in the Special Provisions.

8-02.3(4)B Topsoil Type B

Topsoil Type B shall be naturally occurring topsoil taken from within the project limits and shall meet the requirements of Section 9-14.1(2). Topsoil Type B shall be taken from areas shown in the Plans to the designated depth and stockpiled at locations that will not interfere with the construction of the project, and outside of sensitive areas, as allowed by the Engineer. A minimum of two weeks prior to excavation of Topsoil Type B, the Contractor shall pre-treat the vegetation on the designated Topsoil Type B areas according to the Weed and Pest Control Plan. Areas beyond the slope stakes shall be disturbed as little as possible in the above operations and under no circumstances shall Topsoil Type B be stockpiled within 10 feet of any existing tree or vegetation area designated to be saved and protected. The Contractor shall protect topsoil stockpile from weed infestation.

The Contractor shall set aside sufficient material to satisfy the needs of the project.

Upon completion of topsoil placement, the Contractor shall dispose of remaining stockpiled Topsoil Type B not required for use on the project at no additional expense to the Contracting Agency in accordance with Section 2-03.3(7)C.

Should a shortage of Topsoil Type B occur, and the Contractor has wasted or otherwise disposed of topsoil material, the Contractor shall furnish Topsoil Type A or C at no additional expense to the Contracting Agency.

8-02.3(4)C Topsoil Type C
Topsoil Type C shall be naturally occurring topsoil obtained from a source provided by the Contractor outside of the Contracting Agency-owned Right of Way. Topsoil Type C shall meet the requirements of Sections 8-02.3(4)B and 9-14.1(3). The Contractor shall not begin removal of Topsoil Type C from the proposed source until the material has been allowed for use by the Engineer.

8-02.3(5) Roadside Seeding, Lawn and Planting Area Preparation
This Work includes preparing worked areas for the installation of all types of permanent erosion control planting. Work shall be conducted so the flow lines in drainage channels are maintained. Material displaced by the Contractor's operations that interferes with drainage shall be removed from the channel and disposed of as allowed by the Engineer.

8-02.3(5)A Seeding Area Preparation
The Contractor shall prepare roadside seeding areas as follows:

1. Remove all excess material, debris, stumps, and rocks greater than 3 inches in diameter from areas to be seeded. Dispose of removed materials offsite.

2. Prepare roadside seeding area to a weed free and bare condition.

3. Bring area to uniform grade and install topsoil, soil amendments, or compost as specified. Any slopes 3(H) to 1(V) or steeper shall not be tilled unless otherwise specified.

4. Compact to provide a reasonably firm but friable seedbed; tractor walk to uniformly cover the surface with longitudinal depressions at least 2 inches deep formed perpendicular to the natural flow of water on the slope. Condition the soil with sufficient water so the longitudinal depressions remain in the soil surface until completion of the seeding.

5. Seed and mulch within 2 days of preparation.

8-02.3(5)B Lawn Area Preparation
The Contractor shall prepare lawn areas as follows:

1. Prepare lawn area to a weed free and bare condition in accordance with Section 8-02.3(3)B.

2. Remove excess material, stumps, wood or rocks over 3 inches in diameter and remove from site.

3. Bring area to uniform grade and install topsoil or soil amendments in accordance with Section 8-02.3(4) and 8-02.3(6).

4. Till to an 8-inch depth, rake to a smooth even grade without low areas that trap water, and compact with a 50-pound roller. The finished grade of the soil shall be 1 inch below the top of all curbs, junction and valve boxes, walks, driveways, and other Structures.

5. Seed or sod the area within two days of preparation.

8-02.3(5)C Planting Area Preparation
The Contractor shall prepare planting areas as follows:

1. Prepare planting area to a weed free and bare condition in accordance with Section 8-02.3(3)B.

2. Decompact soil to a depth of 18 inches where construction activities have taken place or where native soils are compacted.

3. Return soil to uniform grade even with surrounding areas, leaving no holes or mounds over 3 inches in depth or height.

4. Remove excess material, stumps, wood or rocks over 3 inches in diameter and remove from site.

5. Apply compost or other amendments as indicated in the plans and in accordance with Section 8-02.3(6).

6. Cultivate amendments to a depth of 12 inches to provide a reasonably firm but friable planting area. Do not till any slopes 3(H) to 1(V) or steeper.

7. Return soil to a uniform finished grade, 1 inch, or the specified depth of mulch plus 1 inch, below walks, curbs, junction and valve boxes, catch basins, and driveways, unless otherwise specified.

8. Begin planting and mulching the area within two days of final preparation.

8-02.3(6) Soil Amendments
The Contractor shall place soil amendments of the type, quality, and quantities specified where shown in the Plans or as specified in the Special Provisions. Areas receiving soil amendments shall be bare soil or vegetation free prior to application. All soil amendments shall be installed as shown in the Plans within 30 calendar days after delivery to the project site.

8-02.3(6)A Compost
Compost used for soil amendments shall be Fine Compost unless otherwise designated in the Plans. When compost blanket is used for temporary erosion control, the compost blanket may be incorporated into the soil immediately prior to planting when used as compost soil amendment. The area shall be prepared in accordance with Section 8-02.3(5) prior to placing compost.

8-02.3(6)B Fertilizers

The Contractor shall apply fertilizer in the form, mixture, and rate specified in the Special Provisions or as directed by the Engineer. Application procedures shall be in accordance with the manufacturer's recommendations unless otherwise specified in the Special Provisions.

The Contractor shall submit a guaranteed fertilizer analysis label for the selected product a minimum of one week prior to application for acceptance. Following the Engineer's acceptance, fertilizing of the accepted ground or vegetated surfaces shall begin immediately.

In seeding and lawn areas to be fertilized, the fertilizer shall be applied concurrently with the seed. When fertilizer is hydraulically applied, the fertilizer shall be suitable for application with seeding as specified in Section 8-02.3(9)C. If hydroseeding, the fertilizer shall be placed in the hydroseeder tank no more than 1 hour prior to application.

Fertilizers for planting areas shall be applied concurrently with compost and applied prior to incorporation, unless tablet form fertilizer is specified. Where tablet form fertilizer is specified, fertilizer shall be applied concurrently with plant installation.

Fertilizer sprayed on signs or sign structures shall be removed the same day.

Areas not accessible by fertilizing equipment shall be fertilized by allowed hand methods.

Second Application: A second application of fertilizer shall be applied as specified in the Special Provisions at the locations designated in the Plans. The fertilizer shall be applied during the months of March, April, or May of the following year after the initial seeding, planting, or lawn installation. The fertilizer shall be dry granular pellets or pearls and applied in accordance with the manufacturer's recommendations or as specified in the Special Provisions.

8-02.3(7) Layout of Planting, Lawn and Seeding Areas

The Contractor shall lay out and prepare planting and lawn areas and receive the Engineer's acceptance of layout and preparation prior to any installation activities. The Contractor shall stake the location of all trees larger than 1-inch caliper and the perimeter of all planting areas for acceptance by the Engineer prior to any installation activities.

The Contractor shall locate all trees to be planted in mowable grass areas a minimum of 10 feet from the edge of planting areas, other trees, fence lines, and bottom of ditches unless otherwise specified.

Tree locations shown in the Plans shall be considered approximate unless shown with stationing and offset distance. In irrigated areas, trees shall be located so their trunk is a minimum of ⅓ of the spray radius away from the nearest sprinkler head.

Unless otherwise shown, planting areas located adjacent to Roadways shall begin 6 feet from the edge of shoulder on roadway fills and begin 5 feet up on the back slope from the bottom on roadway cut sections. Plants within planting areas shall

be located such that mature branching pattern will not block sight distance, signs, or other traffic-related devices. No trees shall be placed where the mature canopy will grow to within 10 feet of existing power lines. Where roadside ditches are present, planting areas shall begin 5 feet from the centerline of the ditch unless shown otherwise in the Plans.

8-02.3(8) Planting

8-02.3(8)A Dates and Conditions for Planting

No plant material shall be planted until it has been inspected and accepted for planting by the Engineer. Rejected material shall be removed from the project site immediately. All plants for the project or a sufficient quantity to plant 1-acre of the site, whichever is less, shall be received on site prior to the Engineer beginning inspection of the plants.

Under no circumstances will planting be permitted during unsuitable soil or weather conditions as determined by the Engineer. Unsuitable conditions may include frozen soil, freezing weather, saturated soil, standing water, high winds, heavy rains, and high water levels. The ground shall be moist at the time of planting. All planting shall be accomplished during the following periods:

1. Non-Irrigated Plant Material
   Western Washington (West of the Cascade Mountain Crest) – October 1 to March 1.
   Eastern Washington (East of the Cascade Mountain Crest) – October 1 to November 15.

2. Irrigated Plant Material

   In irrigated areas, plant material shall not be installed until the irrigation system is fully operational and accepted by the Engineer. Trees and shrubs may be planted in irrigated areas during the non-irrigated planting window before the irrigation system is functional with the written concurrence of the Engineer only if the irrigation system is guaranteed to be operational prior to the end of the non-irrigated planting window.

8-02.3(8)B Plant Installation

The Contractor shall handle plant material in the following manner:

1. Root systems shall be kept covered and damp at all times. Plant material shall be kept in containers until the time of planting.

2. Roots shall not be bunched, curled, twisted, or unreasonably bent when placed in the planting hole. Bare root plant material shall be dormant at the time of harvesting and planting. The root systems of all bare root plant material shall be dipped in a slurry immediately prior to planting.

3. Plant material supplied in wrapped balls shall not be removed from the wrapping until the time of planting at the planting location. The root system of balled plant material shall be moist at the time of planting. Root balls shall be loosened prior to planting. All burlap,

baskets, string, wire and other such materials shall be removed from the hole when planting balled plants.

4. Plant cutting material shall be dormant at the time of cutting and planting. All cuttings shall be installed immediately if buds begin to swell.

5. Plants shall be placed with the crown at the finished grade. In their final position, plants shall have their top true root (not adventitious root) no more than 1 inch below the soil surface, no matter where that root was located in the original root ball or container. The backfill material, including container and root ball soil, shall be thoroughly watered on the same day that planting occurs regardless of season.

When installing plants, the Contractor shall dig planting holes three times the diameter of the container or root ball size. Any glazed surface of the planting hole shall be roughened prior to planting.

8-02.3(8)C Pruning, Staking, Guying, and Wrapping
Plants shall be pruned at the time of planting, only to remove minor broken or damaged twigs, branches or roots. Pruning shall be performed with a sharp tool and shall be done in such a manner as to retain or to encourage natural growth characteristics of the plants. All other pruning shall be performed only after the plants have been in the ground at least 1 year and when plants are dormant.

Trees shall only be staked when so noted in the Plans. Each tree shall be staked or guyed before completion of the backfilling in accordance with the details shown in the Plans.

Trees shall be wrapped when so noted in the Plans.

8-02.3(9) Seeding, Fertilizing, and Mulching
For all seed, the Contractor shall furnish the following documentation to the Engineer:

1. The state or provincial seed dealer license and endorsements.

2. Copies of Washington State Department of Agriculture (WSDA) test results on each lot of seed. Test results shall be within six months prior to the date of application.

8-02.3(9)A Dates for Application of Seed
Unless otherwise allowed by the Engineer, the Contractor shall apply seed for permanent erosion control during the following periods:

Western Washington[1] (West of the Cascade Mountain Crest)	Eastern Washington (East of the Cascade Mountain Crest)
March 1 through May 15 September 1 through October 1	October 1 through November 15
[1]Seeding may be allowed outside these dates when allowed by the Engineer.	

All roadway excavation and embankment ground surfaces that are completed to final grades shall be prepared and seeded during the first available seeding window. When environmental conditions are not conducive to satisfactory results, the Engineer may suspend the seeding Work until such time that the desired results are likely to be obtained. If seeding is suspended, temporary erosion control methods according to Section 8-01 shall be used to protect the bare soil until seeding conditions improve.

8-02.3(9)B Seeding and Fertilizing

The Contractor shall prepare the seeding area in accordance with Section 8-02.3(5)A and apply seed at the rate and mix specified in the Special Provisions. The Contractor shall notify the Engineer within 5 days in advance of any seeding operation and shall not begin the Work until areas prepared or designated for seeding have been accepted. Following the Engineer's acceptance, seeding of the accepted ground surfaces shall begin immediately.

Seeding shall not be done during windy weather or when the ground is frozen, or excessively wet.

When seeding by hand, the seed shall be incorporated into the top ¼ inch of soil by hand raking or other method that is allowed by the Engineer.

Seed applied as a separate operation using a hydroseeder shall have a tracer added to visibly aid uniform application. The tracer shall be HECP Short-Term Mulch applied at a rate of 200 to 250 pounds per acre and the tracer shall carry the measured specified seeding rate.

8-02.3(9)C Seeding with Fertilizers and Mulches

When the Proposal includes any variation of seeding, fertilizing, and without mulching, the seed and fertilizer shall be applied in one application followed by mulching. West of the Cascade Mountains, seed, fertilizer, and mulch may be completely applied in one application. East of the Cascades, seeding, fertilizing, and mulching shall not be applied as a single application unless allowed by the Engineer in writing prior to application. The fertilizing and mulching shall meet the requirements of Sections 8-02.3(6) and 8-02.3(11).

8-02.3(9)D Inspection

Seeded areas will be inspected upon completion of seeding, fertilizing, and mulching. The Work in any area will not be measured for payment until a uniform distribution of the materials is accomplished at the specified rate. Areas that have not received a uniform application of seed, fertilizer, and mulch at the specified rate, as determined by the Engineer, shall be re-seeded, re-fertilized, or re-mulched prior to payment for seeding within a designated area.

8-02.3(9)E Protection and Care of Seeded Areas

The Contractor shall install and establish a stable and weed free stand of grass as specified within all designated permanent seeding areas. A stable stand of grass shall meet the following requirements:

1. A dense and uniform canopy cover, 70% for Western Washington and 50% for Eastern Washington, of specified species covers all

seeded areas after 3 months of active growth following germination during the growing season. Canopy cover is defined as the cover of living and vigorous grass blades, leaves, and shoots of specified species. Volunteer species, weeds, woody plants, or other undesirable vegetation shall not factor into the canopy cover. Growth and establishment may require supplemental irrigation to meet cover requirements.

2. Stand health is evident by vigorously growing planted species having a uniform rich-green appearance and with no dead patches or major gaps of growth. A stand of grass that displays rusting, wilting, stunted growth, disease, yellowing or browning of leaves, or bare patches does not meet the stand health requirement.

3. The Contractor shall establish a stable stand of grass free of all weeds, non-specified grasses, and other undesirable vegetation. Weed control shall be in accordance with the Weed and Pest Control Plan and occur on a monthly basis during the establishment period and through the life of the Contract.

4. Remove all trash, rocks, construction debris, and other obstructions that may be detrimental to the continued establishment of future seeding.

In addition to the requirements of Section 1-07.13(1), restoration of eroded areas including clean up, removal, and proper disposal of eroded material, filling and raking of eroded areas with Topsoil Type A or fine compost, and re-application of the specified seed, fertilizer, and mulch shall occur at no additional cost to the Contracting Agency.

8-02.3(10) Lawn Installation

8-02.3(10)A Dates and Conditions for Lawn Installation

In irrigated areas, lawn installation shall not begin until the irrigation system is fully operational.

Unless otherwise allowed by the Engineer, seeded lawn installation shall be performed during the following time periods at the location shown:

Western Washington (West of the Cascade Mountain Crest)	Eastern Washington (East of the Cascade Mountain Crest)
March 1 through May 15 September 1 through October 1	October 1 through November 15
When irrigation system is operational March 1 through October 1	When irrigation system is operational March 1 through November 1

8-02.3(10)B Lawn Seeding and Sodding

The Contractor shall prepare the lawn area in accordance with Section 8-02.3(5) and apply seed at the mix and rate of application as specified in the Special Provisions.

The Contractor shall have the option of sodding in lieu of seeding for lawn installation at no additional expense to the Contracting Agency. Seeding in lieu of sodding will not be allowed.

Seed placed by hand shall be raked into the soil. Following raking, the seeded soil shall be rolled with a smooth 50-pound roller. Sod strips shall be placed within 48 hours of being cut. Placement shall be without voids and have the end joints staggered. Following placement, the sod shall be rolled with a smooth roller to establish contact with the soil.

Barriers shall be erected, with warning signs where necessary, to preclude pedestrian traffic access to the newly placed lawn during the establishment period.

8-02.3(10)C Lawn Establishment

Lawn establishment shall consist of caring for all new lawn areas within the limits of the project.

The lawn establishment period shall begin immediately after the lawn seeding or sodding has been accepted by the Engineer and shall extend to the end of four mowings or 20 working days whichever is longer. The mowings shall be done in accordance with Section 8-02.3(10)D.

During the lawn establishment period, the Contractor shall ensure the continuing healthy growth of the turf. This care shall include keeping the project in a presentable condition including, but not limited to, removal of litter, mowing, trimming, removal of grass clippings, edging, fertilization, insecticide and fungicide applications, weed control, watering, repairing the irrigation system, and repair and reseeding all damaged areas.

Temporary barriers shall be removed only when directed by the Engineer.

All Work performed under lawn establishment shall comply with established turf management practices.

Acceptance of lawn planting as specified will be based on a uniform stand of grass and a uniform grade at the time of final inspection. The Contractor shall recultivate, re-grade, reseed, and refertilize areas that are bare or have a poor stand of grass or not having a uniform grade through any cause before final inspection at no additional cost to the Contracting Agency.

8-02.3(10)D Lawn Mowing

Lawn mowing shall begin immediately after the lawn establishment period has been accepted by the Engineer and shall extend to the end of the Contract or the first-year plant establishment, whichever is last.

The Contractor shall accomplish the following minimum requirements:

1. Mow, trim, and edge as often as conditions dictate, at a minimum, once per week between April and September. Maximum height of lawn shall not exceed 3 inches. The cutting height shall be 2 inches. Cuttings, trimmings, and edgings shall be disposed of off the project

site. When the Engineer allows the use of a mulching mower, trimmings may be left in place.

2. Water as often as conditions dictate depending on weather and soil conditions.

3. Provide fertilizer, weed control, water, and other measures as necessary to establish and maintain a healthy stand of grass.

8-02.3(11) Mulch

Mulches associated with seeding and planting shall be of the type specified in the Special Provisions or as indicated in the Plans. The Contractor shall evenly apply mulch at the rates indicated in the Plans. Mulches shall not be placed below the anticipated water level of ditch slopes, pond bank slopes, and stream banks, or in areas of standing or flowing water.

8-02.3(11)A Mulch for Seeding Areas

The Contractor shall furnish and evenly apply Hydraulically Applied Erosion Control Product (HECP) Long Term Mulch at the rates indicated and in accordance with the Manufacturer's specifications unless otherwise specified.

HECP Long Term Mulch shall be hydraulically applied at the rate of 3500 pounds per acre with no more than 2000 pounds applied in any single lift. HECP mulch shall not be used within the Ordinary High Water Mark.

Mulch sprayed on signs or sign Structures shall be removed the same day.

Areas not accessible by mulching equipment shall be mulched by accepted hand methods.

HECP Long Term Mulch may be applied with seed and fertilizer west of the summit of the Cascade Range. East of the summit of the Cascade Range, seed and fertilizer shall be applied in a single application followed by the application of mulch.

8-02.3(11)B Bark or Woodchip Mulch

The Contractor shall apply bark or wood chip mulch of the type and depth specified where shown in the Plans or as specified in the Special Provisions.

The Contractor shall complete final grading and placement/incorporation of soil amendments within the planting area prior to placement of mulch. Areas receiving bark mulch shall be bare soil or vegetation free before application, except where trees and other plants are specifically identified in the Plans or designated by the Engineer to be saved and protected.

Bark or wood chip mulch shall be placed to a uniform non-compacted depth of 3 inches over all planting areas unless otherwise specified. Mulch shall be feathered to the base of the plant and 1 inch below the top of junction and valve boxes, curbs, and pavement edges.

Any contamination of the mulch due to the Contractor's operations shall be corrected to its former condition at no additional cost to the Contracting

Agency. Mulch placed to a thickness greater than specified shall be at no additional cost to the Contracting Agency.

The Contractor shall keep plant material crowns, runners, and branches free of mulch at all times.

8-02.3(11)C Bark or Woodchip Mulch Rings
The Contractor shall apply mulch rings around plants installed within existing vegetation areas or within seeded areas as shown in the Plans. Bark or wood chip mulch rings shall be applied to the surface of vegetation free amended soil in the isolated plant locations where shown in the Plans or as specified in the Special Provisions. Bark or wood chip mulch shall be placed to a uniform non-compacted depth of 3 inches to a radius of 2 feet around all plants within interplanted plant locations.

8-02.3(12) Completion of Initial Planting
Upon completion of the initial planting within a designated area, the Engineer will make an inspection of all planting areas. The Engineer will notify the Contractor, in writing, of any replacements or corrective action necessary to meet the plant installation requirements. The Contractor shall replace all plants and associated materials rejected or missing and correct unsatisfactory conditions.

Completion of the initial planting within a designated area includes the following conditions:

1. 100 percent of each of the plant material categories are installed as shown in the Plans.

2. Planting Area is cleaned up.

3. Repairs are completed, including but not limited to, full operation of the irrigation system.

4. Mulch coverage is complete.

5. All weeds are controlled.

8-02.3(13) Plant Establishment
Plant establishment consists of caring for all plants and planting areas within the project limits. The provisions of Sections 1-07.13(2) and 1-07.13(3) do not apply to this Section.

When the Proposal includes the bid item PSIPE____ (Plant Selection Including Plant Establishment), that bid item includes one year of plant establishment Work. The first year of plant establishment shall begin immediately upon written notification from the Engineer of the completion of initial planting for the project. The first-year plant establishment period shall be a minimum of one calendar year. The one calendar year shall be extended an amount equal to any periods where the Contractor does not comply with the plant establishment requirements and plan.

During the first-year plant establishment period, the Contractor shall perform all Work necessary to ensure the resumption and continued growth of the transplanted material. This Work shall include, but is not limited to, applying water, removing foreign, dead, or rejected plant material, maintaining all planting areas in a weed-free condition, and replacing all unsatisfactory plant material planted under the Contract. If plants are stolen or damaged by the acts of others, the Contracting Agency will pay invoice cost only for the replacement plants with no mark-up and the Contractor will be responsible for the labor to install the replacement plants. Other weed control within the project limits but outside of planting, lawn, or seeding areas shall be as specified in Section 8-02.3(3)C.

During the first year of plant establishment, the Contractor shall meet monthly or at an agreed upon schedule with the Engineer for the purpose of joint inspection of the planting material. The Contractor shall correct all unsatisfactory conditions identified by the Engineer within a 10-day period immediately following the inspection. If plant replacement is required, the Contractor shall, within the 10-day period, submit a plan and schedule for the plant procurement and replacement to occur during the planting period as designated in Section 8-02.3(8). At the end of the plant establishment period, plants that do not show normal growth shall be replaced and all staking and guying that remain on the project shall be removed unless otherwise allowed by the Engineer.

All automatic irrigation systems shall be operated fully automatic during the plant establishment period and until final acceptance of the Contract. Payment for water used to water in plants, or hand watering of plant material or lawn areas unless otherwise specified, is the responsibility of the Contractor during the first-year plant establishment period.

Subsequent year plant establishment periods shall begin immediately at the completion of the preceding year's plant establishment period. Each subsequent plant establishment period shall be one full calendar year in duration.

During the plant establishment period(s) after the first year plant establishment, the Work necessary for the continued healthy and vigorous growth of all plants material shall be performed as directed by the Engineer.

Payment for water used to water plants during the subsequent year(s) of plant establishment will be paid under the plant establishment item.

8-02.3(14) Plant Replacement

The Contractor shall be responsible for growing or arrange to provide sufficient plants for replacement of all plant material rejected through first-year plant establishment. All replacement plant material shall be inspected and accepted by the Engineer prior to installation. All rejected plant material shall be replaced with acceptable plants meeting the specifications and installed according to the requirements of this Section at dates allowed by the Engineer.

All replacement plants shall be of the same species as the plants they replace and meet the requirements of Section 9-14.8 unless otherwise allowed by the Engineer. Plants may vary in size reflecting one season of growth should the Contractor elect to hold plant material under nursery conditions for an additional year to serve as replacement plants. Replacement plant material larger than specified in the Plans

shall meet the applicable section requirements of the ASNS for container class, ball size, spread, and branching characteristics.

8-02.3(15) Bioengineering
Bioengineering consists of using plant materials for the purpose of streambank or earthen slope construction and surface stabilization. This Work may include installing woody plant cuttings in various forms as well as part of streambank or earthen slope construction.

8-02.3(15)A Fascines
Live fascines shall be constructed of live and dead cuttings bundled together with a diameter of 8 to 18 inches. Live cuttings shall be the species shown in the Plans. Dead branches may be cuttings from any woody, non-invasive plant native to the project area. Dead branches may be placed within the live fascine and on the side exposed to the air. Live branches shall be placed in contact with the soil along their entire length. Each live fascine must contain a minimum of eight live branches. Dead branches shall constitute no more than 40 percent of the total fascine content.

The total length of each live fascine shall be a minimum of 5 feet. Branches shall be bundled into log-like forms and bound with biodegradable twine spaced at 1-foot intervals along the entire length of the live fascine. Live fascines shall be installed horizontally in a trench whose depth shall be ½ the diameter of the live fascine. Secure the live fascine with live stakes 3 feet in length and ¾ inch in diameter placed at 18-inch intervals. A minimum of three live stakes shall be used per fascine. The live stakes shall be driven through the live fascine vertically into the slope. The ends of live fascines shall be woven together so that no gap remains between the two sections of the live fascine.

Prior to being covered with soil, the fascine shall be thoroughly watered. Once the fascine is covered with 6 inches of soil, the soil covering the fascine shall be thoroughly watered.

When used to remedy erosion areas, live fascines shall extend a minimum of two feet beyond the visible area of erosion and soil disturbance. The locations for live fascines and live stake rows shall be identified in the field for review and acceptance by the Engineer. The Engineer may require adjustment of fascine locations prior to installation in order to best accomplish the intended functions.

Plant replacement during plant establishment for “PSIPE Live Fascine” will be required for any section void of live shoots for a length of 3 feet or more. Replacement shall consist of installing live stakes, spaced 1 foot apart above the fascine within the area void of live shoots. Live stakes shall be of the same species as the live fascine and shall have a minimum length of 3 feet and a minimum diameter of ¾ inch. The requirements of Section 8-02.3(8) apply to PSIPE Live Fascine.

8-02.3(15)B Brush Mattress
Live brush mattress shall be constructed of live branch cuttings, live poles, jute rope and topsoil. The live cuttings and live poles shall be from the plant

species designated in the Plans. Live branch cuttings shall be placed with the cut ends oriented down slope as shown in the Plans. Cuttings shall overlap from side to side and from top to bottom as each layer is constructed. The live branches in each succeeding upper layer shall overlap the adjacent lower layer by a minimum of 6 inches. A maximum of 20 percent of the branches may be dead branches, but the live branches shall be distributed evenly to provide even rooting and growth over the entire area of the brush mattress.

The Contractor shall anchor the live brush mattress to the slope using stakes and jute rope as shown in the Plans. Initially, the stakes shall be installed to protrude above the live brush mattress. The Contractor shall attach the jute rope to the stakes and tighten the rope by tamping the stakes further into the bank, pulling the live brush mattress tight against the soil surface. The Contractor shall cover the live brush mattress with sufficient stockpiled topsoil to ensure good soil contact with the live plant material.

Plant replacement during plant establishment for "PSIPE Live Brush Mattress" will be required for any section void of live shoots for an area of 25 square feet or more. Replacement shall consist of installing live stakes, spaced 3 feet apart in a triangular pattern within the area void of live shoots. Live stakes shall be of the same species as the live brush mattress and shall have a minimum length of 3 feet and a minimum diameter of ¾ inch. The requirements of Section 8-02.3(8) apply to PSIPE Brush Mattress.

8-02.3(15)C Brush Layer

Brush layers shall be constructed of live branch cuttings, randomly mixed, from the plant species listed under the brush layer heading in the Plans. The number of branches required will vary depending on the average branch diameter and layer thickness.

Brush layers shall be placed in a trench dug at a 45 degree incline into the slope or stream bank. Two-thirds to three-fourths of the length of the live branches shall be buried. Soil shall be firmly tamped in place. Succeeding layers shall be spaced as detailed in the Plans. Brush layer placed in stream banks shall be angled downstream.

Brush layers may include plant establishment when designated as PSIPE Brush Layer. Plant replacement for PSIPE Brush Layer will be required for each section void of live shoots for a continuous distance of 3 feet or more. The requirements of Section 8-02.3(8) apply to PSIPE Brush Layer.

8-02.3(16) Roadside Maintenance Under Construction

When the Contract includes the item, Roadside Maintenance Under Construction, this Work includes roadside mowing and ditch maintenance, and noxious weed control outside of planting areas according to Section 8-02.3(3)C.

8-02.3(16)A Roadside Mowing

The Contractor shall mow designated roadside grass areas to the limits designated by the Engineer. Roadside mowing is limited to slopes not steeper than 3(H) to 1(V).

The Contractor shall mow according to the following requirements:

1. Trim around traffic equipment, structures, planting areas, or other features extending above ground preceding or simultaneously with each mowing.

2. Maintain grass between 4 and 12 inches in height.

3. Operate mowing equipment with suitable guards to prevent throwing rocks or debris onto the traveled way or off of the Contracting Agency property. Power driven equipment shall not cause ruts, deformation, and compaction of the vegetated soil.

4. Removing clippings is required on the traveled way, shoulders, walkways, or Structures.

5. Restore soil rutting to a smooth and even grade at the direction of the Engineer.

8-02.3(16)B Ditch Maintenance
The Contractor shall maintain drainage for the duration of the Contract according to the following requirements:

1. Maintain flow lines in drainage channels and roadside ditches.

2. Cutting or trimming vegetation within drainage channels to maintain positive flow.

3. Remove dirt and debris from inside of culverts or any drainage area where runoff has allowed accumulations and re-seed for erosion control.

4. Restore channels to previous operational condition.

8-02.4 Measurement
Topsoil, bark or woodchip mulch and soil amendments will be measured by the acre or the square yard along the grade and slope of the area covered immediately after placement. Weed control pre-treatment of topsoil areas, excavation, and stockpiling are included in the bid item “Topsoil Type ___.

Bark or woodchip mulch rings will be measured per each.

Compost will be measured by the acre or the square yard along the grade and slope of the area covered immediately after application.

Seeding, fertilizing, and mulching will be measured by the acre or the square yard by ground slope measurement or through the use of design data.

Seeding and fertilizing by hand will be measured by the square yard. No adjustment in area size will be made for the vegetation free zone around each plant.

Seeded lawn, sod installation, and lawn mowing will be measured along the ground slope and computed in square yards of actual lawn completed, established, and accepted.

Plant selection will be measured per each.

PSIPE __ (Plant Selection Including Plant Establishment) will be measured per each.

Live Pole will be measured per each.

Live Stake Row will be measured by the linear foot along the ground slope line.

The pay quantities for plant materials will be determined by count of the number of satisfactory plants in each category accepted by the Engineer.

Fascine and PSIPE live fascine will be measured by the linear foot along the ground slope line.

Brush mattress and PSIPE live brush mattress will be measured by the surface square yard along the ground slope line.

Brush layer and PSIPE brush layer will be measured by the linear foot along the ground slope line.

Water will be measured in accordance with Section 2-07.4. Measurement will be made of only that water hauled in tank trucks or similar equipment.

8-02.5 Payment

Payment will be made for each of the following listed Bid items that are included in the Proposal:

"Project Area Weed and Pest Control" will be paid in accordance with Section 1-09.6.
For the purpose of providing a common Proposal for all Bidders, the Contracting Agency entered an amount for "Project Area Weed and Pest Control" in the Proposal to become a part of the total Bid by the Contractor. Payment under this item will be made only when the Work is not already covered by other items.

"Topsoil Type ____", per acre.
The unit Contract price per acre for "Topsoil Type ____" shall be full payment for all costs for the specified Work.

"Fine Compost ", per acre or per square yard.
"Medium Compost", per acre or per square yard.
"Coarse Compost", per acre or per square yard.
The unit Contract price per acre for "Fine Compost", "Medium Compost" or "Coarse Compost" shall be full pay for furnishing and spreading the compost onto the existing soil.

"Soil Amendment", per acre.
The unit Contract price per acre for "Soil Amendment" shall be full pay for furnishing and incorporating the soil amendment into the existing soil.

“Plant Selection ___”, per each.
The unit Contract price for “Plant Selection ___”, per each shall be full pay for all Work to perform the work as specified within the planting area prior to planting for weed control, planting area preparation and installation of plants with initial watering.

As the plants that do not include plant establishment are obtained, propagated, and grown, partial payments will be made as follows:

Payment of 15 percent of the unit Contract price per each when the plant materials have been contracted, propagated, and are growing under nursery conditions. The Contractor shall provide the Engineer with certification that the plant material has been procured or contracted for delivery to the project for planting within the time limits of the project. The certification shall state the location, quantity, and size of all material.

Payment will be increased to 100 percent of the unit Contract price per each for contracted plant material at the completion of the initial planting.

All partial payments shall be limited to the actual number of healthy vigorous plants that meet the stage requirements, limited to plan quantity. Previous partial payments made for materials rejected or missing will be deducted from future payments due the Contractor.

“PSIPE ___”, per each.
The unit Contract price for “PSIPE ___”, per each, shall be full pay for all Work necessary to perform as specified within the planting area for weed control and planting area preparation, planting, cleanup, and water necessary to complete planting operations as specified to the end of first year plant establishment.

As the plants that include plant establishment are obtained, propagated, and grown, partial payments will be made as follows after inspection by the Engineer:

Payment of 5 percent of the unit Contract price, per each, when the plant materials have been contracted, propagated, and are growing under nursery conditions. The Contractor shall provide the Engineer with certification that the plant material has been procured or contracted for delivery to the project for planting within the time limits of the project. The certification shall state the location, quantity, and size of all material.

Payment will be increased to 15 percent of the unit Contract price, per each, upon completion of the initial weed control and planting area preparation Work.

Payment will be increased to 60 percent of the unit Contract price per each for the contracted plant material in a designated unit area when planted.

Payment will be increased to 70 percent of the unit Contract price per each for contracted plant material at the completion of the initial planting.

Payment will be increased to the appropriate percentage upon reaching the following plant establishment milestones:

June 30th	80 percent
September 30th	90 percent
Completion of first-year plant establishment or after all replacement plants have been installed, whichever is later.	100 percent

Plant establishment milestones are achieved when planting areas meet conditions described in Section 8-02.3(13).

"Seeding, Fertilizing and Mulching", per acre.

"Seeding and Fertilizing", per acre or per square yard.

"Seeding and Fertilizing by Hand", per square yard.

"Second Application of Fertilizer", per acre.

"Seeding and Mulching", per acre.

"Seeded Lawn Installation", per square yard.
"Sod Installation", per square yard.
"Lawn Mowing", per square yard.
The unit Contract price per square yard for "Seeded Lawn Installation" or "Sod Installation" shall be full pay for all costs necessary to prepare the area, plant or sod the lawn, erect barriers, control weeds, and establish lawn areas and for furnishing all labor, tools, equipment, and materials necessary to complete the Work as specified and shall be paid in the following sequence for healthy, vigorous lawn:

Completion of Lawn Planting	60 percent of individual areas
Mid Lawn Establishment (after two mowings)	85 percent of individual areas
Completion of Lawn Establishment (after four mowings)	100 percent of individual areas

"Plant Establishment Year ____" will be paid in accordance with Section 1-09.6. For the purpose of providing a common Proposal for all Bidders, the Contracting Agency entered an amount for "Plant Establishment - ___ Year" in the Proposal to become a part of the total Bid by the Contractor.

"Live Pole", per each.

"Live Stake Row", per linear foot.

"Bark or Wood Chip Mulch", per acre.

"Bark or Wood Chip Mulch Rings", per each.
The unit Contract price per acre for "Bark or Wood Chip Mulch" shall be full pay for furnishing and spreading the mulch onto the existing soil.

"Fascine" and "PSIPE Live Fascine", per linear foot.
"Brush Mattress" and "PSIPE Live Brush Mattress", per square yard.
"Brush Layer" and "PSIPE Brush Layer", per linear foot.
When PSIPE is included with Fascine, Brush Mattress, or Brush Layer, the payment schedule for PSIPE ____ will apply.

"Roadside Maintenance under Construction" will be paid in accordance with Section 1-09.6.
For the purpose of providing a common Proposal for all Bidders, the Contracting Agency has entered an amount for "Roadside Maintenance Under Construction" in the Proposal to become a part of the total Bid by the Contractor.

"Water", per M Gal.

8-04.AP8

Section 8-04, Curbs, Gutters, and Spillways
April 2, 2018
8-04.2 Materials

In the first paragraph, the reference to "Portland Cement" is revised to read:

Cement 9-01

8-04.3(1) Cement Concrete Curbs, Gutters, and Spillways

The first paragraph is supplemented with the following:

Roundabout truck apron cement concrete curb and gutter shall be constructed with air entrained concrete Class 4000 conforming to the requirements of Section 6-02.

8-06.AP8

Section 8-06, Cement Concrete Driveway Entrances
April 2, 2018
8-06.2 Materials

In the first paragraph, the reference to "Portland Cement" is revised to read:

Cement 9-01

8-06.3 Construction Requirements

The first paragraph is revised to read:

Cement concrete driveway approaches shall be constructed with air entrained concrete Class 4000 conforming to the requirements of Section 6-02 or Portland Cement or Blended Hydraulic Cement Concrete Pavement conforming to the requirements of Section 5-05.

8-07.AP8

Section 8-07, Precast Traffic Curb
April 2, 2018
8-07.3(1) Installing Curbs

The first sentence of the first paragraph is revised to read:

> The curb shall be firmly bedded for its entire length and breadth on a mortar bed conforming to Section 9-20.4(3) composed of one part Portland cement or blended hydraulic cement and two parts sand.

The fourth paragraph is revised to read:

> All joints between adjacent pieces of curb except joints for expansion and/or drainage as designated by the Engineer shall be filled with mortar composed of one part Portland cement or blended hydraulic cement and two parts sand.

8-09.AP8

Section 8-09, Raised Pavement Markers
April 1, 2019
8-09.5 Payment

The last paragraph is revised to read:

> The unit Contract price per hundred for “Raised Pavement Marker Type 1”, “Raised Pavement Marker Type 2”, “Raised Pavement Marker Type 3_____ In.”, and “Recessed Pavement Marker” shall be full pay for furnishing and installing the markers in accordance with these Specifications.

8-11.AP8

Section 8-11, Guardrail
April 1, 2019
8-11.3(1)A Erection of Posts

The first sentence of the first paragraph is revised to read:

> Posts shall be set to the true line and grade of the Highway after the grade is in place and compaction is completed.

8-11.3(1)C Terminal and Anchor Installation

The first paragraph is revised to read:

> All excavation and backfilling required for installation of anchors shall be performed in accordance with Section 2-09, except that the costs thereof shall be included in the unit Contract price for the anchor installed.

The first sentence of the second to last paragraph is revised to read:

> Assembly and installation of Beam Guardrail Non-flared Terminals for Type 31 guardrail shall be supervised at all times by a manufacturer’s representative, or an installer who has been trained and certified by the manufacturer.

The last paragraph is revised to read:

> Beam Guardrail Non-flared Terminals for Type 31 guardrail shall meet the crash test and evaluation criteria in the Manual for Assessing Safety Hardware (MASH).

8-11.4 Measurement

The third paragraph is revised to read:

> Measurement of beam guardrail _____ terminal will be per each for the completed terminal.

The fourth paragraph is revised to read:

> Measurement of beam guardrail Type 31 buried terminal Type 2 will be per linear foot for the completed terminal.

The sixth paragraph is revised to read:

> Measurement of beam guardrail anchor Type 10 will be per each for the completed anchor, including the attachment of the anchor to the guardrail.

8-11.5 Payment

The Bid item “Beam Guardrail Anchor Type ___”, per each is revised to read “Beam Guardrail Anchor Type 10”, per each.

The Bid item “Beam Guardrail Buried Terminal Type 1”, per each is deleted from this section.

The Bid item “Beam Guardrail Buried Terminal Type 2”, per linear foot and the following paragraph are revised to read:

> “Beam Guardrail Type 31 Buried Terminal Type 2”, per linear foot.
>
> The unit Contract price per linear foot for “Beam Guardrail Type 31 Buried Terminal Type 2” shall be full payment for all costs to obtain and provide materials and perform the Work as described in Section 8-11.3(1)C.

8-14.AP8

Section 8-14, Cement Concrete Sidewalks
April 2, 2018
8-14.2 Materials

In the first paragraph, the reference to “Portland Cement” is revised to read:

> Cement 9-01

In the second paragraph, each reference to “Federal Standard 595” is revised to read “SAE AMS Standard 595”.

8-16.AP8

Section 8-16, Concrete Slope Protection
April 2, 2018
8-16.2 Materials

In the first paragraph, the last two material references are revised to read:

Poured Portland Cement or Blended Hydraulic Cement Concrete Slope Protection	9-13.5(2)
Pneumatically Placed Portland Cement or Blended Hydraulic Cement Concrete Slope Protection	9-13.5(3)

8-17.AP8

Section 8-17, Impact Attenuator Systems
January 7, 2019
8-17.3 Construction Requirements

This section is supplemented with the following:

Permanent impact attenuators shall meet the crash test and evaluation criteria of the Manual for Assessing Safety Hardware (MASH), except as otherwise noted in the Plans or Special Provisions.

8-20.AP8

Section 8-20, Illumination, Traffic Signal Systems, Intelligent Transportation Systems, and Electrical
August 6, 2018
8-20.1(1) Regulations and Code

The last paragraph is revised to read:

Persons performing electrical Work shall be certified in accordance with and supervised as required by RCW 19.28.161. Proof of certification shall be worn at all times in accordance with WAC 296-46B-942. Persons failing to meet these certification requirements may not perform any electrical work, and shall stop any active electrical work, until their certification is provided and worn in accordance with this Section.

8-20.2(2) Equipment List and Drawings

This section is renumbered:

8-20.2(1) Equipment List and Drawings

8-20.3(4) Foundations

The second sentence of the first paragraph is revised to read:

Concrete for Type II, III, IV, V, and CCTV signal standards and light standard foundations shall be Class 4000P and does not require air entrainment.

8-20.3(5)A General

The last two sentences of the last paragraph is deleted.

This section is supplemented with the following:

All conduits shall include a pull tape with the equipment grounding conductor. The pull tape shall be attached to the conduit near the end bell or grounded end bushing, or to duct plugs or caps if present, at both ends of the conduit.

8-20.3(8) Wiring
The seventeenth paragraph is supplemented with the following:

> Pulling tape shall meet the requirements of Section 9-29.1(10). Pull string may not be used.

8-20.3(14)C Induction Loop Vehicle Detectors
Item number 2 is deleted.

Item numbers 3 through 12 are renumbered to 2 through 11, respectively.

8-21.AP8

Section 8-21, Permanent Signing
January 7 2019
8-21.3(5) Sign Relocation
The second sentence of the first paragraph is revised to read:

> Where the existing sign Structure is mounted on concrete pedestals, the Contractor shall remove the pedestal to a minimum of 2 feet below finished grade and backfill the remaining hole with material similar to that surrounding the hole.

8-21.3(9)F Foundations
Item number 3 of the twelfth paragraph is supplemented with the following new sentence:

> Class 4000P concrete for roadside sign structures does not require air entrainment.

8-22.AP8

Section 8-22, Pavement Marking
January 7, 2019
8-22.3(2) Preparation of Roadway Surfaces
The second paragraph is revised to read:

> Remove all other contaminants from pavement surfaces that may adversely affect the installation of new pavement marking.

8-22.3(3)F Application Thickness
The second to last sentence of the last paragraph is revised to read:

> After grinding, clean the groove.

9-00.AP9

Section 9-00, Definitions and Tests
January 7, 2019
9-00.4 Sieves for Testing Purposes
This section is revised to read:

> Test sieves shall be made of either: (1) woven wire cloth conforming to ASTM E11, or (2) square-hole, perforated plates conforming to ASTM E323.

9-00.7 Galvanized Hardware, AASHTO M 232

The first sentence is revised to read:

> An acceptable alternate to hot-dip galvanizing in accordance with AASHTO M 232 will be zinc coatings mechanically deposited in accordance with ASTM B695, providing the minimum thickness of zinc coating is not less than that specified in AASHTO M 232, and the process will not produce hydrogen embrittlement in the base metal.

9-02.AP9

Section 9-02, Bituminous Materials
January 7, 2019
9-02.1 Asphalt Material, General

The second paragraph is revised to read:

> The Asphalt Supplier of Performance Graded (PG) asphalt binder and emulsified asphalt shall have a Quality Control Plan (QCP) in accordance with WSDOT QC 2 "Standard Practice for Asphalt Suppliers That Certify Performance Graded and Emulsified Asphalts". The Asphalt Supplier's QCP shall be submitted and receive the acceptance of the WSDOT State Materials Laboratory. Once accepted, any change to the QCP will require a new QCP to be submitted for acceptance. The Asphalt Supplier of PG asphalt binder and emulsified asphalt shall certify through the Bill of Lading that the PG asphalt binder or emulsified asphalt meets the Specification requirements of the Contract.

9-02.1(4) Performance Graded Asphalt Binder (PGAB)

This section's title is revised to read:

> **Performance Graded (PG) Asphalt Binder**

The first paragraph is revised to read:

> PG asphalt binder meeting the requirements of AASHTO M 332 Table 1 of the grades specified in the Contract shall be used in the production of HMA. For HMA with greater than 20 percent RAP by total weight of HMA, or any amount of RAS, the new asphalt binder, recycling agent and recovered asphalt (RAP and/or RAS) when blended in the proportions of the mix design shall meet the PG asphalt binder requirements of AASHTO M 332 Table 1 for the grade of asphalt binder specified by the Contract.

The second paragraph, including the table, is revised to read:

> In addition to AASHTO M 332 Table 1 specification requirements, PG asphalt binders shall meet the following requirements:

		Additional Requirements by Performance Grade (PG) Asphalt Binders					
Property	**Test Method**	**PG58S-22**	**PG58H-22**	**PG58V-22**	**PG64S-28**	**PG64H-28**	**PG64V-28**
RTFO Residue: Average Percent Recovery @ 3.2 kPa	AASHTO T 350[1]			30% Min.	20% Min.	25% Min.	30% Min.
[1]Specimen conditioned in accordance with AASHTO T 240 – RTFO.							

The third paragraph is revised to read:

> The RTFO J_{nrdiff} and the PAV direct tension specifications of AASHTO M 332 are not required.

9-02.1(6) Cationic Emulsified Asphalt

This section is revised to read:

> Cationic Emulsified Asphalt meeting the requirements of AASHTO M 208 Table 1 of the grades specified in the Contract shall be used.

9-02.5 Warm Mix Asphalt (WMA) Additive

This section, including title, is revised to read:

> **9-02.5 HMA Additive**
> Additives for HMA shall be accepted by the Engineer.

9-03.AP9

Section 9-03, Aggregates
January 7, 2019

9-03.1 Aggregates for Portland Cement Concrete

This section's title is revised to read:

> **Aggregates for Concrete**

9-03.1(1) General Requirements

The first two sentences of the first paragraph are revised to read:

> Concrete aggregates shall be manufactured from ledge rock, talus, or sand and gravel in accordance with the provisions of Section 3-01. Reclaimed aggregate may be used if it complies with the specifications for concrete.

The second paragraph (up until the colon) is revised to read:

> Aggregates for concrete shall meet the following test requirements:

The second sentence of the second to last paragraph is revised to read:

> The Contractor shall submit test results according to ASTM C1567 through the Engineer to the State Materials Laboratory that demonstrate that the proposed fly ash when used with the proposed aggregates and cement will control the potential expansion to 0.20 percent or less before the fly ash and aggregate sources may be used in concrete.

9-03.1(2) Fine Aggregate for Portland Cement Concrete

This section's title is revised to read:

> **Fine Aggregate for Concrete**

9-03.1(4) Coarse Aggregate for Portland Cement Concrete

This section's title is revised to read:

Coarse Aggregate for Concrete

9-03.1(4)C Grading

The first paragraph (up until the colon) is revised to read:

Coarse aggregate for concrete when separated by means of laboratory sieves shall conform to one or more of the following gradings as called for elsewhere in these Specifications, Special Provisions, or in the Plans:

9-03.1(5) Combined Aggregate Gradation for Portland Cement Concrete

This section's title is revised to read:

Combined Aggregate Gradation for Concrete

9-03.1(5)B Grading

In the last paragraph, "WSDOT FOP for WAQTC/AASHTO T 27/T 11" is revised to read "FOP for WAQTC/AASHTO T 27/T 11".

9-03.2 Aggregate for Job-Mixed Portland Cement Mortar

This section's title is revised to read:

Aggregate for Job-Mixed Portland Cement or Blended Hydraulic Cement Mortar

The first sentence of the first paragraph is revised to read:

Fine aggregate for portland cement or blended hydraulic cement mortar shall consist of sand or other inert materials, or combinations thereof, accepted by the Engineer, having hard, strong, durable particles free from adherent coating.

9-03.4(1) General Requirements

The first paragraph (up until the colon) is revised to read:

Aggregate for bituminous surface treatment shall be manufactured from ledge rock, talus, or gravel, in accordance with Section 3-01. Aggregates for Bituminous Surface Treatment shall meet the following test requirements:

9-03.8(1) General Requirements

The first paragraph (up until the colon) is revised to read:

Aggregates for Hot Mix Asphalt shall meet the following test requirements:

9-03.8(2) HMA Test Requirements

The two tables in the second paragraph are replaced with the following three tables:

Mix Criteria	HMA Class							
	⅜ inch		½ inch		¾ inch		1 inch	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Voids in Mineral Aggregate (VMA), %	15.0		14.0		13.0		12.0	

Voids Filled With Asphalt (VFA), %								
ESAL's (millions)	VFA							
< 0.3	70	80	70	80	70	80	67	80
0.3 to < 3	65	78	65	78	65	78	65	78
≥ 3	73	76	65	75	65	75	65	75
Dust/Asphalt Ratio	0.6	1.6	0.6	1.6	0.6	1.6	0.6	1.6

Test Method	ESAL's (millions)	Number of Passes
Hamburg Wheel-Track Testing, FOP for AASHTO T 324 Minimum Number of Passes with no Stripping Inflection Point and Maximum Rut Depth of 10mm	< 0.3	10,000
	0.3 to < 3	12,500
	≥ 3	15,000
Indirect Tensile (IDT) Strength (psi) of Bituminous Materials FOP for ASTM D6931		175 Maximum

	ESAL's (millions)	N initial	N design	N maximum
% Gmm	< 0.3	≤ 91.5	96.0	≤ 98.0
	0.3 to < 3	≤ 90.5	96.0	≤ 98.0
	≥ 3	≤ 89.0	96.0	≤ 98.0
Gyratory Compaction (number of gyrations)	< 0.3	6	50	75
	0.3 to < 3	7	75	115
	> 3	8	100	160

9-03.8(7) HMA Tolerances and Adjustments

In the table in item number 1, the fifth row is revised to read:

Asphalt binder	-0.4% to 0.5%		±0.7%

In the table in item number 1, the following new row is inserted before the last row:

Voids in Mineral Aggregate, VMA	-1.0%		

9-03.9(1) Ballast

The second paragraph (up until the colon) is revised to read:

> Aggregates for ballast shall meet the following test requirements:

9-03.14(4) Gravel Borrow for Structural Earth Wall

The second sentence of the first paragraph is revised to read:

> The material shall be substantially free of shale or other soft, poor durability particles, and shall not contain recycled materials, such as glass, shredded tires, concrete rubble, or asphaltic concrete rubble.

9-03.21(1)B Recycled Concrete Aggregate Approval and Acceptance

The first sentence of the second paragraph is revised to read:

> Recycled concrete aggregate may be used as coarse aggregate or blended with coarse aggregate for Commercial Concrete, Class 3000 concrete, or Cement Concrete Pavement.

Item number 4 of the second paragraph is revised to read:

4. For Cement Concrete Pavement mix designs using recycled concrete aggregates, the Contractor shall submit evidence that ASR mitigating measures control expansion in accordance with Section 9-03.1(1).

This section is supplemented with the following new subsection:

9-03.21(1)B1 Recycled Concrete Aggregate Approval and Acceptance
Recycled concrete aggregate may be approved through a three tiered system that consists of the following:

Tier 1	
Approval Requirements	Approval of the Reclamation Facility is not required.
Acceptance Requirements	Certification of toxicity characteristics in accordance with Section 9-03.21(1). Field acceptance testing in accordance with Section 3-04.
Approved to provide the following Aggregate Materials:	
9-03.10 Aggregate for Gravel Base 9-03.12(1)B Gravel Backfill for Foundations Class B 9-03.12(2) Gravel Backfill for Walls 9-03.12(3) Gravel Backfill for Pipe Zone Bedding 9-03.14(1) Gravel Borrow 9-03.14(2) Select Borrow 9-03.14(2) Select Borrow (greater than 3 feet below subgrade and side slope) 9-03.14(3) Common Borrow 9-03.14(3) Common Borrow (greater than 3 feet below subgrade and side slope) 9-03.17 Foundation Material Class A and Class B 9-03.18 Foundation Material Class C 9-03.19 Bank Run Gravel for Trench Backfill	

Tier 2	
Approval Requirements	The Reclamation Facility shall have a Quality Control Plan (QCP) in accordance with WSDOT QC 9 "Standard Practice for Approval of Reclamation Facilities of WSDOT Recycled Concrete and Returned Concrete". The Reclamation Facility's QCP shall be submitted and approved by the WSDOT State Materials Laboratory. Once accepted, any changes to the QCP will require a new QCP to be submitted for acceptance. Evaluation of aggregate source properties (LA Wear and Degradation) for the recycled concrete aggregate is not required.
Acceptance Requirements	Certification of toxicity characteristics in accordance with Section 9-03.21(1), required if requested. Field acceptance testing in accordance with Section 3-04 is required. Provide certification in accordance with WSDOT QC 9 for every lot. A lot shall be no larger than 10,000 tons.
Approved to provide the following Aggregate Materials:	

Tier 1 aggregate materials 9-03.1 Coarse Aggregate for Commercial Concrete or Concrete class 3000 9-03.9(1) Ballast 9-03.9(2) Permeable Ballast 9-03.9(3) Crushed Surfacing 9-03.12(1)A Gravel Backfill for Foundations Class A

Tier 3	
Approval Requirements	The Reclamation Facility shall have a Quality Control Plan (QCP) in accordance with WSDOT QC 10 "Standard Practice for Approval of Reclamation Facilities of Recycled Concrete Aggregates from Stockpiles of Unknown Sources". The Reclamation Facility's QCP shall be submitted and approved by the WSDOT State Materials Laboratory. Once accepted, any changes to the QCP will require a new QCP to be submitted for acceptance. Evaluation of aggregate source properties (LA Wear and Degradation) for the recycled concrete aggregate is required.
Acceptance Requirements	Certification of toxicity characteristics in accordance with Section 9-03.21(1) is required. Field acceptance testing in accordance with Section 3-04 is required. Provide certification in accordance with WSDOT QC 10 for every lot. A lot shall be no larger than 10,000 tons
Approved to provide the following Aggregate Materials:	
Tier 1 aggregate materials 9-03.1 Coarse Aggregate for Commercial Concrete or Concrete class 3000 9-03.9(1) Ballast 9-03.9(2) Permeable Ballast 9-03.9(3) Crushed Surfacing 9-03.12(1)A Gravel Backfill for Foundations Class A	

For Reclamation Facilities that do not participate in Tier 2 and Tier 3, approval of recycled concrete aggregate will be in accordance with Section 9-03.21(1), and acceptance will be in accordance with Section 3-04.

9-03.21(1)E Table on Maximum Allowable percent (By Weight) of Recycled Material

"Portland Cement" is deleted from the first two rows in the table.

The following new row is inserted after the second row:

Coarse Aggregate for Concrete Pavement	9-03.1(4)	0	100	0	0

The first column of the fourth row (after the preceding Amendment is applied) is revised to read:

Coarse Aggregate for Commercial Concrete and Class 3000 Concrete

9-04.AP9

Section 9-04, Joint and Crack Sealing Materials
January 7, 2019

This section's title is revised to read:

Joint Sealing Materials

9-04.1(2) Premolded Joint Filler for Expansion Joints

In this section, each reference to "AASHTO T 42" is revised to read "ASTM D 545".

9-04.2(1)A1 Hot Poured Sealant for Cement Concrete Pavement

This section is supplemented with the following:

Hot poured sealant for cement concrete pavement is acceptable for installations in joints where cement concrete pavement abuts a bituminous pavement.

9-04.2(1)A2 Hot Poured Sealant for Bituminous Pavement

This section is supplemented with the following:

Hot poured sealant for bituminous pavement is acceptable for installations in joints where cement concrete pavement abuts a bituminous pavement.

9-04.2(1)B Sand Slurry for Bituminous Pavement

Item number 2 of the first paragraph is revised to read:

2. Two percent portland cement or blended hydraulic cement, and

9-04.3 Joint Mortar

The first paragraph is revised to read:

Mortar for hand mortared joints shall conform to Section 9-20.4(3) and consist of one part portland cement or blended hydraulic cement, three parts fine sand, and sufficient water to allow proper workability.

9-04.5 Flexible Plastic Gaskets

In the table, the Test Method value for **Specific Gravity at 77°F** is revised to read "ASTM D71".

In the table, the Test Method value for **Flash Point COC, F** is revised to read "ASTM D93 REV A".

In the table, the Test Method value for **Volatile Matter** is revised to read "ASTM D6".

9-05.AP9

Section 9-05, Drainage Structures and Culverts
January 7, 2019

9-05.3(1)A End Design and Joints

The second sentence of the first paragraph is revised to read:

The joints and gasket material shall meet the requirements of ASTM C990.

9-05.3(1)C Age at Shipment

The last sentence of the first paragraph is revised to read:

> Unless it is tested and accepted at an earlier age, it shall not be considered ready for shipment sooner than 28 days after manufacture when made with Type II portland cement or blended hydraulic cement, nor sooner than 7 days when made with Type III portland cement.

9-05.7(3) Concrete Storm Sewer Pipe Joints

The second sentence is revised to read:

> The joints and gasket material shall meet the requirements of ASTM C990.

9-05.7(4)A Hydrostatic Pressure on Pipes in Straight Alignment

The first sentence is revised to read:

> Hydrostatic pressure tests on pipes in straight alignment shall be made in accordance with the procedure outlined in Section 10 of ASTM C990, except that they shall be performed on an assembly consisting of not less than three nor more than five pipe sections selected from stock by the Engineer and assembled in accordance with standard installation instructions issued by the manufacturer.

9-05.24(1) Polypropylene Culvert Pipe and Storm Sewer Pipe

This section is revised to read:

> Polypropylene culvert and storm sewer pipe shall conform to the following requirements:
>
> 1. For dual wall pipe sizes up to 60 inches: ASTM F2881 or AASHTO M 330, Type S or Type D.
>
> 2. For double or triple wall pipe sizes up to 60 inches: ASTM F2764.
>
> 3. Fittings shall be factory welded, injection molded, or PVC.

9-05.24(2) Polypropylene Sanitary Sewer Pipe

This section is revised to read:

> Polypropylene sanitary sewer pipe shall conform to the following requirements:
>
> 1. For pipe sizes up to 60 inches: ASTM F2764.
>
> 2. Fittings shall be factory welded, injection molded, or PVC.

9-06.AP9

Section 9-06, Structural Steel and Related Materials
January 7, 2019
9-06.5 Bolts

This section's title is revised to read:

> **Bolts and Rods**

9-06.5(4) Anchor Bolts

This section, including title, is revised to read:

9-06.5(4) Anchor Bolts and Anchor Rods

Anchor bolts and anchor rods shall meet the requirements of ASTM F1554 and, unless otherwise specified, shall be Grade 105 and shall conform to Supplemental Requirements S2, S3, and S4.

Nuts for ASTM F1554 Grade 105 black anchor bolts and anchor rods shall conform to ASTM A563, Grade D or DH. Nuts for ASTM F1554 Grade 105 galvanized anchor bolts and anchor rods shall conform to either ASTM A563, Grade DH, or AASHTO M292, Grade 2H, and shall conform to the overtapping, lubrication, and rotational testing requirements in Section 9-06.5(3). Nuts for ASTM F1554 Grade 36 or 55 black or galvanized anchor bolts and anchor rods shall conform to ASTM A563, Grade A or DH. Washers shall conform to ASTM F436.

The bolts and rods shall be tested by the manufacturer in accordance with the requirements of the pertinent Specification and as specified in these Specifications. Anchor bolts, anchor rods, nuts, and washers shall be inspected prior to shipping to the project site. The Contractor shall submit to the Engineer for acceptance a Manufacturer's Certificate of Compliance for the anchor bolts, anchor rods, nuts, and washers, as defined in Section 1-06.3. If the Engineer deems it appropriate, the Contractor shall provide a sample of the anchor bolt, anchor rod, nut, and washer for testing.

All bolts, rods, nuts, and washers shall be marked and identified as required in the pertinent Specification.

9-06.15 Welded Shear Connectors

The third paragraph is revised to read:

Mechanical properties shall be determined in accordance with AASHTO T 244.

9-06.17 Vacant

This section, including title, is revised to read:

9-06.17 Noise Barrier Wall Access Door

Access door frames shall be formed of 14-gauge steel to the size and dimensions shown in the Plans. The access door frame head and jamb members shall be mitered, securely welded, and ground smooth. Each head shall have two anchors and each jamb shall have three anchors. The hinges shall be reinforced with ¼-inch by 12-inch plate, width equal to the full inside width of the frame.

Access doors shall be full flush 1-¾-inch thick seamless doors with a polystyrene core. Door faces shall be constructed with smooth seamless 14-gauge roller-levered, cold-rolled steel sheet conforming to ASTM A 792 Type SS, Grade 33 minimum, Coating Designation AZ55 minimum. The vertical edges shall be neat interlocked hemmed edge seam. The top and bottom of the door shall be enclosed with 14-gauge channels. Mortise and reinforcement for locks and hinges shall be 10-gauge steel. Welded top cap shall be ground and filled for exterior applications. The bottom channel shall have weep holes.

Each access door shall have three hinges. Access door hinges shall be ASTM A 276 Type 316 stainless steel, 4-½-inches square, with stainless steel ball bearing and non-removable pins.

Each access door shall have two pull plates. The pull plates shall be ASTM A 240 Type 316 stainless steel, with a grip handle of one-inch diameter and 8 to 10-inches in length.

The door assembly shall be fabricated and assembled as a complete unit including all hardware specified prior to shipment.

9-06.18 Metal Bridge Railing

The second sentence of the first paragraph is revised to read:

Steel used for metal railings, when galvanized after fabrication in accordance with AASHTO M111, shall have a controlled silicon content of either 0.00 to 0.06 percent or 0.15 to 0.25 percent.

9-07.AP9

Section 9-07, Reinforcing Steel
January 7, 2019
9-07.5(1) Epoxy-Coated Dowel Bars (for Cement Concrete Rehabilitation)

This section (including title) is revised to read:

9-07.5(1) Dowel Bars for Cement Concrete Pavement Rehabilitation

Dowel bars for Cement Concrete Pavement Rehabilitation shall be 1½ inch outside diameter plain round steel bars or tubular bars 18 inches in length and meet the requirements of one of the following dowel bar types:

1. Epoxy-coated dowel bars shall be round plain steel bars of the dimensions shown in the Standard Plans. They shall conform to AASHTO M31, Grade 60 or ASTM A615, Grade 60 and shall be coated in accordance with ASTM A1078 Type 2 coating, except that the bars may be cut to length after being coated. Cut ends shall be coated in accordance with ASTM A1078 with a patching material that is compatible with the coating, inert in concrete and recommended by the coating manufacturer. The thickness of the epoxy coating shall be 10 mils plus or minus 2 mils. The Contractor shall furnish a written certification that properly identifies the coating material, the number of each batch of coating material used, quantity represented, date of manufacture, name and address of manufacturer, and a statement that the supplied coating material meets the requirements of ASTM A1078 Type 2 coating. Patching material, compatible with the coating material and inert in concrete and recommended by the manufacturer shall be supplied with each shipment for field repairs by the Contractor.

2. ASTM A513 steel tubes made from Grade 60 Carbon Steel Tube with a 1.625 inch outside diameter and a 0.120 inch wall thickness. Both the inside and outside of the tube shall be zinc coated with G40 galvanizing in accordance with ASTM A653. Following zinc coating the tubes shall be coated in accordance with Section 9-07.5(1) item 1. The ends of the tube shall be capped to prevent intrusion of concrete or other materials.

9-07.5(2) Corrosion Resistant Dowel Bars (for Cement Concrete Pavement and Cement Concrete Pavement Rehabilitation)

The first paragraph (up until the colon) is revised to read:

> Corrosion resistant dowel bars shall be 1½ inch outside diameter plain round steel bars or tubular bars 18 inches in length and meet the requirements of one of the following:

Item number 4 and 5 of the first paragraph are revised to read:

4. Corrosion-resistant, low-carbon, chromium plain steel bars for concrete reinforcement meeting all the requirements of ASTM A 1035 Alloy Type CS Grade 100 or Alloy Type CS Grade 120.

5. Zinc Clad dowel bars shall be 1½ inch solid bars or 1.625 inch outside diameter by 0.120 inch wall tubular bars meeting the chemical and physical properties of AASHTO M 31, Grade 60, or AASHTO M 255, Grade 60. The bars shall have a minimum of 0.035 inches A710 Zinc alloy clad to the plain steel inner bar or tube. A710 Zinc shall be composed of: zinc: 99.5 percent, by weight, minimum; copper: 0.1-0.25 percent, by weight; and iron: 0.0020 percent, by weight, maximum. Each end of tubular bars shall be plugged using a snug-fitting insert to prohibit any intrusion of concrete or other materials.

The numbered list in the first paragraph is supplemented with the following:

6. Multicoated fusion bonded epoxy bars shall consist of an ASTM A615 bar with alternating layers of ASTM A934 coating and an abrasion resistant overcoat (ARO). The ASTM A934 coating shall form the base and there shall be two layers of each coating material. The minimum thickness of the combined layers of the ASTM A934 coating and ARO coating shall be 20 mils. The ARO shall meet the following requirements:

Test	Method	Specification
Gouge Resistance	NACE TM0215, 30 kg wt., LS-1 bit @ 25°C	< 0.22 mm
Gouge Resistance	NACE TM0215, 50 kg wt., LS-1 bit @ 25°C	< 0.44 mm

7. ASTM A513 steel tubes made from Grade 60 Carbon Steel Tube with a 1.625 inch outside diameter and a 0.120 inch wall thickness. Both the inside and outside of the tube shall be zinc coated with G90 galvanizing in accordance with ASTM A653. Following zinc coating the tubes shall be coated in accordance with Section 9-07.5(1) item 1. The ends of the tube shall be capped to prevent intrusion of concrete or other materials.

The last paragraph is revised to read:

> Stainless Steel Clad and Stainless Steel Tube Dowel bar ends shall be sealed with a patching material (primer and finish coat) used for patching epoxy-coated reinforcing steel as required in Section 9-07.3, item 6.

9-07.7 Wire Mesh

This section is supplemented with the following:

> Welded wire manufacturers shall participate in the NTPEP Audit Program for Reinforcing Steel (rebar) Manufacturers and shall be listed on the NTPEP audit program website displaying that they are NTPEP compliant.

Section 9-08, Paints and Related Materials
January 7, 2019
9-08.1(1) Description

The first sentence is revised to read:

Paint used for highway and bridge structure applications shall be made from materials meeting the requirements of the applicable Federal and State Paint Specifications, Department of Defense (DOD), American Society of Testing of Materials (ASTM), and The Society for Protective Coatings (SSPC) specifications in effect at time of manufacture.

9-08.1(2) Paint Types

This section is supplemented with the following new subsections:

9-08.1(2)M NEPCOAT Qualified Products List A

Qualified products used shall be part of a NEPCOAT system supplied by the same manufacturer.

9-08.1(2)N NEPCOAT Qualified Products List B

Qualified products used shall be part of a NEPCOAT system supplied by the same manufacturer.

9-08.1(2)D Organic Zinc-Rich Primer

This section, including title, is revised to read:

Vacant

9-08.1(2)E Epoxy Polyamide

This section is revised to read:

Epoxy polyamide shall be a two-component system conforming to MIL-DTL-24441 or SSPC Coating Standard No. 42.

9-08.1(2)H Top Coat, Single-Component, Moisture-Cured Polyurethane

This section is revised to read:

Vehicle Type:	Moisture-cured aliphatic polyurethane.
Color and Gloss:	Meet the SAE AMS Standard 595 Color as specified in the table below.

The Top Coat shall meet the following requirements:

The resin shall be an aliphatic urethane.

Minimum-volume solids 50 percent.

The top coat shall be semi-gloss.

Color	Semi-Gloss
Washington Gray	26357
Mt. Baker Gray	26134
Mt. St. Helens Gray	26306
Cascade Green	24158

9-08.1(2)I Rust-Penetrating Sealer

This section is revised to read:

Rust-penetrating sealer shall be a two-component, chemically-cured, 100 percent solids epoxy.

9-08.1(2)J Black Enamel

This section is revised to read:

The enamel shall conform to Federal Specification MIL PRF 24635E Type II Class 2.

9-08.1(2)K Orange Equipment Enamel

The first paragraph is revised to read:

The enamel shall be an alkyd gloss enamel conforming to Federal Specification MIL-PRF-24635E Type II Class 1. The color, when dry, shall match that of SAE AMS Standard 595, color number 12246.

9-08.1(2)L Exterior Acrylic Latex Paint-White

The first paragraph is revised to read:

This paint shall conform to Federal Specification MIL-PRF-24635E Type II Class 1, 2 or 3.

9-08.1(7) Acceptance

This section is revised to read:

For projects with moisture-cured polyurethane quantities less than 20 gallons, acceptance will be by the Manufacturer's Certificate of Compliance.

For projects with moisture-cured polyurethane quantities greater than 20 gallons, the product shall be listed in the current WSDOT Qualified Products List (QPL). If the lot number is listed on the QPL, it may be accepted without additional testing. If the lot number is not listed on the QPL, a 1 quart sample shall be submitted to the State Materials Laboratory for testing and acceptance.

For all other paint types, acceptance will be based on visual inspection.

9-08.1(8) Standard Colors

In the first paragraph, the reference to "Federal Standard 595" is revised to read "SAE AMS Standard 595".

The second paragraph is revised to read:

Unless otherwise specified, all top or finish coats shall be semi-gloss, with the paint falling within the range of 35 to 70 on the 60-degree gloss meter.

9-08.2 Powder Coating Materials for Coating Galvanized Surfaces

The last paragraph is revised to read:

Repair materials shall be as recommended by the powder coating manufacturer and as specified in the Contractor's powder coating plan as accepted by the Engineer.

9-08.3 Pigmented Sealer Materials for Coating of Concrete Surfaces

This section, including title, is revised to read:

9-08.3 Concrete Surface Treatments

9-08.3(1) Pigmented Sealer Materials

The pigmented sealer shall be a semi-opaque, colored toner containing only methyl methacrylate-ethyl acrylate copolymer resins, toning pigments suspended in solution at all times by a chemical suspension agent, and solvent. Toning pigments shall be laminar silicates, titanium dioxide, and inorganic oxides only. There shall be no settling or color variation. Tinting shall occur at the factory at the time of manufacture and placement in containers, prior to initial shipment. Use of vegetable or marine oils, paraffin materials, stearates, or organic pigments in any part of coating formulation will not be permitted. The color of pigmented sealer shall be as specified by the Contracting Agency. The Contractor shall submit a 1-quart wet sample, a drawdown color sample, and spectrophotometer or colorimeter readings taken in accordance with ASTM D2244, for each batch and corresponding standard color card. The calculated Delta E shall not exceed 1.5 from the Commission Internationale de l'Eclairage (CIELAB) when measured at 10 degrees Standard Observer and Illuminant D 65.

The 1-quart wet sample shall be submitted in the manufacturer's labeled container with product number, batch number, and size of batch. The companion drawdown color sample shall be labeled with the product number, batch number, and size of batch. The Contractor shall submit the specified samples and readings to the Engineer at least 14 calendar days prior to the scheduled application of the sealer. The Contractor shall not begin applying pigmented sealer until receiving the Engineer's written approval of the pigmented sealer color samples.

9-08.3(2) Exposed Aggregate Concrete Coatings and Sealers

9-08.3(2)A Retardant Coating

Retardant coating shall exhibit the following properties:

1. Retards the set of the surface mortar of the concrete without preventing the concrete to reach the specified 28 day compressive strength.

2. Leaves the aggregate with its original color and luster, and firmly embedded in the concrete matrix.

3. Allows the removal of the surface mortar in accordance with the methods specified in Section 6-02.3(14)E without the use of acidic washing compounds.

4. Allows for uniform removal of the surface mortar.

If the Contractor proposes use of a retardant coating that is not listed in the current WSDOT QPL, the Contractor shall submit a Type 2 Working Drawing consisting of a one quart product sample from a current lot along with

supporting product information, Safety Data Sheet, and a Manufacturer's Certificate of Compliance stating that the product conforms to the above performance requirements.

9-08.3(2)B Clear Sealer
The sealer for concrete surfaces with exposed aggregate finish shall be a clear, non-gloss, penetrating sealer of either a silane, siloxane, or silicone based formulation.

9-08.3(3) Permeon Treatment
Permeon treatment shall be a product of known consistent performance in producing the SAE AMS Standard 595 Color No. 30219 target color hue established by WSDOT, either selected from the WSDOT Qualified Products List (QPL), or an equivalent product accepted by the Engineer. For acceptance of products not listed in the current WSDOT QPL, the Contractor shall submit Type 3 Working Drawings consisting of a one quart product sample from a current lot, supporting product information and a Safety Data Sheet.

9-13.AP9

Section 9-13, Riprap, Quarry Spalls, Slope Protection, and Rock for Erosion and Scour Protection and Rock Walls
April 2, 2018
9-13.1(1) General
The last paragraph is revised to read:

Riprap and quarry spalls shall be free from segregation, seams, cracks, and other defects tending to destroy its resistance to weather and shall meet the following test requirements:

9-13.5 Concrete Slope Protection
This section is revised to read:

Concrete slope protection shall consist of reinforced portland cement or blended hydraulic cement concrete poured or pneumatically placed upon the slope with a rustication joint pattern or semi-open concrete masonry units placed upon the slope closely adjoining each other.

9-13.5(2) Poured Portland Cement Concrete Slope Protection
This section's title is revised to read:

Poured Portland Cement or Blended Hydraulic Cement Concrete Slope Protection

9-13.5(3) Pneumatically Placed Portland Cement Concrete Slope Protection
This section's title is revised to read:

Pneumatically Placed Portland Cement or Blended Hydraulic Cement Concrete Slope Protection

The first paragraph is revised to read:

Cement – This material shall be portland cement or blended hydraulic cement as specified in Section 9-01.

9-13.7(1) Rock for Rock Walls and Chinking Material

The first paragraph (up until the colon) is revised to read:

> Rock for rock walls and chinking material shall be hard, sound and durable material, free from seams, cracks, and other defects tending to destroy its resistance to weather, and shall meet the following test requirements:

9-14.AP9

Section 9-14, Erosion Control and Roadside Planting
August 6, 2018

9-14.4(2) Hydraulically Applied Erosion Control Products (HECPs)

In Table 1, the last four rows are deleted.

9-14.4(2)A Long-Term Mulch

The first paragraph is supplemented with the following:

> Products containing cellulose fiber produced from paper or paper components will not be accepted.

Table 2 is supplemented with the following new rows:

Water Holding Capacity	ASTM D 7367	800 percent minimum
Organic Matter Content	AASHTO T 267	90 percent minimum
Seed Germination Enhancement	ASTM D 7322	Long Term 420 percent minimum

9-14.4(2)B Moderate-Term Mulch

This section is revised to read:

> Within 48 hours of application, the Moderate-Term Mulch shall bond with the soil surface to create a continuous, absorbent, flexible, erosion-resistant blanket. Moderate-Term Mulch shall effectively perform the intended erosion control function in accordance with Section 8-01.3(1) for a minimum of 3 months, or until temporary vegetation has been established, whichever comes first.
>
> Moderate-Term Mulch shall not be used in conjunction with permanent seeding.

9-14.4(2)C Short-Term Mulch

This section is revised to read:

> Short-Term Mulch shall effectively perform the intended erosion control function in accordance with Section 8-01.3(1) for a minimum of 2 months, or until temporary vegetation has been established, whichever comes first. Short-Term Mulch shall not be used in conjunction with permanent seeding.

9-16.AP9

Section 9-16, Fence and Guardrail
August 6, 2018

9-16.3(1) Rail Element

The last sentence of the first paragraph is revised to read:

> All rail elements shall be formed from 12-gage steel except for thrie beam reducer sections, reduced length thrie beam rail elements, thrie beams used for bridge rail retrofits, and Design F end sections, which shall be formed from 10-gage steel.

9-16.3(5) Anchors
The last paragraph is revised to read:

Cement grout shall conform to Section 9-20.3(4) and consist of one part portland cement or blended hydraulic cement and two parts sand.

9-18.AP9
Section 9-18, Precast Traffic Curb
April 2, 2018
9-18.1(1) Aggregates and Proportioning
Item number 1 of the first paragraph is revised to read:

1. Portland cement or blended hydraulic cement shall conform to the requirements of Section 9-01 except that it may be Type I portland cement conforming to AASHTO M 85.

9-20.AP9
Section 9-20, Concrete Patching Material, Grout, and Mortar
April 1, 2019
9-20.1 Patching Material
This section, including title, is revised to read:

9-20.1 Patching Material for Cement Concrete Pavement
Concrete patching material shall be prepackaged mortar extended with aggregate. The amount of aggregate for extension shall conform to the manufacturer's recommendation.

Patching mortar and patching mortar extended with aggregate shall contain cementitious material and conform to Sections 9-20.1(1) and 9-20.1(2). The Manufacturer shall use the services of a laboratory that has an equipment calibration verification system and a technician training and evaluation process in accordance with AASHTO R 18 to perform all tests specified in Section 9-20.1.

9-20.1(1) Patching Mortar
Patching mortar shall conform to the following requirements:

Compressive Strength	ASTM Test Method	Specification
at 3 hours	C 39	Minimum 3,000 psi
at 24 hours	C 39	Minimum 5,000 psi
Length Change		
at 28 days	C 157	0.15 percent maximum
Total Chloride Ion Content	C 1218	1 lb/yd^3 maximum
Bond Strength		
at 24 hours	C 882 (As modified by C 928, Section 9.5)	Minimum 1,000 psi
Scaling Resistance (at 25 cycles of freezing and thawing)	C 672 (As modified by C 928, Section 9.4)	1 lb/ft^2 maximum

9-20.1(2) Patching Mortar Extended with Aggregate
Patching mortar extended with aggregate shall meet the following requirements:

Compressive Strength	ASTM Test Method	Specification
at 3 hours	C 39	Minimum 3,000 psi
at 24 hours	C 39	Minimum 5,000 psi
Length Change		
at 28 days	C 157	0.15 percent maximum
Bond Strength		
at 24 hours	C 882 (As modified by ASTM C928, Section 9.5)	Minimum 1,000 psi
Scaling Resistance (at 25 cycles of freezing and thawing)	C 672	2 Maximum Visual Rating
Freeze thaw	C 666	Maximum expansion 0.10% Minimum durability 90.0%

9-20.1(3) Aggregate
Aggregate used to extend the patching mortar shall conform to Section 9-03.1(4) and be AASHTO Grading No. 8. A Manufacturer's Certificate of Compliance shall be submitted showing the aggregate source and the gradation. Mitigation for Alkali Silica Reaction (ASR) will not be required for the extender aggregate used for concrete patching material.

9-20.1(4) Water
Water shall meet the requirements of Section 9-25.1. The quantity of water shall be within the limits recommended by the repair material manufacturer.

9-20.2 Specifications
This section, including title, is revised to read:

9-20.2 Patching Material for Concrete Structure Repair
Concrete patching material shall be a prepackaged mixture of portland or blended hydraulic cement, aggregate, and admixtures. Fly ash, ground granulated blast furnace slag and microsilica fume may be used. The concrete patching material may be shrinkage compensated. The concrete patching material shall also meet the following requirements:

- Compressive strength of 6000 psi or higher at 28 days in accordance with AASHTO T 22 (ASTM C 39), unless noted otherwise

- Bond strength of 250 psi or higher at 28 days or less in accordance with ASTM C 1583 or ICRI 210.3R

- Shrinkage shall be 0.05 percent (500 microstrain) or lower at 28 days in accordance with AASHTO T 160 (ASTM C 157) as modified by ICRI 320.3R

- Permeability shall be 2,000 coulombs or lower at 28 days in accordance with AASHTO T 277 (ASTM C 1202)

- Freeze-thaw resistance shall have a durability factor of 90 percent or higher after a minimum of 300 cycles in accordance with AASHTO T 161 Procedure A (ASTM C 666)

- Soluble chloride ion limits in Section 6-02.3(2) shall be satisfied

9-20.2(1) Patching Mortar
This section, including title, is deleted in its entirety.

9-20.2(2) Patching Mortar Extended with Aggregate
This section, including title, is deleted in its entirety.

9-20.3(3) Grout Type 3 for Unconfined Bearing Pad Applications
This section's title is revised to read:

Grout Type 3 for Unconfined Applications

This section is revised to read:

Grout Type 3 shall be a prepackaged material that does not include expansive admixtures meeting the following requirements:

- Compressive strength shall be 4000 psi or higher at 28 days in accordance with AASHTO T 22 (ASTM C 39) for grout extended with coarse aggregate or AASHTO T 106 (ASTM C109) otherwise.

- Bond strength shall meet one of the following:

  - 250 psi or higher at 28 days or less in accordance with ASTM C1583.

  - 2000 psi or higher at 28 days or less in accordance with ASTM C882. The following modification to ASTM C882 is acceptable: use Type 3 Grout in lieu of epoxy resin base bonding system and freshly mixed portland-cement mortar in the procedure for testing Type II and V systems.

- Drying shrinkage shall be 0.08 percent (800 microstrain) or lower at 28 days in accordance with AASHTO T 160 (ASTM C157). The following modification to AASHTO T 160 is acceptable: use a standard specimen size of 3 x 3 x 11-¼ inches.

9-20.5 Bridge Deck Repair Material
Item number 3 of the first paragraph is revised to read:

3. Permeability of less than 2,000 coulombs at 28-days or more in accordance with AASHTO T 277.

9-21.AP9

Section 9-21, Raised Pavement Markers (RPM)
January 2, 2018
9-21.2 Raised Pavement Markers Type 2
This section's content is deleted.

9-21.2(1) Physical Properties

This section, including title, is revised to read:

9-21.2(1) Standard Raised Pavement Markers Type 2

The marker housing shall contain reflective faces as shown in the Plans to reflect incident light from either a single or opposite directions and meet the requirements of ASTM D 4280 including Flexural strength requirements.

9-21.2(2) Optical Requirements

This section, including title, is revised to read:

9-21.2(2) Abrasion Resistant Raised Markers Type 2

Abrasion Resistant Raised Markers Type 2 shall comply with Section 9-21.2(1) and meet the requirements of ASTM D 4280 with the following additional requirement: The coefficient of luminous intensity of the markers shall be measured after subjecting the entire lens surface to the test described in ASTM D 4280 Section 9.5 using a sand drop apparatus. After the exposure described above, retroreflected values shall not be less than 0.5 times a nominal unblemished sample.

9-21.2(3) Strength Requirements

This section is deleted in its entirety.

9-23.AP9

Section 9-23, Concrete Curing Materials and Admixtures
April 1, 2019
9-23.12 Natural Pozzolan

This section is revised to read:

Natural Pozzolans shall be ground Pumice and shall conform to the requirements of AASHTO M295 Class N, including supplementary optional chemical requirements as set forth in Table 2.

9-23.13 Blended Supplementary Cementitious Material

The second sentence is revised to read:

Blended SCMs shall be limited to binary or ternary blends of fly ash, ground granulated blast furnace slag and microsilica fume.

The second to last sentence is deleted.

9-26.AP9

Section 9-26, Epoxy Resins
January 7, 2019
9-26.1(1) General

The following new sentence is inserted after the first sentence of the first paragraph:

For pre-packaged cartridge kits, the epoxy bonding agent shall meet the requirements of ASTM C881 when mixed according to manufacturer instructions, utilizing the manufacturer's mixing nozzle.

9-26.1(2) Packaging and Marking

The first sentence of the first paragraph is revised to read:

> The components of the epoxy system furnished under these Specifications shall be supplied in separate containers or pre-packaged cartridge kits that are non-reactive with the materials contained.

The second paragraph is revised to read:

> Separate containers shall be marked by permanent marking that identify the formulator, “Component A” (contains the Epoxy Resin) and “Component B” (Contains the Curing Agent), type, grade, class, lot or batch number, mixing instructions and the quantity contained in pounds or gallons as defined by these Specifications.

The following new paragraph is inserted after the second paragraph:

> Pre-packaged cartridge kits shall be marked by permanent marking that identify the formulator, type, grade, class, lot or batch number, mixing instructions and the quantity contained in ounces or milliliters as defined by these Specifications.

9-28.AP9

Section 9-28, Signing Materials and Fabrication
April 1, 2019
9-28.2 Manufacturer’s Identification and Date

The second sentence is revised to read:

> In addition, the width and height dimension, in inches, the Contract number, and the number of the sign as it appears in the Plans shall be placed using 3-inch series C black letters on the back of destination, distance, and large special signs.

9-28.10 Vacant

This section, including title, is revised to read:

> **9-28.10 Digital Printing**
> Transparent and opaque durable inks used in digital printed sign messages shall be as recommended by the manufacturer. When properly applied, digital printed colors shall have a warranty life of the base retroreflective sign sheeting. Digital applied colors shall present a smooth surface, free from foreign material, and all messages and borders shall be clear and sharp. Digital printed signs shall conform to 70% of the retroreflective minimum values established for its type and color. Digitally printed signs shall meet the daytime color and luminance, and nighttime color requirements of ASTM D 4956. No variations in color or overlapping of colors will be permitted. Digital printed permanent traffic signs shall have an integrated engineered match component clear protective overlay recommended by the sheeting manufacturer applied to the entire face of the sign. On Temporary construction/maintenance signs printed with black ink only, the protective overlay film is optional, as long as the finished sign has a warranty of a minimum of three years from sign sheeting manufacturer.
>
> All digital printed traffic control signs shall be an integrated engineered match component system. The integrated engineered match component system shall consist of retroreflective sheeting, durable ink(s), and clear overlay film all from the same manufacturer applied to aluminum substrate conforming to Section 9-28.8.

The sign fabricator shall use an approved integrated engineered match component system as listed on the Qualified Products List (QPL). Each approved digital printer shall only use the compatible retroreflective sign sheeting manufacturer's engineered match component system products.

Each retroreflective sign sheeting manufacturer/integrated engineered match component system listed on the QPL shall certify a department approved sign fabricator is approved to operate their compatible digital printer. The sign fabricator shall re-certify annually with the retroreflective sign manufacturer to ensure their digital printer is still meeting manufacturer's specifications for traffic control signs. Documentation of each re-certification shall be submitted to the QPL Engineer annually.

9-28.11 Hardware

The last paragraph is revised to read:

All steel parts shall be galvanized in accordance with AASHTO M111. Steel bolts and related connecting hardware shall be galvanized in accordance with ASTM F 2329.

9-28.14(2) Steel Structures and Posts

The first sentence of the third paragraph is revised to read:

Anchor rods for sign bridge and cantilever sign structure foundations shall conform to Section 9-06.5(4), including Supplemental Requirement S4 tested at -20°F.

In the second sentence of the fourth paragraph, "AASHTO M232" is revised to read "ASTM F 2329".

The first sentence of the fifth paragraph is revised to read:

Except as otherwise noted, steel used for sign structures and posts shall have a controlled silicon content of either 0.00 to 0.06 percent or 0.15 to 0.25 percent.

The last sentence of the last paragraph is revised to read:

If such modifications are contemplated, the Contractor shall submit a Type 2 Working Drawing of the proposed modifications.

9-29.AP9

Section 9-29, Illumination, Signal, Electrical
April 1, 2019
9-29.1 Conduit, Innerduct, and Outerduct

This section is supplemented with the following new subsections:

9-29.1(10) Pull Tape

Pull tape shall be pre-lubricated polyester pulling tape. The pull tape shall have a minimum width of ½-inch and a minimum tensile strength of 500 pounds. Pull tape may have measurement marks.

9-29.1(11) Foam Conduit Sealant

Foam conduit sealant shall be self-expanding waterproof foam designed to prevent both water and pest intrusion. The foam shall be designed for use in and around electrical equipment, including both insulated and bare conductors.

9-29.2(1) Junction Boxes

The first paragraph is revised to read:

For the purposes of this Specification concrete is defined as portland cement or blended hydraulic cement concrete and non-concrete is all others.

9-29.2(1)A2 Non-Concrete Junction Boxes

The first paragraph is revised to read:

Material for the non-concrete junction boxes shall be of a quality that will provide for a similar life expectancy as portland cement or blended hydraulic cement concrete in a direct burial application.

9-29.2(2)A Standard Duty Cable Vaults and Pull Boxes

In the table in the last paragraph, the fourth, fifth and sixth rows are revised to read:

Slip Resistant Lid	ASTM A36 steel
Frame	ASTM A36 steel
Slip Resistant Frame	ASTM A36 steel

9-29.3(2)A1 Single Conductor Current Carrying

This second sentence is revised to read:

Insulation shall be XLP (cross-linked polyethylene) or EPR (Ethylene Propylene Rubber), Type USE (Underground Service Entrance) or USE-2, and rated for 600-volts or higher.

9-29.6 Light and Signal Standards

In the first sentence of the third paragraph, “AASHTO M232” is revised to read “ASTM F 2329”.

Item number 2 of the last paragraph is revised to read:

2. The steel light and signal standard fabricator’s shop drawing submittal, including supporting design calculations, submitted as a Type 2E Working Drawing in accordance with Section 8-20.2(1) and the Special Provisions.

9-29.6(1) Steel Light and Signal Standards

In the second paragraph, “AASHTO M232” is revised to read “ASTM F 2329”.

The first sentence of the last paragraph is revised to read:

Steel used for light and signal standards shall have a controlled silicon content of either 0.00 to 0.06 percent or 0.15 to 0.25 percent.

9-29.6(5) Foundation Hardware

In the last paragraph, “AASHTO M232” is revised to read “ASTM F 2329”.

9-29.10(1) Conventional Roadway Luminaires

This section is revised to read:

All conventional roadway luminaires shall meet 3G vibration requirements as described in ANSI C136.31.

All luminaires shall have housings fabricated from aluminum. The housing shall be painted flat gray, SAE AMS Standard 595 color chip No. 26280, unless otherwise specified in the Contract. Painted housings shall withstand a 1,000 hour salt spray test as specified in ASTM B117.

Each housing shall include a four bolt slip-fitter mount capable of accepting a nominal 2” tenon and adjustable within +/- 5 degrees of the axis of the tenon. The clamping bracket(s) and the cap screws shall not bottom out on the housing bosses when adjusted within the +/- 5 degree range. No part of the slipfitter mounting brackets on the luminaires shall develop a permanent set in excess of 0.2 inch when the cap screws used for mounting are tightened to a torque of 32 foot-pounds. Each luminaire shall include leveling reference points for both transverse and longitudinal adjustment.

All luminaires shall include shorting caps when shipped. The caps shall be removed and provided to the Contracting Agency when an alternate control device is required to be installed in the photocell socket. House side shields shall be included when required by the Contract. Order codes shall be modified to the minimum extent necessary to include the option for house side shields.

This section is supplemented with the following new subsections:

9-29.10(1)A High Pressure Sodium (HPS) Conventional Roadway Luminaires

HPS conventional roadway luminaires shall meet the following requirements:

1. General shape shall be “cobrahead” style, with flat glass lens and full cutoff optics.

2. Light pattern distribution shall be IES Type III.

3. The reflector of all luminaires shall be of a snap-in design or secured with screws. The reflector shall be polished aluminum or prismatic borosilicate glass.

4. Flat lenses shall be formed from heat resistant, high-impact, molded borosilicate or tempered glass.

5. The lens shall be mounted in a doorframe assembly, which shall be hinged to the luminaire and secured in the closed position to the luminaire by means of an automatic latch. The lens and doorframe assembly, when closed, shall exert pressure against a gasket seat. The lens shall not allow any light output above 90 degrees nadir. Gaskets shall be composed of material capable of withstanding the temperatures involved and shall be securely held in place.

6. The ballast shall be mounted on a separate exterior door, which shall be hinged to the luminaire and secured in the closed position to the luminaire housing by means of an automatic type of latch (a combination hex/slot stainless steel screw fastener may supplement the automatic-type latch).

7. Each luminaire shall be capable of accepting a 150, 200, 250, 310, or 400 watt lamp complete and associated ballast. Lamps shall mount horizontally.

9-29.10(1)B Light Emitting Diode (LED) Conventional Roadway Luminaires
LED Conventional Roadway Luminaires are divided into classes based on their equivalent High Pressure Sodium (HPS) luminaires. Current classes are 200W, 250W, 310W, and 400W. LED luminaires are required to be pre-approved in order to verify their photometric output. To be considered for pre-approval, LED luminaires must meet the requirements of this section.

LED luminaires shall include a removable access door, with tool-less entry, for access to electronic components and the terminal block. The access door shall be removable, but include positive retention such that it can hang freely without disconnecting from the luminaire housing. LED drivers may be mounted either to the interior of the luminaire housing or to the removable door itself.

LED drivers shall be removable for user replacement. All internal modular components shall be connected by means of mechanical plug and socket type quick disconnects. Wire nuts may not be used for any purpose. All external electrical connections to the luminaire shall be made through the terminal block.

LED luminaires shall include a 7-pin NEMA photocell receptacle. The LED driver(s) shall be dimmable from ten volts to zero volts. LED output shall have a Correlated Color Temperature (CCT) of 4000K nominal (4000-4300K) and a Color Rendering Index (CRI) of 70 or greater. LED output shall be a minimum of 85% at 75,000 hours at 25 degrees Celsius.

LED luminaires shall be available for 120V, 240V, and 480V supply voltages. Voltages refer to the supply voltages to the luminaires present in the field. LED power usage shall not exceed the following maximum values for the applicable wattage class:

Class	Max. Wattage
200W	110W
250W	165W
310W	210W
400W	275W

Only one brand of LED conventional roadway luminaire may be used on a Contract. They do not necessarily have to be the same brand as any high-mast, underdeck, or wall-mount luminaires when those types of luminaires are specified in the Contract. LED luminaires shall include a standard 10 year manufacturer warranty.

The list of pre-approved LED Conventional Roadway Luminaires is available at http://www.wsdot.wa.gov/Design/Traffic/ledluminaires.htm.

9-29.10(2) Decorative Luminaires
This section, including title, is revised to read:

9-29.10(2) Vacant

9-29.12 Electrical Splice Materials

This section is supplemented with the following new subsections:

9-29.12(3) Splice Enclosures

9-29.12(3)A Heat Shrink Splice Enclosure

Heat shrink splice enclosures shall be medium or heavy wall cross-linked polyolefin, meeting the requirements of AMS-DTL-23053/15, with thermoplastic adhesive sealant. Heat shrink splices used for “wye” connections require rubber electrical mastic tape.

9-29.12(3)B Molded Splice Enclosure

Molded splice enclosures shall use epoxy resin in a clear rigid plastic mold. The material used shall be compatible with the insulation material of the insulated conductor or cable. The component materials of the resin insulation shall be packaged ready for convenient mixing without removing from the package.

9-29.12(4) Re-Enterable Splice Enclosure

Re-enterable splice enclosures shall use either dielectric grease or a flexible resin contained in a two-piece plastic mold. The mold shall either snap together or use stainless steel hose clamps.

9-29.12(5) Vinyl Electrical Tape for Splices

Vinyl electrical tape in splicing applications shall meet the requirements of MIL-I-24391C.

9-29.12(1) Illumination Circuit Splices

This section is revised to read:

Underground illumination circuit splices shall be solderless crimped connections capable of securely joining the wires, both mechanically and electrically, as defined in Section 8-20.3(8). Aerial illumination splices shall be solderless crimp connectors or split bolt vice-type connectors.

9-29.12(1)A Heat Shrink Splice Enclosure

This section is deleted in its entirety.

9-29.12(1)B Molded Splice Enclosure

This section is deleted in its entirety.

9-29.12(2) Traffic Signal Splice Material

This section is revised to read:

Induction loop splices and magnetometer splices shall use an uninsulated barrel-type crimped connector capable of being soldered.

9-29.13(10)D Cabinets for Type 170E and 2070 Controllers

The first sentence of item number 4 is revised to read:

A disposable paper filter element with dimensions of 12” × 16” × 1” shall be provided in lieu of a metal filter.

Item number 6 is revised to read:

6. LED light strips shall be provided for cabinet lighting, powered from the Equipment breaker on the Power Distribution Assembly. Each LED light strip shall be approximately 12 inches long, have a minimum output of 320 lumens, and have a color temperature of 4100K (cool white) or higher. There shall be three light strips for each rack within the cabinet. Lighting shall be ceiling mounted – rack mounted lighting is not permitted. Light strips shall be installed in the locations shown in the Standard Plans. Lighting shall not interfere with the proper operation of any other ceiling mounted equipment. All lighting fixtures above a rack shall energize automatically when either door to that respective rack is opened. Each door switch shall be labeled “Light”.

Item number 7 is revised to read:

7. Rack mounted equipment shall be as shown in the Standard Plans. The cabinet shall use PDA #2LX and Output File #1LX. Where an Auxiliary Output File is required, Output File #2LX shall also be included.

This section is supplemented with the following new item:

9. The PCB connectors for Field Terminal Blocks FT1 through FT6 on Output Files #1LX and #2LX shall be capable of accepting minimum 14 AWG field wiring, have a pitch of 5.08 mm, and use screw flange type locking to secure the plug and socket connection. The sockets on the Field Terminal Panel shall be secured to the panel such that unplugging a connector will not result in the socket moving or separating from the panel.

9-29.13(11) Traffic Data Accumulator and Ramp Meters

Item number 2 is revised to read:

2. Rack mounted equipment shall be as shown in the Standard Plans.

Item number 3 is revised to read:

3. PDA #3LX shall be furnished with three Model 200 Load Switches installed. PDA #3LX shall be modified to include a second Model 430 transfer relay, mounted on the rear of the PDA and wired as shown in the Standard Plans.

9-29.13(12) ITS Cabinet

This section’s title is revised to read:

Type 331L ITS Cabinet

The first paragraph (excluding the numbered list) is revised to read:

Basic ITS cabinets shall be Model 331L Cabinets, unless otherwise specified in the Contract. Type 331L Cabinets shall be constructed in accordance with the TEES, with the following modifications:

Item number 6 of the first paragraph is revised to read:

6. LED light strips shall be provided for cabinet lighting, powered from the Equipment breaker on the Power Distribution Assembly. Each LED light strip shall be approximately 12 inches long, have a minimum output of 320 lumens, and have a color temperature of 4100K (cool white) or higher. There shall be three light strips for each rack within the cabinet. Lighting shall be ceiling mounted – rack mounted lighting is not permitted. Light strips shall be installed in the locations shown in the Standard Plans. Lighting shall not interfere with the proper operation of any other ceiling mounted equipment. All lighting fixtures above a rack shall energize automatically when either door to that respective rack is opened. Each door switch shall be labeled “Light”.

9-29.16(2)E Painting Signal Heads

In the first sentence, “Federal Standard 595” is revised to read “SAE AMS Standard 595”.

9-29.17 Signal Head Mounting Brackets and Fittings

In the first paragraph, item number 2 under **Stainless Steel** is revised to read:

2. Bands or cables for Type N mount.

9-29.20 Pedestrian Signals

In item 2C of the second paragraph, “Federal Standard 595” is revised to read “SAE AMS Standard 595”.

9-29.24 Service Cabinets

The third sentence of item number 6 is revised to read:

The dead front cover shall have cutouts for the entire breaker array, with blank covers where no circuit breakers are installed.

Item number 8 is revised to read:

8. Lighting contactors shall meet the requirements of Section 9-29.24(2).

The last sentence of item number 10 is revised to read:

Dead front panels shall prevent access to any exposed, live components, and shall cover all equipment except for circuit breakers (including blank covers), the photocell test/bypass switch, and the GFCI receptacle.

9-29.24(2) Electrical Circuit Breakers and Contactors

This section is revised to read:

All circuit breakers shall be bolt-on type, with the RMS-symmetrical interrupting capacity described in this Section. Circuit breakers for 120/240/277 volt circuits shall be rated at 240 or 277 volts, as applicable, with an interrupting capacity of not less than 10,000 amperes. Circuit breakers for 480 volt circuits shall be rated at 480 volts, and shall have an interrupting capacity of not less than 14,000 amperes.

Lighting contactors shall be rated for tungsten or ballasted (such as sodium vapor, mercury vapor, metal halide, and fluorescent) lamp loads. Contactors for

120/240/277 volt circuits shall be rated at 240 volts maximum line to line voltage, or 277 volts maximum line to neutral voltage, as applicable. Contactors for 480 volt circuits shall be rated at 480 volt maximum line to line voltage.

9-33.AP9

Section 9-33, Construction Geosynthetic
August 6, 2018
9-33.4(1) Geosynthetic Material Approval

The second sentence of the first paragraph is revised to read:

> If the geosynthetics material is not listed in the current WSDOT QPL, a Manufacturer's Certificate of Compliance including Certified Test Reports of each proposed geosynthetic shall be submitted to the State Materials Laboratory in Tumwater for evaluation.

The last paragraph is revised to read:

> Geosynthetics used as reinforcement in permanent geosynthetic retaining walls, reinforced slopes, reinforced embankments, and other geosynthetic reinforcement applications require proof of compliance with the National Transportation Product Evaluation Program (NTPEP) in accordance with AASHTO Standard Practice R 69, Standard Practice for Determination of Long-Term Strength for Geosynthetic Reinforcement.

9-34.AP9

Section 9-34, Pavement Marking Material
January 7, 2019
9-34.2(2) Color

The first sentence is revised to read:

> Paint draw-downs shall be prepared according to ASTM D823.

Each reference to "Federal Standard 595" is revised to read "SAE AMS Standard 595".

9-34.2(3) Prohibited Materials

This section is revised to read:

> Traffic paint shall not contain mercury, lead, chromium, diarylide pigments, toluene, chlorinated solvents, hydrolysable chlorine derivatives, ethylene-based glycol ethers and their acetates, nor any other EPA hazardous waste material over the regulatory levels in accordance with CFR 40 Part 261.24.

9-34.2(5) Low VOC Waterborne Paint

The heading "Standard Waterborne Paint" is supplemented with "Type 1 and 2".

The heading "High-Build Waterborne Paint" is supplemented with "Type 4".

The heading "Cold Weather Waterborne Paint" is supplemented with "Type 5".

In the row beginning with "° @90°F", each minimum value is revised to read "60".

In the row beginning with “Fineness of Grind, (Hegman Scale)”, each minimum value is revised to read “3”.

The last four rows are replaced with the following:

Vehicle Composition	ASTM D 2621	100% acrylic emulsion	100% cross-linking acrylic[4]	100% acrylic emulsion
Freeze-Thaw Stability, KU	ASTM D 2243 and D 562	@ 5 cycles show no coagulation or change in viscosity greater than ± 10 KU	@ 5 cycles show no coagulation or change in viscosity greater than ± 10 KU	@ 3 cycles show no coagulation or change in viscosity greater than ± 10 KU
Heat Stability	ASTM D 562[2]	± 10 KU from the initial viscosity	± 10 KU from the initial viscosity	± 10 KU from the initial Viscosity
Low Temperature Film Formation	ASTM D 2805[3]	No Cracks*		No Cracks
Cold Flexibility[5]	ASTM D522	Pass at 0.5 in mandrel*		
Test Deck Durability[6]	ASTM D913	≥70% paint retention in wheel track*		
Mud Cracking	(See note 7)	No Cracks	No Cracks	

After the preceding Amendments are applied, the following new column is inserted after the “Standard Waterborne Paint Type 1 and 2” column:

Semi-Durable Waterborne Paint Type 3			
White		**Yellow**	
Min.	**Max.**	**Min.**	**Max.**
Within ± 0.3 of qualification sample			
80	95	80	95
60		60	
77		77	
	65		65
43		43	
	1.25		1.25
3		3	
0.98		0.96	
88		50	
100°		100°	
9.5		9.5	
	10		10
100% acrylic emulsion			
@ 5 cycles show no coagulation or change in viscosity greater than ± 10 KU			
± 10 KU from the initial viscosity			
No Cracks			
Pass at 0.25 in mandrel			
≥70% paint retention in wheel track			
No Cracks			

The footnotes are supplemented with the following:

[4]Cross-linking acrylic shall meet the requirements of federal specification TT-P-1952F Section 3.1.1.

[5]Cold Flexibility: The paint shall be applied to an aluminum panel at a wet film thickness of 15 mils and allowed to dry under ambient conditions (50±10% RH and 72±5 ˚F) for

24 hours. A cylindrical mandrel apparatus (in accordance with ASTM D522 method B) shall be put in a 40°F refrigerator when the paint is drawn down. After 24 hours, the aluminum panel with dry paint shall be put in the 40°F refrigerator with the mandrel apparatus for 2 hours. After 2 hours, the panel and test apparatus shall be removed and immediately tested to according to ASTM D522 to evaluate cold flexibility. Paint must show no evidence of cracking, chipping or flaking when bent 180 degrees over a mandrel bar of specified diameter.

[6]NTPEP test deck, or a test deck conforming to ASTM D713, shall be conducted for a minimum of six months with the following additional requirements: it shall be applied at 15 wet mils to a test deck that is located at 40N latitude or higher with at least 10,000 ADT and which was applied during the months of September through November.

[7]Paint is applied to an approximately 4”x12” aluminum panel using a drawdown bar with a 50 mil gap. The coated panel is allowed to dry under ambient conditions (50±10% RH and 72±5 ˚F) for 24 hours. Visual evaluation of the dry film shall reveal no cracks.

9-34.3 Plastic

In the first sentence of the last paragraph, “Federal Standard 595” is revised to read “SAE AMS Standard 595”.

9-34.3(2) Type B – Pre-Formed Fused Thermoplastic

In the last two paragraphs, each reference to “Federal Standard 595” is revised to read “SAE AMS Standard 595”.

9-34.3(4) Type D – Liquid Cold Applied Methyl Methacrylate

The Test Method value for **Adhesion to PCC or HMA, psi** is revised to read “ASTM D4541[1]”.

9-34.4 Glass Beads for Pavement Marking Materials

In the Test Method column of the table titled Metal Concentration Limits, “EPA 3052 SW-846 6010C” is revised to read “EPA 3052 SW-846 6010D”.

9-34.5(1) Temporary Pavement Marking Tape – Short Duration

This section, including title, is revised to read:

9-34.5(1) Temporary Pavement Marking Tape – Short Duration (Removable)
Temporary pavement marking tape for short duration (usage is for up to two months) shall conform to ASTM D4592 Type I except that black tape, black mask tape and the black portion of the contrast removable tape, shall be non-reflective.

9-34.5(2) Temporary Pavement Marking Tape – Long Duration

This section’s title is revised to read:

Temporary Pavement Marking Tape – Long Duration (Non-Removable)

The first sentence is revised to read:

Temporary pavement marking tape for long duration (usage is for greater than two months and less than one year) shall conform to ASTM D4592 Type II.

ASTM E2176 is deleted from the second sentence.

9-34.7(1) Requirements

The first paragraph is revised to read:

> Field performance evaluation is required for low VOC solvent-based paint per Section 9-34.2(4), Type A – liquid hot applied thermoplastic per Section 9-34.3(1), Type B – preformed fused thermoplastic per Section 9-34.3(2), Type C – cold applied preformed tape per Section 9-34.3(3), and Type D – liquid applied methyl methacrylate per Section 9-34.3(4).

The last paragraph is deleted.

9-34.7(1)C Auto No-Track Time

The first paragraph is revised to read:

> Auto No-Track Time will only be required for low VOC solvent-based paint in accordance with Section 9-34.2(4).

The second and third sentences of the second paragraph are deleted.

V. WSDOT Special Provisions

INTRODUCTION TO THE SPECIAL PROVISIONS

(******)
The work on this project shall be accomplished in accordance with the Standard Specifications for Road, Bridge and Municipal Construction, 2018 edition, as issued by the Washington State Department of Transportation (WSDOT) and the American Public Works Association (APWA), Washington State Chapter (hereafter "Standard Specifications"). The Standard Specifications, as modified or supplemented by the Amendments to the Standard Specifications and these Special Provisions, all of which are made a part of the Contract Documents, shall govern all of the Work.

These Special Provisions are from various sources, which may have project-specific fill-ins; and project-specific Special Provisions. Each Provision either supplements, modifies, or replaces the comparable Standard Specification or is a new Provision. The deletion, amendment, alteration, or addition to any subsection or portion of the Standard Specifications is meant to pertain only to that particular portion of the section, and in no way should it be interpreted that the balance of the section does not apply.

Several types of Special Provisions are included in this Contract: General, APWA, Contracting Agency, and Project Specific. Special Provisions types are differentiated as follows:

(date)	WSDOT General Special Provision
(date APWA GSP)	APWA General Special Provision
(******)	Project Specific Special Provision.

WSDOT General Special Provisions (and Bridges and Structures Special Provisions, if applicable) are similar to Standard Specifications in that they typically apply to many projects. Usually, the only difference from one project to another is the inclusion of variable project data, inserted as a "fill-in".

APWA General Special Provisions are specifications developed by the American Public Works Association for use by local agencies.

Project Specific Special Provisions normally appear only in the contract for which they were developed.

Also incorporated into the Contract Documents by reference are:

- Manual on Uniform Traffic Control Devices for Streets and Highways, currently adopted edition, with Washington State modifications, if any
- Standard Plans for Road, Bridge and Municipal Construction, WSDOT/APWA, current edition

Contractor shall obtain copies of these publications, at Contractor's own expense.

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DIVISION 1

GENERAL REQUIREMENTS

1-01 DEFINITIONS AND TERMS

1-01.3 Definitions

Delete the heading **Completion Dates** and the three paragraphs that follow it, and replace them with the following:

(******)

Dates

Bid Opening Date
The date on which the Contracting Agency publicly opens and reads the Bids.

Award Date
The date of the formal decision of the Contracting Agency to accept the lowest responsible and responsive Bidder for the Work.

Contract Execution Date
The date the Contracting Agency officially binds the Agency to the Contract.

Notice to Proceed Date
The date stated in the Notice to Proceed on which the Contract Time begins.

Substantial Completion Date
The day the Engineer determines the Contracting Agency has full and unrestricted use and benefit of the facilities, both from the operational and safety standpoint, any remaining traffic disruptions will be rare and brief, and only minor incidental work, replacement of temporary substitute facilities, plant establishment periods, or correction or repair remains for the Physical Completion of the total Contract.

Physical Completion Date
The day all of the Work is physically completed on the project. All documentation required by the Contract and required by law does not necessarily need to be furnished by the Contractor by this date.

Completion (Project Completion) Date
The day all the Work specified in the Contract is completed and all the obligations of the Contractor under the contract are fulfilled by the Contractor. All documentation required by the Contract and required by law must be furnished by the Contractor before establishment of this date.

Final Acceptance Date
The date on which the Contracting Agency accepts the Work as complete.

Supplement this section with the following:

All references in the Standard Specifications, Amendments, or WSDOT General Special Provisions, to the terms “Department of Transportation”, “Washington State Transportation Commission”, “Commission”, “Secretary of Transportation”, “Secretary”, “Headquarters”, and “State Treasurer” shall be revised to read “Contracting Agency”.

All references to the terms “State” or “state” shall be revised to read “Contracting Agency” unless the reference is to an administrative agency of the State of Washington, a State statute or regulation, or the context reasonably indicates otherwise.

All references to “State Materials Laboratory” shall be revised to read “Contracting Agency designated location”.

All references to “final contract voucher certification” shall be interpreted to mean the Contracting Agency form(s) by which final payment is authorized, and final completion and acceptance granted.

Additive
A supplemental unit of work or group of bid items, identified separately in the Bid Proposal, which may, at the discretion of the Contracting Agency, be awarded in addition to the base bid.

Alternate
One of two or more units of work or groups of bid items, identified separately in the Bid Proposal, from which the Contracting Agency may make a choice between different methods or material of construction for performing the same work.

Business Day
A business day is any day from Monday through Friday except holidays as listed in Section 1-08.5.

Contract Bond
The definition in the Standard Specifications for “Contract Bond” applies to whatever bond form(s) are required by the Contract Documents, which may be a combination of a Payment Bond and a Performance Bond.

Contract Documents
See definition for “Contract”.

Contract Time
The period of time established by the terms and conditions of the Contract within which the Work must be physically completed.

Notice of Award
The written notice from the Contracting Agency to the successful Bidder signifying the Contracting Agency’s acceptance of the Bid Proposal.

Notice to Proceed
The written notice from the Contracting Agency or Engineer to the Contractor authorizing and directing the Contractor to proceed with the Work and establishing the date on which the Contract Time begins.

Traffic
Both vehicular and non-vehicular traffic, such as pedestrians, bicyclists, wheelchairs, and equestrian traffic.

1-02 BID PROCEDURES AND CONDITIONS

1-02.1 Prequalification of Bidders

Delete this section and replace it with the following:

1-02.1 Qualifications of Bidder
(January 24, 2011 APWA GSP)

Before award of a public works contract, a bidder must meet at least the minimum qualifications of RCW 39.04.350(1) to be considered a responsible bidder and qualified to be awarded a public works project.

Add the following new section:

1-02.1(1) Supplemental Qualifications Criteria **New Section**
(July 31, 2017 APWA GSP)

In addition, the Contracting Agency has established Contracting Agency-specific and/or project-specific supplemental criteria, in accordance with RCW 39.04.350(3), for determining Bidder responsibility, including the basis for evaluation and the deadline for appealing a determination that a Bidder is not responsible. These criteria are contained in Section 1-02.14 Option B of these Special Provisions.

1-02.5 Proposal Forms
(July 31, 2017 APWA GSP)

Delete this section and replace it with the following:

The Proposal Form will identify the project and its location and describe the work. It will also list estimated quantities, units of measurement, the items of work, and the materials to be furnished at the unit bid prices. The bidder shall complete spaces on the proposal form that call for, but are not limited to, unit prices; extensions; summations; the total bid amount; signatures; date; and, where applicable, retail sales taxes and acknowledgment of addenda; the bidder's name, address, telephone number, and signature; the bidder's UDBE/DBE/M/WBE commitment, if applicable; a State of Washington Contractor's Registration Number; and a Business License Number, if applicable. Bids shall be completed by typing or shall be printed in ink by hand, preferably in black ink. The required certifications are included as part of the Proposal Form.

The Contracting Agency reserves the right to arrange the proposal forms with alternates and additives, if such be to the advantage of the Contracting Agency. The bidder shall bid on all alternates and additives set forth in the Proposal Form unless otherwise specified.

1-02.6 Preparation of Proposal

(July 11, 2018 APWA GSP)

Supplement the second paragraph with the following:

4. If a minimum bid amount has been established for any item, the unit or lump sum price must equal or exceed the minimum amount stated.

5. Any correction to a bid made by interlineation, alteration, or erasure, shall be initialed by the signer of the bid.

Delete the last two paragraphs, and replace them with the following:

If no Subcontractor is listed, the Bidder acknowledges that it does not intend to use any Subcontractor to perform those items of work.

The Bidder shall submit with their Bid a completed Contractor Certification Wage Law Compliance form, provided by the Contracting Agency. Failure to return this certification as part of the Bid Proposal package will make this Bid Nonresponsive and ineligible for Award. A Contractor Certification of Wage Law Compliance form is included in the Proposal Forms.

The Bidder shall make no stipulation on the Bid Form, nor qualify the bid in any manner.

A bid by a corporation shall be executed in the corporate name, by the president or a vice president (or other corporate officer accompanied by evidence of authority to sign).

A bid by a partnership shall be executed in the partnership name, and signed by a partner. A copy of the partnership agreement shall be submitted with the Bid Form if any UDBE requirements are to be satisfied through such an agreement.

A bid by a joint venture shall be executed in the joint venture name and signed by a member of the joint venture. A copy of the joint venture agreement shall be submitted with the Bid Form if any UDBE requirements are to be satisfied through such an agreement.

1-02.7 Bid Deposit

(March 8, 2013 APWA GSP)

Supplement this section with the following:

Bid bonds shall contain the following:

1. Contracting Agency-assigned number for the project;

2. Name of the project;

3. The Contracting Agency named as obligee;

4. The amount of the bid bond stated either as a dollar figure or as a percentage which represents five percent of the maximum bid amount that could be awarded;

5. Signature of the bidder's officer empowered to sign official statements. The signature of the person authorized to submit the bid should agree with the signature on the bond, and the title of the person must accompany the said signature;

6. The signature of the surety's officer empowered to sign the bond and the power of attorney.

If so stated in the Contract Provisions, bidder must use the bond form included in the Contract Provisions.

If so stated in the Contract Provisions, cash will not be accepted for a bid deposit.

1-02.9 Delivery of Proposal

Delete this section and replace it with the following:

(******)
Each Proposal shall be submitted in a sealed envelope, with the Project Name and Project Number as stated in the Invitation to Bid clearly marked on the outside of the envelope, or as otherwise required in the Bid Documents, to ensure proper handling and delivery.

The Contracting Agency will not open or consider any Bid Proposal that is received after the time specified in the Invitation to Bid for receipt of Bid Proposals, or received in a location other than that specified in the Invitation to Bid.

1-02.10 Withdrawing, Revising, or Supplementing Proposal
(July 23, 2015 APWA GSP)

Delete this section, and replace it with the following:

After submitting a physical Bid Proposal to the Contracting Agency, the Bidder may withdraw, revise, or supplement it if:

1. The Bidder submits a written request signed by an authorized person and physically delivers it to the place designated for receipt of Bid Proposals, and

2. The Contracting Agency receives the request before the time set for receipt of Bid Proposals, and

3. The revised or supplemented Bid Proposal (if any) is received by the Contracting Agency before the time set for receipt of Bid Proposals.

If the Bidder's request to withdraw, revise, or supplement its Bid Proposal is received before the time set for receipt of Bid Proposals, the Contracting Agency will return the unopened Proposal package to the Bidder. The Bidder must then submit the revised or supplemented package in its entirety. If the Bidder does not submit a revised or supplemented package, then its bid shall be considered withdrawn.

Late revised or supplemented Bid Proposals or late withdrawal requests will be date recorded by the Contracting Agency and returned unopened. Mailed, emailed, or faxed requests to withdraw, revise, or supplement a Bid Proposal are not acceptable.

1-02.13 Irregular Proposals

(December 19, 2019 APWA GSP)

Delete this section and replace it with the following:

1. A Proposal will be considered irregular and will be rejected if:
   a. The Bidder is not prequalified when so required;
   b. The authorized Proposal form furnished by the Contracting Agency is not used or is altered;
   c. The completed Proposal form contains any unauthorized additions, deletions, alternate Bids, or conditions;
   d. The Bidder adds provisions reserving the right to reject or accept the award, or enter into the Contract;
   e. A price per unit cannot be determined from the Bid Proposal;
   f. The Proposal form is not properly executed;
   g. The Bidder fails to submit or properly complete a Subcontractor list, if applicable, as required in Section 1-02.6;
   h. The Bidder fails to submit or properly complete an Underutilized Disadvantaged Business Enterprise Certification, if applicable, as required in Section 1-02.6;
   i. The Bidder fails to submit written confirmation from each UDBE firm listed on the Bidder's completed UDBE Utilization Certification that they are in agreement with the bidder's UDBE participation commitment, if applicable, as required in Section 1-02.6, or if the written confirmation that is submitted fails to meet the requirements of the Special Provisions;
   j The Bidder fails to submit UDBE Good Faith Effort documentation, if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to demonstrate that a Good Faith Effort to meet the Condition of Award was made;
   k. The Bidder fails to submit a UDBE Bid Item Breakdown form, if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to meet the requirements of the Special Provisions;
   l. The Bidder fails to submit UDBE Trucking Credit Forms, if applicable, as required in Section 1-02.6, or if the documentation that is submitted fails to meet the requirements of the Special Provisions;
   m. The Bid Proposal does not constitute a definite and unqualified offer to meet the material terms of the Bid invitation; or
   n. More than one Proposal is submitted for the same project from a Bidder under the same or different names.

2. A Proposal may be considered irregular and may be rejected if:
   a. The Proposal does not include a unit price for every Bid item;
   b. Any of the unit prices are excessively unbalanced (either above or below the amount of a reasonable Bid) to the potential detriment of the Contracting Agency;

c. Receipt of Addenda is not acknowledged;

d. A member of a joint venture or partnership and the joint venture or partnership submit Proposals for the same project (in such an instance, both Bids may be rejected); or

e. If Proposal form entries are not made in ink.

1-02.14 Disqualification of Bidders

Delete this section and replace it with the following:

(******)
A Bidder will be deemed not responsible if the Bidder does not meet the mandatory bidder responsibility criteria in RCW 39.04.350(1), as amended; or does not meet Supplemental Criteria 1-7 listed in this Section.

The Contracting Agency will verify that the Bidder meets the mandatory bidder responsibility criteria in RCW 39.04.350(1), and Supplemental Criteria 1-2. Evidence that the Bidder meets Supplemental Criteria 3-7 shall be provided by the Bidder as stated later in this Section.

1. **Delinquent State Taxes**
   A. Criterion: The Bidder shall not owe delinquent taxes to the Washington State Department of Revenue without a payment plan approved by the Department of Revenue.
   B. Documentation: The Bidder, if and when required as detailed below, shall sign a statement (on a form to be provided by the Contracting Agency) that the Bidder does not owe delinquent taxes to the Washington State Department of Revenue, or if delinquent taxes are owed to the Washington State Department of Revenue, the Bidder must submit a written payment plan approved by the Department of Revenue, to the Contracting Agency by the deadline listed below.

2. **Federal Debarment**
   A Criterion: The Bidder shall not currently be debarred or suspended by the Federal government.

   B. Documentation: The Bidder shall not be listed as having an “active exclusion” on the U.S. government’s “System for Award Management” database (www.sam.gov).

3. **Subcontractor Responsibility**
   A Criterion: The Bidder’s standard subcontract form shall include the subcontractor responsibility language required by RCW 39.06.020, and the Bidder shall have an established procedure which it utilizes to validate the responsibility of each of its subcontractors. The Bidder’s subcontract form shall also include a requirement that each of its subcontractors shall have and document a similar procedure to determine whether the sub-tier subcontractors with whom it contracts are also “responsible” subcontractors as defined by RCW 39.06.020.

   B. Documentation: The Bidder, if and when required as detailed below, shall submit a copy of its standard subcontract form for review by the Contracting Agency, and

a written description of its procedure for validating the responsibility of subcontractors with which it contracts.

4. **Claims Against Retainage and Bonds**

A Criterion: The Bidder shall not have a record of excessive claims filed against the retainage or payment bonds for public works projects in the three years prior to the bid submittal date, that demonstrate a lack of effective management by the Bidder of making timely and appropriate payments to its subcontractors, suppliers, and workers, unless there are extenuating circumstances and such circumstances are deemed acceptable to the Contracting Agency.

B. Documentation: The Bidder, if and when required as detailed below, shall submit a list of the public works projects completed in the three years prior to the bid submittal date that have had claims against retainage and bonds and include for each project the following information:

- Name of project
- The owner and contact information for the owner;
- A list of claims filed against the retainage and/or payment bond for any of the projects listed;
- A written explanation of the circumstances surrounding each claim and the ultimate resolution of the claim.

5. **Public Bidding Crime**

A Criterion: The Bidder and/or its owners shall not have been convicted of a crime involving bidding on a public works contract in the five years prior to the bid submittal date.

B. Documentation: The Bidder, if and when required as detailed below, shall sign a statement (on a form to be provided by the Contracting Agency) that the Bidder and/or its owners have not been convicted of a crime involving bidding on a public works contract.

6. **Termination for Cause / Termination for Default**

A Criterion: The Bidder shall not have had any public works contract terminated for cause or terminated for default by a government agency in the five years prior to the bid submittal date, unless there are extenuating circumstances and such circumstances are deemed acceptable to the Contracting Agency.

B. Documentation: The Bidder, if and when required as detailed below, shall sign a statement (on a form to be provided by the Contracting Agency) that the Bidder has not had any public works contract terminated for cause or terminated for default by a government agency in the five years prior to the bid submittal date; or if Bidder was terminated, describe the circumstances.

7. **Lawsuits**

A Criterion: The Bidder shall not have lawsuits with judgments entered against the Bidder in the five years prior to the bid submittal date that demonstrate a pattern of failing to meet the terms of contracts, unless there are extenuating circumstances and such circumstances are deemed acceptable to the Contracting Agency.

B. Documentation: The Bidder, if and when required as detailed below, shall sign a statement (on a form to be provided by the Contracting Agency) that the Bidder has not had any lawsuits with judgments entered against the Bidder in the five years prior to the bid submittal date that demonstrate a pattern of failing to meet the terms of contracts, or shall submit a list of all lawsuits with judgments entered against the Bidder in the five years prior to the bid submittal date, along with a written explanation of the circumstances surrounding each such lawsuit. The Contracting Agency shall evaluate these explanations to determine whether the lawsuits demonstrate a pattern of failing to meet of terms of construction related contracts.

As evidence that the Bidder meets the Supplemental Criteria stated above, the apparent low Bidder must submit to the Contracting Agency by 12:00 P.M. (noon) of the second business day following the bid submittal deadline, a written statement verifying that the Bidder meets the supplemental criteria together with supporting documentation (sufficient in the sole judgment of the Contracting Agency) demonstrating compliance with the Supplemental Criteria. The Contracting Agency reserves the right to request further documentation as needed from the low Bidder and documentation from other Bidders as well to assess Bidder responsibility and compliance with all bidder responsibility criteria. The Contracting Agency also reserves the right to obtain information from third-parties and independent sources of information concerning a Bidder's compliance with the mandatory and supplemental criteria, and to use that information in their evaluation. The Contracting Agency may consider mitigating factors in determining whether the Bidder complies with the requirements of the supplemental criteria.

The basis for evaluation of Bidder compliance with these mandatory and supplemental criteria shall include any documents or facts obtained by the Contracting Agency (whether from the Bidder or third parties) including but not limited to: (i) financial, historical, or operational data from the Bidder; (ii) information obtained directly by the Contracting Agency from others for whom the Bidder has worked, or other public agencies or private enterprises; and (iii) any additional information obtained by the Contracting Agency which is believed to be relevant to the matter.

If the Contracting Agency determines the Bidder does not meet the bidder responsibility criteria above and is therefore not a responsible Bidder, the Contracting Agency shall notify the Bidder in writing, with the reasons for its determination. If the Bidder disagrees with this determination, it may appeal the determination within two (2) business days of the Contracting Agency's determination by presenting its appeal and any additional information to the Contracting Agency. The Contracting Agency will consider the appeal and any additional information before issuing its final determination. If the final determination affirms that the Bidder is not responsible, the Contracting Agency will not execute a contract with any other

Bidder until at least two business days after the Bidder determined to be not responsible has received the Contracting Agency's final determination.

Request to Change Supplemental Bidder Responsibility Criteria Prior To Bid: Bidders with concerns about the relevancy or restrictiveness of the Supplemental Bidder Responsibility Criteria may make or submit requests to the Contracting Agency to modify the criteria. Such requests shall be in writing, describe the nature of the concerns, and propose specific modifications to the criteria. Bidders shall submit such requests to the Contracting Agency no later than five (5) business days prior to the bid submittal deadline and address the request to the Project Engineer or such other person designated by the Contracting Agency in the Bid Documents.

1-02.15 Pre Award Information

(August 14, 2013 APWA GSP)

Revise this section to read:

Before awarding any contract, the Contracting Agency may require one or more of these items or actions of the apparent lowest responsible bidder:

1. A complete statement of the origin, composition, and manufacture of any or all materials to be used,

2. Samples of these materials for quality and fitness tests,

3. A progress schedule (in a form the Contracting Agency requires) showing the order of and time required for the various phases of the work,

4. A breakdown of costs assigned to any bid item,

5. Attendance at a conference with the Engineer or representatives of the Engineer,

6. <u>Obtain, and furnish a copy of, a business license to do business in the city or county where the work is located.</u>

7. Any other information or action taken that is deemed necessary to ensure that the bidder is the lowest responsible bidder.

1-03 AWARD AND EXECUTION OF CONTRACT

1-03.1 Consideration of Bids

(January 23, 2006 APWA GSP)

Revise the first paragraph to read:

After opening and reading proposals, the Contracting Agency will check them for correctness of extensions of the prices per unit and the total price. If a discrepancy exists between the price per unit and the extended amount of any bid item, the price per unit will control. <u>If a minimum bid amount has been established for any item and the bidder's unit or lump sum price is less than the minimum specified amount, the Contracting Agency will unilaterally revise the unit or lump sum price, to the minimum specified amount and recalculate the</u>

extension. The total of extensions, corrected where necessary, including sales taxes where applicable and such additives and/or alternates as selected by the Contracting Agency, will be used by the Contracting Agency for award purposes and to fix the Awarded Contract Price amount and the amount of the contract bond.

1-03.3 Execution of Contract
(October 1, 2005 APWA GSP)

Revise this section to read:

Copies of the Contract Provisions, including the unsigned Form of Contract, will be available for signature by the successful bidder on the first business day following award. The number of copies to be executed by the Contractor will be determined by the Contracting Agency.

Within 10 calendar days after the award date, the successful bidder shall return the signed Contracting Agency-prepared contract, an insurance certification as required by Section 1-07.18, and a satisfactory bond as required by law and Section 1-03.4. Before execution of the contract by the Contracting Agency, the successful bidder shall provide any pre-award information the Contracting Agency may require under Section 1-02.15.

Until the Contracting Agency executes a contract, no proposal shall bind the Contracting Agency nor shall any work begin within the project limits or within Contracting Agency-furnished sites. The Contractor shall bear all risks for any work begun outside such areas and for any materials ordered before the contract is executed by the Contracting Agency.

If the bidder experiences circumstances beyond their control that prevents return of the contract documents within the calendar days after the award date stated above, the Contracting Agency may grant up to a maximum of 10 additional calendar days for return of the documents, provided the Contracting Agency deems the circumstances warrant it.

1-03.4 Contract Bond
(July 23, 2015 APWA GSP)

Delete the first paragraph and replace it with the following:

The successful bidder shall provide executed payment and performance bond(s) for the full contract amount. The bond may be a combined payment and performance bond; or be separate payment and performance bonds. In the case of separate payment and performance bonds, each shall be for the full contract amount. The bond(s) shall:

1. Be on Contracting Agency-furnished form(s)

2. Be signed by an approved surety (or sureties) that:

    a. Is registered with the Washington State Insurance Commissioner, and

    b. Appears on the current Authorized Insurance List in the State of Washington published by the Office of the Insurance Commissioner

3. Guarantee that the Contractor will perform and comply with all obligations, duties, and conditions under the Contract, including but not limited to the duty and obligation to indemnify, defend, and protect the Contracting Agency against all losses and claims related directly or indirectly from any failure:

    a. Of the Contractor (or any of the employees, subcontractors, or lower tier subcontractors of the Contractor) to faithfully perform and comply with all contract obligations, conditions, and duties, or

    b. Of the Contractor (or the subcontractors or lower tier subcontractors of the Contractor) to pay all laborers, mechanics, subcontractors, lower tier subcontractors, material person, or any other person who provides supplies or provisions for carrying out the work

4. Be conditioned upon the payment of taxes, increases, and penalties incurred on the project under titles 50, 51, and 82 RCW; and

5. Be accompanied by a power of attorney for the Surety's officer empowered to sign the bond; and

6. Be signed by an officer of the Contractor empowered to sign official statements (sole proprietor or partner). If the Contractor is a corporation, the bond(s) must be signed by the president or vice president, unless accompanied by written proof of the authority of the individual signing the bond(s) to bind the corporation (i.e., corporate resolution, power of attorney, or a letter to such effect signed by the president or vice president).

Add the following at the end of this section:

(******)
Maintenance Bond: The successful bidder shall provide an executed maintenance bond in the form provided in the Invitation.

1-04 SCOPE OF THE WORK

1-04.2 Coordination of Contract Documents, Plans, Special Provisions, Specifications, and Addenda

Revise the second paragraph to read:

(******)
Any inconsistency in the parts of the Contract shall be resolved by following this order of precedence (e.g., 1 presiding over 2, 2 over 3, 3 over 4, and so forth):

1. Addenda,

2. Proposal Form,

3. Special Provisions – including Project Special Provisions,

4. Scope of Work (Exhibit A),

5. Plans and Contract Drawings (Exhibit B),

6. CSI Technical Specifications,

7. Amendments to the Standard Specifications – Current through the Bid Opening Date,

8. 2018 WSDOT Standard Specifications,

9. City of Pacific Standards

10. All applicable codes, permits, and regulations.

1-04.5 Procedure and Protest by the Contractor

Replace the first and second paragraphs and subsections 1 and 2(a) of the third paragraph of this section with the following:

(******)
The Contractor accepts all requirements of a change order by: (1) endorsing it, (2) writing a separate acceptance, or (3) not protesting in the way this section provides. A change order that is not protested as provided in this section shall be full payment and final settlement of all claims for Contract Time and for all costs of any kind, including costs of delays, related to any Work either covered or affected by the change.

By not protesting as this section provides, the Contractor waives any claim or entitlement to additional compensation, adjustment to the Contract Price, adjustment to the Contract Time, and any other legal or equitable relief. Also, by not protesting as provided by this section, the Contractor thereby accepts any written or oral order, change order, direction, instruction, interpretation, and determination issued by the Engineer.

If an occurrence, event, or action occurs whereby the Contractor believes it has or will have a right to additional compensation, adjustment to the Contract Price, adjustment to the Contract Time, legal or equitable relief, damages, or any modification or equitable adjustment of the terms of the Contract, or if the Contractor is in disagreement with anything required in a change order, another written order, an oral order, determination, or any other action by the Engineer, the Contractor shall:

1. Immediately give a signed written notice of protest to the Project Engineer or the Project Engineer's field Inspectors before doing any Work related to the occurrence, event, or action that is the subject of the protest. In all cases, the notice of protest must be given within ten (10) calendar days of the occurrence, event, or action that is the subject of the protest. The notice of protest must include the date and description of the event, occurrence, or action together with a statement describing the anticipated effect of the event, occurrence, or action upon the Work and the Contract.

2. Supplement the written protest within fourteen (14) calendar days with a written statement and supporting documents providing the following:

    a. The date and nature of the occurrence, event, action, order, direction, instruction, interpretation, or determination that is the subject of the protest;

1-05 CONTROL OF WORK

1-05.4 Conformity With and Deviations From Plans and Stakes

Supplement this section with the following:

(******)

Roadway and Utility Surveys

Surveying, calculations, and measuring required for setting and maintaining the necessary lines and grades shall be the Contractor's responsibility.

The Contractor shall inform the Engineer when monuments are discovered that were not identified in the Plans, and which may be disturbed or damaged by construction activity. All monuments shall be protected or replaced at the Contractor's expense. Where monuments may be disturbed or replaced, the Contractor shall conform to the governing body's applicable requirements for such work.

The survey work shall include but not be limited to the following:

1. Verify the primary horizontal and vertical control furnished by the Contracting Agency, and expand into secondary control by adding stakes and hubs as well as any additional survey control needed for the project. Provide descriptions of secondary control to the Contracting Agency. The description shall include coordinates and elevations of all secondary control points.

2. For all other types of construction included in this provision, provide staking and layout as necessary to adequately locate, construct, and check the specific construction activity.

3. Provide survey offset points as required to establish line and grade for all underground utilities, structures and foundations.

4. Provide staking as necessary to grade the site as shown in the Contract Plans.

5. Record the vertical and horizontal locations of utilities located as part of the preconstruction investigations.

6. All other staking necessary to construct the improvements as shown in the Contract Plans.

The Contractor shall provide the Contracting Agency copies of any calculations and staking data when requested by the Project Engineer.

1-05.7 Removal of Defective and Unauthorized Work

(October 1, 2005 APWA GSP)

Supplement this section with the following:

If the Contractor fails to remedy defective or unauthorized work within the time specified in a written notice from the Engineer, or fails to perform any part of the work required by the Contract Documents, the Engineer may correct and remedy such work as may be identified

in the written notice, with Contracting Agency forces or by such other means as the Contracting Agency may deem necessary.

If the Contractor fails to comply with a written order to remedy what the Engineer determines to be an emergency situation, the Engineer may have the defective and unauthorized work corrected immediately, have the rejected work removed and replaced, or have work the Contractor refuses to perform completed by using Contracting Agency or other forces. An emergency situation is any situation when, in the opinion of the Engineer, a delay in its remedy could be potentially unsafe, or might cause serious risk of loss or damage to the public.

Direct or indirect costs incurred by the Contracting Agency attributable to correcting and remedying defective or unauthorized work, or work the Contractor failed or refused to perform, shall be paid by the Contractor. Payment will be deducted by the Engineer from monies due, or to become due, the Contractor. Such direct and indirect costs shall include in particular, but without limitation, compensation for additional professional services required, and costs for repair and replacement of work of others destroyed or damaged by correction, removal, or replacement of the Contractor's unauthorized work.

No adjustment in Contract Time or compensation will be allowed because of the delay in the performance of the work attributable to the exercise of the Contracting Agency's rights provided by this Section.

The rights exercised under the provisions of this section shall not diminish the Contracting Agency's right to pursue any other avenue for additional remedy or damages with respect to the Contractor's failure to perform the work as required.

1-05.11 Final Inspection

Section 1-05.11 is revised to read:

(******)

Substantial Completion Date

When the Contractor considers the work to be substantially complete, the Contractor shall so notify the Engineer and request the Engineer establish the Substantial Completion Date. The Contractor's request shall list the specific items of work that remain to be completed in order to reach physical completion. The Engineer will schedule an inspection of the work with the Contractor to determine the status of completion. The Engineer may also establish the Substantial Completion Date unilaterally.

If, after this inspection, the Engineer concurs with the Contractor that the work is substantially complete and ready for its intended use, the Engineer, by written notice to the Contractor, will set the Substantial Completion Date. If, after this inspection the Engineer does not consider the work substantially complete and ready for its intended use, the Engineer will, by written notice, so notify the Contractor giving the reasons therefore.

Upon receipt of written notice concurring in or denying substantial completion, whichever is applicable, the Contractor shall pursue vigorously, diligently and without unauthorized interruption, the work necessary to reach Substantial and Physical Completion. The Contractor shall provide the Engineer with a revised schedule indicating when the Contractor expects to reach substantial and physical completion of the work.

The above process shall be repeated until the Engineer establishes the Substantial Completion Date and the Contractor considers the work physically complete and ready for final inspection.

Final Inspection and Physical Completion Date
When the Contractor considers the work physically complete and ready for final inspection the Contractor, by written notice, shall request the Engineer to schedule a final inspection. The Engineer will set a date for final inspection. The Engineer and the Contractor will then make a final inspection and the Engineer will notify the Contractor in writing of all particulars in which the final inspection reveals the work incomplete or unacceptable. The Contractor shall immediately take such corrective measures as are necessary to remedy the listed deficiencies. Corrective work shall be pursued vigorously, diligently, and without interruption until physical completion of the listed deficiencies. This process will continue until the Engineer is satisfied the listed deficiencies have been corrected.

If action to correct the listed deficiencies is not initiated within 7 days after receipt of the written notice listing the deficiencies, the Engineer may, upon written notice to the Contractor, take whatever steps are necessary to correct those deficiencies pursuant to Section 1-05.7.

The Contractor will not be allowed an extension of Contract Time because of a delay in the performance of the work attributable to the exercise of the Engineer's right hereunder.

Upon correction of all deficiencies, the Engineer will notify the Contractor and the Contracting Agency, in writing, of the date upon which the work was considered physically complete. That date shall constitute the Physical Completion Date of the contract, but shall not imply acceptance of the work or that all the obligations of the Contractor under the contract have been fulfilled.

Testing
It is the intent of the Contracting Agency to have at the Substantial Completion Date a complete and operable system. Therefore when the work involves the installation of machinery or other mechanical equipment; street lighting, electrical distribution or signal systems; irrigation systems; buildings; or other similar work it may be desirable for the Engineer to have the Contractor operate and test the work for a period of time after final inspection but prior to the physical completion date. Whenever items of work are listed in the Contract Provisions for testing they shall be fully tested under operating conditions for the time period specified to ensure their acceptability prior to the Substantial Completion Date.

Testing shall include testing of each equipment item installed and operational testing of the complete facility. During and following testing, the Contractor shall correct any items of workmanship, materials, or equipment which prove faulty, or that are not in first class operating condition. Equipment, electrical controls, meters, or other devices and equipment shall be tested under the observation of the Engineer, so that the Engineer may determine their suitability for the purpose for which they were installed. See Section 11-01.3(8) for startup and testing requirements, including:

- Equipment start-up and testing (must be completed to the satisfaction of the Engineer as a prerequisite to substantial completion)
- Pump station start-up and operational testing (must be completed to the satisfaction of the Engineer as a prerequisite to physical completion)

The costs for power, gas, labor, material, supplies, and everything else needed to successfully complete operational testing, shall be included in the unit contract prices related to the system being tested, unless specifically set forth otherwise in the proposal.

Operational and test periods, when required by the Engineer, shall not affect a manufacturer's guaranties or warranties furnished under the terms of the contract.

1-05.12 Final Acceptance

Add the following new section:

1-05.12(1) One-Year Guarantee Period New Section

(March 8, 2013 APWA GSP)

The Contractor shall return to the project and repair or replace all defects in workmanship and material discovered within one year after Final Acceptance of the Work. The Contractor shall start work to remedy any such defects within 7 calendar days of receiving Contracting Agency's written notice of a defect, and shall complete such work within the time stated in the Contracting Agency's notice. In case of an emergency, where damage may result from delay or where loss of services may result, such corrections may be made by the Contracting Agency's own forces or another contractor, in which case the cost of corrections shall be paid by the Contractor. In the event the Contractor does not accomplish corrections within the time specified, the work will be otherwise accomplished and the cost of same shall be paid by the Contractor.

When corrections of defects are made, the Contractor shall then be responsible for correcting all defects in workmanship and materials in the corrected work for one year after acceptance of the corrections by Contracting Agency.

This guarantee is supplemental to and does not limit or affect the requirements that the Contractor's work comply with the requirements of the Contract or any other legal rights or remedies of the Contracting Agency.

1-05.13 Superintendents, Labor and Equipment of Contractor

(August 14, 2013 APWA GSP)

Delete the sixth and seventh paragraphs of this section.

1-05.15 Method of Serving Notices

(March 25, 2009 APWA GSP)

Revise the second paragraph to read:

All correspondence from the Contractor shall be directed to the Project Engineer. All correspondence from the Contractor constituting any notification, notice of protest, notice of dispute, or other correspondence constituting notification required to be furnished under the Contract, must be in paper format, hand delivered or sent via mail delivery service to the Project Engineer's office. Electronic copies such as e-mails or electronically delivered copies of correspondence will not constitute such notice and will not comply with the requirements of the Contract.

Add the following new section:

1-05.16 Water and Power **New Section**
(October 1, 2005 APWA GSP)

The Contractor shall make necessary arrangements, and shall bear the costs for power and water necessary for the performance of the work, unless the contract includes power and water as a pay item.

1-06 CONTROL OF MATERIAL

1-06.1 Approval of Materials Prior to Use

Section 1-06.1 is supplemented as follows:

(******)
All notifications to the Engineer shall be at least seven (7) calendar days prior to use.

1-06.2 Acceptance of Materials

1-06.2(2) Statistical Evaluation of Materials for Acceptance

(******)
Section 1-06.2(2) shall not apply to this project.

1-07 LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

1-07.1 Laws to be Observed
(October 1, 2005 APWA GSP)

Supplement this section with the following:

In cases of conflict between different safety regulations, the more stringent regulation shall apply.

The Washington State Department of Labor and Industries shall be the sole and paramount administrative agency responsible for the administration of the provisions of the Washington Industrial Safety and Health Act of 1973 (WISHA).

The Contractor shall maintain at the project site office, or other well-known place at the project site, all articles necessary for providing first aid to the injured. The Contractor shall establish, publish, and make known to all employees, procedures for ensuring immediate removal to a hospital, or doctor's care, persons, including employees, who may have been injured on the project site. Employees should not be permitted to work on the project site before the Contractor has established and made known procedures for removal of injured persons to a hospital or a doctor's care.

The Contractor shall have sole responsibility for the safety, efficiency, and adequacy of the Contractor's plant, appliances, and methods, and for any damage or injury resulting from their failure, or improper maintenance, use, or operation. The Contractor shall be solely and

completely responsible for the conditions of the project site, including safety for all persons and property in the performance of the work. This requirement shall apply continuously, and not be limited to normal working hours. The required or implied duty of the Engineer to conduct construction review of the Contractor's performance does not, and shall not, be intended to include review and adequacy of the Contractor's safety measures in, on, or near the project site.

1-07.2 State Taxes

Delete this section, including its sub-sections, in its entirety and replace it with the following:

1-07.2 State Sales Tax

(June 27, 2011 APWA GSP)

The Washington State Department of Revenue has issued special rules on the State sales tax. Sections 1-07.2(1) through 1-07.2(3) are meant to clarify those rules. The Contractor should contact the Washington State Department of Revenue for answers to questions in this area. The Contracting Agency will not adjust its payment if the Contractor bases a bid on a misunderstood tax liability.

The Contractor shall include all Contractor-paid taxes in the unit bid prices or other contract amounts. In some cases, however, state retail sales tax will not be included. Section 1-07.2(2) describes this exception.

The Contracting Agency will pay the retained percentage (or release the Contract Bond if a FHWA-funded Project) only if the Contractor has obtained from the Washington State Department of Revenue a certificate showing that all contract-related taxes have been paid (RCW 60.28.051). The Contracting Agency may deduct from its payments to the Contractor any amount the Contractor may owe the Washington State Department of Revenue, whether the amount owed relates to this contract or not. Any amount so deducted will be paid into the proper State fund.

1-07.2(1) State Sales Tax — Rule 171

WAC 458-20-171, and its related rules, apply to building, repairing, or improving streets, roads, etc., which are owned by a municipal corporation, or political subdivision of the state, or by the United States, and which are used primarily for foot or vehicular traffic. This includes storm or combined sewer systems within and included as a part of the street or road drainage system and power lines when such are part of the roadway lighting system. For work performed in such cases, the Contractor shall include Washington State Retail Sales Taxes in the various unit bid item prices, or other contract amounts, including those that the Contractor pays on the purchase of the materials, equipment, or supplies used or consumed in doing the work.

1-07.2(2) State Sales Tax — Rule 170

WAC 458-20-170, and its related rules, apply to the constructing and repairing of new or existing buildings, or other structures, upon real property. This includes, but is not limited to, the construction of streets, roads, highways, etc., owned by the state of Washington; water mains and their appurtenances; sanitary sewers and sewage disposal systems unless such

sewers and disposal systems are within, and a part of, a street or road drainage system; telephone, telegraph, electrical power distribution lines, or other conduits or lines in or above streets or roads, unless such power lines become a part of a street or road lighting system; and installing or attaching of any article of tangible personal property in or to real property, whether or not such personal property becomes a part of the realty by virtue of installation.

For work performed in such cases, the Contractor shall collect from the Contracting Agency, retail sales tax on the full contract price. The Contracting Agency will automatically add this sales tax to each payment to the Contractor. For this reason, the Contractor shall not include the retail sales tax in the unit bid item prices, or in any other contract amount subject to Rule 170, with the following exception.

Exception: The Contracting Agency will not add in sales tax for a payment the Contractor or a subcontractor makes on the purchase or rental of tools, machinery, equipment, or consumable supplies not integrated into the project. Such sales taxes shall be included in the unit bid item prices or in any other contract amount.

1-07.2(3) Services

The Contractor shall not collect retail sales tax from the Contracting Agency on any contract wholly for professional or other services (as defined in Washington State Department of Revenue Rules 138 and 244).

1-07.4 Sanitation

Section 1-07.4 is supplemented with the following:

(******)

Portable Toilet Facility

The Contractor shall supply at least one portable toilet on the job site at all times when the Contractor has any employees on the job site performing contract work. Portable toilets shall be serviced on a weekly basis.

This item shall be included in the bid item for mobilization. An amount approximating the actual cost per week will be subtracted from the bid item for mobilization for each week the portable toilet is not supplied on the job site or serviced on a weekly basis.

1-07.13 Contractor's Responsibility for Work

1-07.13(4) Repair of Damage

Section 1-07.13(4) is revised to read:

(******)

The Contractor shall promptly repair all damage to either temporary or permanent work as directed by the Engineer. For damage qualifying for relief under Sections 1-07.13(1), 1-07.13(2) or 1-07.13(3), payment will be made in accordance with Section 1-09.4. Payment will be limited to repair of damaged work only. No payment will be made for delay or disruption of work.

1-07.18 Public Liability and Property Damage Insurance

Delete this section in its entirety, and replace it with the following:

(******)

1-07.18 Insurance

1-07.18(1) General Requirements

A. The Contractor shall procure and maintain the insurance described in all subsections of section 1-07.18 of these Special Provisions, from insurers with a current A. M. Best rating of not less than A-, and licensed to do business in the State of Washington. The Contracting Agency reserves the right to approve or reject the insurance provided, based on the insurer's financial condition.

B. The Contractor shall keep this insurance in force without interruption from the commencement of the Contractor's Work through the term of the Contract and for thirty (30) days after the Physical Completion date, unless otherwise indicated below.

C. If any insurance policy is written on a claims made form, its retroactive date, and that of all subsequent renewals, shall be no later than the effective date of this Contract. The policy shall state that coverage is claims made, and state the retroactive date. Claims-made form coverage shall be maintained by the Contractor for a minimum of 36 months following the Completion Date or earlier termination of this Contract, and the Contractor shall annually provide the Contracting Agency with proof of renewal. If renewal of the claims made form of coverage becomes unavailable, or economically prohibitive, the Contractor shall purchase an extended reporting period ("tail") or execute another form of guarantee acceptable to the Contracting Agency to assure financial responsibility for liability for services performed.

D. The Contractor's Automobile Liability, Commercial General Liability and Excess or Umbrella Liability insurance policies shall be primary and non-contributory insurance as respects the Contracting Agency's insurance, self-insurance, or self-insured pool coverage. Any insurance, self-insurance, or self-insured pool coverage maintained by the Contracting Agency shall be excess of the Contractor's insurance and shall not contribute with it.

E. The Contractor shall provide the Contracting Agency and all additional insureds with written notice of any policy cancellation, within two business days of their receipt of such notice.

F. The Contractor shall not begin work under the Contract until the required insurance has been obtained and approved by the Contracting Agency.

G. Failure on the part of the Contractor to maintain the insurance as required shall constitute a material breach of contract, upon which the Contracting Agency may, after giving five business days' notice to the Contractor to correct the breach, immediately terminate the Contract or, at its discretion, procure or renew such insurance and pay any and all premiums in connection therewith, with any sums so expended to be repaid to the

Contracting Agency on demand, or at the sole discretion of the Contracting Agency, offset against funds due the Contractor from the Contracting Agency.

H. All costs for insurance shall be incidental to and included in the unit or lump sum prices of the Contract and no additional payment will be made.

I. Products and Completed Operations coverage shall be provided for a period of 3 years following Substantial Completion of the Work.

1-07.18(2) Additional Insured

All insurance policies, with the exception of Workers Compensation, and of Professional Liability and Builder's Risk (if required by this Contract) shall name the following listed entities as additional insured(s) using the forms or endorsements required herein:

- the Contracting Agency and its officers, elected officials, employees, agents, and volunteers

The above-listed entities shall be additional insured(s) for the full available limits of liability maintained by the Contractor, irrespective of whether such limits maintained by the Contractor are greater than those required by this Contract, and irrespective of whether the Certificate of Insurance provided by the Contractor pursuant to 1-07.18(4) describes limits lower than those maintained by the Contractor.

For Commercial General Liability insurance coverage, the required additional insured endorsements shall be at least as broad as ISO forms CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

1-07.18(3) Subcontractors

The Contractor shall cause each Subcontractor of every tier to provide insurance coverage that complies with all applicable requirements of the Contractor-provided insurance as set forth herein, except the Contractor shall have sole responsibility for determining the limits of coverage required to be obtained by Subcontractors.

The Contractor shall ensure that all Subcontractors of every tier add all entities listed in 1-07.18(2) as additional insureds, and provide proof of such on the policies as required by that section as detailed in 1-07.18(2) using an endorsement as least as broad as ISO CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency evidence of insurance and copies of the additional insured endorsements of each Subcontractor of every tier as required in 1-07.18(4) Verification of Coverage.

1-07.18(4) Verification of Coverage

The Contractor shall deliver to the Contracting Agency a Certificate(s) of Insurance and endorsements for each policy of insurance meeting the requirements set forth herein when the Contractor delivers the signed Contract for the work. Failure of Contracting Agency to demand such verification of coverage with these insurance requirements or failure of

Contracting Agency to identify a deficiency from the insurance documentation provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

Verification of coverage shall include:

1. An ACORD certificate or a form determined by the Contracting Agency to be equivalent.

2. Copies of all endorsements naming Contracting Agency and all other entities listed in 1-07.18(2) as additional insured(s), showing the policy number. The Contractor may submit a copy of any blanket additional insured clause from its policies instead of a separate endorsement.

3. Any other amendatory endorsements to show the coverage required herein.

4. A notation of coverage enhancements on the Certificate of Insurance shall <u>not</u> satisfy these requirements – actual endorsements must be submitted.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency a full and certified copy of the insurance policy(s). If Builders Risk insurance is required on this Project, a full and certified copy of that policy is required when the Contractor delivers the signed Contract for the work.

1-07.18(5) Coverages and Limits

The insurance shall provide the minimum coverages and limits set forth below. Contractor's maintenance of insurance, its scope of coverage, and limits as required herein shall not be construed to limit the liability of the Contractor to the coverage provided by such insurance, or otherwise limit the Contracting Agency's recourse to any remedy available at law or in equity.

All deductibles and self-insured retentions must be disclosed and are subject to approval by the Contracting Agency. The cost of any claim payments falling within the deductible or self-insured retention shall be the responsibility of the Contractor. In the event an additional insured incurs a liability subject to any policy's deductibles or self-insured retention, said deductibles or self-insured retention shall be the responsibility of the Contractor.

1-07.18(5)A Commercial General Liability

Commercial General Liability insurance shall be written on coverage forms at least as broad as ISO occurrence form CG 00 01, including but not limited to liability arising from premises, operations, stop gap liability, independent contractors, products-completed operations, personal and advertising injury, and liability assumed under an insured contract. There shall be no exclusion for liability arising from explosion, collapse or underground property damage.

The Commercial General Liability insurance shall be endorsed to provide a per project general aggregate limit, using ISO form CG 25 03 05 09 or an equivalent endorsement.

Contractor shall maintain Commercial General Liability Insurance arising out of the Contractor's completed operations for at least three years following Substantial Completion of the Work.

Such policy must provide the following minimum limits:

$2,000,000	Each Occurrence
$2,000,000	General Aggregate
$2,000,000	Products & Completed Operations Aggregate
$2,000,000	Personal & Advertising Injury each offense
$1,000,000	Stop Gap / Employers' Liability each accident

1-07.18(5)B Automobile Liability

Automobile Liability shall cover owned, non-owned, hired, and leased vehicles; and shall be written on a coverage form at least as broad as ISO form CA 00 01. If the work involves the transport of pollutants, the automobile liability policy shall include MCS 90 and CA 99 48 endorsements.

Such policy must provide the following minimum limit:

$2,000,000	Combined single limit each accident

1-07.18(5)C Workers' Compensation

The Contractor shall comply with Workers' Compensation coverage as required by the Industrial Insurance laws of the State of Washington.

Section 1-07.18 is supplemented with the following:

1-07.18(5)D Excess or Umbrella Liability
(January 4, 2016 APWA GSP)

The Contractor shall provide Excess or Umbrella Liability insurance with limits of not less than ***$2 Million Dollars ($2,000,000)*** each occurrence and annual aggregate. This excess or umbrella liability coverage shall be excess over and as least as broad in coverage as the Contractor's Commercial General and Auto Liability insurance

All entities listed under 1-07.18(2) of these Special Provisions shall be named as additional insureds on the Contractor's Excess or Umbrella Liability insurance policy.

This requirement may be satisfied instead through the Contractor's primary Commercial General and Automobile Liability coverages, or any combination thereof that achieves the overall required limits of insurance.

1-07.18(5)E LHWCA Insurance
(January 4, 2016 APWA GSP)

If this Contract involves work on or adjacent to Navigable Waters of the United States, the Contractor shall procure and maintain insurance coverage in compliance with the statutory requirements of the U.S. Longshore and Harbor Workers' Compensation Act (LHWCA).

Such policy must provide the following minimum limits:

$1,000,000	Bodily Injury by Accident – each accident
$1,000,000	Bodily Injury by Disease – each employee
$1,000,000	Bodily Injury by Disease – policy limits

1-07.18(5)J Pollution Liability
(January 4, 2016 APWA GSP)

The Contractor shall provide a Contractors Pollution Liability policy, providing coverage for claims involving bodily injury, property damage (including loss of use of tangible property that has not been physically injured), cleanup costs, remediation, disposal or other handling of pollutants, including costs and expenses incurred in the investigation, defense, or settlement of claims, arising out of any one or more of the following:

1. Contractor's operations related to this project.

2. Remediation, abatement, repair, maintenance or other work with lead-based paint or materials containing asbestos.

3. Transportation of hazardous materials away from any site related to this project.

All entities listed under 1-07.18(2) of these Special Provisions shall be named by endorsement as additional insureds on the Contractors Pollution Liability insurance policy.

Such Pollution Liability policy shall provide the following minimum limits:
$2,000,000 each loss and annual aggregate

1-07.18(5)K Professional Liability
(January 4, 2016 APWA GSP)

The Contractor and/or its Subcontractor(s) and/or its design consultant providing construction management, value engineering, or any other design-related non-construction professional services shall provide evidence of Professional Liability insurance covering professional errors and omissions.

Such policy shall provide the following minimum limits:
$1,000,000 per claim and annual aggregate

If the scope of such design-related professional services includes work related to pollution conditions, the Professional Liability insurance shall include coverage for Environmental Professional Liability.

If insurance is on a claims made form, its retroactive date, and that of all subsequent renewals, shall be no later than the effective date of this Contract.

1-07.23 Public Convenience and Safety

1-07.23(1) Construction Under Traffic
(May 2, 2017 APWA GSP)

Revise the third sentence of the second paragraph to read:

Accessibility to existing or temporary pedestrian push buttons shall not be impaired; if approved by the Contracting Agency activating pedestrian recall timing or other accommodation may be allowed during construction.

1-07.24 Rights of Way

(July 23, 2015 APWA GSP)

Delete this section and replace it with the following:

Street Right of Way lines, limits of easements, and limits of construction permits are indicated in the Plans. The Contractor's construction activities shall be confined within these limits, unless arrangements for use of private property are made.

Generally, the Contracting Agency will have obtained, prior to bid opening, all rights of way and easements, both permanent and temporary, necessary for carrying out the work. Exceptions to this are noted in the Bid Documents or will be brought to the Contractor's attention by a duly issued Addendum.

Whenever any of the work is accomplished on or through property other than public Right of Way, the Contractor shall meet and fulfill all covenants and stipulations of any easement agreement obtained by the Contracting Agency from the owner of the private property. Copies of the easement agreements may be included in the Contract Provisions or made available to the Contractor as soon as practical after they have been obtained by the Engineer.

Whenever easements or rights of entry have not been acquired prior to advertising, these areas are so noted in the Plans. The Contractor shall not proceed with any portion of the work in areas where right of way, easements or rights of entry have not been acquired until the Engineer certifies to the Contractor that the right of way or easement is available or that the right of entry has been received. If the Contractor is delayed due to acts of omission on the part of the Contracting Agency in obtaining easements, rights of entry or right of way, the Contractor will be entitled to an extension of time. The Contractor agrees that such delay shall not be a breach of contract.

Each property owner shall be given 48 hours notice prior to entry by the Contractor. This includes entry onto easements and private property where private improvements must be adjusted.

The Contractor shall be responsible for providing, without expense or liability to the Contracting Agency, any additional land and access thereto that the Contractor may desire for temporary construction facilities, storage of materials, or other Contractor needs. However, before using any private property, whether adjoining the work or not, the Contractor shall file with the Engineer a written permission of the private property owner, and, upon vacating the premises, a written release from the property owner of each property disturbed or otherwise interfered with by reasons of construction pursued under this contract. The statement shall be signed by the private property owner, or proper authority acting for the owner of the private property affected, stating that permission has been granted to use the property and all necessary permits have been obtained or, in the case of a release, that the restoration of the property has been satisfactorily accomplished. The statement shall include the parcel number, address, and date of signature. Written releases must be filed with the Engineer before the Completion Date will be established.

1-08 PROSECUTION AND PROGRESS

Add the following new section:

1-08.0 Preliminary Matters **New Section**
(May 25, 2006 APWA GSP)

Add the following new section:

1-08.0(1) Preconstruction Conference **New Section**
(October 10, 2008 APWA GSP)

Prior to the Contractor beginning the work, a preconstruction conference will be held between the Contractor, the Engineer and such other interested parties as may be invited. The purpose of the preconstruction conference will be:

1. To review the initial progress schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for progress payment, notifications, approvals, submittals, etc.;
4. To establish normal working hours for the work;
5. To review safety standards and traffic control; and
6. To discuss such other related items as may be pertinent to the work.

The Contractor shall prepare and submit at the preconstruction conference the following:

1. A breakdown of all lump sum items;
2. A preliminary schedule of working drawing submittals; and
3. A list of material sources for approval if applicable.

Section 1-08.0(1) is supplemented with the following:

(******)
The Contractor shall request the preconstruction conference a minimum of 10 calendar days prior to the start of construction. The actual date of the preconstruction conference will depend on availability of City staff and the various parties associated with the work.

Add the following new section:

(******)

1-08.0(2) Hours of Work **New Section**

Except in the case of emergency or unless otherwise approved by the Contracting Agency, the normal straight time working hours for the contract shall be any consecutive 8-hour period between 8:00 a.m. and 5:00 p.m. of a working day with a maximum 1-hour lunch break and Monday through Friday work week. The normal straight time 8-hour working period for the contract shall be established at the preconstruction conference or prior to the Contractor commencing the work.

If a Contractor desires to perform work on holidays, Saturdays, Sundays, or before 8:00 a.m. or after 5:00 p.m. on any day, the Contractor shall apply in writing to the Engineer for permission to work such times. Permission to work longer than an 8-hour period between 8:00 a.m. and 5:00 p.m. is not required. Such requests shall be submitted to the Engineer no later than noon on the working day prior to the day for which the Contractor is requesting permission to work.

The Contractor shall comply with local ordinances. The Contractor has full responsibility for confining his operations to these hours and obtaining any needed waivers. Permission to work outside these hours may be granted on a case-by-case through the Engineer. Approval to continue work during these hours may be revoked at any time the Contractor exceeds the noise control regulations or complaints are received from the public or adjoining property owners regarding the noise or light glare from the Contractor's operations. The Contractor shall have no claim for damages or delays should such permission be revoked for these reasons.

Permission to work Saturdays, Sundays, holidays or other than the agreed upon normal straight time working hours Monday through Friday may be given subject to certain other conditions set forth by the Contracting Agency or Engineer. These conditions may include but are not limited to: requiring the Engineer or such assistants as the Engineer may deem necessary to be present during the work; requiring the Contractor to reimburse the Contracting Agency for the costs in excess of straight-time costs for Contracting Agency employees who worked during such times, on non-Federal aid projects; considering the work performed on Saturdays, Sundays, and holidays as working days with regards to the Contract Time. Assistants may include, but are not limited to, survey crews; inspectors; and other Contracting Agency employees when in the opinion of the Engineer, such work necessitates their presence.

Add the following new section:

(******)

1-08.0(3) Reimbursement for Overtime Work of Contracting Agency Employees **New Section**

Where the Contractor elects to work on a Saturday, Sunday, or holiday, or longer than an 8-hour work shift on a regular working day, as defined in the Standard Specifications, such work shall be considered as overtime work. On all such overtime work an inspector will be present, and a survey crew may be required at the discretion of the Engineer. In such case,

the Contracting Agency may deduct from amounts due or to become due to the Contractor for the costs in excess of the straight-time costs for employees of the Contracting Agency required to work overtime hours.

The minimum overtime pay is two (2) hours at one and one-half (1-1/2) time City rates on weekdays (before or after normal work hours), Saturday, Sunday, or holidays.

The Contractor by these specifications does hereby authorize the Engineer to deduct such costs from the amount due or to become due to the Contractor.

1-08.3 Progress Schedule

1-08.3(2) Progress Schedule Types

1-08.3(2)A Type A Progress Schedule
(March 13, 2012 APWA GSP)

Revise this section to read:

The Contractor shall submit ***4*** copies of a Type A Progress Schedule no later than <u>at the preconstruction conference</u>, or some other mutually agreed upon submittal time. The schedule may be a critical path method (CPM) schedule, bar chart, or other standard schedule format. Regardless of which format used, the schedule shall identify the critical path. The Engineer will evaluate the Type A Progress Schedule and approve or return the schedule for corrections within 15 calendar days of receiving the submittal.

1-08.4 Prosecution of Work

Delete this section and replace it with the following:

(******)
1-08.4 Notice to Proceed and Prosecution of Work

Notice to Proceed will be given after the contract has been executed and the contract bond and evidence of insurance have been approved and filed by the Contracting Agency. The Contractor shall not commence with the work until the Notice to Proceed has been given by the Engineer. Immediately following issuance of the Notice to Proceed, the Contractor shall begin procuring materials with extended lead times including, but not limited to, pumps, control systems, structures and generators. The Contractor shall commence physical construction activities on the project site immediately following delivery of all extended lead time materials and equipment, unless otherwise approved in writing. The Contractor shall diligently pursue the work to the physical completion date within the time specified in the contract. Voluntary shutdown or slowing of operations by the Contractor shall not relieve the Contractor of the responsibility to complete the work within the time(s) specified in the contract.

When shown in the Plans, the first order of work shall be the installation of high visibility fencing to delineate all areas for protection or restoration, as described in the Contract. Installation of high visibility fencing adjacent to the roadway shall occur after the placement of all necessary signs and traffic control devices in accordance with 1-10.1(2). Upon construction of the fencing, the Contractor shall request the Engineer to inspect the fence. No other work shall be performed on the site until the Contracting Agency has accepted the installation of high visibility fencing, as described in the Contract.

1-08.5 Time for Completion

(November 30, 2018 APWA GSP, Option A)

Revise the third and fourth paragraphs to read:

Contract time shall begin on the first working day following the Notice to Proceed Date.

Each working day shall be charged to the contract as it occurs, until the contract work is physically complete. If substantial completion has been granted and all the authorized working days have been used, charging of working days will cease. Each week the Engineer will provide the Contractor a statement that shows the number of working days: (1) charged to the contract the week before; (2) specified for the physical completion of the contract; and (3) remaining for the physical completion of the contract. The statement will also show the nonworking days and any partial or whole day the Engineer declares as unworkable. Within 10 calendar days after the date of each statement, the Contractor shall file a written protest of any alleged discrepancies in it. To be considered by the Engineer, the protest shall be in sufficient detail to enable the Engineer to ascertain the basis and amount of time disputed. By not filing such detailed protest in that period, the Contractor shall be deemed as having accepted the statement as correct. If the Contractor is approved to work 10 hours a day and 4 days a week (a 4-10 schedule) and the fifth day of the week in which a 4-10 shift is worked would ordinarily be charged as a working day then the fifth day of that week will be charged as a working day whether or not the Contractor works on that day.

Revise the sixth paragraph to read:

The Engineer will give the Contractor written notice of the completion date of the contract after all the Contractor's obligations under the contract have been performed by the Contractor. The following events must occur before the Completion Date can be established:

1. The physical work on the project must be complete; and

2. The Contractor must furnish all documentation required by the contract and required by law, to allow the Contracting Agency to process final acceptance of the contract. The following documents must be received by the Project Engineer prior to establishing a completion date:

    a. Certified Payrolls (per Section 1-07.9(5)).
    b. Material Acceptance Certification Documents
    c. Monthly Reports of Amounts Credited as DBE Participation, as required by the Contract Provisions.
    d. Final Contract Voucher Certification
    e. Copies of the approved "Affidavit of Prevailing Wages Paid" for the Contractor and all Subcontractors
    f. A copy of the Notice of Termination sent to the Washington State Department of Ecology (Ecology); the elapse of 30 calendar days from the date of receipt of the Notice of Termination by Ecology; and no rejection of the Notice of Termination by Ecology. This requirement will not apply if the Construction Stormwater General Permit is transferred back to the Contracting Agency in accordance with Section 8-01.3(16).
    g. Property owner releases per Section 1-07.24

Section 1-08.5 is supplemented with the following:

(******)
This project shall be physically completed within the working days established in the Contract's Project Timeline.

1-08.9 Liquidated Damages
(August 14, 2013 APWA GSP)

Revise the fourth paragraph to read:

When the Contract Work has progressed to Substantial Completion as defined in the Contract, the Engineer may determine that the work is Substantially Complete. The Engineer will notify the Contractor in writing of the Substantial Completion Date. For overruns in Contract Time occurring after the date so established, the formula for liquidated damages shown above will not apply. For overruns in Contract Time occurring after the Substantial Completion Date, liquidated damages shall be assessed on the basis of direct engineering and related costs assignable to the project until the actual Physical Completion Date of all the Contract Work. The Contractor shall complete the remaining Work as promptly as possible. Upon request by the Project Engineer, the Contractor shall furnish a written schedule for completing the physical Work on the Contract.

1-09 MEASUREMENT AND PAYMENT

1-09.9 Payments
(March 13, 2012 APWA GSP)

Delete the first four paragraphs and replace them with the following:

The basis of payment will be the actual quantities of Work performed according to the Contract and as specified for payment.

The Contractor shall submit a breakdown of the cost of lump sum bid items at the Preconstruction Conference, to enable the Project Engineer to determine the Work performed on a monthly basis. A breakdown is not required for lump sum items that include a basis for incremental payments as part of the respective Specification. Absent a lump sum breakdown, the Project Engineer will make a determination based on information available. The Project Engineer's determination of the cost of work shall be final.

Progress payments for completed work and material on hand will be based upon progress estimates prepared by the Engineer. A progress estimate cutoff date will be established at the preconstruction conference.

The initial progress estimate will be made not later than 30 days after the Contractor commences the work, and successive progress estimates will be made every month thereafter until the Completion Date. Progress estimates made during progress of the work are tentative, and made only for the purpose of determining progress payments. The progress estimates are subject to change at any time prior to the calculation of the final payment.

The value of the progress estimate will be the sum of the following:

1. Unit Price Items in the Bid Form — the approximate quantity of acceptable units of work completed multiplied by the unit price.

2. Lump Sum Items in the Bid Form — based on the approved Contractor's lump sum breakdown for that item, or absent such a breakdown, based on the Engineer's determination.

3. Materials on Hand — 100 percent of invoiced cost of material delivered to Job site or other storage area approved by the Engineer.

4. Change Orders — entitlement for approved extra cost or completed extra work as determined by the Engineer.

Progress payments will be made in accordance with the progress estimate less:

1. Retainage per Section 1-09.9(1), on non FHWA-funded projects;

2. The amount of progress payments previously made; and

3. Funds withheld by the Contracting Agency for disbursement in accordance with the Contract Documents.

Progress payments for work performed shall not be evidence of acceptable performance or an admission by the Contracting Agency that any work has been satisfactorily completed. The determination of payments under the contract will be final in accordance with Section 1-05.1.

1-09.11 Disputes and Claims

1-09.11(3) Time Limitation and Jurisdiction

(November 30, 2018 APWA GSP)

Revise this section to read:

For the convenience of the parties to the Contract it is mutually agreed by the parties that any claims or causes of action which the Contractor has against the Contracting Agency arising from the Contract shall be brought within 180 calendar days from the date of final acceptance (Section 1-05.12) of the Contract by the Contracting Agency; and it is further agreed that any such claims or causes of action shall be brought only in the Superior Court of the county where the Contracting Agency headquarters is located, provided that where an action is asserted against a county, RCW 36.01.050 shall control venue and jurisdiction. The parties understand and agree that the Contractor's failure to bring suit within the time period provided, shall be a complete bar to any such claims or causes of action. It is further mutually agreed by the parties that when any claims or causes of action which the Contractor asserts against the Contracting Agency arising from the Contract are filed with the Contracting Agency or initiated in court, the Contractor shall permit the Contracting Agency to have timely access to any records deemed necessary by the Contracting Agency to assist in evaluating the claims or action.

1-09.13 Claims Resolution

1-09.13(3) Claims $250,000 or Less
(October 1, 2005 APWA GSP)

Delete this section and replace it with the following:

The Contractor and the Contracting Agency mutually agree that those claims that total $250,000 or less, submitted in accordance with Section 1-09.11 and not resolved by nonbinding ADR processes, shall be resolved through litigation unless the parties mutually agree in writing to resolve the claim through binding arbitration.

END OF DIVISION 1

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VI. Technical Specifications

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Division 01

General Requirements

SECTION 01 01 00
SUMMARY OF WORK

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. The Work covers construction work specifically shown on the Contract Drawings and described herein.

B. The project site is located in the intersection of Tacoma Boulevard S and 5th Avenue SW in the City of Pacific. The station is located entirely in the Right-of-Way.

C. The work to be performed under this Contract consists of furnishing all tools, equipment, materials, supplies, and manufactured articles; furnishing all labor, transportation, and services, including fuel, power, water, and essential communications; and performing all work or other operations required for the fulfillment of the Contract, in strict accordance with the Contract Documents. Provide work complete. Provide all work, materials, and services not expressly indicated in the Contract Documents that may be necessary for the complete and proper construction of the work and administration of the contract.

D. Background Information:

1. The Tacoma Boulevard Pump Station receives sewage and pumps it north to a discharge manhole located in the intersection of Tacoma Boulevard S and 4th Avenue SW. The station has two dry-pit sewage pumps located in an underground dry well that are each rated for 250 gpm at 42 feet.

2. The station and equipment are aging and need to be replaced. The existing station type is not preferred by the City because the equipment is located in a confined space.

E. The proposed Work includes installing a bypass pump connection on the existing force main, installing a wet well mounted vacuum prime pump station on top of the existing wet well, and connecting to the existing force main.

1. The above description is not intended to be complete. The work to be completed is provided for in the Contract Documents. The summary in this section is not intended to relieve the Contractor of the responsibility for reading and understanding the Contract Documents.

F. Federal, state and local laws, statutes, and regulations are not individually referenced. This provision incorporates by reference the latest version of statutes, laws and regulations. In case of conflict between the requirements of the specifications and requirements of the statutes and regulations, the Contractor shall bring any conflict to the attention of the Project Representative. Lacking a specific response, the more stringent shall control. In no case can this Contract be interpreted to override statutes and regulations of governing authorities.

G. National and industry codes cited, such as IBC, NEC, NFPA, shall include amendments and supplements by the authority having jurisdiction whether stated or not

H. The station is currently operating. Interruption of any existing utilities requires prior Owner approval.

1.02 CONTRACTOR'S DUTIES

A. Except as specifically noted, provide and pay for:

1. Labor, materials, and equipment.

2. Tools, construction equipment, machinery, and fuel.

3. Water, heat, and utilities required for construction.

4. Other facilities and services necessary for proper execution and completion of Work.

B. Pay legally required sales tax, consumer use tax, and other taxes as may be required by law.

C. Give required notices.

D. Comply with codes, ordinances, rules, regulations, orders, and other legal requirements of public authorities which bear on performance of Work.

E. Promptly submit written notice to Owner of observed variance of Contract Documents from legal requirements. It is not Contractor's responsibility to make certain that Drawings and Specifications comply with codes and regulations.

F. Enforce strict discipline and good order among employees.

G. Do not employ persons who are not skilled in assigned task.

1.03 CONTRACTOR FURNISHED

A. Labor, materials, and equipment required for the project.

B. Water for construction, fire protection, and all field offices.

C. All gates, barricades, fences, handrails, guardrails, and security required by the Contract or by laws and regulations.

D. Sanitary facilities adequate for all workers and complying with all codes and regulations.

E. Shelter and drying facilities for workers.

F. Guards, marks, shields, protective clothing, raingear, and other equipment required by law, ordinance, labor contracts, OSHA, and other regulations for the maintenance of health and safety.

G. First aid kits and equipment required by law and regulations.

1.04 OWNER FURNISHED

A. The wet well mounted vacuum prime pump station (Everlast 3000 series) as manufactured by Smith and Loveless shall be supplied by the Owner and installed and tested by the Contractor.

1.05 PERMITS AND LICENSES

A. The Owner shall secure and pay for permanent franchises, permits, licenses, and easements as applicable.

B. The Contractor shall acquire and pay for all permits not provided by Owner and all specialty permits, including but not limited to, electrical permits, plumbing permits, transportation permits, burning permits, wage and hour regulation permits, and all other permits of a temporary nature relating to the construction of the project as required.

1.06 USE OF PREMISES

A. Limitation:

1. The Contractor's apparatus, storage of materials, and construction operations shall be confined to such limits, as may be directed by the Owner, so as not to unreasonably encumber the site.

2. The Contractor shall enforce any instructions of the Owner regarding signs, advertising, fires, danger signals, barricades, and smoking; and shall require all persons employed on the Work to comply with all building, post, or institutional regulations while on the premises.

3. The Contractor shall not permit any part of any structure to be loaded with a weight that will injure its safety.

B. Confine operations at site to areas permitted by:

1. Laws.

2. Ordinances.

3. Permits.

4. Contract Documents.

5. Right-of-Way.

1.07 COORDINATION OF WORK WITH THE OWNER AND OTHERS

A. The Contractor shall provide for coordination of his work with his subcontractors and of all affected utilities. He shall also coordinate his activities with the Owner and the Engineer.

1.08 SPECIFICATION LANGUAGE

A. Specifications are written mostly in imperative and streamlined form. Unless indicated otherwise, this imperative language is directed to the Contractor. Additionally, the words “shall be” shall be included by inference where a colon (:) is used within sentences or phrases.

   1. Examples:

      a. Aggregate: ASTM C33.

      b. Adhesive: Spread with notched trowel.

B. Related Sections: Individual Specification sections may include a reference to other sections. Specification sections referenced are intended only to assist in identifying associated work and are not intended and shall not be considered to be all inclusive. The Contractor is responsible to perform all the work in the Contract Documents whether referenced in the specific specifications or not.

C. Whenever there is wording stating that an item is “as specified”, “as shown”, or “as indicated”, the reference is to all the Contract Documents. Stating “as specified”, “as shown”, or “as indicated” does not refer necessarily to a Drawing or Specification, but it refers to either.

D. The words “Provide” and “Furnish” shall mean supplying, installing, and incorporating into the Work including all labor, materials, supplies, and equipment necessary to do so. The word “Supply” shall mean to acquire, deliver, and transfer the item to the City as specified.

E. Unless otherwise indicated, all materials and equipment incorporated into the Work shall be as specified and shall be new and free of defects.

F. Requirements for UL or FM label shall mean UL or FM label or other OSHA/Nationally Recognized Testing Lab [NRTL] agency when approved by Authority Having Jurisdiction.

1.09 REFERENCES

A. Whenever a Specification in this Contract references the specifications of WSDOT or other Jurisdiction Having Authority, it is to define the technical standards to be met for this Contract; only the technical standards are referenced. Administrative provisions such as Measurement and Payment of the referenced specification shall not apply to this Contract in any instance.

B. References to industry, association and governing codes and standards are to be interpreted as reference to the version current at the date of submission of the contract bids.

1.10 STANDARD SPECIFICATIONS

A. References implicit or implied to “WSDOT” or “Standard” specifications shall mean the current edition of the Standard Specifications for Road, Bridge, and Municipal Construction including the standard drawings. Said Specifications and Drawings (APWA/WSDOT) shall be considered a part of this document as though it has been reproduced as whole and will be referred to as the Standard Specifications. The CSI specifications shall take precedence over the Standard Specifications.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 12 16
WORK SEQUENCE

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies completion time, milestones, work sequence, constraints, hours of work, incentives, and liquidated damages.

B. Schedule and conduct all work in a manner consistent with the Contract, comply with the construction schedule and milestone requirements and constraints of the work as specified.

C. Plan the sequence of construction to accommodate all Contract requirements.

D. Existing sewage infrastructure is continuously receiving and pumping sewage; those functions shall not be interrupted except as specified herein. Coordinate the work to avoid any interference with normal operation of existing sewage infrastructure, including but not limited to pump stations, force mains, treatment processes, and drainfields to convey all wastewater received. Any repairs, cleanup, or associated work related to sewage backups, including but not limited to nearby residences, are the Contractor's responsibility.

1.02 DEFINITIONS

A. High Flow Wet Season: The period from October 16 to May 14.

B. Lower Flow Dryer Period: The period from May 15 to October 15.

C. Dry Weather Conditions: Period when the weather forecast predicts no rain for 7 days in the future; at the sole discretion of the Project Representative a prediction of a trace (less than 0.01 inch) sprinkling may be acceptable.

D. Substantial Completion: When used in this specification section for determining completion of a milestone, "substantial completion" shall mean that the following work elements are complete:

1. Component and Operational Testing on the system, or systems, are complete as defined in Section 01 65 10, with satisfactory results meeting the Contract performance criteria and are accepted by the Project Representative.

2. Training is complete.

3. Draft O&M Manuals have been submitted.

4. Record drawing monthly required markups for the systems are up to date as required in Section 01 78 39.

5. The systems have completed 5 consecutive days of problem-free automated operation.

1.03 SUBMITTALS

A. Provide the following submittals in accordance with Section 01 33 00, “Submittal Procedures”:

1. Advanced notices of equipment shutdowns or restricted use.

2. For each milestone, submit a written statement to notify the Project Representative when Contractor believes the milestone is complete.

3. To make use of Exceptions to Operational Constraints shown in this specification, submit weather forecast to document anticipation of dry weather conditions, prior to use of the listed exception.

4. The Contractor shall notify the Project Representative when it believes it has completed a milestone. The Project Representative will then inspect and provide a punch list, if necessary

5. Submit anticipated traffic or site circulation impacts to Engineer and Owner.

1.04 COMPLETION TIMES

A. Complete the work within the specified in the specifications. Achieve Substantial Completion milestones within durations shown in Paragraph 1.05.

B. Achieve Substantial Completion and Final Acceptance shall be no later than the dates stated in the Invitation to Bid, after notice to proceed to the Contractor, unless otherwise approved in writing by the Owner.

1.05 MILESTONES

A. Milestone No. 1 – Substantial Completion of Tacoma Boulevard Pump Station.

B. Milestone No. 2 – Final Acceptance:

1. All remaining project elements completed to achieve Final Acceptance and Completion, as stated in Paragraph 1.04.

1.06 WORK SEQUENCE

A. General: The Contractor is responsible for determining the sequence of work within the constraints of this Contract.

B. Prior to beginning of work that changes the existing site conditions, the following shall be completed:

1. Submit and obtain a “No Exceptions” response on the submittal of a project-specific Health and Safety Plan prior to start of fieldwork.

2. Complete all required and specified erosion and sedimentation control measures.

3. Meet with the Owner’s Operations and Maintenance staff to understand station operations to maintain flow, safety requirements, and communication issues.

C. Assumed Construction Sequence – The project has been designed assuming the following generalized construction sequence. The following is a suggested sequence of construction and commissioning:

1. Tacoma Boulevard Pump Station:

   a. Expose existing force main and excavate for Interim Force Main Connection piping and valves.

   b. Assemble the ejector trucks at and near the site and set up for the sewage hauling operation.

   c. Pump wet well down to lowest level with existing pumps. Lock-out existing pumps. Drain force main by raising check valve arm on one or both of the valves so that the force main drains back into the wet well.

      1) Haul sewage to discharge manhole location on Tacoma Boulevard S and 4th Ave SW during duration of station outage. Contractor shall coordinate with the City to determine the exact manhole and traffic control requirements, if necessary.

   d. Cut into existing force main and install, at a minimum, 4-inch wye, two 4-inch plug valves, and the 4-inch force main discharge piping as shown as Interim Force Main Connection on the Contract Drawings.

      1) Note that the Interim Force Main Connection work shall be completed during a period of dry weather conditions.

   e. Bring station back online and run station through a minimum of three automatic on/off cycles before removing the ejector trucks from the site.

   f. Install the new wet well mounted vacuum prime station.

   g. Provide complete testing and commissioning, including pump manufacturer's certificate of proper installation.

   h. Demolish existing station.

   i. Install the bypass pump connection as shown as Final Force Main Connection on the Contract Drawings.

   j. Provide restoration of disturbed areas.

1.07 CONSTRAINTS

A. Notification: For all equipment and facility shutdowns and use restrictions, provide the Project Representative with advanced notice, and Contractor shall receive approval from the Project Representative, prior to the shutdown or restricted use. Provide the Owner a minimum preliminary advanced notification of 7 days and 48 hours confirmed notice prior to shutdowns and use restrictions.

B. Schedule Constraints:

1. The Interim Force Main Connection shall be completed during a period of dry weather.

C. Operational Constraints: The following operational constraints apply unless otherwise specified:

1. The Contractor shall maintain a “firm” pumping capacity at all times equal to or greater than the firm flow capacity of the existing pump station (250 gpm).

   a. Firm Capacity of Existing Pump Station: 250 gpm at 42 feet of total dynamic head (rated capacity of each of the two pumps at this station).

2. Access to the site and equipment shall be maintained for City operation and maintenance activities.

D. Wet Well Water Levels:

1. The specified firm capacity noted above is based on an operating wet well water level approximately 18 inches below the invert of the existing influent sewer pipe in the lift station wet well.

2. Contractor shall coordinate the work to keep water levels within the allowable wet well operating levels. Maximum wet well water level shall be the invert of the influent sewer pipe as it enters the wet well unless otherwise directed by Owner in writing.

E. Sewage Hauling: In the case of a complete pump station shutdown and sewage hauling operation, provide the following:

1. Provide a minimum notice of 2 working days to City prior to beginning of sewage hauling operation.

2. Sewage hauling shall be performed under conditions forecast as dry weather. Under those conditions, anticipate an average daily inflow of 60 gpm and peak inflows of 100 gpm into the pump station during the hauling operation.

3. Provide an adequate number of ejector trucks (vacuum trucks), plus one standby truck, for removing sewage from the wet well and hauling to the discharge manhole without backing up the sewer system or causing a spill.

4. Coordinate sewage discharge with City. Discharge location shall be the station discharge manhole located near the intersection of Tacoma Boulevard S and 4th Ave SW unless otherwise directed by the City.

5. Provide City-approved traffic control in accordance with the Contract Documents at the pump station and at the discharge location.

6. Sewage hauling operations are restricted to the hours of 8 am to 5 pm.

F. Access shall be maintained for Owner operation and maintenance activities.

1.08 INCENTIVES AND LIQUIDATED DAMAGES

A. Incentives: Not used in this Contract.

B. Liquidated Damages for failure to achieve milestones, shall be assessed in accordance with the Contract Documents.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 22 00
MEASUREMENT AND PAYMENT

PART 1 – GENERAL

1.01 DESCRIPTION OF WORK

A. This section includes the minimum requirements for bid measurement and payment.

1.02 GENERAL

A. The Bid Amounts for each Bid Item will be used for comparative bid analysis. The Bid amounts will also form the basis of monthly progress payments. Each Lump Sum bid amount will undergo further breakdown as described later in this section. Bid items are not intended to be exclusive descriptions of work categories and the Contractor shall determine and include in its pricing all materials, labor, and equipment necessary to complete each Bid Item (work phase) as shown and specified.

1.03 MEASUREMENT AND PAYMENT

A. Bid Item 1 - Mobilization: Payment for mobilization will be made at the lump sum price named in the Bid Schedule under Bid Item 1. This price shall constitute full payment for mobilization, complete as specified. The lump sum price for mobilization shall include all costs for obtaining all bonds, permits, and licenses; moving onto and off of the site of equipment and materials; furnishing and erecting, construction trailers, and other construction facilities; and all preparatory work as required for the proper performance and completion of the project, including work items not identified in a separate bid item. The Total Price for mobilization shall not exceed 10 percent of the total bid price.

B. Bid Item 2 – Trench Safety: The lump sum price shall be full payment for trench safety, as required by WAC, Chapter 296-155, Part N.

C. Bid Item 3 – Installation, testing, and commissioning of Owner supplied wet well mounted vacuum prime pump skid: The lump sum price shall include all of the costs for installing, testing, and commissioning the pump skid.

D. Bid Item 4 – Tacoma Blvd Pump Station Upgrade and associated site work: The lump sum price shall include all of the remaining work items in the Contract that were not included in Bid Items 1-3.

E. Bid Item 5 – Minor Changes: The fixed price as shown in the bid table shall be included in the contract price.

1.04 MEASUREMENT OF PAY QUANTITIES

A. The Engineer shall make all measurements, and determine all quantities and amounts of work done under the Contract. At the time measurements are made for quantity determinations, the Contractor or his authorized assistant shall be present to verify such measurements. From quantity figures so ascertained, it will be the Contractor's

responsibility to prepare a monthly periodical estimate of the work accomplished to date. This estimate shall be submitted to the Engineer each month for his review and check not later than the tenth of each month. The form of such monthly estimates to be subject to the approval of the Engineer. See “Monthly Progress Payment Request Application” at the end of this section.

B. Measurement shall be from work in place actually complete.

1.05 CONTRACTOR’S COST BREAKDOWN

A. For work to be performed for a lump sum amount, the Contractor shall submit a cost breakdown to the Owner or Engineer prior to the first payment and within ten (10) days after Notice to Proceed. The cost breakdown, as agreed upon by the Contractor and the Owner or Engineer, shall be used for preparing future estimates for partial payments to the Contractor, and shall list the major items of work with a price fairly apportioned to each item. Mobilization, overhead, bond, insurance, other general costs and profit shall be prorated to each item so that the total of the prices for all items equal the lump sum price. At the discretion of the Owner or Engineer, mobilization, bond and insurance costs may be provided for separately if accompanied by invoices to verify actual expenses.

B. The cost breakdown shall be generally in the same format as the Contract specifications divisions and subdivisions, with major items of work listed individually. The cost breakdown shall be by structure, civil, landscaping, or other logical division of work. The cost breakdown for architectural, structural, mechanical, and electrical work shall include separate items for identifiable portions of the structures. The cost breakdown shall include separate allowances for any testing and startup work required. Measurable approximate quantities of work performed by the Contractor or its subcontractors shall be provided. For quantities that are the sum total of several individual quantities, backup summaries shall be provided which list the individual descriptions and quantities. These summaries then will be used to determine the quantities of work in place in subsequent progress payment requests.

C. No single item of worth listed in the cost breakdown shall exceed 5 percent of the total lump sum cost. Items exceeding 5 percent shall be broken down into further detail, except in cases where material costs for individual items of equipment exceed the 5 percent limit.

D. The above is a statement of the intent of the Contract Documents to provide a moderate level of detail, acceptable to the Owner or Engineer, to allow a fair and reasonable estimate to be made of the value of work installed. The detail of the cost breakdown must be sufficient to provide timely processing of the monthly progress payment request.

E. The cost breakdown will be subject to the approval of the Owner or Engineer, and upon request, the Contractor shall substantiate the price for any or all items and provide additional level of detail, including quantities of work. The cost breakdown shall be sufficiently detailed to permit its use by the Owner or Engineer as one of the bases for

evaluating requests for payments. The Owner or Engineer shall be the sole judge of the adequacy of the cost breakdown.

F. The cost breakdown shall be solely used to determine progress payments. The cost breakdown shall not be considered in determining payment or credit for additional or deleted work.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

EXAMPLE MONTHLY PROGRESS PAYMENT REQUEST APPLICATION FOLLOWS

MONTHLY PROGRESS PAYMENT REQUEST APPLICATION

Contract No.:	Application Date:
Project Name:	Application Number:
Contractor:	Application Period:

ITEM NO.	DESCRIPTION OF ITEM	UNIT	QUANTITY	UNIT PRICE	EXTENDED TOTAL AMOUNT $	% COMP TO DATE	TOTAL QTY TO DATE	TOTAL TO DATE $	PRIOR QUANTITY	PRIOR BILLING $	% COMP PERIOD	QTY THIS PERIOD	DUE THIS PERIOD $

SECTION 01 26 10
CONTRACT MEETINGS

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies Contract meetings prior to, and during construction.

1.02 PROGRESS MEETINGS

A. Attend weekly progress meetings to discuss the agenda items listed below including plans for the following month and to evaluate progress to date and since the last meeting.

B. Arrange for attendance of subcontractors as necessary to discuss job progress.

C. When required by the Project Representative, attend meetings of other contractors working in the area to coordinate the work of this Contract with other work in the vicinity.

D. Meeting time to be mutually agreed to between the Project Representative and Contractor Representative.

1.03 ATTENDANCE AT PROGRESS MEETINGS

A. Progress Meeting Attendance:

1. City staff.
2. Project Representative.
3. Contractor's Representative and other Contractor staff.
4. Other contractors, as pertinent to agenda.
5. Subcontractors, as pertinent to agenda.
6. For specific issues, representatives of governmental agencies, other regulatory agencies, or utilities.

1.04 AGENDA FOR PROGRESS MEETINGS

A. In General:

1. Review progress on action items from prior meetings.
2. Review work progress since last meeting.
3. Note field observations, problems, and decisions.

4. Identify problems that impede planned progress.
5. Contractor to identify any existing or foreseen delay or constructability issues.
6. Review off-site fabrication status and problems.
7. Update construction schedule as indicated.
8. Review planned work during next scheduled look-ahead period per Section 01 12 16.
9. Coordinate projected work with other contractors.
10. Review submittal schedules and status of outstanding submittals.
11. Discuss maintaining quality and work standards.
12. Review changes for:
    a. Effect on construction schedule.
    b. Effect on all dates required by Section 01 65 10.
    c. Review status and action required for changes.
13. Discuss all issues which the Contractor considers additional scope, cost, or impact to the Contract.
14. Review safety program. Identify and discuss areas of concern.
15. Other items as required.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 PROCEDURES

A. Inquiries: Direct to Engineer regarding procedure, purpose, or extent of submittal.

B. Timeliness: Schedule and make submissions in accordance with requirements of individual specification sections and in such sequence as to cause no delay in Work or in work of other contractors.

C. Identification of Submittals:

1. Complete, sign, and transmit with each submittal package one copy of the Shop Drawing Transmittal Form provided in Section 01 99 99, "Forms."

2. Identify each submittal with the following numbering and tracking system:

   a. Sequentially number each submittal.

   b. Resubmission of a submittal will have original submittal number with sequential alphabetic suffix.

3. Format: Orderly, indexed with labeled tab dividers.

4. Show date of submission.

5. Show project title, Owner's contract identification, and contract number.

6. Show names of Contractor, subcontractor, or supplier and manufacturer as appropriate.

7. Identify, as applicable, Contract Document section and paragraph to which submittal applies.

8. Identify submittal type. Submit only one type in each submittal package.

9. Identify and indicate each deviation or variation from Contract Documents.

D. In order to meet the substantial completion dates as established in Section 01 01 00, "Summary of Work," the Contractor shall organize coordination meetings, as necessary, with equipment suppliers and the Engineer for long lead items to reduce the amount of time spent on submittals and resubmittals.

E. Resubmissions: Clearly identify each correction or change made.

F. Incomplete Submittal Submissions:

1. Engineer will return the entire submittal for Contractor's revision/correction and resubmission.

2. Submittals that do not clearly bear Contractor's specific written indication of Contractor review and approval of submittal or that are transmitted with an unsigned or uncertified submission form or as may otherwise be required will be returned to Contractor unreviewed.

G. Nonspecified Submissions: Submissions not required under these Contract Documents and not shown on submissions will not be reviewed and will be returned to the Contractor.

H. Engineer's Review: Engineer will act upon Contractor submittal and transmit response to Contractor not later than 21 days after receipt, unless otherwise specified. Resubmittals will be subject to the same review time.

I. Schedule Delays:

1. No adjustment of contract times or price will be allowed due to Engineer's review of submittals, unless all of the following criteria are met:

a. Contractor has notified Engineer in writing that timely review of submittal in question is critical to progress of Work and has received Engineer's written acceptance to reflect such on current accepted submissions and progress schedule. Written agreement by the Engineer to reduce submittal review time will be made only for unusual and Contractor-justified reasons. Acceptance of a progress schedule containing submittal review times less than specified or less than agreed to in writing by Engineer will not constitute Engineer's acceptance of the reduced review times.

b. Engineer has failed to review and return first submission of a submittal within agreed time indicated on current accepted schedule of submissions or, if no time is indicated thereon, within 21 days after receipt.

c. Contractor demonstrates that delay in progress of Work is directly attributable to Engineer's failure to return submittal within time indicated and accepted by Engineer.

2. No adjustment of contract times or price will be allowed due to delays in progress of Work caused by rejection and subsequent resubmission of submittals, including multiple resubmissions.

1.02 SHOP DRAWINGS AND SAMPLES

A. Copies:

1. Shop Drawings and Product Data: One electronic, searchable PDF copy delivered to Owner and Project Representative.

2. Samples: Two, unless otherwise specified in individual specification sections.

B. General: Submit to Owner and Engineer as required by individual specification sections.

C. Identify and Indicate:

1. Pertinent drawing sheet(s) and detail number(s), products, units and assemblies, and system or equipment identification or tag numbers.

2. Critical field dimensions and relationships to other critical features of Work.

3. Samples: Source, location, date taken, and by whom.

4. Each deviation or variation from Contract Documents.

5. Where spare parts are to be provided under individual specification sections, indicate the lead time for delivery of all spare parts and a list of suppliers of the spare parts.

D. Design Data: When specified, provide project-specific information as required and as necessary to clearly show calculations, dimensions, logic and assumptions, and referenced standards and codes upon which design is based.

E. Foreign Manufacturers:

1. When proposed, include the following additional information:

a. Names and addresses of at least two companies closest to Project that maintain technical service representatives.

b. List of local spare parts and accessories available for proposed equipment.

F. Preparation:

1. Format: Whenever possible, schedule for and combine shop drawings and samples required for submission in each specification section into a single submittal package.

2. Present in a clear and thorough manner and of sufficient detail to show kind, size, arrangement, and function of components, materials, and devices and compliance with Contract Documents. Identify details by reference to sheet and detail, and schedule or room numbers as shown on Drawings.

3. Sheet Sizes: 8-1/2 inches by 11 inches or multiples thereof to a maximum of 11 inches by 17 inches.

4. Piping Systems: Drawn to scale.

5. Product Data: Clearly mark each copy to identify pertinent products or models and show performance characteristics and capacities, dimensions and clearances required, wiring, or piping diagrams and controls, and external connections, anchorages, and supports required.

6. Equipment and Component Titles: Identical to title shown on Drawings.

7. Manufacturer's standard schematic drawings and diagrams as follows:

    a. Modify to delete information that is not applicable to Work.

    b. Supplement standard information to provide information specifically applicable to Work.

G. Shop Drawing Disposition:

1. Engineer will review, mark, and stamp as appropriate and distribute as noted:

    a. No Exception Taken (for incorporation in Work):

        1) Contractor may begin to implement activities to incorporate specific product(s) or Work covered by submittal.

    b. Make Corrections Noted (for incorporation in Work):

        1) Contractor may begin to implement activities to incorporate product(s) or Work covered by submittal, in accordance with Engineer's notations.

    c. Rejected:

        1) Contractor shall make corrections or develop replacement and resubmit (in same manner and quantity as specified for original submission).

        2) Submittal is not satisfactory and Contractor may not incorporate specific product(s) or conduct Work covered by submittal.

    d. Revise and Resubmit:

        1) Contractor shall resubmit entire submittal after making required revisions (in same manner and quantity as specified for original submission).

        2) Submittal is not satisfactory and Contractor may not incorporate specific product(s) or conduct Work covered by submittal.

    e. Submit Specified Item:

        1) Contractor shall submit missing portions (in same manner and quantity as specified for original submission).

        2) Submittal is not satisfactory and Contractor may not incorporate specific product(s) or conduct Work covered by submittal, unless otherwise noted in the Engineer's review comments.

H. Sample Disposition: Same as shop drawing disposition. Samples will not be returned.

1.03 ADMINISTRATIVE SUBMITTALS

A. One electronic, searchable PDF copy.

B. Submit to Owner. Owner will transmit Engineer copies as appropriate.

C. Description:

1. Submittals that are not shop drawings or samples, or that do not reflect quality of product or method of construction.

2. May include, but is not limited to, those submittals identified below:

   a. Applications for Payment.

   b. Progress Reports and Quantity Charts.

   c. Progress Schedule(s).

   d. Schedule of Values: Meet the requirements “Schedule of Values” below.

   e. Training Materials.

   f. Submittals Required by Laws, Regulations, and Governing Agencies:

      1) Submit promptly notifications, reports, certifications, payrolls, and otherwise as may be required directly to the applicable federal, state, or local governing agency or their representative.

      2) Transmit to Engineer for Owner’s records one electronic copy of correspondence and transmittals (to include enclosures and attachments) between Contractor and governing agency.

   g. Disposition: When appropriate, Engineer will review, stamp, and indicate requirements for resubmission or acceptance on submittal as follows:

      1) No Exceptions Taken:

         a) Schedules: Indicates that schedules provide for the orderly progression of the Work to completion within any specified milestones and the contract times, but such acceptance will neither impose on Engineer’s responsibility for the sequencing, scheduling, or progress of the Work nor interfere with or relieve Contractor from Contractor’s full responsibility therefore.

         b) Acceptance of other administrative submittals will indicate that submittal conforms to intent of Contract Documents as to form and substance.

         c) Contractor may proceed to perform submittal-related Work.

      2) Rejected:

         a) Contractor shall revise/correct or develop replacement and resubmit.

D. Schedule of Values:

1. Format: Identify each line item in the Schedule of Values with number and title of the major specification sections. Submit typed Schedule of Values on 8-1/2 by 11-inch

paper; Contractor's standard form or media-driven printout will be considered on request.

2. At preconstruction meeting, submit to the Engineer a preliminary Schedule of Values. After approval by Engineer, submit to the Engineer a Schedule of Values (preferably in Microsoft Excel format), at least 15 days prior to submitting first Application for Payment.

3. The Schedule of Values shall assign a fair, reasonable, and equitable dollar value for each activity on the Contractor's Progress Schedule. The Schedule of Values shall include anticipated progress payments for each item through the final payment. In addition, a detailed breakdown of lump sum prices shall be included in the Schedule of Values.

4. The detailed breakdown of the lump sum shall list prices for the following, as applicable:

    a. Bonds and Insurance Premiums.

    b. Mobilization.

    c. Sitework, including Demolition and Restoration.

    d. Erosion Control.

    e. Reinforcing Steel.

    f. Concrete.

    g. Precast Concrete.

    h. Structural Steel.

    i. Miscellaneous Metals.

    j. Equipment.

    k. Installation of wet well mounted vacuum prime pump skid.

    l. Mechanical – Process Piping, Valves, and Supports.

    m. Electrical.

    n. Instrumentation and Controls.

    o. Painting.

    p. Operation and maintenance manual.

    q. Testing.

r. Start-up.

s. Training.

t. Record drawings.

u. Close Out.

v. Demobilization.

w. Other items as appropriate to the Work and as approved by the Engineer.

5. The Schedule of Values shall specifically indicate installed cost for materials and equipment for each item.

6. Each activity's assigned value shall consist of labor, equipment and materials cost and a prorate contribution to overhead and profit. Breakdown shall be so organized as to facilitate assessment of Work and payment of subcontractors.

7. The sum of the assigned values shall equal the lump sum price of the activity.

1.04 QUALITY CONTROL SUBMITTALS

A. Copies: Two hard copies and one electronic, searchable PDF copy.

B. Submit to Owner. Owner will provide copies to Engineer as appropriate.

C. Certificates:

1. Certificates of Successful Testing or Inspection: Submit when testing or inspection is required by laws and regulations or governing agency or specified in the individual specification sections.

2. Manufacturer's Installation Certification Form: Submit as required.

D. Operation and Maintenance Manual: As required in Section 01 78 23, "Operation and Maintenance Data."

E. Statements of Qualification: Evidence of qualification, certification, or registration. As required in these Contract Documents to verify qualifications of professional land surveyors, engineers, materials testing laboratories, specialty subcontractors, trades, consultants, installers, and other professionals.

F. Field Samples: Provide as required by individual specifications and as may be required by Engineer during progress of Work.

G. Written Test Reports of Each Test and Inspection:

1. As a minimum, include the following:

a. Date of test and date issued project title and number, testing laboratory name, address, telephone number, and name and signature of laboratory inspector.

b. Date and time of sampling or inspection and record of temperature and weather conditions.

c. Identification of product and specification section, location of sample, test, or inspection in the Project, type of inspection or test with referenced standard code, certified results of test.

d. Compliance with Contract Documents and identifying corrective action necessary to bring materials and equipment into compliance.

e. Provide an interpretation of test results, when requested by Engineer.

H. Disposition:

1. Engineer will review, stamp, and indicate requirements for resubmission or acceptance on submittal as follows:

a. No Exceptions Taken:

1) Acceptance will indicate that submittal conforms to intent of Contract Documents as to form and substance.

2) Contractor may proceed to perform submittal-related Work.

3) One copy furnished Owner.

4) Remaining copies returned to Contractor appropriately annotated.

b. Rejected:

1) One copy furnished Owner.

2) Remaining copies returned to Contractor appropriately annotated.

3) Contractor shall revise/correct or develop replacement and resubmit.

1.05 CONTRACT CLOSEOUT SUBMITTALS

A. General: Meet requirements of Section 01 77 00, “Closeout Procedures.”

B. Submit to Engineer.

C. Copies: One electronic, searchable PDF copy.

D. Disposition:

1. Engineer will review, stamp, and indicate requirements for resubmission or acceptance on submittal as follows:

   a. No Exceptions Taken:

      1) Acceptance will indicate that submittal conforms to intent of Contract Documents as to form and substance.

      2) Contractor may proceed to perform submittal-related Work.

   b. Rejected:

      1) Contractor shall revise/correct or develop replacement and resubmit.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 43 33
MANUFACTURERS' SERVICES

PART 1 – GENERAL

1.01 DEFINITIONS

A. Person-Day: One person for 8 hours, at the project site, within regular Contractor working hours.

1.02 SUBMITTALS

A. Training Schedule: Submit not less than 20 days prior to start-up of equipment and revise as necessary for acceptance.

B. Quality Control Submittals:

1. When specified in the individual specifications, submit:

   a. Qualifications of manufacturer's representative performing specified services.

   b. Manufacturer's Certificate of Proper Installation: On form included in Section 01 99 99, "Forms."

1.03 QUALIFICATION OF MANUFACTURER'S REPRESENTATIVE

A. Authorized representative of the manufacturer, factory trained, and experienced in the technical applications, installation, operation, and maintenance of respective equipment, subsystem, or system. Additional qualifications may be specified elsewhere.

1.04 FULFILLMENT OF SPECIFIED MINIMUM SERVICES

A. Where manufacturers' services are specified, furnish manufacturer's qualified representative. Where time is necessary in excess of that stated in the Specifications for manufacturer's services, additional time required to perform the specified services shall be considered incidental work.

B. Schedule manufacturer's services to avoid conflicting with other on-site testing or other manufacturer's on-site services.

C. If specified, manufacturer's on-site services shall include as a minimum:

1. Inspection, checking, and adjustment as required for product (system, subsystem, or component) to function as warranted by manufacturer and necessary to furnish written approval of installation.

2. Revisiting the site as required to correct problems and until installation and operation are acceptable to Engineer and Owner.

3. Assistance during functional and performance testing and startup demonstration, and until product acceptance by the Owner.

4. Training of Owner's personnel in the operation and maintenance of respective product as required.

5. Completion of Manufacturer's Certificate of Proper Installation with applicable certificates for proper installation and initial, interim, and final test or service.

1.05 TRAINING SCHEDULE

A. List specified equipment and systems with respective manufacturers that require training services or manufacturers' representatives and show:

1. Estimated dates for installation completion.

2. Estimated dates for start-up testing.

3. Estimated training dates to allow for multiple sessions when several shifts are involved.

B. Adjust training schedule to ensure training of appropriate personnel as deemed necessary by Owner.

1.06 TRAINING OWNER'S PERSONNEL

A. Furnish trained, articulate personnel to coordinate and expedite training, to be present during training coordination meetings with Owner, and familiar with operation and maintenance manual information specified in Section 01 78 23, "Operation and Maintenance Data."

B. Furnish manufacturers' representatives for detailed classroom and hands-on training to Owner's personnel on operation and maintenance of specified product (system, subsystem, component) and as may be required in applicable specifications.

1. All training sessions for Owner's personnel shall be scheduled to take place on a date and time coordinated with Owner.

2. Training sessions may be videotape recorded by Owner at Owner's expense.

3. Provide two training sessions for operators in order to allow all operators to attend one training session while other operators continue operations. Operations training sessions shall follow the following outline:

GENERAL OUTLINE FOR MANUFACTURER PRESENTATIONS

1. Familiarization:

a. Show catalog, parts lists, drawings, etc., in the plant files and operation and maintenance manuals.

b. Check out the installation of the specific equipment items.

c. Demonstrate the unit and show that all parts of the Specifications are met.

d. Answer questions.

2. Safety:

a. Point out safety references.

b. Discuss proper precautions around equipment.

3. Operation:

a. Point out reference literature.

b. Explain all modes of operation (including emergency).

c. Check out Owner's personnel on proper use of the equipment (let them do it).

4. Preventive Maintenance (PM):

a. Pass out PM list including:

1) Reference material.

2) Daily, weekly, monthly, quarterly, semi-annual, and annual jobs.

b. Show how to perform PM jobs.

c. Show Owner's personnel what to look for as indicators of equipment problems.

5. Corrective Maintenance:

a. List possible problems.

b. Discuss repairs – point out special problems.

c. Open up equipment and demonstrate procedures, where practical.

6. Parts:

a. Show how to use parts list and order parts.

b. Check over spare parts on hand. Make recommendations.

7. Local Representatives:

a. Where to Order Parts: name, address, and telephone.

b. Service Problems:

1) Who to call.

2) How to get emergency help.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 52 00

TEMPORARY CONSTRUCTION FACILITIES AND UTILITIES

PART 1 – GENERAL

1.01 STORAGE BUILDINGS

A. The Contractor shall provide temporary storage space for the protection of mechanical and electrical equipment and materials as recommended by manufacturers of such equipment and materials. The Contractor may make arrangements with the Owner to store equipment and material around the job sites solely at the discretion of the Owner.

B. Combustible materials (paints, solvents, fuels, etc.) shall be stored in a well-ventilated building, removed from other buildings.

1.02 SECURITY

A. Contractor shall take all necessary steps to secure the construction site, including, but not necessarily limited to, fencing, lighting, and night watchmen.

1.03 STAGING AREAS

A. The Contractor shall construct temporary staging areas for the storage of materials that are not subject to damage by weather conditions. Materials such as pipe and reinforcing and structural steel shall be stored on pallets or racks, off the ground, and stored in a manner to allow ready access for inspection and inventory. Temporary gravel surfacing of the storage yards shall meet the approval of the Engineer. Runoff shall be diverted such that it enters site catch basins or is routed to the TESC facilities.

1.04 CONTRACTOR'S WORK AREA

A. The Contractor shall limit his operations and storage of equipment and materials to the areas designated by the Owner.

1.05 PARKING SPACE FOR CONTRACTOR'S EMPLOYEES

A. The Contractor shall park only in areas designated by the Owner.

1.06 USE OF THE OWNER'S FACILITIES

A. The Contractor shall not use any of the Owner's telephones, restrooms, utilities, or facilities during this project.

1.07 TELEPHONE SERVICE

A. The Contractor shall furnish a telephone service for use on-site for himself during the period of construction of the Contract. The cost of installation and use for the Contractor's telephone service shall be borne by the Contractor.

1.08 TEMPORARY WATER

A. If available at the site, the Contractor shall coordinate with the Owner or Engineer for water needs at the pump station site. Contractor shall pay 80 cents per 100 cubic feet. The Contractor will be required to coordinate with water department and provide necessary pipe fittings.

B. The Contractor shall provide backflow preventer devices, approved by the Owner and the Department of Health, to prevent a cross connection between the water supply and wastewater conveying systems, where necessary.

1.09 CONTRACTOR CONSTRUCTION BUILDINGS

A. Contractor shall furnish, at his own expense, all offices, sheds, storage buildings, shelters, and protection for workers that he may require for his own use or may deem fit. All structures and their locations shall be approved by the Engineer prior to construction or placement on site.

1.10 TEMPORARY ELECTRIC POWER

A. Unless otherwise specified, the Contractor shall provide all necessary power and special connections to power lines.

1.11 SAFETY REQUIREMENTS FOR TEMPORARY ELECTRIC POWER

A. Temporary electric power installation shall meet the construction safety requirements of OSHA, state, and other governing agencies.

1.12 SANITARY FACILITIES

A. The Contractor shall provide adequate toilet facilities and washing facilities for all workers and Owner's representatives employed on the site. The Contractor shall maintain the same in a sanitary condition at all times and shall then remove the facilities and disinfect the premises. All portions of the work shall be maintained at all times in a sanitary condition. Contractor shall note that potable water is not available at the site.

B. The Contractor shall establish a regular collection of all sanitary and organic wastes.

C. Contractor shall dispose of all wastes in accordance with state laws and regulations.

1.13 TEMPORARY HEATING

A. The Contractor shall provide temporary heating, covering, and enclosures as necessary to protect all work and material against damage by dampness and cold, and to facilitate completion of the work. The Contractor shall supply all the fuel, equipment, and materials required for temporary heating.

1.14 WATER CONTROL

A. The Contractor shall provide all necessary labor, equipment, and materials required to keep all excavations and work areas free from water at all times. The Contractor shall

obtain any required construction easement for routing or disposal of the water, and shall provide the means of conveyance of said water. The cost for all necessary water control by the Contractor shall be incidental to the entire project and shall be included in the Contract price.

1.15 PROTECTION OF THE FINISHED CONSTRUCTION

A. The Contractor shall assume the responsibility for the protection of all finished construction and shall repair and restore any and all damage to finished work to its original or better state.

1.16 WASTE MATERIAL

A. Clean up the debris resulting from work at least once a day or more often if it interferes with the work of others or presents a fire hazard.

B. Remove all waste material from the site in an expeditious manner.

C. The Contractor shall notify the Owner and Engineer of the dump site utilized. Refuse shall only be disposed of in approved landfill sites.

D. The Contractor shall be responsible for obtaining a suitable site for discharge of any fluid wastes (such as oil, gasoline, sewage, dechlorination water) or any other wastes which are prohibited by local ordinances. Disposal into storm or sanitary sewers, streams, or waterways will not be permitted. Any discharge site or method of disposal must be accepted by the Engineer.

1.17 REMOVAL OF TEMPORARY FACILITIES AND UTILITIES

A. At such time or times any temporary construction facilities and utilities are no longer required for the work; the Contractor shall notify the Engineer of his intent and schedule for removal of the temporary facilities and utilities and obtain the Engineer's approval before removing the same. As approved, the Contractor shall remove the temporary facilities and utilities from the site as his property and leave the site in such condition as specified, as directed by the Engineer, and/or as shown on the Drawings.

B. In unfinished areas, the condition of the site shall be left in a condition that will restore original drainage, evenly graded, seeded or planted as necessary, and left with an appearance equal to, or better than original.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 60 00
PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.01 DEFINITIONS

A. Products:

1. New items for incorporation in the work, whether purchased by Contractor or Owner for the Project, or taken from previously purchased stock; may also include existing materials or components required for reuse.

2. Includes the terms material, equipment, machinery, components, subsystem, system, hardware, software, and terms of similar intent and is not intended to change the meaning of such other terms used in the Contract Documents as those terms are self-explanatory and have well recognized meanings in the construction industry.

3. Items identified by manufacturer's product name, including make or model designation, indicated in the manufacturer's published product literature, that is current as of the date of the Contract Documents.

1.02 SUBMITTALS

A. Administrative Submittals: Schedule of factory tests required by Contract Documents. Identify tests for which Engineer's presence has been specified.

B. Quality Control Submittals:

1. Factory Tests: As specified in the individual sections of the Specifications.

   a. Procedures: Preliminary outlines.

   b. Final accepted procedures prior to start of factory testing.

   c. Test Documentation: Results of successful testing, including certification of procedures and results.

1.03 ENVIRONMENTAL REQUIREMENTS

A. Altitude: Provide materials and equipment suitable for installation and operation under rated conditions at approximately 10 to 190 feet above sea level.

B. Provide equipment and devices installed outdoors or in unheated enclosures capable of continuous operation within an ambient temperature range of 10 degrees F to 100 degrees F, and annual rainfall averaging 20 inches per year.

1.04 PREPARATION FOR SHIPMENT

A. When practical, factory assemble products. Match-mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with a strippable protective coating.

B. Package products to facilitate handling and protect from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate its purchase order number, bill of lading number, contents by name, name of Project and Contractor, equipment number, and approximate weight. Include complete packing lists and bills of materials with each shipment.

C. Spare Parts, Special Tools, Test Equipment, Expendables, and Maintenance Materials:

1. Furnish as required by the Specifications prior to whichever occurs first:

   a. Starting functional testing.

   b. Operation of the equipment by the Owner.

   c. 75 percent project completion.

2. Properly package to avoid damage, in original cartons insofar as possible. Replace parts damaged or otherwise inoperable.

3. Firmly fix to, and prominently display on, each package:

   a. Minimum 3-inch by 6-inch manila shipping tag with the following information printed clearly:

      1) Manufacturer's part description and number.

      2) Applicable equipment description.

      3) Quantity of parts in package.

      4) Equipment manufacturer.

      5) Applicable specification section.

      6) Name of Contractor.

      7) Project name.

4. Deliver materials to site.

5. Notify Engineer and Owner upon arrival.

D. Store in accordance with the manufacturer's recommendations. Protect equipment from exposure to the elements and keep thoroughly dry and dust free at all times. Protect painted surfaces against impact, abrasion, discoloration, or other damage. Grease or oil all bearings and similar items.

E. Request a minimum 7-day advance notice of shipment from manufacturers.

F. Factory test results shall be reviewed and accepted by Engineer before product shipment as required in individual specification sections.

1.05 DELIVERY AND INSPECTION

A. Deliver products in accordance with the accepted current progress schedule and coordinate to avoid conflict with work and conditions at the site. Deliver anchor bolts and templates sufficiently early to permit setting prior to placement of structural concrete.

B. Deliver products in undamaged condition, in manufacturer's original container or packaging, with identifying labels intact and legible. Include on label date of manufacture and shelf life, where applicable. Include UL labels on products so specified.

C. Unload products in accordance with manufacturer's instructions for unloading, or as specified. Record the receipt of products at the site. Inspect for completeness and evidence of damage during shipment.

D. Remove damaged products from the site and expedite delivery of identical new undamaged products and remedy incomplete or lost products to provide that specified, so as not to delay the progress of the work.

1.06 HANDLING, STORAGE, AND PROTECTION

A. Handle products in accordance with the manufacturer's written instructions, and in a manner to prevent damage. Store products, upon delivery, in accordance with manufacturer's instructions, with labels intact and legible, in approved storage yards or sheds. Provide manufacturer's recommended maintenance during storage, installation, and until products are accepted for use by Owner.

B. Arrange storage in a manner to provide easy access for inspection. Make periodic inspections of stored products to assure that products are maintained under specified conditions, and free from damage or deterioration. Keep running account of products in storage to facilitate inspection and to estimate progress payments for products delivered, but not installed in the work.

C. Store electrical, instrumentation, control products, and equipment with bearings in weather tight structures maintained above 60 degrees F and below 100 degrees F. Protect electrical, instrumentation, control products, and insulation against moisture, water, and dust damage. Connect and operate continuously all space heaters furnished in electrical equipment.

D. Store fabricated products above ground, on blocking or skids, and prevent soiling or staining. Store loose granular materials in a well-drained area on solid surfaces to prevent mixing with foreign matter. Cover products that are subject to deterioration with impervious sheet coverings, provide adequate ventilation to avoid condensation.

E. Store finished products that are ready for installation in dry and well-ventilated areas. Do not subject product to extreme changes in temperature or humidity.

F. Hazardous Materials: Prevent contamination of personnel, the storage building, and the site. Meet the requirements of the product specifications, codes, and manufacturer's instructions.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide manufacturer's standard materials suitable for service conditions unless otherwise specified in the individual specifications.

B. Where product specifications include a named manufacturer, with or without model number, and also include performance requirements, named manufacturer's products must meet the performance requirements.

C. Like items of products furnished and installed in the work shall be end products of one manufacturer and of the same series or family of models to achieve standardization for appearance, operation and maintenance, spare parts and replacement, and manufacturer's services and implement same or similar process instrumentation and control functions in same or similar manner.

D. Do not use materials and equipment removed from existing premises, except as specifically permitted by the Contract Documents.

E. Provide interchangeable components of the same manufacture and for similar components, unless otherwise specified.

F. Equipment, Components, Systems, and Subsystems: Design and manufacture with due regard for health and safety of operation, maintenance, and accessibility, durability of parts, and shall comply with applicable OSHA, state, and local health and safety regulations.

G. Coating materials shall meet federal, state, and local requirements limiting the emission of volatile organic compounds and for worker exposure.

H. Provide materials and equipment listed by UL wherever standards have been established by that agency.

I. Equipment Finish:

1. Provide manufacturer's standard finish and color, except where specific finish or color is indicated.

2. If manufacturer has no standard color, provide equipment with ANSI No. 61, light gray color.

J. Special Tools and Accessories: Furnish to Owner, upon acceptance of equipment, all accessories required to place each item of equipment in full operation. These accessory items include, but are not limited to, adequate oil and grease (as required for first lubrication of equipment after field testing), light bulbs, fuses, hydrant wrenches, valve keys, handwheels, chain operators, special tools, and other spare parts as required for maintenance.

K. Lubricant: Provide initial lubricant recommended by equipment manufacturer in sufficient quantity to fill lubricant reservoirs and to replace consumption during testing, start-up, and operation until final acceptance by Owner.

2.02 FABRICATION AND MANUFACTURE

A. Manufacture parts to U.S.A. standard sizes and gauges.

B. Two or more items of the same type shall be identical, by the same manufacturer, and interchangeable.

C. Design structural members for anticipated shock and vibratory loads.

D. Use 1/4-inch-minimum thickness for steel that will be submerged, wholly or partially, during normal operation.

E. Modify standard products as necessary to meet specifications.

2.03 METAL CASTINGS

A. Free of voids, cracks, wormholes, and other casting defects.

B. In accordance with applicable ASTM Standards.

2.04 LUBRICATION

A. Require no more than weekly attention during continuous operation.

B. Convenient and accessible. Oil drains with bronze or stainless steel valves and fill plugs easily accessible from the normal operating area or platform. Locate drains to allow convenient collection of oil during oil changes without removing equipment from its installed position.

C. Provide constant-level oilers or oil level indicators for oil lubrication systems.

D. For grease type bearings, which are not easily accessible, provide and install stainless steel tubing; protect and extend tubing to convenient location with suitable grease fitting.

2.05 SOURCE QUALITY CONTROL

A. Factory Testing:

1. Where Specifications call for factory testing to be witnessed by Engineer, notify Engineer not less than 14 days prior to scheduled test date, unless otherwise specified.

2. Calibration Instruments: Bear the seal of a reputable laboratory certifying that instrument has been calibrated within the previous 12 months to a standard endorsed by NIST.

3. Factory Tests: Perform in accordance with accepted test procedures and document successful completion.

PART 3 – EXECUTION

3.01 INSPECTION

A. Inspect materials and equipment for signs of pitting, rust decay, or other deleterious effects of storage. Do not install materials or equipment showing such effects. Remove damaged material or equipment from the site and expedite delivery of identical new material or equipment. Delays to the work resulting from materials or equipment damage, which necessitates procurements of new products, will be considered delays within Contractor's control.

3.02 INSTALLATION

A. Drawings show general locations of equipment, devices, and raceways, unless specifically dimensioned.

B. No shimming between machined surfaces is allowed.

C. Install work in accordance with NECA Standard of Installation, unless otherwise specified.

D. Install and apply assembled components in accordance with original component manufacturer's written instructions.

E. Repaint painted surfaces that are damaged prior to equipment installation and acceptance by the Owner.

F. Handle, install, connect, clean, condition, operate, and adjust products in accordance with manufacturer's instructions and as may be specified. Retain a copy of manufacturers' instruction at site, available for review at all times.

G. For material and equipment specifically indicated or specified to be reused in the work:

1. Use special care in removal, handling, storage, and reinstallation to assure proper function in the completed work.

2. Arrange for transportation, storage, and handling of products that require off-site storage, restoration, or renovation. Include costs for such work in the contract price.

3.03 FIELD TESTING

A. In accordance with Section 01 65 10 and individual specification sections.

3.04 ADJUSTMENT AND CLEANING

A. Perform required adjustments, tests, operation checks, and other start-up activities.

3.05 LUBRICANTS

A. Fill lubricant reservoirs and replace consumption during testing, start-up, and operation prior to acceptance of equipment by Owner.

END OF SECTION

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SECTION 01 65 10

TESTING, TRAINING, AND COMMISSIONING

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies the requirements for achieving, verifying, and documenting the working condition of the facility, according to its planned function and operation, including the training of operating personnel. This process includes, but is not limited to, documentation and procedures, pre-installation and component testing, system and operational testing, commissioning, and possession and use by the Owner. The process is applicable to mechanical, electrical, and control systems and other completed portions of the work, functioning as integrated systems of a completed operational facility.

B. Provide power, fuel, compressed air supplies, chemicals, calibrated testing equipment, and all other necessary items and work required to complete the tests and inspections specified herein, unless otherwise specified.

1. Provide temporary heating, ventilation, and air conditioning, as required for areas within permanent facilities prior to commissioning.

2. If, under test, a portion of the work fails to meet the Contract requirements and is adjusted, altered, renewed, or replaced, repeat tests on that portion, together with other portions of the work affected, within a reasonable time and in accordance with the specified conditions.

3. Test results to be within the tolerances set forth in the Specifications. If no tolerances have been specified, conform to tolerances established by recognized industry practice. Revise installation as necessary until tests are within tolerances.

4. Where, in the case of an otherwise satisfactory installed test, doubt or dispute arises between the Owner representative and the Contractor regarding the test results or the methods or equipment used in the performance of such test, then the Owner representative may order the test to be repeated. The repeat test using such modified methods or equipment will be paid per the following:

   a. If the test results confirm the satisfactory installed test results, costs for the repeat test will be paid by the Owner.

   b. If the test results of an installed test fail to comply with the Contract requirements, all costs associated with the repeat tests and equipment necessary to achieve the Contract requirements are at the Contractor's expense.

1.02 QUALITY ASSURANCE

A. Referenced Standards: This section incorporates by reference the latest revision of the following documents. It is a part of this section as specified and modified. In case of conflict

between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ASTM	American Society for Testing and Materials
HI	Hydraulic Institute Standards
IEEE	Institute of Electrical and Electronics Engineers
ISA	Instrument Society of America

B. Install testing equipment and apparatus with personnel trained in the trades and professions required to assure competent workmanship.

C. Supervise the installation of specific equipment testing items specified to be accomplished by factory-trained installation specialists furnished or certified by the equipment manufacturers.

D. Document the skills and training of workers engaged in the installation of testing equipment furnished by the Contractor.

1.03 SUBMITTALS

A. Procedures: Section 01 33 00, “Submittal Procedures.”

B. Thirty (30) Calendar Days After Notice to Proceed: A listing of all individual component and system testing to be performed.

C. Test Plan Submittals:

1. Pre-installation test phase.
2. Component test phase.
3. System test phase.
4. Operational test phase.
5. Commissioning.

D. Testing Reports:

1. Test results demonstrating conformance to the contract requirements.
2. Documentation that test equipment was calibrated.

3. Documentation that test was witnessed by manufacturer's representative and Owner representative, where required.

4. Certifications of installation and performance by manufacturer's representative, where required.

E. Training Program:

1. Listing of all components and systems.

2. Training plans.

3. Documentation of training performed.

1.04 TESTING REPRESENTATIVE QUALIFICATIONS AND RESPONSIBILITIES

A. Designate the Testing Representative.

1. The Testing Representative shall complete the following:

a. Review and approve all functional and performance tests, results, and documentation for all components and systems.

b. Develop schedules for all testing, integrate testing into the master construction activity schedule, and coordinate all required testing.

c. Coordinate testing with the Owner Representative and Owner Operations Staff.

d. Develop or assemble complete test program including schedule, procedures, forms, and other documentation and submit for approval two months prior to starting any field testing required.

e. Document the results of the testing.

f. Coordinate all cross-system testing.

g. Document any inconsistencies or deficiencies in system operations and ensure system compliance.

h. Coordinate the required testing and approved procedures, including verification that pretests have been satisfactorily conducted and the systems are ready for final tests.

i. Obtain all documentation of component and systems' tests and assemble a final test report.

j. Be available for participation in commissioning.

1.05 DEFINITIONS

A. Facility(ies): The sewage pump stations, including all associated structures, equipment, and materials.

B. Equipment: All mechanical, electrical, instrumentation, controls, and other devices specified in the Contract to provide a completed operational Facility.

C. System:

1. A defined part of the Contract, consisting of an arrangement of items, such as equipment, structures, piping, wiring, materials, or incidentals, so related or connected to form an identifiable, unified, functional, operational, safe, and independent part of the Contract.

2. Specific testing systems include, but are not limited to, the following:

a. Raw Sewage Pumping Systems:

1) Raw sewage pumps.

2) Vacuum pressure system.

3) Force main pressure monitoring.

4) Wet well level controls.

5) PLC I/O and logic.

b. Stand-By Power System:

1) Manual Transfer Switch.

2) Portable generator plug.

3) Engine generator (provided by others).

4) PLC I/O and logic.

c. Control circuits, alarms, and annunciators.

d. Other specified systems.

3. System Test Package: Comprehensive package of test procedures and results for each system listed. Package shall include items listed in the paragraphs below. Individual package shall be prepared for each system listed.

4. Pre-installation Test Phase:

    a. Factory testing as specified in individual Specification Sections.

    b. Standard factory tests of manufacturer and standard industry practice.

    c. Delivery acceptance tests and inspections.

5. Component Test Phase: Installed component tests and inspections.

6. System Test Phase: Complete Systems tests and evaluations.

7. Operational Test Phase: Testing of the entire facility and interlocks. The full operation of the facility for a specified period that assures that all systems and processes operate to defined design criteria.

1.06 TESTING

A. Specific testing is required at distinct stages of construction as follows:

1. Final Facilities Testing: Following the completion of each pump station, complete an Operational Testing Phase on the entire Facility.

2. Prior to each phase of testing, submit the following per Section 01 33 00, “Submittal Procedures:”

    a. Pre-installation Test Phase:

        1) Results of factory tests specified in individual Specifications.

        2) Other standard factory test results available from manufacturer.

    b. Component Test Phase:

        1) Written test procedures for Systems Test Package for each item of Equipment for approval prior to testing.

        2) Schedule indicating the order in which testing, training, operation, and commissioning will occur.

        3) Completed forms which include:

            a) Verification of proper check-out, alignment, adjustment, and calibration.

            b) All test information and results including specified operational parameters.

            c) Use form for each item of equipment installed.

            d) Use form which includes all test information including specified operational parameters.

e) Separate sections to record values for preinstallation inspections and tests.

f) Initials of equipment manufacturer's representatives, the Contractor's representative, and the Owner's Representative.

g) Record of relevant performance data for the original testing and not less than three re-tests.

h) Format acceptable to the Owner's Representative.

c. System Test Phase:

1) System Test Package prior to testing a system. Include the following:

a) Identification of the system with a description of operating parameters.

b) Process and instrumentation diagrams detailing system.

c) Equipment list pertaining to the system with cross-references to the appropriate Specifications. Reference Systems as defined above.

d) Written procedures detailing the Contractor's Component Tests and System Tests proposed to verify equipment compliance with the Specifications and operating parameters.

e) Submittals from Preinstallation Test Phase and delivery acceptance tests and inspections for each Component Test of the System.

f) Submittals from Component Tests Phase for each component of the system.

2) Update System Test Package with results of System Test phase.

3) Submit Complete System Test results and evaluations.

d. Testing Stage Submittals:

1) General:

a) Complete description and schedule of all testing to be completed at each test stage and submit a minimum of two months prior to initiating test stage.

b) Following completion of System testing, submit Form Testing Results Transmittal from Section 01 99 99.

1.07 TRAINING

A. Procedure: Section 01 33 00, “Submittal Procedures.”

1. Master Training Schedule for Operations and Maintenance:

   a. Submit 30 days prior to start of system test phase for first training presentation.

   b. Schedule to include:

      1) Target date and time for each operating and maintenance training presentation for each system, both field and classroom.

      2) Target date for initiation of Commissioning period.

      3) Do not schedule training on weekends or holidays observed by the Owner.

      4) Coordinate training scheduling with applicable Owner staff work schedule.

2. After each training, submit information related to training, including but not limited to the date and time, the location of the training, the specific piece of equipment, the person(s) performing the training and their contact information, the person(s) present receiving the training, any handout and notes, and any material covered during the training.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 MATERIALS AND EQUIPMENT

A. Comply with the requirements of this Contract and the recommendations of the equipment manufacturers.

B. Provide test gauges, meters, recorders and monitors as required to supplement or augment the instrumentation system provided under this Contract to properly demonstrate that equipment fully satisfies the specified requirements. Specifically select devices employed for the purpose of measuring the performance of the facility’s equipment and systems to be consistent with the variables to be monitored. Instruments are to be recently calibrated.

C. Demonstrate through recalibration the accuracy of instruments employed for testing purposes.

D. Calibration procedures are in accordance with applicable standards of ASTM, ISA, and IEEE to ensure the adequacy and calibration of gauges, meters, recorders, and monitors.

3.02 INSTALLATION

A. Install equipment in accordance with the details shown and specified in full compliance with manufacturer's requirements. Notify the Owner's Representative of conflict between a manufacturer's installation recommendations and specific requirements of the Contract Documents.

3.03 TESTING

A. General Requirements:

1. Test and inspect equipment and partially completed or fully completed portions of the work to prove compliance with the Contract requirements.

2. Unless otherwise noted, pay all costs of testing, including temporary facilities and connections.

3. Test the following:

   a. Equipment with one or more moving parts or devices requiring an electrical, pneumatic, or hydraulic connection.

   b. Leakage tests and other piping tests.

   c. Electrical devices and systems.

   d. Instrumentation devices and systems.

   e. Receive Owner Representative's approval for the application of all tests only after Owner Representative's inspection of equipment for conformance with the Specifications.

   f. Tests and inspections, unless otherwise specified or accepted, are in accordance with the recognized standards of the industry. Allow for up to two additional set point changes during testing.

4. Procedures:

   a. Design testing procedures to duplicate, as nearly as possible, conditions of operation to ensure that the equipment is not damaged. Once the testing procedures have been reviewed and approved by the Owner Representative, organize by system into test packages, and include the proper checkout, alignment, adjustment, and calibration signoff forms for each item of equipment and system.

   b. Jointly use forms with the Owner Representative to ensure that documentation for each electrical, mechanical, and instrumentation equipment item has been properly recorded for installation and testing. Failure to follow the Owner's Representative approved procedure will result in non-acceptance of the equipment.

c. Fulfillment of the test and inspection requirements are by either of the following:

1) Tests and inspections carried out in Owner Representative's presence, or

2) Certificates or reports of tests and inspections carried out by Owner Representative approved persons or organizations.

d. Maintain the systems test packages, which contain tests and sign-off forms including, but not limited to, piping, equipment, electrical, and instrumentation. Submit test packages to the Owner for inspection upon request.

5. Phases:

a. Pre-installation Test Phase:

1) Test items at the place of manufacture during or on completion of manufacture. Tests include, but are not limited to hydraulic pressure tests, electric and instrumentation subsystem tests, performance, and operating tests and inspections.

2) Perform in accordance with the relevant standards of the industry if not specified in the Contract Documents. Tests other than those specified are in accordance with the Special Provisions.

3) When items are delivered to the site, remove all coverings, containers, or crates in order to permit the Owner Representative to conduct the inspection to determine if the items are of the specified quality and workmanship, and are visually in good order and condition at the time of delivery. Should the Owner Representative find, in its opinion, indication of damage or deficient quality of workmanship, provide the necessary documentation or conduct such tests to demonstrate compliance.

b. Component Test Phase:

1) General:

a) Identify component equipment in each system to be tested to the specified requirements, in testing procedure submittals, prior to component testing and before a system is placed into operation.

b) Incorporate requirements of the Specifications into the installed tests and inspection procedures and proceed in a logical, step-wise sequence to ensure that the installed equipment has been properly assembled, serviced, aligned, adjusted, connected, and calibrated prior to operation.

c) Perform all changes, adjustments, or replacements required to make the equipment operate.

2) Component testing procedures include, but are not limited to:

a) Piping system pressure testing and cleaning.

b) Equipment testing.

c) Electrical system testing.

d) Instrumentation system testing:

e) Provide and complete a checklist to verify discrete and analog inputs from field devices update PLC memory registers.

f) Provide and complete a checklist to verify PLC discrete and analog outputs are connected to field devices.

g) Testing, checking, and correcting deficiencies of:

i) Power, control, and monitoring circuits for continuity prior to connection to power source.

ii) Voltage of all circuits.

iii) Phase sequence.

iv) Cleanliness of connecting piping systems.

v) Alignment of connected machinery.

vi) Vacuum and pressure of all closed systems.

vii) Lubrication.

viii) Valve orientation and position status for manual operating mode.

ix) Instrumentation and control signal generation, transmission, reception, and response.

x) Tagging and identification systems.

xi) Proper connections, alignment, calibration, and adjustment.

h) Calibrate all safety equipment.

i) Manually rotate or move moving parts to assure freedom of movement.

j) Bump electric motors to verify power and direction of rotation.

k) Perform other tests, checks, and activities required to make component ready for System Test Phase.

3) Obtain approval of operation and maintenance information as specified prior to testing.

c. System Test Phase:

1) General:

a) Once the Owner Representative has approved equipment required for the Component Test Phase and has not found deficiencies in that portion of the work, test and operate all individual systems under operating conditions to determine as comprehensively as possible whether the equipment and system meet the requirements of the Specifications. See specific system testing procedures below.

b) Except as described below, employ potable water in the testing of all liquid systems. For all other systems use the intended fluid or a compatible substitute. Owner Representative to approve test media disposal methods.

c) When testing requires the use of auxiliary systems such as electrical power, compressed air, control air, or instrumentation which have not yet been placed in service, provide acceptable substitute sources, capable of meeting the requirements of the machine, device or system.

d) Maintain temporary facilities until permanent services are in service.

e) Following System Testing:

i) Recheck machines for proper alignment; re-align if necessary and dowel in place.

ii) Check equipment for loose connections, unusual movement, or other indications of improper operating characteristics.

iii) Correct deficiencies to the requirements of the Owner's Representative.

iv) Disassemble and inspect equipment which exhibits unusual or unacceptable operating characteristics. Repair or remove from the site and replace with new. Test until the equipment meets the requirements of the Specifications.

2) Field Testing to Verify Performance Requirements:

a) As part of system test phase, completely field test each equipment item over the entire range of operating conditions.

b) Record flow, suction pressure, and discharge pressure in field testing report.

c) Perform vibration tests where specified in individual equipment specification. Vibration tests shall be in accordance with Hydraulic Institute Standards.

d) Provide necessary pressure and flow measuring equipment. Calibrate prior to use.

e) Provide a complete field testing report on each equipment item and include in system Test Package.

3) System test procedures include, but are not limited to:

a) Provide and complete a checklist to demonstrate discrete and analog points are displayed on Forney graphic screens at main control.

b) Provide and complete a checklist to demonstrate discrete and analog points are displayed on Metrotel graphic screen at main control.

c) Provide and complete a checklist to demonstrate operator entries via Forney interface are communicated to PLC memory.

d) Provide and complete a checklist to demonstrate entries via the SCADA signals.

e) Provide and complete a checklist to verify discrete and analog inputs from field devices update PLC operator interface panel.

f) Provide and complete a checklist to demonstrate operator entries via PLC interface panel control.

g) Actuate all alarms from field devices by physically changing state of field device to cause alarm. Do not simulate conditions. Provide and complete a checklist to demonstrate that all alarms are received on annunciators, PLC interface, and Forney displays.

h) Test systems to the Owner's Representative requirements prior to proceeding to Operational Test Phase.

4) The following procedures are in addition to and supplement those procedures described above. Additional specific system test procedures include, but are not limited to, the following:

a) Pump Station Wet Well Level Monitoring Systems:

i) Simulate 25 percent, 50 percent, and 100 percent of span on the submersible transducer level system. Verify that level data is transferred to the facility PLC.

ii) Simulate the pressure switch trip points. Verify that the level switches switch at the proper point and that the data is transferred to the facility PLC.

iii) Verify that all float switch contacts are opening and closing by lifting and lowering each individual float.

b) Raw Sewage Pumping System: Initiate flow of sewage to the pump inlet in the wet well. With the pump in hand mode allow the level to rise in the pumping station wet well. Demonstrate and test all automatic and manual functions of the pumping system.

c) Standby Power System:

i) Demonstrate the function of the portable generator connection and manual transfer switch by opening the main breaker to the pumping station.

A) Contractor shall provide the portable generator to perform this test.

ii) Simulate a low battery voltage condition and verify alarm is transmitted to the control panel and PLC.

d) Fire Alarm and Intrusion Monitor Systems: If applicable, demonstrate complete operation of systems and verify all alarms and controls.

5) Complete Manufacturer's Installation Certification Form in Section 01 99 99, "Forms" following all testing.

6. Operational Test Phase:

a. General:

1) After completion of the System Test Phase and approval by the Owner Representative that systems and equipment comply with the requirements of the Specifications, configure all systems for complete automatic operation as required.

2) Provide a continuous 48-hour facility automatic operation performance test prior to Commissioning.

3) Provide 1-week notice to Owner Representative prior to starting Operational Test in order that Owner staff may be coordinated to provide support as needed.

4) Coordinate to ensure the Owner's operation is not compromised.

5) Coordinate and schedule sewage flows prior to starting Operational Test.

6) Do not allow overflows.

7) Repeat the operational testing until the specified operating modes have been accomplished without interruption. Should the operational test mode be halted for any reason related to the facilities or the equipment constructed under this Contract, or the Contractor's temporary testing of systems, the operational

testing mode shall be repeated until it has been accomplished without interruption.

a) Bring process units to full operating conditions, including temperature, pressure, and flow.

b) Test in a step-by-step method, in accordance with the Contractor's approved written testing procedures. Accomplish the testing work in an orderly, systematic testing of equipment, systems, structures, and the complete Facility as a unit. OwnerRepresentative to witness each individual step in the procedures.

c) Operate Equipment and Systems during the operational testing phase, to the greatest extent practical, at conditions which represent the full range of operating parameters as defined in the Contract Documents.

d) Unless otherwise noted, the facility shall perform through its complete design range for a period of two consecutive 24-hour days.

e) Potable water, fuel, power, and chemicals required during the operational test phase shall be provided by the Contractor.

f) Supply operational manpower for testing requiring 24-hour operations.

g) Submit operations phase test results in three compiled volumes (original and two copies) within 5 days of completion of this testing phase.

b. Procedures:

1) Completed Facility Initial Operation Mode:

2) After modifications to each pump replacement, initiate flow through the pump from the wet well.

3) Operate the pump in hand mode and allow the level in the wet well to rise.

4) Demonstrate complete automatic operation of the facility for all pump operations.

7. Contractor's Responsibilities:

a. Be responsible for necessary repairs and replacements required to maintain the operational.

b. Be available to provide immediate response 24 hours per day, 7 days a week, in case of failure of any portion.

8. Owner's Responsibilities: Normal operational cost including, but not limited to, electricity.

3.04 COMMISSIONING

A. After completion of the Operational Test Phase and certification by the Owner Representative that System and Operational tests meet performance requirements, that the required training is complete and that all required documents are submitted, the Owner will begin operating the facility during the Commissioning Period.

B. Prior to start of Commissioning, remove temporary piping, plugs and other apparatus that may have been in use during the operational tests.

C. Provide required labor to support the Owner to insure the facility attains its fully operational mode.

D. The Owner's operations personnel will be responsible for operation of the facility or portion thereof during commissioning. The facility shall be fully operational, capable of accepting design flows, and performing functions as designed.

E. The Owner is responsible for costs of normal operation including, but not limited to supplies, electricity, and chemicals.

F. Be responsible for all costs of necessary maintenance, repairs, or replacements required to keep the facility operational during the commissioning period. Failures of equipment will require restart of Commissioning Period.

G. Be available to provide immediate assistance 24 hours per day, seven days per week, in case of failure of a portion of the system being operated. Provide a 24-hour phone contact.

H. The Commissioning Period is successfully completed upon 5 continuous days' operation without equipment failures, and in accordance with the contract required performance, for all systems being commissioned.

3.05 TRAINING

A. Conduct all personnel training after completion of Component Test Phase for the equipment for which training is being conducted, but no later than five working days after System Test Phase begins:

1. Personnel training on individual Equipment or System will not be considered completed unless:

    a. All training deliverables are received and approved before commencement of training on the individual equipment or system.

    b. No system malfunctions occur during training.

    c. All provisions of field and classroom training are met.

    d. Training not in compliance with the above shall be performed again in its entirety by the Contractor.

2. Field and Classroom Training Requirements:

    a. Hold classroom training at Owner-designated facility.

    b. Training Days: Monday, Tuesday, Wednesday, Thursday, and Friday.

    c. Training Instructor: Factory trained and familiar with giving both classroom and hands-on instructions.

    d. Training Instructors: Be at class on time. Session beginning and ending times to be coordinated with the Owner Representative and indicated on the master schedule. Normal time lengths for class periods can vary, but brief rest breaks shall be scheduled and taken.

    e. Organize training into separate maintenance and operation sessions and identify on schedule.

    f. Plan for maximum class attendance of 12 people at each session and provide sufficient classroom materials, samples, and handouts for those in attendance.

    g. Instructors to have a typed agenda and well prepared instruction material. The use of visual aids, e.g. films, pictures, and slides is recommended for use during the classroom training programs.

    h. Provide equipment required for presentation of films, slides, and other visual aids.

    i. Maintain a log of classroom training including: instructors, topics, dates, time, and attendance.

3. Make available experienced factory-trained representatives of the manufacturers of the various pieces of equipment to train the Owner's personnel in the operation and maintenance thereof. The time required for this training is as specified for each piece of equipment and as specified in this section.

4. Notify the Owner Representative of the time of the training at least 10 days prior to the day of the training.

5. The training requirements are shown in individual Specification Sections. It is the Contractor's responsibility to coordinate those requirements.

3.06 TRAINING PRESENTATION CONTENTS

A. Train the Owner's personnel only with manufacturers' representatives. Provide correct expertise during any questioning periods. Use the following general outline for manufacturer training presentations:

1. Familiarization:

    a. Show catalog, parts lists, drawings, and O&M manuals.

    b. Provide overview of design intent.

c. Review the installation of the specific equipment items.

d. Demonstrate the unit's operation.

e. Answer questions.

2. Safety:

a. Point out safety references.

b. Discuss safety precautions around equipment.

3. Operation:

a. Point out reference literature.

b. Explain all modes of operation, including emergency.

c. Test personnel on proper use of the equipment by letting them operate it.

4. Preventative Maintenance (PM):

a. Pass out the PM list, including reference material, and daily, monthly, quarterly, semi-annual, and annual PM tasks.

b. Demonstrate how to perform PM tasks.

c. Identify indicators of equipment problems.

5. Corrective Maintenance:

a. List possible problems.

b. Discuss repairs; point out special problems.

c. Open up the Equipment and demonstrate procedures where practical.

6. Parts:

a. Review spare parts list, and provide storage and storage maintenance instruction.

b. Indicate how to order additional spare parts.

c. Provide recommendations for spare parts inventory.

B. Schedule and attend a planning and coordination meeting 10 days prior to first anticipated training presentation.

C. Provide a status report and schedule-to-complete for requirements prerequisite to training presentation.

D. Provide agenda for each training presentation a minimum of 7 days prior to the training presentation.

E. Document staff which received training.

F. The Owner may elect to video record the training sessions given by the manufacturer's representative of on-going Owner staff training; provide accommodation for video recording.

3.07 PAYMENT

A. Payment for the work specified in this section shall be incidental to the project.

END OF SECTION

SECTION 01 73 23

SEISMIC ANCHORAGE AND BRACING

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies the anchorage and bracing for equipment and seismic anchoring and bracing for suspended equipment and equipment over 200 pounds.

1.02 QUALITY ASSURANCE

A. Reference Standards: This section incorporates by reference the latest revisions of the following documents. They are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of a listed document, the requirements of this section shall prevail.

Reference	Title
IBC	International Building Code (2015)
ASCE 7	Minimum Design Loads for Building Structures (2010)

1.03 SUBMITTALS

A. Procedures: "Submittal Procedures."

B. List of freestanding equipment weighing 200 pounds or more.

C. Anchorage details for equipment and freestanding items weighing between 200 and 400 pounds.

D. Sway bracing for elevated or suspended items such as ceiling systems, ducting, conduit, cable trays, and piping.

E. No less than 45 days in advance of equipment installation, for items weighing over 400 pounds: required anchorage and bracing Drawings and calculations bearing the stamp of the Engineer; show the criteria used to determine seismic coefficients and forces applied to the equipment, including seismic zone, soil profile type, and importance factors.

1.04 DESIGN AND PERFORMANCE REQUIREMENTS

A. In accordance with IBC Chapter 16 or local code, whichever is more stringent, all equipment shall be anchored and braced to resist seismic forces prescribed in the code and ASCE 7, Chapter 13. All equipment includes equipment that is freestanding, supported by stand-frames, suspended, anchored to walls, and anchored to floors or slabs.

B. Seismic anchorage and bracing for equipment shall be designed by a State of Washington Registered Mechanical, Civil, or Structural Engineer using the site-specific seismic criteria.

C. Equipment and equipment anchorages designed in accordance with 1997 Uniform Building Code (UBC), Zone 4, shall be considered as meeting the requirements of this specification.

1.05 SITE SEISMIC CRITERIA

A. Maximum Considered Earthquake, 5 Percent Damped, Spectral Response Acceleration at Short Periods: Ss = 1.30 G's.

B. Maximum Considered Earthquake, 5 Percent Damped, Spectral Response Acceleration at Period of 1 Second: S1 = 0.50 G's.

C. Importance Factor: Ip = 1.5.

D. Site Classification: D.

E. Seismic Design Category D.

F. Component Amplification and Response Factors: From ASCE 7, Table 13.5-1 or Table 13.6-1.

PART 2 – PRODUCTS

2.01 ANCHORAGE TO CONCRETE

A. Drill in or adhesive anchors are allowed only if, based upon the current ICC Evaluation Service Report, the anchors are permitted to be used for seismic loads, in cracked concrete.

B. Cable or wire bracing is not allowed, except for suspended ceilings.

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 SUBSTANTIAL COMPLETION

A. Contractor shall complete all the work within the time designated in the Agreement unless modified by Change Order or the Certificate of Substantial Completion.

B. Should the Owner or Engineer consider that work is not Substantially Complete:

1. Engineer shall notify the Contractor in writing stating reasons thereof.

2. Contractor shall complete work and send subsequent written notice(s) to Owner and Engineer certifying that work or designated portion of work is Substantially Complete.

C. Contractor shall submit all warranty certificates at the time of application for Substantial Completion. The guarantee and warranty periods begin with the date of Final Acceptance. However, in connection with any specific equipment certified by the Owner as completed and its use or operation thereof for its intended purpose is assumed by the Owner, the warranty period for such equipment shall begin with the beginning date of such use or operation.

1.02 FINAL CLEANING

A. Final Cleaning of Structures:

1. In preparation for Substantial Completion or occupancy, conduct final inspection of sight-exposed interior and exterior surfaces, and of concealed spaces.

2. Remove grease, dust, dirt, stains, labels, fingerprints, and other foreign materials, from sight-exposed interior and exterior finished surfaces; polish surfaces so designated to shine finish.

3. Repair, patch, and touch up marred surfaces to specified finish, to match adjacent surfaces.

4. Broom clean paved surfaces; rake clean other surfaces of grounds.

5. Maintain cleaning until work is complete.

B. Final Cleanup of Pipelines:

1. Final cleanup work shall be completed as closely behind the work as it is physically possible to do.

2. Unless otherwise specifically provided in writing only those portions of the completed work will be included in the partial pay estimates where, in the Owner's or Engineer's opinion, the cleanup work has been satisfactorily completed.

3. Refer to specific sections for detailed requirements for cleanup of pipelines.

C. General Cleanup:

1. Before Final Acceptance, the Contractor shall remove and obliterate, insofar as feasible, all objects or disturbances of the ground that mar the landscape and were caused by his operations, whether or not part of the improvement.

2. Rubbish, excess materials, temporary structures, and discarded equipment shall be removed and disposed of daily.

3. Fill holes and grade to smooth land contours. Shape ends of cuts and fills to fit adjacent terrain.

4. Hand rake disturbed areas to remove loose objects including rock and clods in excess of 2 inches in any dimension.

5. Sweep pavement, curb and gutter, sidewalks and driveways.

1.03 FINAL INSPECTION

A. Final inspection shall be conducted in accordance with the Contract.

1.04 FINAL PAYMENT

A. Submit final pay request to Owner in accordance with the Contract.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.01 QUALITY ASSURANCE

A. Equipment manufacturer or system supplier shall prepare manuals for equipment and systems.

1.02 SEQUENCE

A. Procedures: "Submittal Procedures."

B. Preliminary Manuals: Submit prior to shipment date for equipment, system, subsystem, or component. Preliminary manuals for all major equipment shall be submitted prior to 50 percent completion of the Progress Schedule. Include copy of warranties, bonds, and service agreements.

C. Final Manuals: Submit not less than 10 days after placing the equipment or system in service.

1.03 GENERAL

A. Furnish for each item of equipment or system as specified in the individual specification sections.

B. Manual Format:

1. Size: 8-1/2 inches by 11 inches.

2. Paper: 20-pound minimum, white for typed pages.

3. Text: Manufacturer's printed data, or neatly typewritten.

4. Three-hole punch data for binding and composition; arrange printing so that punched holes do not obliterate data.

5. Provide fly-leaf for each separate product, or each piece of operating equipment, with typed name of equipment, equipment number(s), specification section number(s), and manufacturer(s) name(s) and provide with heavy section dividers with numbered plastic index tabs for major components.

6. Provide each manual with title page, and typed table of contents with consecutive page numbers. Place contents of entire set, identified by volume number, in each binder.

7. Cover: Identify each volume with typed or printed title "OPERATION AND MAINTENANCE MANUAL, VOLUME NO. ____ OF ____", if applicable, and list:

   a. Project title.

   b. Designate the system or equipment for which it is intended.

c. Identity of separate structure as applicable.

d. Identity of general subject matter covered in manual. Identity of equipment number and specification section.

8. Assemble and bind material in same order as specified, as much as possible.

9. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs or detailed graphics.

10. Binders:

    a. Preliminary Manuals: Heavy paper covers.

    b. Final Manuals: Commercial quality, substantial, permanent, three-ring locking slant “D” style binders with durable, cleanable, plastic covers.

11. Table of contents neatly typewritten, arranged in a systematic order:

    a. Contractor, name of responsible principal, address, and telephone number.

    b. List of each product required to be included, indexed to content of each volume.

    c. List with each product the name, address, and telephone number of subcontractor, supplier, installer, and maintenance contractor, as appropriate:

        1) Identify area of responsibility of each.

        2) Provide local source of supply for parts and replacement.

    d. Identify each product by product name and other identifying numbers or symbols as set forth in Contract Documents.

12. Product Data:

    a. Include only those sheets that are pertinent to specific product.

    b. Clearly annotate each sheet to:

        1) Identify specific product or part installed.

        2) Identify data applicable to installation.

        3) Delete references to inapplicable information.

13. Drawings:

    a. Supplement product data with Drawings as necessary to clearly illustrate:

        1) Relations of component parts of equipment and systems.

        2) Control and flow diagrams.

3) Coordinate Drawings with project record documents to ensure correct illustration of completed installation.

4) Do not use project record documents as maintenance manual drawings.

5) Provide reinforced three-hole punched binder envelope, bind in with text.

6) Reduced to 8-1/2 inches by 11 inches, or 11 inches by 17 inches folded to 8 1/2 inches by 11 inches.

7) Where reduction is impractical, fold and place in 8-1/2-inch by 11-inch envelopes bound in text.

8) Identify specification section and product on Drawings and envelopes.

14. Instructions and Procedures: Within text as required to supplement product data.

a. Handling, storage, maintenance during storage, assembly, erection, installation, adjusting, testing, operating, shutdown in emergency, troubleshooting, maintenance, interface, and as may otherwise be required.

b. Organize in a consistent format under separate heading for each different procedure.

c. Provide a logical sequence of instructions for each procedure.

d. Provide information sheet for Owner's personnel, including:

1) Proper procedures in the event of failure.

2) Instances that might affect the validity of warranties or bonds.

15. Warranties, Bonds, and Service Agreements.

1.04 SUBMITTALS

A. Preliminary Manuals:

1. Submit four copies and electronic copy (searchable PDF format) for Engineer's review.

2. Disposition and Distribution: In accordance with "Submittal Procedures."

3. Engineer's review will be based on the Operations and Maintenance Review Checklist form in Section 01 99 99, "Forms."

B. Final Manuals: Submit four bound, hard paper copies and one electronic copy (searchable PDF format) of the Final Manual.

1.05 MANUALS FOR EQUIPMENT AND SYSTEMS

A. Content for Each Unit (or Common Units) and System:

1. Description of unit and component parts including controls, accessories, and appurtenances:

   a. Function, normal operating characteristics, and limiting conditions.

   b. Performance curves, engineering data, nameplate data, and factory and field tests.

   c. Complete nomenclature and commercial number of replaceable parts.

2. Operating Procedures:

   a. Start-up, break-in, routine, and normal operating instructions.

   b. Test procedures and results of factory tests where required.

   c. Regulation, control, stopping, and emergency instructions.

   d. Description of operation sequence by control manufacturer.

   e. Shutdown instructions for both short and extended durations.

   f. Summer and winter operating instructions, as applicable.

   g. Safety precautions.

   h. Special operating instructions.

   i. Installation instructions.

3. Maintenance and Overhaul Procedures:

   a. Routine operations.

   b. Guide to troubleshooting.

   c. Disassembly, removal, repair, reinstallation, and reassembly.

4. Installation Instructions: Including alignment, adjusting, calibrating, and checking.

5. Original manufacturer's parts list, illustrations, detailed assembly Drawings showing each part with part numbers and sequentially numbered parts list, and diagrams required for maintenance.

6. Maintenance Summary Form in Section 01 99 99, "Forms."

7. Spare parts ordering instructions and list of recommended spare parts.

8. Where applicable, identify installed spares and other provisions for future work (e.g., reserved panel space, unused components, wiring, terminals).

9. Manufacturer's printed operating and maintenance instructions.

10. As-installed, color-coded piping diagrams.

11. Charts of valve tag numbers, with location and function of each valve.

12. Description of Warranty.

B. Content for Each Electric or Electronic Item or System:

1. Description of Unit and Component Parts:

    a. Function, normal operating characteristics, and limiting conditions.

    b. Performance curves, engineering data, nameplate data, and tests.

    c. Complete nomenclature and commercial number of replaceable parts.

    d. Interconnection wiring diagrams, including all control and lighting systems.

2. Circuit Directories of Panelboards:

    a. Electrical service.

    b. Controls.

    c. Communications.

3. List of electrical relay settings, and control and alarm contact settings.

4. Electrical interconnection wiring diagram, including control and lighting systems.

5. As-installed control diagrams by control manufacturer.

6. Operating Procedures:

    a. Routine and normal operating instructions.

    b. Sequences required.

    c. Safety precautions.

    d. Special operating instructions.

7. Maintenance Procedures.

    a. Routine operations.

    b. Guide to troubleshooting.

    c. Adjustment and checking.

    d. List of relay settings, control and alarm contact settings.

8. Manufacturer's printed operating and maintenance instructions.

9. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

C. Detailed Master List:

1. Provide a detailed master list as a separate section within the operating and maintenance manual.

2. Subdivide sections into the following categories:

    a. Equipment with spare parts list with current prices.

    b. Recommended equipment expendables to be on hand.

    c. Recommended test equipment.

    d. Miscellaneous loose items which have relevant importance.

D. Software Manuals: Provide hard copies and electronic copies of all software manuals and program listings associated with equipment to be provided in the process instrumentation and control system.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 78 39
RECORD DRAWINGS

PART 1 – GENERAL

1.01 GENERAL

A. Record Drawings refer to those documents maintained and annotated by the Contractor during construction and are defined as:

1. A neatly and legibly-marked set of Contract Drawings showing the final as-built location and size of piping, equipment, electrical conduits, outlet boxes, cables, panels, and any other major elements of the Work.

2. Additional as-built documentation, such as schedules, lists, drawings, standard details, and electrical and instrumentation diagrams included in the Contract Documents or Shop Drawings.

3. Contractor as-built layout and installation drawings.

B. Unless otherwise specified, Record Drawings shall be full size and maintained in a clean, dry, and legible condition. Record documents shall not be used for construction purposes and shall be available for review by the Engineer during normal working hours at the Contractor's field office. At the completion of the Work, prior to final payment, completed Record Drawings shall be submitted to the Engineer. The Contractor is responsible for submission of the completed Record Drawing set for all portions of the Work including those portions performed by subcontractors. The Record Drawing submitted will be rejected unless all Contract Drawings and all disciplines are included. Submit original with color markup as described below.

C. Marking of the Drawings shall be kept current and shall be done at the time the material and equipment are installed. Changes shall be made to the Record Drawing when items are installed 0.25 feet horizontal or 0.1 feet vertically or more from the location designated on the Contract Drawings. Annotations to the record documents shall be made with an erasable colored pen or pencil conforming to the following color code:

1. Additions/Modifications: Red.

2. Deletions: Green.

3. Comments: Black.

D. Legibly mark to record actual depths and slopes, horizontal and vertical location of underground raceways, cables, and appurtenances referenced to permanent surface improvements.

E. The Contractor's Record Drawings will be reviewed monthly by the Engineer for completeness prior to preparing the progress estimate for payment. If the Record Drawings do not reflect the work performed, a portion of the payment for that item of work will be withheld from the progress estimate.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 99 99
FORMS

PART 1 – GENERAL

1.01 FORMAT

A. Electronic Versions: Engineer will provide, upon request, all forms in Microsoft Word format for Contractor's use on this Project.

B. Forms with project specific information will be issued to Contractor at Preconstruction Conference.

1.02 FORMS

A. Application for Payment (see Section 01 22 00).

B. Submittal Transmittal.

C. Manufacturer's Certificate of Proper Installation.

D. Operation and Maintenance Manual Review Checklist.

E. Maintenance Summary.

F. Motor Data.

G. Warranty Documentation Form.

H. Release and Certificate of Payment.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

(FORMS FOLLOW)

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Application for Payment

To be provided by City at a later date.

Submittal Transmittal

Transmittal No.: _____

To:

ATTN: _____ **Date:** _____

Project: _____ **Project No.:** _____

Owner: _____ **Location:** _____

Previous Transmittal No. (if resubmitted): _____

USE ONE FORM PER ITEM SUBMITTED

Qty.	Spec. Para. No.	Spec. Page No.	Item Description and Use	Manufacturer	Dwg. No(s).	Approval Status (Engineer)

By this submittal, the Contractor represents that he has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data, or will do so, and that he has checked and coordinated each Shop Drawing with the project requirements and of the Contract Documents. Deviations from the Contract Documents are noted below.

Deviations: _____

_____

_____

_____

_____

Contractor: _____ **Signature:** _____

(THIS SPACE FOR Engineer)

To: _____ **Date:** _____

_____

_____

_____

Enclosed are _____ copies of the above item. Approval status as noted above is in accordance with the following legend:

A. No Exceptions Taken
B. Make Corrections Noted
C. Rejected
D. Revise and Resubmit
E. Submit Specified Item
F. _____

See attached Comment Sheet Dated _____

Checking is only for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Any action shown is subject to the requirements of the Plans and specifications. Contractor is responsible for: dimensions which shall be confirmed and correlated at the job site; fabrication processes and techniques of construction, coordination of his work with that of all other trades and the satisfactory performance of his work.

By: _____

Manufacturer's Certificate of Proper Installation

Contract No.: _____ **Specification Section:** _____

Contractor: _____

Equipment Name: _____ **Equipment No.:** _____

Manufacturer: _____

The undersigned manufacturer of the equipment item described above hereby certifies that he has checked the installation of the equipment and that the equipment, as specified in the project manual, has been provided in accordance with the manufacturer's recommendations and that the trial operation of the equipment item has been satisfactory.

Comments: _____

_____

_____

_____

_____

Date	Manufacturer
Date	Signature of Authorized Representative
Date	Contractor
Date	Signature of Authorized Representative

Operation and Maintenance Manual Review Checklist

Equipment: _____ **Submittal No.:** _____

Specification Section: _____

MANUAL FORMAT

- ☐ Three Ring Binder, Plastic Covers (final)
- ☐ Heavy Paper Covers (preliminary)
- ☐ 8-1/2″ x 11″, Folded 11” x 17”
- ☐ No Odd Size Envelopes
- ☐ White Paper (20-lb)
- ☐ Printed or Typewritten
- ☐ Hole Punched
- ☐ Project Title
- ☐ System/Equipment Title
- ☐ Contractor Name, Address, Phone Number
- ☐ Title Page
- ☐ Table of Contents
- ☐ Volume X of Y
- ☐ Section Dividers with Numbered Plastic Reinforced Index Tabs
- ☐ Sections Ordered Same as Specification

MANUAL CONTENT

- ☐ Each Item of Equipment/System
- ☐ Equipment/System Description
- ☐ Controls Description
- ☐ Curves, Data
- ☐ Parts List, Assembly Drawings, Part Numbers
- ☐ Drawings (spatial/mechanical/assembly)
- ☐ Spec Section and Product Name on Drawings/Envelopes
- ☐ Diagrams (control/flow)
- ☐ Safety Information
- ☐ Troubleshooting Guide
- ☐ Inapplicable Data (crossed out or deleted)
- ☐ Spare Parts Ordering Instructions
- ☐ Copies of Warranties, Bonds, Service Agreements
- ☐ Factory Test Results

Instructions:

- ☐ Handling
- ☐ Storage
- ☐ Installation
- ☐ Testing
- ☐ Operating
- ☐ Maintenance
- ☐ Shutdown

Maintenance Summary Forms:

- ☐ Correct Form Used
- ☐ 8-1/2″ x 11″
- ☐ Typewritten
- ☐ Form Completely Filled Out
- ☐ Form for Each Unit
- ☐ Lubrication Instructions
- ☐ Recommended Spare Parts

Maintenance Summary

PROJECT: _____ **CONTRACT NO.:** _____

1. **Equipment Item:** _____
2. **Manufacturer:** _____
3. **Equipment/Tag No.(s):** _____
4. **Weight of Individual Components (Over 100 Pounds):** _____
5. **Nameplate Data (hp, voltage, speed, etc.):** _____
6. **Manufacturer's Local Representative:**
   a. Name: _____ Telephone No.: _____
   b. Address: _____
7. **Maintenance Requirements:**

Maintenance Operation Comments	Frequency	Lubricant (If Applicable)
List briefly each maintenance operation required and refer to specific information in manufacturer's standard maintenance manual, if applicable. (Reference to manufacturer's catalog or sales literature is not acceptable.)	List required frequency of each maintenance operation.	Refer by symbol to lubricant required.

Maintenance Summary (Continued)

8. Lubricant List:

Reference Symbol	Shell	Standard Oil	Gulf	Arco	Or Equal
List symbols used in No. 7 above.	List equivalent lubricants as distributed by each manufacturer for the specific use recommended.				

9. Recommended Spare Parts for Owner's Inventory:

Part No.	Description	Unit	Quantity	Unit Cost

NOTE: Identify parts provided by this Contract with two asterisks.

Motor Data

Equipment Name: _____ **Equipment No.:** _____

Site Location: _____

Nameplate Markings:

Mfr: _____ Mfr Model: _____ Frame: _____ HP: _____

Volts: _____ Phase: _____ RPM: _____ Service Factor: _____

FLA: _____ LRA: _____ Frequency: _____ Ambient Temp Rating: _____ Degrees C

Time Rating: _____ (NEMA MG1-10.35) Design Letter: _____ (NEMA MG-1.16)

KVA Code Letter: _____ Insulation Class: _____

The following information is required for explosion-proof motors only:

A. Approved by UL for installation in Class _____, Division _____.

B. UL frame temperature code _____; Group _____Atmosphere (NEC Tables 500-s and 500-s(b)).

The following information is required for high efficiency motors only:

A. Guaranteed minimum efficiency at full load or NEMA efficiency index:

_____ (NEMA MG1-12.53b)

B. Nameplate or nominal efficiency: _____

Data Not Necessarily Marked on Nameplate:

Type of Enclosure: _____ Enclosure Material: _____

Temp Rise: _____ Degrees C (NEMA MG1-12.41,42)

Space heater included? ☐ Yes ☐ No

If Yes, Watts: _____ Volts: _____

Type of rotor winding over-temperature protection, if specified:

_____

Use the space below to provide additional information on other motor modifications, if specified:

_____

_____

_____

Warranty Documentation Form

Page ____ of ____

Contract Name: _____

Contract No: _____ Date: _____

System, Equip., or Area I.D.	START DATE	END DATE	Contact	Company	Phone

_____ _____

Signature of Contractor Representative Date

_____ _____

Signature of Project Representative Date

Release and Certificate of Payment

1. Date: _____

2. Contractor: _____

   a. Name: _____

   b. Address: _____

   c. Telephone: _____

3. Project: _____

   a. Name: _____

   b. Contract #: _____

4. Payment Amount: $_____

5. Period Covered: _____

6. Final Payment: _____

Contractor covenants and warrants to: _____
("Owner"), and certifies as follows:

1. All persons, firms, corporations and other entities furnishing labor, employee benefits, materials, equipment, and/or professional services in connection with the Project, at the request of and for or on behalf of the Contractor will be paid through the period stated in No. 5 above from funds to be received from this payment. No person, firm, corporation, or other entity who has furnished labor, employee benefits, materials, equipment and/or professional services to the Contractor for the Project, has any right to file a claim or lien against the Project or against the Contractor's bonds, or any retained percentage, except as follows (none, unless otherwise stated):

2. There are no federal, state or municipal taxes, warrants, levies, or other claims, charges, unpaid or delinquent, for which the Contractor or its subcontractors are responsible which constitute an encumbrance, claim, or lien against the Project, or the Contractor's bonds, or retained percentage. No government agency may file a warrant, lien, levy, or other encumbrance against the Project or against the Contractor's bonds or retained percentages, except as follows (none, unless otherwise stated):

3. The undersigned Contractor agrees to indemnify and hold the Owner harmless from any and all claims for payment which might be filed contrary to the representations made above and to defend any such claims without any cost, expense, or damages, to the Owner.

4. The undersigned Contractor, in consideration for the Payment Amount shown above, hereby forever releases the Owner, its sureties, and any bond or retainage from any and all claims for payment arising under or in connection with the Project during the period covered and accepts said payment as full compensation and consideration for all of the Work performed under this Contract.

Release and Certificate of Payment

5. This certificate is made by the undersigned Contractor with a full understanding of the facts set forth herein, and for the purpose of inducing the Owner to make payment to the Contractor on the assurance that there are no liens, claims or other encumbrances, except as described above.

6. The person signing this document, regardless of whether they are signing in representative capacity, specifically represents that they have reviewed the relevant records of the Contractor, and have personal knowledge that all lienable claims referred to above have been paid. The undersigned also represents that they have been duly authorized to sign this release and to make the representations set forth above on behalf of the Contractor.

I declare under penalty of perjury under the laws of the State of Washington that the foregoing statements are true and correct.

SIGNED this _____ day of _____, 20__.

_____
Name and Title of Contractor

_____
Contractor's License No, State, and Expiration Date

END OF SECTION

Division 02

Existing Conditions

SECTION 02 05 00
DEMOLITION AND SALVAGE

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies demolition, equipment salvage, cutting, and patching.

1.02 SUBMITTALS

A. Procedures: “Submittals Procedures.”

B. Schedule of work planned.

C. Coordination and rescheduling as required to preclude interference with other operations.

D. Shop drawings when items of matching and repairing require drawings to allow clarification of conformance.

1.03 SALVAGE DISPOSITION, STORAGE AND HANDLING

A. Equipment:

1. As designated on the Contract Drawings or as specified herein, equipment to be removed as a part of this project is to be:

   a. Delivered to the City’s possession where specified, or

   b. Removed by the Contractor for Contractor’s possession and recycling, unless otherwise specified.

B. Materials Disposal:

1. Unless otherwise identified, all materials removed from the project become the property of the Contractor and shall be recycled.

C. Delivery of Salvage Items to the City:

1. Remove, as a unit, items designated for removal and reuse.

2. Clean, condition, tag, protect from damage, and deliver to locations designated.

3. Deliver to City, between the hours of 8:00 a.m. and 4:00 p.m., Mondays through Friday, except for City holidays.

D. Recycled by Contractor:

1. Removal and recycle of equipment and materials shall not occur until the Project Representative has reviewed the list.

2. Upon completion of review, promptly remove from site.

3. Do not store or sell Contractor salvaged items or materials on-site.

1.04 SALVAGED EQUIPMENT TO BE DELIVERED TO CITY

A. None.

1.05 JOB CONDITIONS

A. Protection:

1. Remove salvaged equipment in a manner that protects adjacent equipment and piping.

2. If chipping of concrete is required, perform work in a manner that contains and exhausts concrete dust to a bag filter or other means of complete containment and capture.

3. Repair or replace property that is damaged.

4. Provide dust control enclosure for electrical panels during chipping of concrete.

B. Proper Approval:

1. Obtain approval of authorities having jurisdiction for work which affects existing exitways, exit stairs, means of egress, or access to or exit from such areas.

2. Review with and obtain approval of authorities for temporary construction which affects such areas.

3. Special attention is directed to approvals by fire authorities.

C. Special Requirements:

1. Cut in pieces: Pressure vessels and closed containers which may have contained hazardous or contaminated materials. Disposal of equipment shall not occur until the Project Representative has approved.

1.06 VERIFICATION OF ASSET REMOVAL

A. Document disposal or salvage of assets removed from the project with the Project Representative.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL

A. Notify the Project Representative prior to beginning salvage work so that the proper salvage items are identified and the condition of the salvage item and adjacent equipment, piping and structures can be documented.

3.02 OPERATION PROCEDURES

A. Start and complete work in order or precedence as established by approved schedule. Operational procedures and sequence of work is optional with Contractor provided this does not infringe upon or violate schedule.

B. Execute work to protect City employees or City Representatives and the public from injury. Provide protection to persons and property. Conduct operations to ensure minimum interference with roads, walks, entrances, exits, and other adjacent occupied facilities.

C. Where temporary partitions are required, construct partitions of clean, painted, minimum 1/2-inch (12 mm) thick, plywood. In interior areas adequately braced 1/4-inch (6 mm) pre-finished paneling may be used. Provide the following:

   1. Passageways where necessary to ensure safe passage of persons in or near areas of work.

   2. Substantial barricades and safety lights as required.

   3. Temporary dust proof partitions where indicated or necessary to prevent infiltration of dust into adjacent or occupied areas or the atmosphere.

   4. Temporary weather protection as necessary to prevent damage to existing facilities and discomfort to persons in occupied areas.

3.03 CUTTING AND REMOVAL

A. Neatly cut and remove materials and prepare openings to receive new work.

B. Remove masonry or concrete in small sections.

C. Provide shoring, bracing, and other supports to prevent movement, settlement, or collapse of remaining or adjacent wall areas, structure, or facilities. Arrange shoring, bracing, and supports to prevent overloading of structure.

D. Take precautions necessary to prevent damage to existing remaining work or to adjacent facilities. Execute work using methods that will prevent interference with use of remaining and adjacent facilities by the City, utilities, or other public goods.

E. Properly disconnect salvaged items to retain their full salvage value, remove from their foundations when applicable, and carefully store at a location stated in Paragraph 1.03.C.

3.04 MATCHING AND PATCHING

A. Where items are removed from existing walls, ceilings, floors, or partitions to remain, repair wall, ceiling, floor, or partition disturbed by removal.

B. Where walls, ceilings, floors, or partitions are removed, repair abutting walls, ceilings, or floors disturbed by removal.

C. Where existing construction is cut or otherwise disturbed to permit installation of new work, match and patch existing disturbed construction.

D. Use methods and materials similar in appearance and equal in quality to areas or surfaces being repaired.

E. Remove areas, surfaces, or items which cannot be satisfactorily matched and patched and replace.

3.05 CLEANUP

A. Remove debris, rubbish, and materials resulting from cutting, demolition, or patching operations.

B. Transport materials and legally dispose of off-site.

END OF SECTION

SECTION 02 60 50
MANHOLES

PART 1 – GENERAL

1.01 SCOPE OF WORK

A. The Work covers construction work specifically shown on the Contract Drawings and described herein.

B. Provide and install wet well riser(s) as necessary such that the wet well is a minimum of 2 inches above adjacent grade. Contractor shall confirm existing riser joint type prior to ordering new riser(s).

1.02 QUALITY ASSURANCE

A. Testing by Manufacturer:

1. Submit two copies of all test results which shall include a certification that material to be delivered is represented by the samples tested and that such delivered materials meets or exceeds the Specifications requirements.

2. The Owner shall have free access to all testing and records pertaining to material to be delivered to the jobsite.

PART 2 – PRODUCTS

2.01 PRECAST MANHOLES

A. Submit Shop Drawings.

B. Precast concrete manholes shall conform to the requirements of ASTM C478 except as specifically modified herein.

C. Joints between precast elements designed to accommodate a rubber gasket joint with the existing riser section similar to pipe joints conforming to ASTM C443. Design of joints shall be approved by the Owner before manufacture. Shop Drawings shall be submitted for review. Variations in joint dimensions shall meet the gasket design requirements but shall in no case be more than the minimum requirement of ASTM C478.

D. Openings to receive pipes shall be circular and shall be sized to equal the outside diameter of the pipe to be inserted in the joint plus the manhole wall thickness.

E. Resilient connectors conforming to ASTM C923 may be used at the Contractor's option.

PART 3 – EXECUTION

3.01 MANHOLE INSTALLATION

A. Manholes shall be constructed of precast units.

B. Precast Sections:

1. Placed and aligned to provide vertical sides and vertical alignment of the ladder rungs, if applicable.

2. The completed manhole shall be true to dimensions and watertight.

3. Lift holes shall be thoroughly wetted and then be completely filled with mortar and smoothed and pointed both inside and out to ensure water tightness.

4. Steel loops must be removed and be covered with mortar, smoothed, and pointed.

C. Backfill:

1. Extend around manhole and at least one pipe length into each trench.

2. Hand place and tamp with selected native material up to an elevation of 6 inches above the crown of all entering pipes.

END OF SECTION

SECTION 02 72 00
DEWATERING

PART 1 – GENERAL

1.01 DESCRIPTION

A. This section covers the work necessary to lower the groundwater, pump standing water from excavations, and control surface runoff water to maintain all excavations dry, prevent slope instability, and to prevent disturbance of materials in the bottom of excavations. This section also includes the protection of adjacent structures and facilities from damage caused by dewatering operations.

B. This section also covers disposal of groundwater, including discharge locations and special requirements, from the various excavation sites.

1.02 QUALITY CONTROL

A. The design, installation, and operation of the dewatering system shall be the Contractor's responsibility. The selection of the dewatering methods used is the Contractor's option. The methods may consist of deep wells, well points, collection trenches, cutoff walls, all or part of the above methods, or other methods as deemed necessary by the Contractor and as necessary to achieve the specified results.

B. The Contractor shall construct, maintain, and operate all cofferdams, channels, flume drain, sumps, pumps, and/or other temporary diversion and protection works; shall furnish all materials required therefore; and shall furnish, install, maintain, and operate all necessary pumping, and other equipment for the environmentally safe removal and disposal of water from the various parts of the work and for maintaining the foundations and other parts of the work free from water.

C. The Contractor shall be responsible for all excavations to prevent the occurrence of surface water inflows, boils, seepage, loss of fines, quick condition, loosening or otherwise disturbing the foundation strata, slope instability, and bottom heave. The minimum requirements for dewatering systems shall be as stated herein.

1.03 SUBMITTALS

A. The Contractor shall submit a plan for dewatering for review and approval by the Engineer.

PART 2 – PRODUCTS

2.01 EQUIPMENT

A. Before operations begin, the Contractor shall have available on the site of work, sufficient pumping equipment and/or other machinery to ensure that the operation of the dewatering system can be maintained.

PART 3 – EXECUTION

3.01 CONTROL OF GROUNDWATER

A. It is the intent of these Specifications that an adequate dewatering system be installed to lower and control the groundwater in order to permit excavation; the placement of bedding, backfill, and fill materials; and construction of facilities to be performed under dewatered conditions.

B. Excavations shall be kept free from water and dry during construction. Softening of the bottom of excavations or the formation of quick conditions or boils due to either confined or unconfined aquifer conditions or for other reasons shall be prevented. If, in the opinion of the Engineer, the soils at the bottom of the excavations become softened or disturbed due to inadequate dewatering measures, the softened or disturbed material shall be over-excavated to a depth accepted by the Engineer and replaced with granular fill compacted to at least 95 percent relative compaction. All labor and materials and work necessary to over-excavate and replace the softened or disturbed material shall be provided by the Contractor at no additional expense to the Owner.

C. Prior to the start of any excavation, the groundwater table shall be lowered to a minimum of 2 feet below the bottom of all excavations. The lowering of the water level shall include both the unconfined (phreatic) water surface and the piezometric water level in any confined water-bearing strata.

D. The dewatering system shall be installed and continuously operated so that groundwater levels are maintained at 2 feet below the base of the excavation at all times.

E. As part of these dewatering requirements, all excavations shall be protected from surface water inflows using ditches, flumes, dikes, surface grading, or other methods as necessary.

F. Closed pipelines shall be used to convey pumped water from the dewatering systems and from the excavation to an approved point of discharge.

G. The removal of natural, in-place soils during dewatering operations (sand pumping) shall be prevented. The system shall be such that after initial development, the quantity and size of soil particles will decrease until no visible soil particles are present in water being pumped at any time after 24 hours initial pumping. The Contractor shall measure and record sediment content of pumped water at least once per day using an Imhoff cone.

3.02 DISCHARGE PIPING AND ELECTRICAL SERVICE CORRIDORS

A. Discharge piping and electrical service shall not be located in areas affecting normal pump station operations, including normal traffic patterns, without approval in writing by the Engineer.

3.03 DISCHARGE LOCATION

A. The Contractor shall dispose of all surface water runoff and water removed by the dewatering system in an environmentally sound manner that will not endanger health,

property, or any portion of the work under construction. The discharge location(s) shall be identified in the Contractor's dewatering submittal for the Engineer's review as specified herein. Disposal of water shall be performed in such a manner as will cause no inconvenience whatsoever to the Owner, Engineer, or to others engaged in work about the site.

B. The Contractor shall use sediment control methods, as required, at discharge points near property lines to prevent silt and sediment from migrating off-site. Sediment control methods can include, but are not limited to, siltation ponds, filter fences, screens, and other methods as required.

C. If necessary to meet water quality requirements for turbidity, provide treatment filters and sedimentation tanks before being discharged to the approved discharge location.

D. Surface water runoff shall be directed to sedimentation control facilities.

3.04 MAINTAINING GROUNDWATER CONTROL IN EXCAVATION

A. System maintenance shall include, but not be limited to, 24-hour supervision by personnel skilled in the operation, maintenance, and replacement of system components; and any other work required to maintain the systems. Groundwater control shall be a continuous operation. Interruptions due to outages or any other reasons shall not be permitted.

B. The Contractor shall repair any damage to work in-place and any excavation, including damage to the bottom because of heave and removal of material and pumping out of the excavated area that may result from the Contractor's negligence, inadequate or improper installation, maintenance and operation of the dewatering system, and any mechanical or electrical failure of the dewatering system. The supply of all labor and materials and the performance of all work necessary to carry out additional work for reinstatement of the structures or foundation soil resulting from inadequacy or failure of the dewatering system shall be undertaken by the Contractor at the Contractor's sole expense.

3.05 DURATION OF DEWATERING

A. The Contractor shall keep dewatering systems in operation during excavation, construction, backfilling operations, and other construction until below-grade work is completed or until such time as a written directive to cease operations has been received from the Engineer.

END OF SECTION

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Division 03

Concrete

SECTION 03 10 02
CONCRETE FORMWORK

PART 1 – GENERAL

1.01 QUALITY ASSURANCE

A. Standards:

1. "Recommended Practice for Concrete Formwork," ACI 347.
2. Section 1906, International Building Code.
3. U.S. Product Standard PS 1 for Plywood.
4. Standard Grading and Dressing Rules No. 17 of the West Coast Lumber Inspection Bureau.

1.02 DELIVERY, STORAGE, AND HANDLING

A. On delivery to job site, place materials in area protected from weather.

B. Store materials above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation or ventilation.

C. Handle materials to prevent damage.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Plywood: New or in new condition "B-B Plyform Class 1 Exterior" grade plywood, 5/8-inch-minimum thickness.

B. Steel Panels: Flat steel sheet or plate of sufficient thickness, or braced sufficiently, to prevent noticeable deflection from pressure of concrete. Steel forms galvanized and/or coated to prevent rust and staining.

C. Framing, Studding, and Bracing: "Standard" or "Construction" grade West Coast Species lumber.

D. Form Ties: Prefabricated rod of the cone-type snap-tie configuration; or approved threaded internal disconnecting type to resist all imposed loads of freshly placed concrete, and permit tightening and spreading of forms. Plastic cone snap-ties shall break back 1 to 1-1/2 inches.

E. Form Coating: Lacquer, plastic or epoxy coating or nonstaining form oil that will not impair the bonding quality for final finish of the painting or protective coating. Coatings containing mineral oils or other nondrying ingredients will not be permitted.

F. Shores and Falsework: Standard patented, manufactured shores, or sound commercial construction lumber.

G. Chamfer Strips: Chamfer strips (for all exposed edges) 3/4-inch, 45-degree bevel wood strips or plastic triangular strips.

PART 3 – EXECUTION

3.01 DESIGN OF FORMWORK

A. Design formwork to safely support vertical and lateral loads, which might be applied until such loads, can be supported by the concrete structure. Carry vertical and lateral loads by formwork system to ground or to in-place construction, which has attained adequate strength for that purpose.

B. Design forms and falsework to include assumed values of live load, dead load, weight of moving equipment operated on formwork, concrete mix, height of concrete drop, vibrator frequency, ambient temperature, foundation pressures, stresses, lateral stability, and other factors pertinent to safety of structure during construction.

C. Provide shores and struts with positive means of adjustment capable of taking up formwork settlement during concrete placing operations, using wedges or jacks or a combination thereof. Provide trussed supports when adequate foundations for shores and struts cannot be secured.

D. Form facing materials shall be supported by structural members spaced to prevent deflection. Design camber in formwork as required for anticipated deflections.

E. Design formwork to be readily removable without impact, shock, or damage to cast in place concrete surfaces and adjacent material.

F. Keep oil or other agents from getting on reinforcing steel, embedded items, or other surfaces requiring bond with concrete.

3.02 LAYOUT OF FORMWORK

A. Locate and stake out all forms and establish all lines and levels and elevations.

3.03 CONSTRUCTION OF FORMS

A. Formwork – General:

1. Before concrete is placed in any form, verify horizontal and vertical form position and correct all inaccuracies. Complete all wedging and bracing in advance of placing of concrete.

2. When setting form ties, leave no metal to remain in wall closer than 1 inch from surface. Ties shall fit tight to prevent mortar leakage at holes in forms. Ties shall be protected from rusting at all times. No wire ties or wood spreaders will be permitted. Cutting ties back from concrete face will not be permitted.

3. At construction joints, anchor forms by using an adequate number of form ties in the new pour a few inches from the construction joints. Do not rely on ties adjacent to the joint used in previous placements.

4. For exposed concrete, forms shall be of new plywood, metal panel, or approved panel materials, smooth, and continuous.

5. For unexposed concrete, forms shall be plywood, metal, boards, or approved material. Boards, nominal 1-inch-minimum thickness, sound and tight, commercial construction lumber, shiplapped or tongue-and-grooved, dressed on at least one side and both edges for tight fit. Plywood, metal, or approved material equal to or better than board surface.

6. Inspection and Cleanout Openings: Provide inspection and cleanout openings at the bottom of all forms for columns, pilasters, walls over 8 feet in height, and for forms for irregularly shaped placement where cleaning and inspection from the top would be impractical.

B. Chamfered Corners: All corners chamfered 3/4 inch, unless shown otherwise on Drawings. Provide 45-degree triangular moldings in forms for all chamfering required.

1. Exception: Edges of paving, slabs, and sidewalks to be rounded with concrete edging tool.

2. Edges of concrete containing grating edge angles shall not be chamfered.

C. Cleaning: All dirt, chips, sawdust, mud, water, and other foreign matter shall be removed from within the forms or within the excavated areas before any concrete is deposited therein.

3.04 NOTIFICATION AND INSPECTION

A. Prior to placing of any concrete, and after placement of reinforcing steel in the forms, notify the Engineer at least 24 hours in advance of placing concrete to permit inspection.

3.05 DEFECTIVE WORK

A. Any form movement or deflection during construction or finished surface variations in excess of the tolerances specified will be basis for rejection of cast-in-place product and requirement for replacement of same.

3.06 REMOVAL OF FORMS

A. Do not remove forms and supports until concrete has attained sufficient strength to support anticipated loads.

B. The listing below serves only as a guide in determining the minimum length of time required before removal of forms and is based on the use of Type I portland cement. When

high early strength portland cement is used, the length of time listed below may be reduced to not less than one-third time listed, but not less than 1 day.

1. Walls in Mass Work: 24 hours.

2. Thin Walls (12 inches or less): 48 hours.

3. Columns: 7 days.

4. Bottom Forms and Supports of Beams, Girders and Slabs: 14 days.

C. Use methods of form removal that will not cause overstressing of the concrete. Remove supports to permit the concrete to uniformly and gradually take the stress due to its own weight. Do not use high impact methods to remove supports.

D. Break back ties after concrete has cured sufficiently to maintain unbroken bond with steel tie rods.

3.07 REUSE OF FORMS

A. Any reused form for exposed concrete work shall be reconditioned to “like new” condition. Any reused form shall be cleaned, repaired, and recoated before each reuse.

END OF SECTION

SECTION 03 20 02
CONCRETE REINFORCEMENT

PART 1 – GENERAL

1.01 QUALITY ASSURANCE

A. Manual of Standard Practice for Detailing Reinforced Concrete Structures, ACI 315.

B. Manual of Standard Practice, Concrete Reinforcing Steel Institute.

1.02 SUBMITTALS

A. Placing Drawings, Bending, and Cut-Sheet Schedules.

B. Mill test reports for each shipment of reinforcement shall be submitted to the Engineer for review.

C. All wall reinforcement to be shown in elevation on the Shop Drawings.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver reinforcement to project site in bundles marked to coordinate with placement Drawings.

B. Handle and store to prevent contamination from dirt, oil and other materials, which will affect bond.

C. Store a minimum of 6 inches aboveground and in locations where the material will not be subject to abuse.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Reinforcing Bars: Unless specified otherwise, all bars for concrete reinforcement deformed, and meet requirements ASTM Designation A615, Grade 60, “Billet Steel Bars for Concrete Reinforcement.”

B. Tie Wire: Steel, black annealed, 16-gage minimum.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Placement and Tolerances: Conform to CRSI Manual of Standard Practice.

B. Splices:

1. Do not splice bars except at locations shown or noted on the Drawings or as otherwise approved.

2. Tie lap splices securely with wire to prevent displacement of splice during placement of concrete.

3. Mechanical splices shall be placed to not reduce the required concrete cover.

C. Cleaning: Remove dirt, grease, oil, loose mill scale, excessive rust, and foreign matter that may reduce bond with concrete.

D. Protection during Concreting: Keep reinforcing in proper position during concrete placement.

E. Concrete Cover: Maintain minimum concrete cover over reinforcement as specified in ACI 318 or as noted. Bend ends of the tie-wires away from surfaces to maintain specified concrete cover.

END OF SECTION

SECTION 03 30 01
CAST-IN-PLACE CONCRETE

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies cast-in-place reinforced concrete, including embedded material and formwork.

1.02 QUALITY ASSURANCE

A. Referenced Standards: This section incorporates by reference the latest revision of the following document. It is a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ACI 301	Specifications for Structural Concrete for Buildings
ACI 318	Building Code Requirements for Reinforced Concrete
ASTM A615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C33	Specification for Concrete Aggregates
ASTM C94	Specification for Ready-Mixed Concrete
ASTM C150	Specification for Portland Cement
ASTM E329	Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction Manual of Standard Practice

1.03 TESTING

A. Perform and submit materials testing to demonstrate conformance with the specifications.

1.04 SUBMITTALS

A. Procedures: “Submittal Procedures.”

B. Concrete-Mix Designs.

C. Reinforcing Steel.

D. Curing Compound.

1.05 CONCRETE MIX DESIGNS

A. Compressive Strengths: Unless otherwise specified, provide the following as minimum:

1. All Concrete: 4,000 psi.

PART 2 – PRODUCTS

2.01 REINFORCEMENT

A. Comply with the following as minimums:

1. Bars – ASTM A615, grade 60, unless otherwise shown, using deformed bars for Number 3 and larger.

2. Bending – ACI 318.

B. Fabricate reinforcement to the required shapes and dimensions, within fabrication tolerances stated in the CRSI.

C. Do not use reinforcement having any of the following defects:

1. Bar lengths, depths, or bends exceeding the specified fabricating tolerances.

2. Bends or kinks not indicated on the Drawings or required for this work.

3. Bars with cross-section reduced due to excessive rust or other causes.

2.02 CONCRETE

A. Minimum Requirements:

1. Portland Cement: ASTM C150, Type I or II, low-alkali.

2. Aggregate, General:

a. ASTM C33, uniformly graded and clean.

b. Do not use aggregate known to cause excessive shrinkage.

3. Aggregate, Coarse: crushed rock or washed gravel with size between 3/4 inch and 1-1/2 inches.

4. Aggregate, Fine: natural washed sand of hard and durable particles varying from fine to particles passing a 3/8-inch screen, of which at least 12 percent shall pass a 50-mesh screen.

5. Water: clean and potable.

6. Flyash: for the cementitious portion of the concrete mix, up to 20 percent of the cement content may be flyash or ground granulated blast furnace slag. A higher percentage of flyash can be used if a mix design and plan for form removal is approved by the Owner's Representative.

7. Cementitious content (including fly ash or slag) not less than 564 pounds per cubic yard of concrete.

8. Entrained air 5-1/2 percent plus or minus 1 percent.

9. Maximum water/cement ratio shall be a maximum of 0.40 to reduce shrinkage cracking.

B. Admixtures:

1. Water-reducing admixtures shall conform to ASTM C494, and be used in accordance with the manufacturer's recommendations.

2. No chloride containing admixtures shall be used.

2.03 OTHER MATERIALS

A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor.

PART 3 – EXECUTION

3.01 EXISTING CONDITIONS

A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

3.02 EMBEDDED ITEMS

A. Do not embed piping or electrical conduit in structural concrete unless indicated on the Drawings or approved by the Owner's Representative.

B. Set and secure bolts, inserts, and other required items in the precise locations needed so these items are not displaced.

C. Prior to concrete placement, assure the actual locations of embedded items are noted on the as built set of drawings.

3.03 FORMS

A. Design, erect, support, brace, and maintain formwork to safely support vertical and lateral loads which will be applied until such loads can be supported safely by the concrete structure.

B. Construct forms to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, and level and plumb work in the finished structure.

3.04 MIXING CONCRETE

A. Transit mix the concrete in accordance with provisions of ASTM C94.

B. Do not use concrete that has stood for over 30 minutes after leaving the batch plant, or concrete that is not placed within 90 minutes after water is first introduced into the mix.

3.05 PLACING CONCRETE

A. Preparation:

1. Remove foreign matter accumulated in the forms.

2. Rigidly close openings left in the formwork.

3. Wet wood forms sufficiently to tighten up cracks; wet other material sufficiently to maintain workability of the concrete.

4. Use only clean tools.

5. Schedule inspection with Owner's Representative 24 hours minimum prior to concrete placement.

B. Conveying:

1. Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic.

2. Deposit concrete as nearly as practicable in its final location to avoid separation due to rehandling and flowing.

3. Do not use concrete which becomes non-plastic and unworkable, or does not meet required quality control limits, or has been contaminated by foreign materials.

4. Remove concrete from the work site that does not meet specifications.

C. Placing Concrete in Forms:

1. Deposit concrete in horizontal layers not deeper than 24 inches and avoid inclined construction joints.

2. Remove temporary spreaders in forms when concrete has reached the elevation of the spreaders.

D. Placing Concrete Slabs:

1. Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.

2. Bring slab surfaces to the correct level with a straightedge, and then strike off.

3. Use bullfloats or darbies to smooth the surface, leaving the surface free from bumps and hollows.

4. Do not sprinkle water on the plastic surface.

5. Do not disturb the slab surface prior to start of finishing operations.

3.06 CONSOLIDATION

A. Consolidate each layer of concrete while placing by use of internal concrete vibrators and supplemented by hand spading, rodding, or tamping.

B. Do not vibrate forms or reinforcement.

C. Do not use vibrators to transport concrete inside the forms.

3.07 JOINTS

A. Construction Joints:

1. Construction joints shall be placed as shown on the Drawings. If other joints are found to be required, submit for the Owner's Representative's approval of joint design and location prior to start of concrete placement.

3.08 CONCRETE FINISHING

A. Unless otherwise indicated, provide the following finishes at the indicated locations.

1. Non-slip broom finish: apply to slabs, walks, stairs, drives, ramps, and similar pedestrian and vehicular areas.

2. Formed surfaces: repair all rock pockets, voids, air bubbles, etc. greater than 1/2 inch in any dimension.

END OF SECTION

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SECTION 03 60 00
GROUTING

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies non-shrink grout and epoxy grout for use in applications including but not limited to grouts for leveling machine bases to equipment pads and grouting under base plates. Epoxy adhesives for concrete applications including, but not limited to pressure injection of cracks and doweling of anchor bolts, threaded rod anchors and reinforcing bar dowels.

1.02 QUALITY CONTROL

A. Referenced Standards: This section incorporates by reference the latest revision of the following documents. These references are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ASTM C33	Concrete Aggregates
ASTM C40	Test Method for Organic Impurities in Fine Aggregates for Concrete
ASTM C88	Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate
ASTM C117	Test Method for Materials Finer than No. 200 Sieve in Mineral Aggregates by Washing
ASTM C136	Test Method for Sieve Analysis of Fine and Course Aggregates
ASTM C150	Portland Cement
ASTM C289	Test Method for Potential Alkali-Silica Reactivity of Aggregates (Chemical Method)
ASTM C494	Standard Specification for Chemical Admixtures for Concrete
ASTM C881	Standard for Epoxy-Resin-Base Bonding Systems for Concrete
ASTM C1017	Chemical Admixtures for Use in Producing Flowing Concrete
ASTM C1107	Standard Specification for Packaged Dry, Hydraulic-Cement Grout (Nonshrink)
ASTM D2419	Test Method for Sand Equivalent Value of Soils and Fine Aggregate
ASTM E329	Standard Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction
CRD-C-621	Corps of Engineers Specification for Non-shrink Grout

1.03 SUBMITTALS

A. Procedures: “Submittal Procedures.”

B. Manufacturer’s Data for the following:

1. Non-shrink cementitious grout.

2. Epoxy grout.

3. Admixtures for cement grout.

4. Adhesive for doweling.

5. Bonding compounds.

PART 2 – PRODUCTS

2.01 GENERAL

A. Grout mixes and admixtures shall not contain more than 0.05 percent chloride ions.

B. Water for washing aggregate, for mixing, and for curing:

1. Shall be free from oil and deleterious amounts of acids, alkalis, and organic materials.

2. Shall not contain more than 1,000 mg/L of chlorides as Cl, nor more than 1,300 mg/L of sulfates as SO4.

3. Shall not contain an amount of impurities that may cause a change of more than 25 percent in the setting time of the cement nor a reduction of more than 5 percent in the compressive strength of the grout at 14 days when compared with the result obtained with distilled water.

4. Water used for curing shall not contain an amount of impurities sufficient to discolor the grout.

2.02 GROUT

A. Use grout specified on the Contract Drawings or as specified in the equipment recommendations.

B. Non-shrink cementitious grout:

1. Cementitious grout that conforms to ASTM C1107, CRD-C-621, “Corps of Engineers Specification for Non-Shrink Grout,” and the following requirements:

a. Non-metallic aggregate.

b. Acceptable manufacturers:

1) Euclid Chemical Co., “Euco NS.”

2) BASF, “Masterflow 713 Plus.”

3) Five Star Grout Co., “Five-Star Grout.”

4) Or approved equal.

C. Epoxy Grout:

1. Multi-component, 100 percent solids compound conforming to the following requirements:

a. Suitable for use on dry or damp surfaces.

b. Comply with ASTM C881.

c. Acceptable manufacturer:

1) Euclid Chemical Co., “DuralBond.”

2) Sika Chemical Co, “Sikadur 35 Hi-Mod LV.”

3) BASF, “SCB Concresive 1380.”

4) Or approved equal.

2.03 ADHESIVES

A. Adhesive for doweling of anchors and reinforcing bars in concrete:

1. A two-component, moisture tolerant, epoxy gel conforming to ASTM C881 for load-bearing applications.

2. Acceptable manufacturers:

a. Euclid Chemical Co., “Euco #452.”

b. Sika Corporation, “Sikadur Anchor Fix-4.”

c. Simpson Strong Tie, “Set XP.”

d. Hilti, “HIT RE 500SD.”

e. BASF, “SCB Concresive 1380.”

f. Or approved Equal.

PART 3 – EXECUTION

3.01 GENERAL

A. Mix, place and cure in accordance with the manufacturer's instructions.

B. For grouting of equipment base plates, refer to manufacturer's instructions for appropriate procedures.

3.02 EXAMINATION

A. Inspect concrete surfaces to receive grout or mortar and verify that these surfaces are free of ice, frost, dirt, grease, oil, curing compounds, paints, impregnations, and all loose material or foreign matter likely to affect the bond or performance of grout or mortar.

B. Inspect base plate and anchor systems for rust, oil, and other deleterious substances that may affect the bond or performance of grout.

C. Confirm that newly placed concrete has been cured sufficiently to attain its design strength and limit further shrinkage.

D. Verify that temperature of cementitious or epoxy grout does not exceed manufacturer's recommendations.

3.03 PREPARATION

A. Surface Preparation:

1. Roughen all concrete surfaces by chipping, or other mechanical means to assure bond. Loose or broken concrete shall be removed.

2. All grease, oil, dirt, curing compounds, laitance, and other deleterious materials that may affect bond that were identified in the inspection process shall be completely removed from concrete and bottoms of base plates. All metal surfaces should have a 2 to 3 mil peak-to-valley profile for epoxy grouts.

3. For cementitious mortars and grouts, concrete shall be saturated surface damp. Any standing water shall be removed prior to placing grouts.

4. For epoxy grouts, do not wet concrete surfaces with water. Instead, where required, wet surfaces with epoxy for horizontal work or epoxy gel for vertical or overhead work prior to placing epoxy grouts.

B. Forms and Headboxes for Cementitious or Epoxy Grouts:

1. Forms for grouts shall be built of material with adequate strength to withstand the placement of grouts.

2. Forms must be rigid and liquid tight. All cracks and joints shall be caulked with an elastomeric sealant. All forms shall be lined with polyethylene for easy grout release. Forms carefully waxed with two coats of heavy-duty paste wax shall also be acceptable.

3. Forms shall be 4 to 6 inches higher than the base plate on one side of the base plate configuration when using head pressure for placement.

4. Air relief holes a minimum 1/8 inch in diameter shall be provided when required by a base plate configuration to avoid entrapping air underneath.

3.04 NON-SHRINK CEMENTITIOUS GROUT

A. Prepare concrete surfaces in accordance with the grout manufacturer's instructions.

B. Do not retemper grout by adding more water after stiffening.

3.05 EPOXY GROUT

A. Prime concrete in accordance with the grout manufacturer's instructions.

B. Epoxy grouts shall be mixed in complete units. Do not vary the ratio of components or add solvent to change the consistency of the mix.

C. Mix until aggregate is uniformly wetted. Over mixing will cause air entrapment in the mix.

3.06 DOWEL INSTALLATION

A. Install per adhesive manufacturer's instructions.

B. Obstructions in Drill Path.

1. Locate holes in existing concrete to miss existing reinforcing. Prior to drilling holes, field verify and mark the location of existing reinforcing using a pachometer or other approved locating equipment.

2. When reinforcing steel is encountered in the drill path, slant drill to clear obstruction. Drill shall not be slanted more than 10 degrees. Where slanting the drill does not resolve the conflict, the Contractor shall stop and notify the Project Representative and resolve the conflict to the satisfaction of the Project Representative.

3. Abandoned dowel or anchor holes shall be completely filled with non-shrink grout and struck off flush with the adjacent surface.

3.07 CURING

A. Cementitious Grouts:

1. Clean equipment and tools as recommended by the grout manufacturer.

2. Cure Grouts in accordance with manufacturer's specifications and recommendations. Keep grout moist for a minimum of 3 days. The method needed to protect grouts will depend on temperature, humidity, and wind. Wet burlap, a soaker hose, sun shading, ponding, and, in extreme conditions, a combination of methods shall be employed.

3. Grouts shall be maintained above 40 degrees Fahrenheit until the grout has attained a compressive strength of 3,000 pounds per square inch, or above 70 degrees Fahrenheit for a minimum of 24 hours to avoid damage from subsequent freezing.

B. Epoxy Grouts:

1. Cure grouts in accordance with manufacturers' specifications and recommendations. Do not wet cure epoxy grouts.

2. Consult the manufacturer for appropriate cure schedule. In no case should any surface in contact with epoxy grout be allowed to fall below 50 degrees Fahrenheit for a minimum of 48 hours after placement.

3.08 INSPECTION AND TESTING

A. Installation of epoxy anchors shall take place under continuous supervision of the Special Inspector, who shall verify hole depth, diameter and cleaning; proper mixing and application of the epoxy materials; and installation of the fastener embedments to the proper depths.

B. During the course of construction, the Project Representative may take separate field samples of the following materials for confirming tests:

1. Cement.

2. Aggregates.

3. Cement grout mixture.

4. Commercially manufactured grout products.

C. The testing laboratory will sample and test grout materials and submit results to the Project Representative.

END OF SECTION

Division 05

Metals

SECTION 05 05 23

ANCHORS, INSERTS, AND EMBEDDED PRODUCTS

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies the materials and installation requirements for metal embedments into concrete or grouted masonry.

B. Items Included:

1. Cast-in-place anchor bolts (anchor rods).

2. Collars or sleeves for pipe penetrations.

3. Post-installed anchors.

1.02 SUBMITTALS

A. Procedures: “Submittal Procedures.”

B. Shop Drawings for all fabricated anchors, inserts, and embedded products (wall castings, pipes with seep rings, and special castings).

C. ICBO Evaluation Reports for all expansion and adhesive anchors.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Cast-In-Place Anchor Bolts (Anchor Rods): ASTM A307 headed bolts or ASTM F1554 Grade 36 bent or headed bolts; stainless steel unless otherwise noted. Configuration shall be as shown or noted on the Drawings.

B. Expansion Anchors: ICBO-approved for use in cracked and uncracked concrete shall be required for all anchors used for wind or seismic anchorage applications.

1. Stainless Steel: Shall be used for all anchors noted on the Drawings.

a. Stud: Stainless steel bar conforming to ASTM A276 with chemical composition of either AISI 304 or 316.

b. Wedge: Manufactured from either AISI 304 or 316 stainless steel.

c. Nut: Stainless steel conforming to ASTM F594 with chemical composition of either AISI 304 or 316.

d. Washer: AISI 304 or 316 stainless steel conforming to ASTM A240.

2. Products:

    a. Hilti Kwik Bolt 3.

    b. Powers Fasteners, Power-Stud.

    c. Simpson Strong-Tie, Strong-Bolt.

    d. Other manufacturers upon approval of Engineer.

C. Adhesive Anchors: ICBO-approved for use in cracked or uncracked concrete rated for wind or seismic anchorage applications.

1. All anchor rod material shall conform to ASTM A316 stainless steel.

2. Products:

    a. Hilti HVU-TZ, HIT-RE 500-SD.

    b. Dewalt/Powers Fasteners, Pure 110+.

    c. Simpson Strong-Tie, SET-XP.

    d. Other manufacturers and products upon approval of Engineer.

D. Stainless Steel Plates and Shapes: Conform to AISI Type 304 unless otherwise noted.

PART 3 – EXECUTION

3.01 INSTALLATION

A. Coordinate the location and placement of all items to be embedded in concrete.

B. Adhesive and expansion anchors shall be installed in holes drilled with carbide-tipped drill bits. Anchors shall be installed per manufacturer recommendations. Insert and tighten bolts in accordance with manufacturer's installation instructions. In case of interference with reinforcing bars or steel objects, notify the Engineer.

3.02 INSPECTION

A. Anchors shall be inspected by Special Inspector as required by the Inspection Requirements described in the Structural General Notes contained on the Drawings or as required by the Building Official.

END OF SECTION

Division 09

Finishes

SECTION 09 06 90
EQUIPMENT AND PIPING PAINTING

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies the surface preparation, painting, and finishing of process, mechanical, and electrical equipment specified in the Contract Documents.

B. Painting includes field painting exposed bare and covered pipes (including color coding), hangers, pipe supports, exposed steel and iron work, and primed metal surfaces of mechanical and electrical equipment.

C. Do not paint prefinished items, finished metal surfaces, concealed surfaces, operating parts, and labels.

D. Prefinished items not to be painted include the following factory-finished components, except where color coding is required:

1. Light fixtures.

2. Switchgear.

3. Distribution cabinets.

E. Finished metal surfaces not to be painted include:

1. Anodized aluminum.

2. Stainless steel.

3. Chromium plate.

F. Operating parts not to be painted include moving parts of operating equipment such as the following:

1. Valve and damper operators.

2. Linkages.

3. Sensing devices.

4. Motor, pump, and fan shafts.

G. Labels: Do not paint over Underwriter's Laboratories, Factory Mutual, or other code-required labels or equipment name, identification, performance rating, or nomenclature plates.

1.02 SUBMITTALS

A. Data Sheets:

1. For each paint system furnish Safety Data Sheets (SDSs), the manufacturer's Technical Data Sheets, and paint colors available (where applicable) for each product used in the paint system.

2. Submit required information on a system-by-system basis.

B. Samples:

1. Reference Panel:

a. Prior to start of surface preparation, furnish a 4-inch by 4-inch steel panel for each grade of sandblast specified, prepared to specified requirements.

b. Provide panel representative of the steel used; prevent deterioration of surface quality.

c. Upon approval by Engineer, panel to be reference source for inspection.

d. Unless otherwise specified, before painting work is started, prepare minimum 8-inch by 10-inch samples with type of paint and application specified on similar substrate to which paint is to be applied.

e. Furnish additional samples as required until colors, finishes, and textures are approved.

f. Approved samples to be the quality standard for final finishes.

C. Quality Control Submittals:

1. Applicator's Qualification: Contractor shall provide a list of five references substantiating experience, including current contact names and phone numbers of each reference for verification.

2. Factory-Applied Coatings: Manufacturer's certification stating factory-applied coating system meets or exceeds requirements specified.

3. Manufacturer's written instructions and special details for applying each type of paint.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Applicator: Minimum five years of experience in application of specified products.

B. Regulatory Requirements:

1. Meet federal, state, and local requirements limiting the emission of volatile organic compounds.

2. Perform surface preparation and painting in accordance with recommendations of the following:

   a. Paint manufacturer's instructions.

   b. SSPC-PA Guide No. 3, Guide to Safety in Paint Applications.

   c. Federal, state, and local agencies having jurisdiction.

C. Single Source Responsibility: Provide primers and undercoat paint produced by the same manufacturer as the finish coats.

1.04 DELIVERY, STORAGE, AND HANDLING

A. Deliver materials to the jobsite in the manufacturer's original, unopened packages and containers bearing manufacturer's name and label and the following information:

1. Product name or title of material.

2. Product description (generic classification or binder type).

3. Federal specification number, if applicable.

4. Manufacturer's stock number and date of manufacture.

5. Contents by volume, for pigment and vehicle constituents.

6. Thinning instructions.

7. Application instructions.

8. Color name and number.

9. Safety Data Sheets (SDSs) for all coatings and thinners.

B. Store materials not in use in tightly covered containers in a well-ventilated area at an ambient temperature greater than the minimum temperature recommended by the manufacturer. Maintain containers used in storage in a clean condition, free of foreign materials and residue.

C. Protect materials from freezing. Keep storage area neat and orderly. Remove oily rags and waste daily. Take necessary measures to ensure that workers and work areas are protected from fire and health hazards resulting from handling, mixing, and application.

1.05 JOB CONDITIONS

A. Apply water-based paints only when the temperature of surfaces to be painted and surrounding air temperatures are between 50 degrees F and 90 degrees F, unless otherwise recommended by the paint manufacturer.

B. Do not apply paint in snow, rain, fog, or mist when the relative humidity exceeds 85 percent, at temperatures less than 5 degrees F above the dew point unless specifically allowed by the paint manufacturer, or to damp or wet surfaces.

C. Painting may continue during inclement weather if surfaces and areas to be painted are enclosed and heated within temperature and humidity limits specified by the manufacturer during application and drying periods.

PART 2 – PRODUCTS

2.01 MANUFACTURERS

A. Available Manufacturers:

1. Subject to compliance with requirements, provide paint system products from the following paint manufacturers for this project:

   a. Wasser Corporation (Wasser).

   b. Tnemec Company, Inc. (Tnemec).

   c. The Sherwin-Williams Company (Sherwin-Williams).

2.02 PAINT MATERIALS, GENERAL

A. Material Compatibility: Provide primers, finish-coat materials, and related materials that are compatible with one another and the substrates indicated under conditions of service and application as demonstrated by the manufacturer based on testing and field experience.

B. Material Quality: Provide the manufacturer's best-quality trade-sale paint material of the various coating types specified. Paint-material containers not displaying manufacturer's product identification will not be acceptable.

C. Proprietary Names: Use of manufacturer's proprietary product names to designate colors or materials is not intended to imply that products named are required to be used to the exclusion of equivalent products of other manufacturers. Furnish the manufacturer's material data and certificates of performance for proposed substitutions.

D. Colors: Provide color selections made by the Engineer from the manufacturer's full range of standard colors.

PART 3 – EXECUTION

3.01 EXAMINATION

A. Examine substrates and conditions under which painting will be performed for compliance with paint application requirements. Surfaces receiving paint must be thoroughly dry before paint is applied.

   1. Do not begin to apply paint until unsatisfactory conditions have been corrected.

   2. Start of painting will be construed as the applicator's acceptance of surfaces and conditions within a particular area.

B. Coordination of Work:

   1. Review other sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.

   2. Notify the Engineer about anticipated problems using the materials specified over substrates primed by others, or over existing coated surfaces that are to be prepared and recoated.

3.02 PREPARATION

A. General: Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted, or provide surface-applied protection prior to surface preparation and painting. Remove these items, if necessary, to completely paint the items and adjacent surfaces. Following completion of painting operations in each space or area, have items reinstalled by workers skilled in the trades involved.

B. Cleaning: Before applying paint or other surface treatments, clean the substrates of substances that could impair the bond of the various coatings with a quality bio-degradable cleaner and thoroughly rinse with clean water. Allow for complete drying of substrate to be painted. Remove all oil and grease prior to cleaning. Schedule cleaning and painting so that dust and other contaminants from the cleaning process will not fall on wet, newly painted surfaces.

C. Surface Preparation:

   1. Clean and prepare surfaces to be painted according to the manufacturer's instructions for each particular substrate condition and as specified.

   2. Provide barrier coats over incompatible primers and existing coatings, or remove and redo. Notify Engineer in writing about anticipated problems using the specified finish-coat material with substrates primed by others.

3. Ferrous Metals:

   a. Clean un-galvanized ferrous-metal surfaces that have not been shop-coated and previously painted metals indicated for painting; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with recommendations of the formerly named Steel Structures Painting Council (SSPC), now called The Society of Protective Coatings.

   b. Touch up bare areas and shop-applied prime coats that have been damaged. Wire brush, clean with solvents recommended by the paint manufacturer, and touch up with the same primer as the shop coat.

4. Ductile Iron Pipe:

   a. Prepare ductile or cast-iron surfaces in accordance with manufacturers' instructions.

   b. Ensure surfaces are clean, dry, and free of oil, grease, dirt, dust, and other contaminants. Provide solvent cleaning per National Association of Pipe Fabricators Standard NAPF 500-03-01. Also, blast all Ductile Iron Pipe in accordance with NAPF 500-03-04/05.

D. Materials Preparation:

1. Carefully mix and prepare paint materials according to manufacturer's directions.

2. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.

3. Stir material before application to produce a mixture of uniform density; stir as required during application. Do not stir surface film into material. Remove film and, if necessary, strain material before using.

4. Use only thinners approved by the paint manufacturer and only within recommended limits.

E. Tinting:

1. Tint each undercoat a lighter shade to facilitate identification of each coat where multiple coats of the same material are applied.

2. Tint undercoats to match the color of the finish coat, but provide sufficient differences in shade of undercoats to distinguish each separate coat.

3.03 APPLICATION

A. General:

1. Apply paint according to manufacturer's directions. Use applicators and techniques best suited for substrate and type of material being applied.

2. Do not paint over dirt, rust, scale, grease, moisture, scuffed surfaces, or conditions detrimental to formation of a durable paint film.

3. Provide finish coats that are compatible with primers used.

4. The number of coats and the film thickness required are the same regardless of the application method. Do not apply succeeding coats until the previous coat has cured as recommended by the manufacturer. Sand between applications where sanding is required to produce a smooth, even surface according to the manufacturer's directions.

5. Apply additional coats if undercoats, stains, or other conditions show through final coat of paint until paint film is of uniform finish, color, and appearance. Give special attention to ensure that surfaces, including edges, corners, crevices, welds, and exposed fasteners, receive a dry film thickness equivalent to that of flat surfaces.

6. The term "exposed surfaces" includes areas visible when permanent or built-in fixtures, convector covers, covers for finned-tube radiation, grilles, and similar components are in place. Extend coatings in these areas, as required, to maintain the system integrity and provide desired protection.

7. Paint surfaces behind movable equipment the same as similar exposed surfaces. Before the final installation of equipment, paint surfaces behind permanently fixed equipment with prime coat only.

8. Paint interior surfaces of ducts, where visible through registers or grilles, with a flat, non-specular acrylic latex black paint.

B. Scheduling Painting:

1. Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.

2. Allow sufficient time between successive coats to permit proper drying. Do not recoat until paint has dried to where it feels firm, does not deform or feel sticky under moderate thumb pressure, and where application of another coat of paint does not cause the undercoat to lift or lose adhesion.

C. Application Procedures:

1. Apply paints and coatings by brush, roller, spray, or other applicators according to the manufacturer's directions.

   a. Brushes: Use brushes best suited for the material applied.

   b. Rollers: Use rollers of carpet, velvet back, or high-pile sheep's wool as recommended by the manufacturer for the material and texture required.

   c. Spray Equipment: Use airless spray equipment with orifice size as recommended by the manufacturer for the material and texture required.

D. Minimum Coating Thickness: Apply materials no thinner than the manufacturer's recommended spreading rate. Provide the total dry film thickness of the entire system as recommended by the manufacturer and as specified, whichever is greater.

E. Electrical items to be painted include, but are not limited to, the following:

1. Exposed conduit and fittings in occupied spaces.

2. Motors provided without factory-applied coatings.

F. Prime Coats:

1. Before applying finish coats, apply a prime coat of material, as recommended by the manufacturer, to material that is required to be painted or finished and that has not been prime-coated by others.

2. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.

G. Pigmented (Opaque) Finishes: Completely cover to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.

H. Completed Work:

1. Match approved samples for color, texture, and coverage.

2. Remove, refinish, or repaint work not complying with specified requirements.

3.04 CLEANING

A. Cleanup:

1. At the end of each work day, remove empty cans, rags, rubbish, and other discarded paint materials from the site.

2. After completing painting, clean glass and paint-spattered surfaces. Remove spattered paint by washing and scraping. Do not scratch or damage adjacent finished surfaces.

3.05 PROTECTION

A. Protect work of other trades, whether being painted or not, against damage by painting. Protect adjacent walls, floors, and ceilings against splash and overspray. Correct damage by cleaning, repairing or replacing, and repainting. The Contractor shall be solely responsible for costs to repair damages to Owner's property or private property due to splash and overspray.

B. Provide "Wet Paint" signs to protect newly painted finishes. Remove temporary protective wrappings provided by others to protect their work after completing painting operations.

C. At completion of construction activities of other trades, touch up and restore damaged or defaced painted surfaces.

3.06 PAINT SCHEDULE

A. General: Provide the following paint systems for the various substrates indicated. Spreading rate and dry film thickness of each coat of paint (i.e., primer and finish coat) shall be in accordance with the paint manufacturer's requirements.

B. Ductile Iron Piping and Valves: Provide the following paint system, consisting of one rust-inhibiting primer and two finish coats, over all exposed ductile iron pipe furnished for this project:

1. Surface Preparation: Shall be performed in accordance with NAPF 500 03-04/05 and paint manufacturer's recommendations.

2. Primer: Polyamide Rust Inhibitive Direct to Metal Epoxy:

   a. Tnemec: Series 161 Epoxoline.

   b. Sherwin-Williams: Macropoxy 646 FC B58-600 Series.

   c. Wasser: MC-Ferroclad 100.

3. First Finish Coat: Polyamide Epoxy.

   a. Tnemec: Series 161 Epoxoline.

   b. Sherwin-Williams: Macropoxy 646 FC B58-600 Series.

   c. Wasser: MC-Luster 100.

4. Second Finish Coat: Acrylic, Aliphatic Polyurethane.

   a. Tnemec: Series 73 EnduraShield.

   b. Sherwin-Williams: Acrolon 218 HS B65-650 Series.

   c. Wasser: MC-Luster 1000.

3.07 COLORS

A. Pipe Identification Painting:

1. Color code all piping except electrical conduit and stainless-steel piping. Paint all metallic fittings and valves the same color as the adjoining piping.

2. Piping Color Coding: As shown in Table 09 06 90-1 (at the end of this section).

B. Colors: Provide as designated herein and as selected by Owner or Engineer. Remaining colors to be determined by Engineer during submittal review.

C. Proprietary identification of colors is for identification only. Selected manufacturer may supply matching colors upon acceptance by the Engineer.

Table 09 06 90-1. Pipe Service Color Codes

Pipe Service	Color
Sewer Force Main	Black

END OF SECTION

Division 22

Plumbing

SECTION 22 13 18
FACILITY SANITARY SEWERAGE VALVES

PART 1 – GENERAL

1.01 DESCRIPTION

A. This section specifies valves required for the installation on sanitary, waste, and vent services.

1.02 SUBMITTALS

A. Prior to delivering the product to the job site, the following submittals shall be provided in accordance with the Supplemental Provisions.

B. Shop Drawings and Product Data:

1. Submit product review or product information Shop Drawings for valves. Submittal package shall include Manufacturer's product data, catalog cuts, or Shop Drawings describing construction, dimensions, and materials.

2. Dimensions, port shape, diameter, materials, capacity, and operator.

3. Flow coefficient (CV) or pressure drop data.

4. Calculations of required valve operating torque.

5. Operation and maintenance manuals.

PART 2 – PRODUCTS

2.01 GENERAL

A. Valve to include operator, actuator, handwheel, chainwheel, extension stem, floor stand, worm and gear operator, operating nut, chain, wrench, and accessories for a complete operation.

B. Valve suitable for intended service.

C. Valve same size as adjoining pipe.

D. Valve ends to suit adjacent piping.

E. Size operator for the full range of pressures and velocities.

F. Valve to open by turning counterclockwise.

G. Factory mount operator, actuator, and accessories.

2.02 PLUG VALVES

A. Size: 4 inch.

B. Type: Eccentric plug valves, straight flow, non-lubricated, resilient plug type with port suitable for drip-tight, bi-directional shutoff at the specified design pressure. Valves must have a minimum of 100 percent of adjacent full pipe area in sizes up to 20 inches.

C. Rating: 175 psi.

D. Body: Cast iron, ASTM A126, Class B.

E. Plug: Cast iron, ASTM A126, Class B, or cast iron, ASTM A436 (Ni-resist), or Ductile iron, ASTM A536.

F. Plug Facing: EPDM.

G. No wetted parts of bronze, copper, or aluminum.

H. Body Seats: Welded-in overlay seat of 1/8-inch thick of no less than 99 percent nickel content on all surfaces contacting the plug face, in accordance with AWWA C517-09.

I. Packing: Buna V-flex or TFE adjustable.

J. Ends: Flanged, grooved in accordance with AWWA C606 for rigid joints, or mechanical joint for buried valves, unless otherwise noted on the Drawings.

K. Operators: Provide valve with 2-inch AWWA operating nut that matches existing valves and valve wrench for operating valve. Locate operating nut to allow for easy operation of valve.

L. Manufacturers and Products:

   1. Milliken, 600/601 Series.

   2. DeZurik, PEF.

   3. Or equal.

PART 3 – EXECUTION

3.01 PLUG VALVES

A. Install seat end upstream of liquid flow.

B. Valve stem shall be installed horizontal with plug rotation on the top of the valve.

C. Valve Operators: Valves shall be installed with the operator in a position for convenient operation. Particular care shall be taken to ensure that space is available for operation of lever- or handwheel-operated valves without interference from walls, piping, or equipment. Any valve that is installed, in the opinion of the Owner, in a manner that operation is

inconvenient, shall be modified or removed and reinstalled in a manner suitable to the Owner. Operators for manual valves shall be lever or handwheel as is standard with the manufacturer unless another type of operator is specified or required by the manufacturer.

D. Adjustments: Check and adjust valves and accessories for smooth and optimum operation. Lubricate in accordance with manufacturer's recommendations.

END OF SECTION

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SECTION 22 13 28

WET WELL MOUNTED VACUUM PRIME PUMP SKID INSTALLATION

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies the Contractor's installation and testing of Owner-supplied wet well mounted vacuum prime pump skid, provided through the Good & Services Contract between City of Pacific and APSCO, LLC, with specified accessories and appurtenances, spare parts, and manufacturer's representative startup services for the Tacoma Boulevard Pump Station Upgrade project. Documentation for the purchase order is provided in Appendix B.

1.02 SUBMITTALS

A. Prior to installation:

1. Field testing procedure.

B. Closeout Submittals:

1. Manufacturer's Certificate of Proper Installation.

2. Certified field test results.

1.03 PROTECTION

A. Box, crate, or otherwise completely enclose and protect all equipment during handling, and storage.

B. Protect equipment from exposure to elements, keeping all items thoroughly dry at all times.

C. Store motors, electrical equipment, and other equipment with moving parts in weathertight warehouses at a maintained temperature of 60 degrees F minimum.

D. Painted Surfaces: Protect against impact, abrasion, discoloration, and other damage.

E. Protect electrical equipment, controls, and insulation against moisture or water damage.

1.04 CRITICAL SPEED AND VIBRATION

A. Vibration levels shall comply with the most recent edition of the Hydraulic Institute Standards.

B. Verify that installed equipment is mutually compatible and free of resonance over the complete operating range.

PART 2 – PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

A. Pump skid will be purchased directly by the Owner.

1. Smith and Loveless Wet Well Mounted Vacuum Prime Pump Station

a. Everlast Series 3000.

PART 3 – EXECUTION

3.01 DELIVERY

A. Pump skid and accessories shall be delivered directly to the project site.

1. Contractor shall be responsible for coordinating with the pump skid manufacturer for delivery of the pump skid.

2. Contractor shall be responsible for taking delivery of the pump skid and accessories.

3.02 COATINGS

A. Provide touchup field coating, due to damage in the field and perform in strict accordance with the manufacturer's instructions.

3.03 FIELD QUALITY CONTROL

A. Installation Certification: A manufacturer's authorized representative shall inspect and test each pump for proper installation, lubrication, alignment, and connection. Submit written certification of installation to the Engineer (use form provided in Section 01 99 99, "Forms").

B. Contractor shall assist in providing performance testing:

1. Performance Testing: A manufacturer's authorized representative shall witness and assist with the performance testing of each pump to verify smooth operation and satisfactory performance. Hydraulic performance in the project wet well shall be adequate to demonstrate compliance with performance requirements.

C. Pump Lift Test: A manufacturer's authorized representative shall witness and assist the Contractor to demonstrate successful removal of a pump from the skid.

D. Test Results: Test results certified by the pump manufacturer's authorized representative shall be submitted to the Engineer for approval prior to the Owner's acceptance of the equipment.

E. Coordination: All testing shall be coordinated with the Engineer, Owner, and pump manufacturer.

F. See Appendix B for services provided by Pump Supplier.

END OF SECTION

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Division 26

Electrical

SECTION 26 05 00
COMMON WORK RESULTS FOR ELECTRICAL

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies general requirements for electrical work. Detailed requirements for specific electrical items specified in other sections are subject to the requirements of this section. The Electrical Drawings and Schedules included in the specification are functional in nature and do not specify exact locations of equipment or equipment terminations.

B. All Electrical Work included in this Contract including pre-fabricated assemblies shall conform to the requirements Division 26 specifications and as required/coordinated under other Divisions.

1.02 SECTION INCLUDES

A. The Electrical Contractor shall be responsible for the following Work and all other Electrical Work as described in these specifications and the Contract Drawings.

B. Work Included at Tacoma Boulevard Pump Station:

1. Coordinate with PSE regarding any construction power required through the duration of the project.

2. Installation of all conduits and wiring per the drawings.

3. Demolition of electrical connections in panels, dry well, junction boxes, and equipment per the Contract Specifications and Drawings.

4. Installation of all electrical systems as needed for the Smith & Lovelace packaged pump skid.

C. Equipment required during demo of the old Dry Well and installation of the new pump skid:

1. Bypass pumps will be required to bypass wastewater from the wet well to the force main piping. Should the outage be longer than the normal Client operations hours, the Contractor shall provide the resources to operate the bypass pumps as required by the City.

1.03 SUBMITTALS

A. Refer to Part 1, Division 1 for required method of preparation and transmittal, and conform to requirements herein:

1. The Contractor shall furnish to the Engineer, for review, one (1) complete submittal package for each bid item which includes all materials necessary to complete that item of work.

B. A Single submittal shall be provided to cover all Division 26 items.

C. Catalog cuts of equipment, devices, and materials requested by the specification sections:

1. Catalog information includes technical specifications and application information, including ratings, range, weight, accuracy, etc.

2. Catalog cuts, specifications, or data sheets shall be clearly marked to delineate the options or styles to be furnished.

3. Catalog cuts shall be assembled in a folder. Each folder shall contain a cover sheet, indexed by item, and cross-referenced to the appropriate specification paragraph.

D. Applicable operation and maintenance information on an item-by-item basis in accordance with Section 01 78 23. Operation and maintenance information shall be provided at the time of equipment, device, or material site delivery, or at a certain stage of project completion as required by Section 01 78 23, whichever is the earlier. Full-size Drawings shall be reduced to 11 by 17 inches.

E. Description of functional checkout procedures, specified in this specification, 30 days prior to performing functional checkout tests.

F. Provide both red-lined Contract Drawings and any created interconnection diagrams depicting all cable requirements and showing actual terminations.

G. Electrical Plan and elevation Drawings showing conformance with electrical working clearances and installation clearances required by selected manufacturer.

H. Submit under one schedule the following items:

1. Nameplate Schedules.

2. Tray/Raceway/Conduit Schedules.

3. Wire Marker Schedules.

1.04 QUALITY ASSURANCE

A. Referenced Standards: This section incorporates by reference the latest revision of the following documents in effect on the date of issuance of the Contract Documents. These references are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail:

Reference	Title
ANSI A58.1	Minimum Design Loads for Buildings and Other Structures
NFPA 70	National Electrical Code (NEC) and local amendments
NEMA	National Electrical Manufacturers Association
ICEA	Insulated Cable Engineers Association

Reference	Title
IBC / IBO	International Building Code
UL	Underwriters Laboratories
IEEE	Institute of Electrical and Electronics Engineers
NETA	InterNational Electrical Testing Association

B. Electrical equipment, materials, and installations methods shall conform to applicable local and state codes, as well as the editions of the following in effect on the date of issuance of the Contract Documents:

Reference	Title
NEC	National Electrical Code
NESC	National Electrical Safety Code

C. Identification of Listed Products:

1. Electrical equipment and materials shall be listed and labeled for the purpose for which each item is to be used, by UL or equivalent NRTL agency approved lab as the independent testing laboratory. Independent testing laboratory shall meet the requirements of the local or state inspection authority having jurisdiction.

2. When a product is not available with a testing laboratory listing for the purpose for which it is to serve, the product may be required by the inspection authority to undergo a special inspection. All costs and expenses incurred for such inspections shall be included in the original Contract price.

3. When the product is an assemblage of individual parts, whether the individual parts are listed or not, the entire assemblage shall be listed and labeled as a complete unit for the purpose for which it is to be used.

4. Provide equipment with service entrance labels in those cases where the NEC requires such labels.

D. Series short circuit ratings for protective devices are not allowed.

E. Factory Acceptance Tests: Where specified in the specification section, perform factory tests at the place of fabrication. Perform on completion of manufacture or assembly.

1.05 DEFINITIONS

A. Elementary or Schematic Diagram: A schematic (elementary) diagram shows, by means of graphic symbols, the electrical connections and functions of a specific circuit arrangement. The schematic diagram facilitates tracing the circuit and its functions without regard to the actual physical size, shape, or location of the component devices or parts.

B. One-Line Diagram: Shows by means of single lines and graphical symbols the course of an electrical circuit or system of circuits and the components, devices, or parts used therein. Physical relationships are usually disregarded.

C. Block Diagram: A diagram of a system, instrument, computer, or program in which selected portions are represented by annotated boxes and interconnecting lines.

D. Wiring Diagram or Connection System: A wiring or connection diagram includes all of the devices in a system and shows the physical relationship between the devices, including terminals and interconnecting wiring in an assembly. This diagram shall be (a) in a form showing interconnecting wiring only by terminal designation (wireless diagram), or (b) a panel layout diagram showing the physical location of devices plus the elementary diagram.

E. Interconnection Diagram:

1. Show all external connections between terminals of equipment and outside points, such as motors and auxiliary devices.

2. References shall be shown to all connection diagrams which interface to the interconnection diagrams.

3. Interconnection diagrams shall be of the continuous line type.

4. Bundled wires shall be shown as a single line with the direction of entry/exit of the individual wires clearly shown. Wireless diagrams and wire lists are not acceptable.

5. Each wire identification as actually installed shall be shown.

6. The wire identification for each end of the same wire shall be identical.

7. All devices and equipment shall be identified.

8. Terminal blocks shall be shown as actually installed and identified in the equipment complete with individual terminal identification.

9. All jumpers, shielding and grounding termination details not shown on the equipment connection diagrams shall be shown on the interconnection diagrams.

10. Wires or jumpers shown on the equipment connection diagrams shall not be shown again on the interconnection diagram.

11. Signal and DC circuit polarities and wire pairs shall be shown.

12. Spare wires and cables shall be shown.

F. Arrangement, Layout, or Outline Drawings: An arrangement, layout, or outline drawing is one which shows the physical space and mounting requirements of a piece of equipment. It may also indicate ventilation requirements and space provided for connections or the location to which connections are to be made.

1.06 DRAWINGS

A. The Electrical Drawings are diagrammatic; exact locations of products shall be verified with the Engineer prior to installation. Except where special details are used to illustrate the method of installation of a particular piece or type of equipment or material, the

requirements or descriptions in this and other Division 26 sections shall take precedence in the event of conflict.

B. Field-verify scaled dimensions on Drawings.

C. Review the Drawings and specification divisions of other trades and perform the electrical work that will be required for the installations.

D. Drawings shall be complete with borders and title blocks clearly identifying Contract name, equipment, and the scope of the Drawing.

E. Submit in writing to the Engineer details of any proposed changes in or departures from these Contract Documents along with the reasoning for the change. Make no changes or departures without the prior written favorable review of the Engineer.

F. Maintain a set of Design Drawings on-site that documents As-Constructed changes made to both the Contract Drawings and approved equipment manufacturer Shop Drawings.

1.07 JOB CONDITIONS

A. General: Unless otherwise indicated, size and de-rate equipment and materials for the ambient conditions, but not less than an ambient maximum temperature of 40 degrees C at an elevation ranging from sea level to 3,000 feet without exceeding the manufacturer's stated tolerances.

B. Operations:

1. Coordinate shutdowns with Client’s Operations Personnel.

2. Keep power shutdown periods to a minimum as coordinated.

3. Carry out shutdowns only after the schedule has been favorably reviewed by the Engineer.

C. Construction Power:

1. Make arrangements for the required construction power.

2. When required, provide equipment, materials and wiring in accordance with the applicable codes and regulations.

3. Upon completion of the project, remove temporary construction power equipment, material, and wiring from the site as the property of the Contractor.

D. Seismic (for new construction):

1. Electrical Equipment and Supports: Braced per IBC requirements and Section 01 73 23.

2. Fasten equipment that is front-accessible only to the wall or ceiling as well as the floor.

1.08 STORAGE OF MATERIALS AND EQUIPMENT

A. Store materials and equipment per manufacturer recommendations.

B. Store indoor equipment and materials to be permanently located indoors and seal with plastic film wrap.

PART 2 – PRODUCTS

2.01 EQUIPMENT AND MATERIALS

A. General:

1. Equipment and materials shall be new and free from defects.

2. All material and equipment of the same or a similar type shall be of the same manufacturer throughout the work.

3. Unless otherwise indicated, provide materials and equipment that are the standard products of manufacturers regularly engaged in the production of such materials and equipment. Provide the manufacturer's latest standard design that conforms to these Specifications.

B. Equipment Finish: Unless otherwise indicated, electrical equipment and materials shall be provided with the manufacturer's standard finish. Submit color selections for Owner selection.

2.02 CONDUCTOR/WIRE MARKERS

A. Identify each power and control conductor at each end of each terminal to which it is connected.

B. Conductors size No. 10 AWG or smaller shall have identification sleeves.

C. Conductors:

1. Identify each end as shown on the Drawings.

2. If not shown on the Drawings, identify conductor ends with the Equipment number, followed by -Cxx, where xx is a unique number for that wire.

D. Machine print on sleeves with permanent black ink the letters and numbers that identify each wire.

E. Figures: 1/8-inch high.

F. Sleeves: Yellow or white tubing, sized to fit the conductor insulation.

G. Acceptable Manufacturer:

1. TMS Thermofit Marker System by Raychem Co.

2. Sleeve style wire marking system by W. H. Brady Co.

3. Or Approved Equal.

H. Adhesive strips are not acceptable.

I. Use cable markers of the locking tab type for conductors No. 8 AWG and larger.

J. Tabs: white plastic with conductor identification number permanently embossed.

2.03 NAMEPLATES

A. Provide nameplates on equipment.

B. Laminated phenolic plastic.

C. Nominal Size: 3/4-inch high by 2 inches long.

D. Black backgrounds with 3/16-inch white letters.

E. If abbreviations are required because of space limitations, submit to the Project Representative prior to manufacture.

F. Fastened using self-tapping stainless steel screws. The use of adhesives will not be permitted on the outside of enclosures.

2.04 TERMINAL BLOCKS

A. Unless otherwise indicated, panhead strap screw type.

B. Terminals shall be provided with integral marking strips which shall be permanently identified with the connecting wire numbers as shown on the Drawings.

C. Terminal blocks for P-circuits (power 208-600 volts): Rated not less than the conductor current rating and less than 600 Vac.

D. Terminal blocks for C-circuits (control and/or power 120 volts or less power) and S-circuits (signal): Rated not less than 20 amperes and less than 600 Vac.

E. Terminals: Tin-plated.

F. Insulating material: Nylon.

PART 3 – EXECUTION

3.01 GENERAL

A. Unless otherwise indicated, electrical layout Drawings are diagrammatic.

B. Coordinate the location of electrical material or equipment with other equipment and work.

C. Install equipment in strict accordance with the manufacturer's instructions unless directed otherwise. Wherever a conflict occurs between manufacturer's instructions, codes and regulations, or these Contract Documents, follow Engineer's direction. Keep a copy of manufacturer's installation instructions on the job site available for review at all times.

D. Do not cut or notch any structural member or building surface without specific approval of Engineer.

E. Label electrical and control equipment, including electrical switchgear, variable frequency drive panels, motor starter panels, control panels, equipment within electrical and control panels, disconnect switches, motors, pumps, local control stations, instrument transmitters and analytical controllers.

3.02 REQUIREMENTS

A. All electrical installations shall conform to the codes and standards outlined in this section.

B. Refer to specification Section 01 65 10 for start-up and testing requirements.

C. Sealing of below-ground abandoned conduit coupling penetrations in dry well:

1. Use a 316SS threaded plug of the same size and thread size and pitch to plug the abandoned existing wall penetrating conduit coupling.

2. Use pipe putty or tape sealant on the threads of the threaded 316SS plug to provide a watertight seal for the abandoned existing wall penetrating conduit coupling.

3.03 WORKMANSHIP

A. Assign a qualified representative who shall supervise the electrical construction work from beginning to completion and final acceptance.

B. Perform all labor using qualified craftsmen, who have had experience on similar projects. Provide first-class workmanship for all installations.

C. Ensure that all equipment and materials fit properly as installed.

D. Perform any required work to correct improperly fit installations at no additional expense to the Owner.

3.04 CLEANING EQUIPMENT

A. Thoroughly clean all soiled surfaces of installed equipment and materials.

B. Clean out and vacuum all construction debris from the bottom of all equipment.

C. Provide and touch-up to original condition any factory painting that has been marred or scratched during shipment or installation, using paint furnished by the equipment manufacturer.

D. Following installation, protect materials and equipment from corrosion, physical damage, and the effects of moisture on insulation. Cap conduit runs during construction with manufactured seals. Keep openings in boxes or equipment closed during construction.

E. Keep the premises free from accumulation of waste material or rubbish. Upon completion of work, remove materials, scraps, and debris from premises and from interior and exterior or devices and equipment.

F. Dust Free Areas:

1. Protect electrical, instrumentation and control equipment from dust by wrapping the equipment in plastic film wrap until installed to prevent dust from entering the equipment.

2. Once electrical, instrumentation, and control equipment is installed, protect from dust. Rewrap the equipment if necessary to keep the equipment dust free.

END OF SECTION

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SECTION 26 05 19
600 VOLT CONDUCTORS AND CABLES

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies conductors and cables rated 600 volts used for power, lighting, receptacle, signal, and control circuits.

1.02 QUALITY ASSURANCE

A. Referenced Standards: This section incorporates by reference the latest revision of the following documents. These references are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
ASTM B3	Soft or Annealed Copper Wire
ASTM B8	Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B33	Tinned Soft or Annealed Copper Wire for Electrical Purposes
ASTM B189	Lead-Coated and Lead-Alloy-Coated Soft Copper Wire for Electrical Purposes
ICEA S-68-516	Ethylene-Propylene-Rubber-Insulated Wire
IEEE 383	Type Test of Class IE Electric Cables, Field Splices, and Connections for Nuclear Power Generating Stations
NEMA WC7	Cross-Linked-Thermosetting Insulated Wire and Cable for the Transmission and Distribution of Electric Energy
NEMA WC57/ICEA S-73-532	Standard for Control Cables
NEMA WC70/ICEA S-95-658	Non-Shielded Power Cables Rated 2000 V or less
NEC 310-110	General Conductors Color Code
NFPA 820	Fire Protection in Wastewater Treatment and Collection Facilities
NFPA 70	National Electric Code (NEC)
UL 44	Rubber-Insulated Wires and Cables
UL 83	Thermoplastic-Insulated Wires and Cables
UL 1277	Type TC Power and Control Tray Cable
UL 1581	Reference Standards for Electrical Wires, Cables, and Flexible Cords

1.03 SUBMITTALS

A. Procedures: Section 26 05 00.

B. Catalog cuts showing general information of the conductors and cable.

PART 2 – PRODUCTS

2.01 GENERAL

A. Unscheduled Conductors and Cables:

1. With the exception of lighting, communication, paging, security and receptacle circuits, the type, size and number of conductors shall be as specified on the Drawings.

B. Cable Specification Sheets (CABLESPEC): General requirements for conductors and cables specified in this section are listed on CABLESPEC sheets in this section.

2.02 COLOR CODING

A. General:

1. Multiconductor power and control cable colors shall be manufacturer's standard.

2. Single conductor control conductor color shall be yellow, except for the grounded conductor which shall be white.

B. Power Conductors:

1. Single-conductor power conductors shall be color coded in accordance with the following:

Use	Cable	Color
Three-phase, 480-volt power or 480/277	Phase A	Brown
	Phase B	Orange
	Phase C	Yellow
	Ground	Green
	Neutral	Gray
Three-phase, 120/208-volt power	Phase A Phase B	Black Red
	Phase C	Blue
	Neutral	White
	Ground	Green
Single-phase, 120/240-volt power	Line 1 Line 2	Red Black
	Neutral	White
	Ground	Green

2. Cables sized No. 4 AWG and larger may be black with colored 3/4-inch vinyl plastic tape applied in 3-inch lengths around the cable at each end.

3. Tag the cables at terminations and in pull boxes, handholes, and manholes.

C. Signal Conductors: Unless otherwise indicated, cables shall be color coded black and white for pairs or black, red, and white for triads.

D. Control Conductors: Control conductors color coding shall be manufacturer's standard.

2.03 POWER AND CONTROL CONDUCTORS AND CABLE, 600 VOLT

A. Single Conductor:

1. Stranded and used in conduits for power and control circuits.

2. Unless otherwise indicated, provide in accordance with CABLESPEC "XHHW-2."

B. Multiconductor Cable:

1. Used for power and control circuits routed in cable tray.

2. Cables shall be UL labeled, Type TC, designed for cable tray installation in accordance with NEC 336.

3. The type of insulation, number of conductors, and size of conductor shall be as specified.

4. Unless otherwise indicated, provide multiconductor power and control cable in accordance with CABLESPEC "MC."

5. Power Cable: Containing three or four conductors, as specified, plus an equipment grounding conductor.

6. Control Cable: Unless otherwise indicated, shall be size 14 AWG.

2.04 SIGNAL CABLES

A. General:

1. Provide signal cable for instrument signal transmission, alarm, communication and other circuits as specified. Circuit shielding shall be provided in addition to cable shielding.

2. Unless otherwise indicated, provide single circuit signal cable in accordance with CABLESPEC "TSP."

3. Unless otherwise indicated, provide multi-circuit signal in accordance with CABLESPEC "MIC."

B. Communication System Cables: Ethernet communication cables shall be Cat 5e/6 wiring in and between the control panels and components.

2.05 SPLICING AND TERMINATING MATERIALS

A. Connectors:

1. Tool applied compression type of correct size and UL listed for the specific application.

2. Tin-plated high conductivity copper.

3. For wire sizes No. 10 AWG and smaller: Nylon self-insulated, ring tongue or locking-spade terminals.

4. For wire sizes No. 8 AWG and larger: One-hole lugs up to size No. 3/0 AWG, and two-hole or four-hole lugs for size No. 4/0 and larger.

5. Mechanical clamp, dimple, screw-type connectors are not acceptable.

B. Motor Connection Kits:

1. Shall consist of heat-shrinkable, polymeric insulating material over the connection area and a high dielectric strength mastic to seal the ends against ingress of moisture and contamination.

2. Shall accommodate a range of cable sizes for both in-line and stub-type configurations.

3. Shall be independent of cable manufacturer's tolerances.

C. Splicing is not allowed without prior approval from the Engineer.

PART 3 – EXECUTION

3.01 GENERAL

A. Identify each power and control conductor at each terminal to which it is connected. The marking system shall comply with Section 26 05 00.

B. Wire Pulling:

1. Complete the pulling of wire and cable into conduit or trays without damaging or putting undue stress on the cable insulation.

2. Soapstone, talc or UL listed pulling compounds are acceptable lubricants for pulling wire and cable.

3. Grease is not acceptable.

4. Raceway construction shall be complete, cleaned, and protected from the weather before cable is placed.

C. Whenever a cable leaves a raceway, provide a cable support.

D. When flat bus bar connections are made with un-plated bar scratch-brush the contact areas. Torque bolts to the bus manufacturer's recommendations.

E. Provide and install yellow three-strand copolymer polyolefin pull string in all new conduits. String shall extend at least 1 foot beyond each end of the conduit and be tied off on bushing or in other manner acceptable to the Engineer.

F. Splicing is not allowed without prior approval from the Engineer.

3.02 600 VOLT CONDUCTOR AND CABLE

A. Lacing and Bundling:

1. Lace and bundle conductors in panels and electrical equipment, No. 6 AWG and smaller, at intervals not greater than 6 inches, spread into trees and connected to their respective terminals.

2. Lacing shall be made up with plastic cable ties.

3. Lacing is not necessary in plastic panel wiring duct.

4. Bundle conductors crossing hinges into groups not exceeding 12 and arrange for protection from chafing when the hinged member is moved.

B. Slack:

1. Provide slack in junction and pull boxes, handholes and manholes.

2. Slack shall be sufficient to allow cables or conductors to be routed along the walls of the box.

3. Amount of slack shall be equal to largest dimension of the box.

4. Where plastic panel wiring duct is provided for wire runs, lacing is not required.

5. Do not use plastic panel wiring duct in manholes and handholes.

C. Stranded Conductors:

1. Terminate as described in this section, except where terminals will not accept such terminations.

2. In these cases, terminate the conductors directly on the terminal block.

3. Install compression lugs and connectors using manufacturer's recommended tools.

D. Raceway fill limitations shall be as defined by NEC and the following:

1. Lighting and receptacle circuits may be in the same conduit in accordance with derating requirements of the NEC.

2. However, lighting and receptacle circuits shall not be in conduits with power or control conductors.

E. Make terminations at solenoid valves, 120-volt motors, and other devices provided with pigtail leads using self-insulating tubular compression connectors.

3.03 SIGNAL CABLE

A. Circuits:

1. Run as individually shielded twisted pairs or triads.

2. Do not, in any case, make up a circuit using conductors from different pairs or triads.

3. Use triads wherever 3-wire circuits are required.

4. Unless otherwise indicated, provide terminal blocks at instrument cable junctions, and identify circuits at such junctions.

5. Run signal circuits without splices between instruments, terminal boxes, or panels.

B. Shields are not acceptable as a signal path, except for circuits operating at radio frequencies and utilizing coaxial cables.

C. Common grounded return conductors for two or more circuits are not acceptable.

D. Unless otherwise indicated, bond shields to the signal ground bus at the control panel and isolated from ground and other shields at other locations. Provide terminals for running signal leads and shield drain wires through junction boxes.

E. Shield Drain Wire:

1. Terminate spare circuits and the shield drain wire on terminal blocks at both ends of the cable run and cause to be electrically continuous through terminal boxes.

2. Do not ground shield drain wires for spare circuits at either end of the cable run.

F. Terminal Boxes:

1. Provide at instrument cable splices.

2. If cable is buried or in raceway below grade at splice, provide an instrument stand as specified with terminal box mounted approximately 3 feet above grade.

G. Install and terminate cable for telephone systems in compliance with the manufacturer's recommendations.

3.04 TESTING

A. General: Test conductors and cable in accordance with Section 26 05 00.

B. Signal Cable:

1. Test each signal pair or triad for electrical continuity.

2. Test each shield drain conductor for continuity. Shield drain conductor resistance shall not exceed the loop resistance of the pair or triad.

3. Test each conductor (signal and shield drain) for insulation resistance with all other conductors in the cable grounded.

4. Instruments used for continuity measurements shall have a resolution of 0.1 ohms and an accuracy of better than 0.1 percent of reading plus 0.3 ohms. Use a 500-volt megohmmeter for insulation resistance measurements.

C. Fiber Optic Cable:

1. Test each fiber with an OTDR from both ends of the fiber to verify the cable is not broken or diminished in performance. Verify cables are installed per manufacturer standards and document the dB loss over the length of the cables.

3.05 SCHEDULES

A. Cables are scheduled on the Drawings.

3.06 CABLE SPECIFICATION SHEETS (CABLESPEC)

A. General:

1. Conductor and cable types for different locations, service conditions and raceway systems are specified on individual cable specification sheets (CABLESPEC).

2. Install scheduled and unscheduled conductors and cables in accordance with the CABLESPEC sheets.

B. CABLESPEC Sheets: CABLESPEC sheets follow.

Cable System Identification:	MC
Description:	Multiconductor power and control cable, No. 1/0 AWG and larger, approved for tray installation and in accordance with UL 1569.
Voltage:	600 volts.
Conductor Material:	Bare annealed copper; stranded in accordance with ASTM B8.
Insulation:	XHHW-2, 90 degrees C dry, 75 degrees C wet, crosslinked polyethylene in accordance with NEMA WC57 / ICEA S-73-532 (control cable), NEMA WC70 / ICEA S-95-658 (Power Cable), and UL 44.
Assembly:	Individual conductors cabled together with nonhydroscopic fillers and binding tape.
Sheath:	Impervious, continuous, corrugated aluminum welded over cable core. Sheath shall meet the grounding conductor requirements of NEC Table 250-95.
Jacket:	50 mil minimum, polyvinylchloride (PVC) in accordance with UL 1277.
Flame Resistance:	IEEE 383.
Manufacturer(s):	Okonite, Houston Wire & Cable, or approved equal.
Uses Permitted:	Cable tray, direct burial, encased in concrete in normal or Class 1, Division 2 atmospheres.
Execution:	Installation: Install in accordance with this section.
	Testing: Test in accordance with Section 26 05 00.

Cable System Identification:	TC
Description:	Multiconductor power and control cable, No. 14 AWG minimum through No. 1 AWG, approved for tray installation and in accordance with UL 1581
Voltage:	600 volts.
Conductor Material:	Bare annealed copper; stranded in accordance with ASTM B8.
Insulation:	XHHW-2, 90 degrees C dry, 75 degrees C wet, crosslinked polyethylene in accordance with NEMA WC57 / ICEA S-73-532 (control cable), NEMA WC70 / ICEA S-95-658 (Power Cable), and UL 44.
Assembly:	Individual conductors cabled together with nonhydroscopic fillers and binding tape.
Jacket:	50 mil minimum, polyvinylchloride (PVC) in accordance with UL 1581.
Flame Resistance:	IEEE 383.
Manufacturer(s):	Okonite, Houston Wire & Cable, or approved equal.
Uses Permitted:	Cable tray, direct burial, encased in concrete in normal or Class 1, Division 2 atmospheres.
Execution:	Installation: For power cable, install in existing tray. For control cable, install in hanging cable baskets, as indicated on Drawings. Testing: Test in accordance with Section 26 05 00.

Cable System Identification:	XHHW-2
Description:	Single conductor Cross-linked polyethylene power and control cable for sizes No. 14 AWG through No. 600 kCMIL.
Voltage:	600 volts.
Conductor Material:	Bare annealed copper; stranded in accordance with ASTM B8.
Insulation:	XHHW-2, 90 degrees C dry, 75 degrees C wet, cross-linked polyethylene in accordance with NEMA WC57/ ICEA S-73-532 (control cable), NEMA WC70/ ICEA S-95-658 (power cable).
Jacket:	None.
Flame Resistance:	N/A.
Manufacturer(s):	Okonite, X-Olene; Cablec, Durasheath XLP; or approved equal.
Execution:	Installation: Install in accordance with this section. Testing: Test in accordance with Section 26 05 00.

Cable System Identification:	TSP
Description:	Single twisted, shielded pair or triad, 16 AWG, instrumentation cable, UL listed. NEC type TC.
Voltage:	600 volts.
Conductor Material:	Bare annealed copper; stranded in accordance with ASTM B8.
Insulation:	15 mil, 90°C Dry / 75°C Wet, Polyvinyl chloride (PVC) with 4 mil nylon conduit or jacket.
Lay:	Twisted on a 2-inch lay.
Shield:	100 percent, 1.35 mil aluminum-Mylar tape with 18 AWG 7-strand tinned copper drain wire.
Jacket:	45 mil polyvinylchloride (PVC).
Flame Resistance:	UL 1277.
Manufacturer(s):	Okonite, Okoseal-N type P-OS; or approved equal.
Execution:	Installation: Install in accordance with this section. Testing: Test in accordance with this section.

Cable System Identification:	MIC
Description:	Multiple twisted, shielded pairs or triads, 16 AWG, instrumentation cable, UL listed.
Voltage:	600 volts.
Conductor Material:	Bare annealed copper; stranded in accordance with ASTM B8.
Insulation:	15 mil, 90°C Dry / 75°C Wet, Polyvinyl chloride (PVC) with 4 mil nylon conduit or jacket.
Lay:	Twisted on a 2-inch lay.
Shield:	100 percent, 1.35 mil aluminum-Mylar tape with 18 AWG 7-strand tinned copper drain wire.
Overall Shield:	2.35 mil aluminum-Mylar tape with a No. 20 AWG 7-strand tinned copper drain wire.
Jacket:	45-mil polyvinylchloride (PVC).
Flame Resistance:	UL 1277.
Manufacturer(s):	Okonite, Okoseal-N type SP-OS; or approved equal.
Execution:	Installation: Install in accordance with this section. Testing: Test in accordance with this section.

Cable System Identification:	RJ45
Description:	CAT5e (200 MHz), 4-Pair, U/UTP-Unshielded, Riser-CMR, Premise Horizontal Cable, 24 AWG Solid Bare Copper Conductors, Polyolefin Insulation, Ripcord, PVC Jacket.
Voltage:	600 volts.
Conductor Count and Material:	Eight (8) Copper Conductors.
Insulation:	Copper conductors shall be covered with Polyolefin.
Jacket:	Outer Jacket Material shall be Polyvinyl Chloride.
Manufacturer(s):	Beldon; or approved equal.
Execution:	Installation: Install in accordance with specification Section 26 05 00. Testing: Use a TDR to verify dB loss over the length of cable and compare to manufacturer's specifications. Document results and provide to Engineer.

END OF SECTION

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SECTION 26 05 26

GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies the system for grounding electrical equipment, exposed nonenergized metal surfaces of equipment, and metal structures.

1.02 QUALITY ASSURANCE

A. Referenced Standards: This section incorporates by reference the latest revision of the following documents. These references are part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
IEEE 81	Guide for Measuring Earth Resistivity, Ground Impedance, and Earth
NEC	National Electrical Code Article 250 Grounding and Bonding
NFPA 70	National Electric Code (NEC)

B. Qualifications: Not Used.

C. Comply with requirements of NEC Article 250.

1.03 SUBMITTALS

A. Procedures: Section 01 33 00.

B. Product Data.

C. Grounding System Test Results.

PART 2 – PRODUCTS

2.01 GROUND CABLE

A. Annealed bare copper, concentric stranded as specified. If cable sizes are not indicated, the minimum sizes shall be as follows:

1. 15kV - 480V transformer: 250 MCM.

2. 15kV Load Interrupter: 4/0 AWG.

3. 480V switchgear: 4/0 AWG.

4. 480V MCC and switchboards: 2/0 AWG.

5. Lighting panels: 1/0 AWG.

6. Exposed metal: 2 AWG.

2.02 GROUND RODS

A. Copper covered steel, 3/4-inch diameter and ten feet long.

B. Rods shall have threaded type removable caps so that extension rods of same diameter and length may be added where necessary.

2.03 COMPRESSION CONNECTORS

A. Cast copper.

B. Acceptable Manufacturer:

1. Thomas and Betts.

2. Burndy.

3. Or Approved Equal.

2.04 BOLTED CONNECTORS

A. Acceptable Manufacturer:

1. Burndy.

2. O. Z. Gedney.

3. Or Approved Equal.

2.05 EXOTHERMIC CONNECTORS

A. Acceptable Manufacturer:

1. Thermoweld.

2. Cadweld.

3. Or Approved Equal.

2.06 GROUNDING PLATE – CAST IN CONCRETE

A. Cast copper plate for use with future two-hole lug connection. Flush mounted in concrete.

B. Acceptable Manufacturers:

1. Burndy.

2. Erico.

3. Or Approved Equal.

PART 3 – EXECUTION

3.01 GENERAL

A. Make embedded and buried ground connections by compression connectors utilizing diamond or hexagon dies. Use a hand compression tool for wire sizes 2/0 AWG and smaller and a hydraulic pump and compression head for wire sizes larger than 2/0 AWG.

B. Tools and Dies:

1. Approved for purpose used.

2. Dimple compressions are not acceptable.

C. Prepare compression connections in accordance with the manufacturer's instructions.

D. Unless otherwise indicated, make exposed ground connections to equipment by bolted clamps.

E. Do not use solder in any part of the ground circuits.

F. Cables:

1. Securely attach embedded ground cables and fittings to concrete reinforcing steel with tie wires and prevented from displacement during concrete placement.

2. As each part of the grounding system below finished grade is completed, notify the Project Representative a minimum of four hours prior to backfilling.

G. Extensions:

1. Extend grounding conductors that are extended beyond concrete surfaces for equipment connection a sufficient length to reach the final connection point without splicing.

2. Minimum extensions: 3 feet.

H. Conductors:

1. Locate grounding conductors that project from a concrete surface as close as possible to a corner of the equipment pad, protected by conduit, or terminated in a flush grounding plate.

2. Terminate grounding conductors for future equipment using a two-hole copper flush mounted grounding plate.

3. Support exposed grounding conductors by non-corrosive metallic hardware at 4-foot intervals or less.

4. Ground conductors, except signal conductor shields entering enclosures:

   a. Bonded together to the enclosure if it is metallic and to metallic raceways within or terminating at the enclosure.

5. Grounding conductor shall not be used as a system neutral.

I. Use compression-type lugs in accordance with manufacturer's recommendations.

J. Directly connect lightning arresters to the ground system using copper conductors, sized as specified.

K. Metallic Sheaths or Shields of Shielded Power Cable:

   1. Terminated by a copper grounding strip provided with cable connection for connection to the grounding system.

L. Prior to making ground connections or bonds, clean metal surface at the point of connection.

M. For all control devices with sealed cable connection, include a ground conductor in the control cable.

N. Prior to burying of the ground conductors, record location for Record Drawings.

3.02 RACEWAY GROUND

A. Metallic Conduits:

   1. Assembled to provide a continuous ground path and bonded using insulated grounding bushings.

   2. Bond using insulated grounding bushings.

B. Non-metallic conduits: Insulated ground conductor sized in compliance with the NEC.

C. Grounding bushings: Connected to the grounding system using conductors sized in compliance with NFPA 70.

D. Cable Trays:

   1. No. 2/0 AWG bare copper ground conductor run on the outside of each tray.

   2. Conductor to be connected to each section or fitting using a carriage bolt and clamp.

E. Every conduit shall contain an insulated green ground conductor sized in compliance with NEC.

3.03 EQUIPMENT AND ENCLOSURE GROUND

A. Connect electrical and distribution equipment to the grounding system. Cables sized as indicated.

B. Connect non-electrical equipment with metallic enclosures to the grounding system.

C. Securely bond transformer, steel mounting rack, yard fences and gates as specified.

3.04 GROUNDING SYSTEM TESTS

A. Test per IEEE 81 each grounding connection to determine the ground resistance.

B. Submit a plot of ground resistance readings for each isolated ground rod or ground mat on 8-1/2 by 11 inch size graph paper.

C. Current reference rod: At least 100 feet from the ground rod or grid under test.

D. Make measurements at 10-foot intervals beginning 25 feet from the test electrode, and ending 75 feet from it, in direct line between the ground rod or center of grid and the current reference electrode.

E. Consider a grounding system that shows greater than 2-ohm resistance for the flat portion of the plotted data inadequately grounded. Add additional parallel-connected ground rods and deeper driven rods until the ground resistance measurements meet the 2-ohm or less requirement.

F. Use of salts, water, or compounds to attain the indicated ground resistance is not acceptable.

END OF SECTION

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SECTION 26 05 33.16
RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SUMMARY

A. Provide raceway and boxes as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

1.02 QUALITY ASSURANCE

A. Comply with the following requirements:

1. NFPA 70 National Electrical Code (NEC).

2. Local codes and ordinances.

1.03 SUBMITTALS

A. Shop Drawings: Submit product information/data shop drawings for materials in accordance with Section 26 05 00.

PART 2 – PRODUCTS

2.01 GENERAL

A. Provide conduit system of the types of conduit as indicated in the Conduit Usage Schedule in Part 3 of this section.

B. Provide minimum of 1-inch trade size conduit.

C. Both 90-degree short radius and 90-degree large radius adapter elbows are prohibited.

D. Provide junction boxes as necessary to facilitate pulling and/or splicing of wires.

2.02 METAL CONDUIT AND FITTINGS

A. Galvanized Rigid Steel Conduit (GRS) and Fittings:

1. Conduit: Comply with ANSI C80.1 and UL 6 standards.

2. Fittings: Comply with UL 514B and NEMA FB1 and FB2.10 standards.

3. Hot-dip galvanized steel.

4. Couplings shall be threaded-type. Setscrew-type and compression-type are not acceptable.

5. Union couplings for conduits shall be the three-piece (Erickson) type. Threadless couplings shall not be used.

2.03 FLEXIBLE CONDUIT AND FITTINGS

A. Liquidtight Flexible Metal Conduit and Fittings:

1. Conduit: Comply with UL 360 standards.

a. Galvanized flexible steel core.

b. Provide outer liquidtight, PVC sunlight resistant jacket.

2. Fittings: Comply with UL 514B and NEMA FB1 standards.

2.04 CONDUIT BODIES

A. Metallic Conduit Bodies: Comply with NETA FB1, ANSI C33.84, and UL 514 standards.

1. Use hot-dipped galvanized or cadmium plated malleable iron, or copper free aluminum material.

B. Provide removable cover with gasket and corrosion-resistant screws.

2.05 EXPANSION FITTINGS

A. Expansion Fittings: Comply with UL 514 standards.

1. Provide copper grounding strap and clamps.

2. Use Crouse-Hinds Type XJ, or equal.

B. Expansion/Deflection Fitting:

1. Comply with UL 514 and 467 standards.

2. Use Crouse-Hinds Type XD, or equal.

2.06 DRAINS AND BREATHERS

A. Automatic Drain-Breather: Use Crouse-Hinds Type ECD, or equal.

B. Condensate Drain:

1. Use conduit outlet body, Type T.

a. Provide threaded, galvanized plug with 3/16-inch drilled hole through plug.

2.07 WALL AND FLOOR SLEEVES

A. Wall Sleeves:

1. Cast Iron Wall Sleeves: Use mechanical joint type with flanges tapped for studs.

2. Steel Wall Sleeves: Fabricate sleeve from Schedule 40 black steel pipe.

B. Link Seals:

1. Use modular mechanical type consisting of interlocking solid rubber links designed for positive hydrostatic pressure of 20 psig.

   a. Connect each pair of links by a carbon steel zinc phosphate plated bolt and nut, each with a heavy Delrin plastic elongated washer.

      1) Acceptable product: “LINK-SEAL” as manufactured by Thunderline Corp. or equal.

2.08 CONDUIT PENETRATIONS

A. Enclosures: Provide zinc Myers hub with Viton o-ring and Lexan insuliner (by Cooper Crouse Hinds or equal) for termination of conduits to enclosures. Provide ground nut as required.

2.09 FLEXIBLE SEALING COMPOUND

A. Use Panduit DS-5 duct sealing compound, or equal, where air and vapor tight conduit sealing is required.

2.10 OUTLET BOXES AND JUNCTION BOXES

A. Flush Mounted: Provide hot-dipped galvanized steel boxes and accessories suitable for application and type construction.

B. Surface Mounted: Provide corrosion-resistant single or multiple gang malleable iron or aluminum Type FS or FD cast boxes with threaded hubs, or pressed steel boxes as permitted under Part 3 of this section.

C. Weatherproof Boxes: Provide gasketed covers and corrosion-proof fasteners.

D. Cast Metal Boxes:

1. Box bodies and cover shall be cast or malleable iron with a minimum wall thickness of 1/8 inch at every point, and not less than 1/4 inch at tapped holes for rigid conduit. Bosses are not acceptable.

2. Mounting lugs shall be provided at the back or bottom corners of the body.

3. Covers shall be secured to the box body with No. 6 or larger brass or bronze flathead screws.

4. Boxes shall be provided with neoprene cover gaskets.

5. Where only cast aluminum is available for certain types of fixture boxes, an epoxy finish shall be provided.

6. Outlet boxes shall be of the FS types. Boxes shall conform to FS W-C-586C, UL 514A, and UL 514C.

E. Pull Boxes and Junction Boxes:

1. Except where NEMA 4X stainless steel boxes are called for, boxes shall be fabricated from carbon steel per UL 50.

2. Boxes shall be welded construction with seams or joints closed and reinforced.

3. Boxes shall be galvanized after construction.

4. Boxes intended for outdoor use shall be cast metal with threaded hubs and neoprene gasketed covers. Cover retention shall be by corrosion-resistant stainless steel screws.

5. Boxes for wiring operating at 601 V or higher shall be padlockable.

6. Boxes and cabinets shall be securely fastened to building structural members so as to prevent movement in any direction. Boxes shall not be supported by lighting fixtures, suspended ceiling support wires, or freely hanging rods.

   a. Covers of boxes and cabinets mounted in horizontal plane (top or bottom) either shall weigh not more than 40 pounds or shall require not more than 40 pounds of force to open or close.

   b. Covers of boxes and cabinets mounted in vertical plane (front, back, sides) either shall weigh not more than 60 pounds or shall require not more than 60 pounds of force to open or close. Covers over 30 pounds shall be furnished with angle support at bottom to carry weight of cover for assembly.

   c. Covers of boxes and cabinets weighing more than 30 pounds shall be provided with lifting handles or some means of grasping other than edges.

2.11 PULL BOXES AND SPECIAL PURPOSE OUTLET BOXES

A. Provide pull boxes with covers held in place by corrosion-resistant machine screws, and of type or NEMA rating as shown on the Drawings.

B. Provide special purpose outlet boxes furnished with fixtures and devices where standard outlets are not applicable.

PART 3 – EXECUTION

3.01 INSTALLATION – RACEWAY

A. Install conduit and fittings in accordance with manufacturer's recommendations.

B. Run exposed conduits parallel to or at right angles with lines of building or structure.

C. Route conduit runs above suspended panel ceilings so as not to interfere with panel removals.

D. Keep conduit plugged, clean, and dry during construction.

E. Install wall sleeves as shown on the Drawings and where conduits pass through foundation walls below grade.

F. Install expansion fittings in the following locations:

1. Conduit runs crossing structural expansion joint.

2. Conduit runs attached to two separate structures.

3. Conduit runs where movement perpendicular to axis of conduit may be encountered.

G. Conduit runs extending through areas of different temperature or atmospheric conditions, or partly indoors and partly outdoors must be sealed, drained, and installed in a manner preventing drainage of condensed or entrapped moisture into cabinets, boxes, fixtures, motors, or equipment enclosures.

H. Conduits Run in Concrete Structures:

1. Comply with applicable provisions of ACI 318 for conduits embedded in structural frame slab.

2. Install conduits parallel to each other spaced on center of at least three times conduit trade diameter with minimum 2-inch concrete covering.

3. Conduits over 1-1/2 inches may not be installed in slab without approval of Engineer.

I. Install bushings with ground lugs and integral plastic linings at equipment with open bottom conduit entrances.

J. In precast areas, run conduits in roof insulation space. Use 3/4-inch maximum conduit size.

K. Exterior Underground Conduit: Provide conduits or ducts terminating below grade with means to prevent entry of dirt or moisture.

L. Flexible conduit shall be limited to 36 inches in length and used for vibration isolation or where equipment requires flexible connections.

3.02 INSTALLATION – BOXES

A. Install boxes in accordance with manufacturer's recommendations.

B. Pressed sheet metal device boxes shall only be used in locations where EMT is approved or inside finished walls.

C. Use weatherproof boxes for interior and exterior locations exposed to weather or moisture.

D. Do not install boxes back to back or through wall. Off set outlet boxes on opposite sides of wall minimum 12 inches.

E. Set outlet boxes parallel to construct existing items shown to remain unless approved by the Engineer.

3.03 CONDUIT USAGE

A. Install GRS in the following locations unless otherwise shown on the Drawings:

1. Concealed in poured concrete walls and floor or roof slabs.

2. Concealed in insulation above poured or precast concrete roof slabs.

3. Exposed.

B. Install liquidtight flexible metal conduit and fittings for connections to motors, instrumentation, and equipment subject to vibration and at locations shown on the Drawings.

1. For corrosive or outdoor environments, install liquidtight flexible nonmetallic conduit and fittings.

3.04 EXPOSED OUTLET AND JUNCTION BOXES

A. Use cast boxes unless noted otherwise on the Drawings.

B. Install weatherproof outlet, switch, and junction boxes outdoors and in any area where Drawings show weatherproof (WP) wiring devices.

3.05 OUTLET BOX ACCESSORIES

A. Provide outlet box accessories and mounting devices as required for each installation.

3.06 LIGHTING FIXTURE OUTLET BOXES

A. Securely mount with approved type bar hangers spanning structural members to support weight of fixture.

3.07 OUTLET BOX LOCATIONS

A. Location of outlets and equipment is approximate. Exact location to be verified and determined by:

1. Conflict with equipment of other trades.

2. Equipment manufacturer's drawings.

3. Engineer in field.

B. Minor modification in location of outlets and equipment is considered incidental up to distance of 10 feet with no additional compensation, providing necessary instructions are given prior to roughing-in of outlet boxes and equipment.

C. Nominal mounting heights for devices and equipment to be measured from either above finished floor (AFF) or above finished grade (AFG) to center line of device and, unless otherwise shown on the Drawings, are as follows:

1. Switches: 48 inches AFF OR AFG.

2. AC Receptacles and Telephone Outlets: 48 inches AFF or AFG.

3. Thermostats: 60 inches above floor.

END OF SECTION

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SECTION 26 05 53
IDENTIFICATION FOR ELECTRICAL SYSTEMS

PART 1 – GENERAL

1.01 SECTION INCLUDES

A. This section specified products and procedures used to identify electrical system equipment and components.

1.02 REFERENCES

A. None.

1.03 SUBMITTALS

A. As specified in Section 26 05 00.

B. Manufacturer's descriptive literature and drawings for all materials.

PART 2 – PRODUCTS

2.01 NAMEPLATES

A. General:

1. For each piece of electrical equipment, provide a manufacturers nameplate showing manufacturer's name, location, pertinent ratings, and model designation.

2. Identify each piece of equipment and related controls with a rigid laminated engraved phenolic nameplate. Engrave nameplates with the inscriptions indicated on the Drawings and, if not so indicated, with the equipment name. Securely fasten nameplates in place using two stainless steel screws. Where no inscription is indicated on the drawings, furnish nameplates with an appropriate inscription furnished by the Engineer upon prior request by the Contractor.

3. Each control device, including push buttons, control switches, and indicating lights, shall have an integral legend plate or nameplate indicating the device function. These shall be inscribed as indicated on the drawings or as favorably reviewed by the Engineer.

4. Provide labeling for product attributes (for example "Listed" or "Suitable for Use as Service Equipment") required by applicable electrical codes and regulations. Equipment installations shall not render such labels inaccessible or unavailable for access by the AHJ.

PART 3 – EXECUTION

3.01 INSTALLATION

A. General:

1. Where mixed voltages are used in one building (e.g., 480 volts, 208 volts), each piece of equipment, including but not limited to, switchboard(s), panelboard(s), safety switches, etc., on each system must be labeled for voltage in addition to other requirements listed herein.

2. All panelboards must be identified with the same designation used on the Contract Documents.

3. Before attaching labels, clean all surfaces with the label manufacturer's recommended cleaning agent.

4. Install all labels firmly, as recommended by the label manufacturer.

5. Labels attached to wiring device faceplates and electrical equipment shall be installed plumb and neatly on all equipment.

6. Install nameplates parallel to equipment lines.

7. Secure nameplates to equipment fronts unless otherwise noted.

8. Embossed tape will not be permitted for any application.

9. Stenciling is prohibited.

10. Labels: All labels shall be permanent and be machine-generated. No handwritten labels are allowed.

11. Label size shall be appropriate for the conductor size(s). All labels to be used shall be self-laminating, white/transparent vinyl and be wrapped around the conductor.

12. Flag type labels are not allowed. The labels shall be of adequate size to accommodate the circumference of the cable being labeled and properly self-laminated over the full extent of the printed area of the label.

3.02 RACEWAY NUMBERING SYSTEM

A. General:

1. Identify each conduit, rack, and tray by using a three-segment conductor numbering scheme which defines the origin of the conductor, the function of the conductor, and the conduit number.

   Example: (P = power, C = control, S = signal, etc.), and conduit number per the conduit and cable schedule.

B. Conduit Identification:

1. Pressure stamp conduit numbers into a non-corrosive metal tag, such as 22-gauge stainless steel. Fix a tag with number to each end of each conduit and at each manhole, pull box, and handhole with Type 316 Stainless Steel wire or chain auto-locking nylon quick ties. Identify all exposed conduits at least once in each room. Text should be visible from a minimum of 5-foot distance. Adhesive labels will not be accepted.

END OF SECTION

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SECTION 26 09 16
MISCELLANEOUS ELECTRICAL DEVICES

PART 1 – GENERAL

1.01 SUMMARY

A. This section specifies miscellaneous electrical power devices, disconnect switches, and overcurrent protection.

1.02 QUALITY ASSURANCE

A. Referenced Standards: This section incorporates by reference the latest revision of the following documents. These references are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

Reference	Title
NEMA KS 1	Enclosed and Miscellaneous Distribution Equipment Switches (600 Volts Maximum)

1.03 SUBMITTALS

A. Procedures: Section 01 33 00.

B. Product Data: Manufacturer's catalog data for products to be provided in the Work.

PART 2 – PRODUCTS

2.01 SAFETY DISCONNECT SWITCHES

A. Heavy-duty, safety type rated 600 volts AC complete with current limiting fuses sized to match switch ampere rating.

B. Classification, unless otherwise specified:

1. Outdoor: NEMA 4X, stainless steel.

2. Classified areas: Suitable for the specified classification.

C. Operating handle: Capable of being padlocked in the "off" position.

D. Operator: Positive, quick-make, quick-break mechanism.

E. Switch Mechanisms: One auxiliary contact rated B150, per NEMA ICS 2-125, that opens before the switch blades.

F. Defeatable door interlocks that prevent the door from opening when the operating handle is in the “on” position.

G. Switches shall have line terminal shields.

H. Acceptable Manufacturer:

1. Cuttler Hammer.

2. General Electric.

3. Siemens.

4. Square D.

5. Or equal.

2.02 POWER DISTRIBUTION BLOCK

A. The power distribution blocks shall be Square D 9080 Power Distribution Blocks:

1. Class 9080 Type LB.

2. Or Approved Equal.

2.03 CIRCUIT OVERCURRENT PROTECTION

A. Circuit Breakers and Fuses:

1. Thermal magnetic, molded-case type with the ampere rating as specified.

2. Unless otherwise indicated, circuit breaker interrupting rating:

a. 18,000 amperes symmetrical minimum for service at 240 volts and below.

b. 25,000 amperes symmetrical minimum for service above 240 volts.

c. UL listed short circuit rating of 200,000 RMS amps with Class R fuses where a fused disconnect is indicated.

2.04 NAMEPLATES

A. For all control stations, relays, timers, motor contactors and disconnect switches: Per Section 26 05 00.

PART 3 – EXECUTION

3.01 GENERAL

A. Mount safety disconnect switches as shown on the drawings and per PSE requirements.

3.02 FIELD CHECKOUT AND TESTING

A. Checkout each miscellaneous electrical device for:

1. Proper mounting.
2. Proper interconnections.
3. Absence of shorts and grounds.
4. Proper function of motor start and control equipment.
5. Power supply.
6. Field devices.

B. Checkout systems:

1. Proper interconnections.
2. Absence of shorts and grounds.

END OF SECTION

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Division 33

Utilities

SECTION 33 06 00
PIPING SCHEDULE

Table 33 06 00-1. Pipe Schedule

Legend	Service	Size (In.)[a]	Material	Data Sheet	Installation	Joint Type	Lining/Coating[b]	Test Pressure and Type (psig-x)	Remarks
FM	Sanitary Sewer Force Main	All	DI	DS1	EXP BUR	FL/GR	Paint/Paint Paint/Asphaltic	50-H	Pipe shall be lined with Protecto 401 or approved equal.
PS	Pump Suction	All	PVC	DS2	EXP	SW/CP	Bare/Bare	N/A	PVC Schedule 80

NOTES:

[a] Unless noted, pipe schedule applies to all sizes for a particular service. All pipe sizes within pipe ranks may not be used. Reference Drawings for sizes used.

[b] Coating systems per Specification Section 09 06 90.

Size	Material	Installation	Joint Type	Test Type
“>“ Greater Than	“CPVC” Chlorinated Polyvinyl Chloride	“All” All Installations	“CP” Compression	“G” Gravity Test
“<“ Less Than	“DI” Ductile Iron	“BUR” Buried	“FL” Flanged	“H” Hydrostatic Test
“≥“ Greater Than or Equal To	“GS” Galvanized Steel	“EMB” Embedded (in concrete)	“GR” Grooved	“PC” Test per Uniform Plumbing Code
“≤“ Less Than or Equal To	“POLY” Polyethylene	“EXP” Exposed (interior or exterior)	“SW” Socket Welded	
“All” All Sizes	“PVC” Polyvinylchloride	“SUB” Submerged	“THD” Threaded	

END OF SECTION

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SECTION 33 08 00
PIPING LEAKAGE TESTING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Contractor shall perform leakage testing as specified herein on all of the piping segments shown on the Drawings and listed in the Piping Schedule specified in Section 33 06 00.

1.02 SUBMITTALS

A. Testing Plan: Submit prior to testing and include at least the information that follows:

1. Proposed test date.
2. Drawings clearly identifying the piping systems and segment(s) to be tested.
3. Description of test type.
4. Written method of how the piping segment to be tested will be isolated.
5. Calculation of maximum allowable leakage for each piping section(s) to be tested.
6. Certifications of Calibration: For all gauges and testing equipment used. All certifications shall be current at the time of testing.

B. Testing Report Documentation: After testing of each piping segment has been completed, submit the following in accordance with the Division 1 Specifications:

1. Actual test date.
2. Description and identification of piping segment tested.
3. Testing fluid/medium used.
4. Actual test pressure.
5. Remarks, including:
   a. Leaks (type, location).
   b. Repair/replacement performed to remedy excessive leakage.
6. All test report documentation shall be signed by the Contractor to represent that the testing has been satisfactorily completed.

PART 2 – PRODUCT (NOT USED)

PART 3 – EXECUTION

3.01 TESTING

A. General:

1. Notify Owner in writing five days in advance of all piping leakage testing. Perform all testing in the presence of the Owner.

2. Testing shall be performed using calibrated test gauges and calibrated volumetric measuring equipment, provided by the Contractor, to determine leakage rates. Each test gage shall be selected so that the specified test pressure falls within the upper half of the gage's range. All gages and equipment required for testing shall be furnished by the Contractor.

3. Install temporary piping restraint systems as necessary to protect adjacent piping or equipment and make taps in piping prior to testing.

4. Prior to testing, remove or suitably isolate appurtenant equipment, instruments or devices that could be damaged by pressure testing. Furnish, install, and remove temporary restrained plugs, caps, blind flanges, connections, taps and other appurtenances for piping segment isolation as required for testing at no additional cost to the Owner.

B. Testing Fluid:

1. Hydrostatic: All water shall be furnished by the Owner. Contractor shall be responsible for providing backflow preventer, meter and all piping, fittings, hoses, and all other items required to convey water to the piping segment to be tested.

2. Air: Contractor shall furnish all compressed air used for testing. Contractor shall provide an air compressor, air piping/hoses, and all other items required to perform air testing as specified herein.

C. Test Type and Testing Pressure: As indicated on the Piping Schedule.

D. Defective Piping Segments: Repair leaks and defects, if found, with new materials and retest the piping segment until satisfactory results are obtained. Prepare reports for tests and required corrective action, if any.

3.02 HYDROSTATIC TESTING FOR PRESSURE PIPING

A. General:

1. Perform testing on installed piping prior to application of insulation.

2. Maximum Filling Velocity: 0.25 foot per second, applied over full area of pipe.

3. Vent piping during filling. Open vents at high points of piping system or loosen flanges, using at least four bolts, or use equipment vents to pump air pockets.

4. Maintain hydrostatic test pressure continuously for 60 minutes minimum, and for such additional time as necessary to conduct examinations for leakage. Examine joints and connections for leakage.

B. Maximum Allowable Leakage:

$$L = \frac{SD(P)^{1/2}}{133{,}200}$$

Where:

L = Allowable leakage, in gallons per hours.
S = Length of pipe tested, in feet.
D = Nominal diameter of pipe, in inches.
P = Test pressure during leakage test, in pounds per square inch.

C. Defective Piping Segments: Repair leaks and defects, if found, with new materials and retest piping or portion thereof until satisfactory results are obtained. Prepare reports for tests and required corrective action, if any.

END OF SECTION

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SECTION 33 34 00
PIPE AND FITTINGS

PART 1 – GENERAL

1.01 DESCRIPTION

A. This section specifies piping, fittings, and connections. The actual pipe size and fittings shall be as shown on the Drawings and described in the Piping Schedule specified in Section 33 06 00.

B. Piping designations (indicating the nominal pipe size and individual piping system) are used throughout the Mechanical Drawings. Note that in most cases, the piping system material is not included below the piping designation on the Drawings. Rather, the pipe material (and Pipe Data Sheet Number) for each corresponding piping system is identified in the piping schedule contained in Section 33 06 00. Contractor shall be responsible for matching up the piping system designations shown on the Drawings with the corresponding pipe materials listed in Section 33 06 00 to determine which piping materials are to be installed for this project.

1.02 SUBMITTALS

A. Shop Drawings and Product Data:

1. Piping layout drawings showing the locations, lengths, and elevations for all piping systems (exposed, buried, and submerged) in that area with respect to structures, other piping, and utilities (ductwork, etc.). Drawings shall contain details and location of all joints, anchors, supports, fittings, connections, penetrations, valves, piping appurtenances, flexible couplings, manholes, and other items as required.

2. For each piping system identified in the Piping Schedule, submit pipe, fittings, linings, and coatings to be used for each piping system specified.

3. Manufacturer's handling, delivery, storage, and installation instructions.

4. Submit written verification of required pressure testing.

5. Details of standard pipe, specials, and fittings.

6. Calculations for pipe design and fittings reinforcement and/or test data.

7. Details of stulling and shipping packaging.

8. Pipe is to be furnished with special lengths, field-trim pieces, and closure pieces as required by plans and sections for location of elbows, tees, reducers, valves, and other in line fittings. The pipe fabricator shall prepare a pipe laying schedule showing the location of each piece by mark number with station and invert elevation at each end.

B. Quality Control Submittals:

1. Manufacturer's Certificate of Proper Installation.

2. Certified welding inspection and test results.

3. Test logs.

1.03 HANDLING, STORAGE, AND SHIPPING

A. Pipe shall be stulled as required to maintain roundness of plus or minus 1 percent during shipping and handling.

B. Coated pipe shall be shipped on padded bunks with nylon belt tie-down straps or padded banding located approximately over stulling.

C. Coated pipe shall be stored on padded skids, sand or dirt berms, sandbags, old tires, or other suitable means so that coating will not be damaged.

D. Coated pipe shall be handled with wide belt slings. Chains, cables, or other equipment likely to cause damage to the pipe or coating shall not be used.

1.04 PIPING SYSTEMS

A. General:

1. Furnish and install pipe, specials, fittings, closure pieces, supports, bolts, nuts, gaskets, jointing materials, and appurtenances as shown and specified, and as required for a complete and functioning piping system. All pipe joints shall be restrained. Mortar-lined and coated steel pipe shall have full circumferential welds.

2. All exposed piping shall be adequately supported and restrained with devices of appropriate design.

3. Lined and coated pipe shall be stored in such a manner that the lining and coating will not crack or otherwise be damaged due to the effects of freezing and thawing, sunlight, and dry weather conditions.

B. Pipe Installation:

1. Care shall be exercised to avoid bypassing insulating flanges with cable, piping, or other metallic objects.

2. Equipment shall be positioned and aligned so that no strain shall be induced within the equipment during or subsequent to the installation of piping.

3. When temporary supports are used, they shall be sufficiently rigid to prevent any shifting or distortion of the piping or related work.

4. Flexible couplings shall be installed where shown on the Drawings and at such other points as may be required for ease of installation or removal of the pipe, subject to

approval of the Engineer. Flexible couplings shall be of the positive lock type where necessary to prevent separation of pipe due to internal pressure.

PART 2 – PRODUCTS

2.01 PIPING SYSTEMS AND CORRESPONDING PIPE MATERIALS

A. As specified on the Piping Schedule and Data Sheet(s) located at the end of this section.

2.02 JOINTS

A. Grooved End System:

1. Grooved-end piping systems shall be installed only on 8-inch-diameter ductile iron piping and smaller.

2. Grooved pipe and groove joints shall be in accordance with AWWA C606. All ductile iron piping shall furnished be with rigid radius grooves, unless otherwise shown on the Drawings. Gasket material shall be Grade “M” halogenated butyl.

3. Grooved Piping Accessories:

a. Ductile Iron Piping:

1) Grooved Coupling: Shall be used to connect ductile iron pipe grooved-ends together. Coupling shall be Victaulic, Style 31 AWWA Coupling or approved equal.

2) Grooved Flanged Adapter: Shall be used to connect a ductile iron pipe grooved-end to a 125# flanged connection, with a limited amount of movement. Adapter shall be Victaulic, Vic-Flange Adapter Style 341 or approved equal.

3) Transition Fitting: Shall be used to connect ductile iron pipe grooved-end to an IPS grooved-end connection. Fitting shall be Victaulic, Style 307 AWWA Transition Coupling or approved equal.

B. Flanged Joints:

1. Higher pressure rated flanges as required to mate with equipment when equipment flange is of higher pressure rating than required for piping.

C. Threaded Joints: NPT taper pipe threads in accordance with ANSI B1.20.1.

D. Mechanical Joint Gland Follower:

1. Ductile iron anchor type, wedge action, with break-off tightening bolts.

2. Manufacturer and Product: EBAA Iron, Inc., MEGALUG®.

E. Flange Coupling Adapters: Shall meet AWWA C219 Standards. End ring and flanged body shall be cast from ductile iron, meeting the requirements of ASTM A536. Flange shall be ANSI Class 150. Gaskets shall be SBR. Hardware shall be high strength low alloy steel trackhead and T-head bolt National coarse-rolled thread and heavy hex nuts. Provide a factory coating on all metallic parts. Minimum working pressure shall be 250 psi.

1. Manufacturers and Products:

   a. Romac Industries;

   b. Or equal.

2.03 GASKET LUBRICANT

A. All lubricant shall be supplied by pipe manufacturer.

2.04 BOLTS

A. General: Threads shall be as per ANSI B1.1 coarse thread series, Class 2A external and Class 2B internal. Nuts, bolts, and gaskets for flanged fittings and blind flanges shall be designed to withstand the design and test pressure ratings for the pipe.

B. Above Grade: Provide AISI Type 304 stainless steel bolts and mounting hardware.

C. In Wet Well: Provide AISI Type 316 stainless steel bolts and mounting hardware.

2.05 FABRICATION

A. Mark each pipe length on outside with the following:

1. Size or diameter and class.

2. Manufacturer's identification and pipe serial number.

3. Location number on laying drawing.

4. Date of manufacture.

B. Code markings according to approved shop drawings.

C. Flanged pipe shall be fabricated in the shop, not in the field, and delivered to the site with flanges in place and properly faced. Threaded flanges shall be individually fitted and machine tightened on matching threaded pipe by the manufacturer.

2.06 DIELECTRIC CONNECTIONS

A. Furnish and install dielectric unions, insulated bushings, or insulated fittings at all connections between piping of dissimilar metals, regardless of whether these dielectric fittings are shown on the Drawings or not.

2.07 DATA SHEETS

A. Data Sheets are provided at the end of this section and are used to specify each piping system to be used for this project.

PART 3 – EXECUTION

3.01 INSTALLATION OF EXPOSED PIPE – GENERAL

A. Complete installation to present neat orderly appearance.

B. Do not block openings or passageways with piping.

C. Run piping parallel to walls of building, unless shown otherwise on the Drawings.

D. Keep piping free from contact with structure or installed items.

E. Allow clearances for expansion and contraction of pipe.

F. Anchor horizontal runs over 50 feet at midpoint to force expansion equally toward ends.

G. Placement of Vertical Piping:

1. Secure at sufficiently close intervals to keep pipe in alignment and to support weight of pipe and contents.

2. Install supports at each floor or vertically at intervals of not more than 10 feet.

3. If piping is to temporarily stand free of support, or if no structural element is available for support during construction, secure in position with wooden stakes or braces fastened to pipe.

H. Placement of Horizontal Piping:

1. Support at sufficiently close intervals to maintain alignment and prevent sagging.

2. Install hangers at ends of runs or branches and at each change of direction or alignment.

3. Support spacing shall not exceed the manufacturer's recommendations, nor 5 feet for pipe 4 inches in diameter and smaller or 10 feet for pipe larger than 4 inches in diameter, or as shown on the Drawings.

I. Support at Equipment: Install to not induce strain on equipment during or subsequent to the installation of pipe work.

3.02 FLANGED PIPE INSTALLATION

A. Tighten flange bolts so that gasket is uniformly compressed and sealed.

B. Do not distort flanges.

C. Leave flange bolts with ends projecting 1/8 to 3/8 inch beyond the face of nut after tightening.

3.03 THREADED JOINT INSTALLATION

A. Threads: ANSI B2.1, NPT.

B. Cut threads full and clean with sharp dies.

C. Ream ends of pipe after threading and before assembly to remove burrs.

D. Leave not more than three pipe threads exposed at each connection.

E. Joint Sealer: Teflon thread tape.

3.04 PVC PIPE INSTALLATION

A. Cutting:

1. Cut pipe with a knife or handsaw.

2. Make cuts square with pipe.

3. Remove burrs by smoothing edges with a knife, file, or sandpaper.

B. Solvent Joints:

1. Clean joint surfaces and apply manufacturer-recommended primer.

2. Coat with solvent cement and join.

3. Hold joint together until cement takes hold.

4. Use sufficient cement so that a bead of cement is formed between pipe and fitting at socket entrance.

C. Threaded Joints: Tighten by strap wrench to not more than one full turn beyond hand tight.

3.05 LEAKAGE TESTING

A. Perform leakage testing on all piping systems in accordance with Section 33 08 00, “Piping Leakage Testing.”

3.06 PIPE PAINTING

A. Paint all exposed, embedded, and submerged piping in accordance with Section 09 06 90, “Equipment and Piping Painting.”

(PIPE DATA SHEETS FOLLOW)

DATA SHEET 33 34 00-DS1
Ductile Iron Pipe and Fittings

Pipe	Buried Liquid Service Using Push-On, Mechanical, or Proprietary Restrained Joints	AWWA C110/A21.10, and AWWA C151/A21.51, pressure class conforming to Tables 51.1 and 51.3 for Type 4 trench, 250 psi minimum working pressure.
	Exposed Pipe Using Grooved End and Flange Joints	AWWA C115/A21.15, and AWWA C151/A21.51, thickness Class 53 minimum conforming to Table 51.7, 250 psi minimum working pressure.
Lining	Ceramic Epoxy	Single thickness, Protecto 401 or approved equal.
Coating	Buried Piping	Asphaltic (bituminous) per AWWA C151/A21.51.
	Exposed, Embedded, and Submerged	Do not apply asphaltic coating. See Specification 09 06 90 for coating system.
Fittings		Lined and coated same as pipe.
	Push-On	Shall conform to AWWA C110/A21.10. 250 psi minimum working pressure. American Cast Iron Pipe Co., Fastite Joint. U.S. Pipe and Foundry, Tyton Joint.
	Mechanical	AWWA C110/A21.10, C111/A21.11, and C153/A21.53, gray or ductile iron, 250 psi minimum working pressure.
	Proprietary Restrained	AWWA C111/A21.11 and C153/A21.53, ductile iron, 250 psi minimum working pressure. Clow Corp., Super-Lock Joint. American Cast Iron Pipe Co., Flex-Ring or Lok-Ring Joint. U.S. Pipe, TR Flex.
	Grooved End (8” and smaller)	AWWA C606 and C110/A21.10, ductile iron, 250 psi minimum working pressure. Victaulic.
	Flange	AWWA C110/A21.10, ductile iron, faced and drilled, 125-pound flat face; or ANSI B16.1, 250-pound raised face. Gray cast iron will not be allowed.
Joints	Push-On	250 psi minimum working pressure, AWWA C110/A21.10 and C111/A21.11. American Cast Iron Pipe Co., Fastite Joint. U.S. Pipe and Foundry, Tyton Joint.
	Mechanical	250 psi minimum working pressure. EBAA, MEGALUG®
	Proprietary Restrained	150 psi minimum working pressure. Clow Corp., Super-Lock. American Cast Iron Pipe Co., Flex-Ring or Lok-Ring. U.S. Pipe, TR Flex.
	Grooved End (8” and smaller)	Rigid type radius cut conforming to AWWA C606, 250 psi minimum working pressure. Victaulic.
	Flange	125-pound flat face or 250-pound raised face, ductile iron, threaded conforming to AWWA C115/A21.15. Gray cast iron will not be allowed.

(Data Sheet Continues)

DATA SHEET 33 34 00-DS1
Ductile Iron Pipe and Fittings (Continued)

Couplings	Grooved End (8-inch and smaller)	250 psi minimum working pressure, malleable iron per ASTM A47 or ductile iron per ASTM A536. Victaulic.
	Grooved Flanged Adapter	250 psi minimum working pressure, malleable iron per ASTM A47 or ductile iron per ASTM A536. Victaulic.
Bolting	Above grade	AISI Type 304 Stainless Steel.
	Wet Well, Vault, Below Grade, or Submerged Flanges	AISI Type 316 Stainless Steel
Gaskets	Push-On, Mechanical, and Proprietary Restrained Joints	EPDM conforming to AWWA C111/A21.11.
	Grooved End Joints	Halogenated butyl conforming to ASTM D2000 and AWWA C606.
	Flanged, Water and Sewage Service	1/8 inch thick, EPDM, rated to 200 degrees F, conforming to ANSI B16.21, AWWA C207, and ASTM D1330, Grades 1 and 2.
		Full face for 125-pound flat-faced flanges, flat-ring type for 250-pound raised-face flanges. Blind flanges shall be gasketed covering the entire inside face with the gasket cemented to the blind flange.
		Gasket pressure rating shall exceed the system hydrostatic test pressure.
Joint Lubricant		Manufacturer's standard.

DATA SHEET 33 34 00-DS2
Polyvinyl Chloride (PVC) Pipe and Fittings

Pipe	All	Schedule 80 PVC (unless indicated otherwise): Cell class of 12454 and conforming to ASTM D1785 and D2467.
Fittings	All	As Specified Under Pipe Above: ASTM D1785 and D2467.
Joints	All	Solvent socket-weld except where connection to valves and equipment may require future disassembly.
Gaskets	All	1/8-inch-thick Viton or EPDM and shall conform to ASTM F477.
Solvent Cement	All	As recommended by the pipe and fitting manufacturer conforming to ASTM D2564.

END OF SECTION

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Appendix A

Washington State Prevailing Wage Rates for King County

State of Washington
Department of Labor & Industries

Prevailing Wage Section - Telephone 360-902-5335
PO Box 44540, Olympia, WA 98504-4540

Washington State Prevailing Wage

The PREVAILING WAGES listed here include both the hourly wage rate and the hourly rate of fringe benefits. On public works projects, worker's wage and benefit rates must add to not less than this total. A brief description of overtime calculation requirements are provided on the Benefit Code Key.

Journey Level Prevailing Wage Rates for the Effective Date: 04/24/2020

County	Trade	Job Classification	Wage	Holiday	Overtime	Note	*Risk Class
King	Asbestos Abatement Workers	Journey Level	$50.86	5D	1H		View
King	Boilermakers	Journey Level	$69.29	5N	1C		View
King	Brick Mason	Journey Level	$58.82	5A	1M		View
King	Brick Mason	Pointer-Caulker-Cleaner	$58.82	5A	1M		View
King	Building Service Employees	Janitor	$25.58	5S	2F		View
King	Building Service Employees	Traveling Waxer/Shampooer	$26.03	5S	2F		View
King	Building Service Employees	Window Cleaner (Non-Scaffold)	$29.33	5S	2F		View
King	Building Service Employees	Window Cleaner (Scaffold)	$30.33	5S	2F		View
King	Cabinet Makers (In Shop)	Journey Level	$22.74		1		View
King	Carpenters	Acoustical Worker	$62.44	7A	4C		View
King	Carpenters	Carpenter	$62.44	7A	4C		View
King	Carpenters	Carpenters on Stationary Tools	$62.57	7A	4C		View
King	Carpenters	Creosoted Material	$62.54	7A	4C		View
King	Carpenters	Floor Finisher	$62.44	7A	4C		View
King	Carpenters	Floor Layer	$62.44	7A	4C		View
King	Carpenters	Scaffold Erector	$62.44	7A	4C		View
King	Cement Masons	Application of all Composition Mastic	$62.97	7A	4U		View
King	Cement Masons	Application of all Epoxy Material	$62.47	7A	4U		View
King	Cement Masons	Application of all Plastic Material	$62.97	7A	4U		View
King	Cement Masons	Application of Sealing Compound	$62.47	7A	4U		View
King	Cement Masons	Application of Underlayment	$62.97	7A	4U		View
King	Cement Masons	Building General	$62.47	7A	4U		View
King	Cement Masons	Composition or Kalman Floors	$62.97	7A	4U		View
King	Cement Masons	Concrete Paving	$62.47	7A	4U		View
King	Cement Masons	Curb & Gutter Machine	$62.97	7A	4U		View
King	Cement Masons	Curb & Gutter, Sidewalks	$62.47	7A	4U		View
King	Cement Masons	Curing Concrete	$62.47	7A	4U		View

King	Cement Masons	Finish Colored Concrete	$62.97	7A	4U		View
King	Cement Masons	Floor Grinding	$62.97	7A	4U		View
King	Cement Masons	Floor Grinding/Polisher	$62.47	7A	4U		View
King	Cement Masons	Green Concrete Saw, self-powered	$62.97	7A	4U		View
King	Cement Masons	Grouting of all Plates	$62.47	7A	4U		View
King	Cement Masons	Grouting of all Tilt-up Panels	$62.47	7A	4U		View
King	Cement Masons	Gunite Nozzleman	$62.97	7A	4U		View
King	Cement Masons	Hand Powered Grinder	$62.97	7A	4U		View
King	Cement Masons	Journey Level	$62.47	7A	4U		View
King	Cement Masons	Patching Concrete	$62.47	7A	4U		View
King	Cement Masons	Pneumatic Power Tools	$62.97	7A	4U		View
King	Cement Masons	Power Chipping & Brushing	$62.97	7A	4U		View
King	Cement Masons	Sand Blasting Architectural Finish	$62.97	7A	4U		View
King	Cement Masons	Screed & Rodding Machine	$62.97	7A	4U		View
King	Cement Masons	Spackling or Skim Coat Concrete	$62.47	7A	4U		View
King	Cement Masons	Troweling Machine Operator	$62.97	7A	4U		View
King	Cement Masons	Troweling Machine Operator on Colored Slabs	$62.97	7A	4U		View
King	Cement Masons	Tunnel Workers	$62.97	7A	4U		View
King	Divers & Tenders	Bell/Vehicle or Submersible Operator (Not Under Pressure)	$116.20	7A	4C		View
King	Divers & Tenders	Dive Supervisor/Master	$79.23	7A	4C		View
King	Divers & Tenders	Diver	$116.20	7A	4C	8V	View
King	Divers & Tenders	Diver On Standby	$74.23	7A	4C		View
King	Divers & Tenders	Diver Tender	$67.31	7A	4C		View
King	Divers & Tenders	Manifold Operator	$67.31	7A	4C		View
King	Divers & Tenders	Manifold Operator Mixed Gas	$72.31	7A	4C		View
King	Divers & Tenders	Remote Operated Vehicle Operator/Technician	$67.31	7A	4C		View
King	Divers & Tenders	Remote Operated Vehicle Tender	$62.69	7A	4C		View
King	Dredge Workers	Assistant Engineer	$56.44	5D	3F		View
King	Dredge Workers	Assistant Mate (Deckhand)	$56.00	5D	3F		View
King	Dredge Workers	Boatmen	$56.44	5D	3F		View
King	Dredge Workers	Engineer Welder	$57.51	5D	3F		View
King	Dredge Workers	Leverman, Hydraulic	$58.67	5D	3F		View
King	Dredge Workers	Mates	$56.44	5D	3F		View
King	Dredge Workers	Oiler	$56.00	5D	3F		View
King	Drywall Applicator	Journey Level	$62.44	5D	1H		View
King	Drywall Tapers	Journey Level	$62.81	5P	1E		View
King	Electrical Fixture Maintenance Workers	Journey Level	$31.99	5L	1E		View
King	Electricians - Inside	Cable Splicer	$87.22	7C	4E		View
King	Electricians - Inside	Cable Splicer (tunnel)	$93.74	7C	4E		View
King	Electricians - Inside	Certified Welder	$84.26	7C	4E		View

King	Electricians - Inside	Certified Welder (tunnel)	$90.47	7C	4E		View
King	Electricians - Inside	Construction Stock Person	$43.18	7C	4E		View
King	Electricians - Inside	Journey Level	$81.30	7C	4E		View
King	Electricians - Inside	Journey Level (tunnel)	$87.22	7C	4E		View
King	Electricians - Motor Shop	Journey Level	$47.53	5A	1B		View
King	Electricians - Powerline Construction	Cable Splicer	$82.39	5A	4D		View
King	Electricians - Powerline Construction	Certified Line Welder	$75.64	5A	4D		View
King	Electricians - Powerline Construction	Groundperson	$49.17	5A	4D		View
King	Electricians - Powerline Construction	Heavy Line Equipment Operator	$75.64	5A	4D		View
King	Electricians - Powerline Construction	Journey Level Lineperson	$75.64	5A	4D		View
King	Electricians - Powerline Construction	Line Equipment Operator	$64.54	5A	4D		View
King	Electricians - Powerline Construction	Meter Installer	$49.17	5A	4D	8W	View
King	Electricians - Powerline Construction	Pole Sprayer	$75.64	5A	4D		View
King	Electricians - Powerline Construction	Powderperson	$56.49	5A	4D		View
King	Electronic Technicians	Journey Level	$53.57	7E	1E		View
King	Elevator Constructors	Mechanic	$97.31	7D	4A		View
King	Elevator Constructors	Mechanic In Charge	$105.06	7D	4A		View
King	Fabricated Precast Concrete Products	All Classifications - In-Factory Work Only	$18.25	5B	1R		View
King	Fence Erectors	Fence Erector	$43.11	7A	4V	8Y	View
King	Fence Erectors	Fence Laborer	$43.11	7A	4V	8Y	View
King	Flaggers	Journey Level	$43.11	7A	4V	8Y	View
King	Glaziers	Journey Level	$66.51	7L	1Y		View
King	Heat & Frost Insulators And Asbestos Workers	Journeyman	$76.61	5J	4H		View
King	Heating Equipment Mechanics	Journey Level	$85.88	7F	1E		View
King	Hod Carriers & Mason Tenders	Journey Level	$52.44	7A	4V	8Y	View
King	Industrial Power Vacuum Cleaner	Journey Level	$13.50		1		View
King	Inland Boatmen	Boat Operator	$61.41	5B	1K		View
King	Inland Boatmen	Cook	$56.48	5B	1K		View
King	Inland Boatmen	Deckhand	$57.48	5B	1K		View
King	Inland Boatmen	Deckhand Engineer	$58.81	5B	1K		View
King	Inland Boatmen	Launch Operator	$58.89	5B	1K		View
King	Inland Boatmen	Mate	$57.31	5B	1K		View
King	Inspection/Cleaning/Sealing Of Sewer & Water Systems By Remote Control	Cleaner Operator, Foamer Operator	$31.49		1		View
King	Inspection/Cleaning/Sealing Of Sewer & Water Systems By Remote Control	Grout Truck Operator	$13.50		1		View

King	Inspection/Cleaning/Sealing Of Sewer & Water Systems By Remote Control	Head Operator	$24.91		1		View
King	Inspection/Cleaning/Sealing Of Sewer & Water Systems By Remote Control	Technician	$19.33		1		View
King	Inspection/Cleaning/Sealing Of Sewer & Water Systems By Remote Control	Tv Truck Operator	$20.45		1		View
King	Insulation Applicators	Journey Level	$62.44	7A	4C		View
King	Ironworkers	Journeyman	$73.73	7N	1O		View
King	Laborers	Air, Gas Or Electric Vibrating Screed	$50.86	7A	4V	8Y	View
King	Laborers	Airtrac Drill Operator	$52.44	7A	4V	8Y	View
King	Laborers	Ballast Regular Machine	$50.86	7A	4V	8Y	View
King	Laborers	Batch Weighman	$43.11	7A	4V	8Y	View
King	Laborers	Brick Pavers	$50.86	7A	4V	8Y	View
King	Laborers	Brush Cutter	$50.86	7A	4V	8Y	View
King	Laborers	Brush Hog Feeder	$50.86	7A	4V	8Y	View
King	Laborers	Burner	$50.86	7A	4V	8Y	View
King	Laborers	Caisson Worker	$52.44	7A	4V	8Y	View
King	Laborers	Carpenter Tender	$50.86	7A	4V	8Y	View
King	Laborers	Cement Dumper-paving	$51.80	7A	4V	8Y	View
King	Laborers	Cement Finisher Tender	$50.86	7A	4V	8Y	View
King	Laborers	Change House Or Dry Shack	$50.86	7A	4V	8Y	View
King	Laborers	Chipping Gun (30 Lbs. And Over)	$51.80	7A	4V	8Y	View
King	Laborers	Chipping Gun (Under 30 Lbs.)	$50.86	7A	4V	8Y	View
King	Laborers	Choker Setter	$50.86	7A	4V	8Y	View
King	Laborers	Chuck Tender	$50.86	7A	4V	8Y	View
King	Laborers	Clary Power Spreader	$51.80	7A	4V	8Y	View
King	Laborers	Clean-up Laborer	$50.86	7A	4V	8Y	View
King	Laborers	Concrete Dumper/Chute Operator	$51.80	7A	4V	8Y	View
King	Laborers	Concrete Form Stripper	$50.86	7A	4V	8Y	View
King	Laborers	Concrete Placement Crew	$51.80	7A	4V	8Y	View
King	Laborers	Concrete Saw Operator/Core Driller	$51.80	7A	4V	8Y	View
King	Laborers	Crusher Feeder	$43.11	7A	4V	8Y	View
King	Laborers	Curing Laborer	$50.86	7A	4V	8Y	View
King	Laborers	Demolition: Wrecking & Moving (Incl. Charred Material)	$50.86	7A	4V	8Y	View
King	Laborers	Ditch Digger	$50.86	7A	4V	8Y	View
King	Laborers	Diver	$52.44	7A	4V	8Y	View
King	Laborers	Drill Operator (Hydraulic, Diamond)	$51.80	7A	4V	8Y	View
King	Laborers	Dry Stack Walls	$50.86	7A	4V	8Y	View
King	Laborers	Dump Person	$50.86	7A	4V	8Y	View
King	Laborers	Epoxy Technician	$50.86	7A	4V	8Y	View

King	Laborers	Erosion Control Worker	$50.86	7A	4V	8Y	View
King	Laborers	Faller & Bucker Chain Saw	$51.80	7A	4V	8Y	View
King	Laborers	Fine Graders	$50.86	7A	4V	8Y	View
King	Laborers	Firewatch	$43.11	7A	4V	8Y	View
King	Laborers	Form Setter	$50.86	7A	4V	8Y	View
King	Laborers	Gabian Basket Builders	$50.86	7A	4V	8Y	View
King	Laborers	General Laborer	$50.86	7A	4V	8Y	View
King	Laborers	Grade Checker & Transit Person	$52.44	7A	4V	8Y	View
King	Laborers	Grinders	$50.86	7A	4V	8Y	View
King	Laborers	Grout Machine Tender	$50.86	7A	4V	8Y	View
King	Laborers	Groutmen (Pressure) Including Post Tension Beams	$51.80	7A	4V	8Y	View
King	Laborers	Guardrail Erector	$50.86	7A	4V	8Y	View
King	Laborers	Hazardous Waste Worker (Level A)	$52.44	7A	4V	8Y	View
King	Laborers	Hazardous Waste Worker (Level B)	$51.80	7A	4V	8Y	View
King	Laborers	Hazardous Waste Worker (Level C)	$50.86	7A	4V	8Y	View
King	Laborers	High Scaler	$52.44	7A	4V	8Y	View
King	Laborers	Jackhammer	$51.80	7A	4V	8Y	View
King	Laborers	Laserbeam Operator	$51.80	7A	4V	8Y	View
King	Laborers	Maintenance Person	$50.86	7A	4V	8Y	View
King	Laborers	Manhole Builder-Mudman	$51.80	7A	4V	8Y	View
King	Laborers	Material Yard Person	$50.86	7A	4V	8Y	View
King	Laborers	Motorman-Dinky Locomotive	$51.80	7A	4V	8Y	View
King	Laborers	Nozzleman (Concrete Pump, Green Cutter When Using Combination Of High Pressure Air & Water On Concrete & Rock, Sandblast, Gunite, Shotcrete, Water Blaster, Vacuum Blaster)	$51.80	7A	4V	8Y	View
King	Laborers	Pavement Breaker	$51.80	7A	4V	8Y	View
King	Laborers	Pilot Car	$43.11	7A	4V	8Y	View
King	Laborers	Pipe Layer Lead	$52.44	7A	4V	8Y	View
King	Laborers	Pipe Layer/Tailor	$51.80	7A	4V	8Y	View
King	Laborers	Pipe Pot Tender	$51.80	7A	4V	8Y	View
King	Laborers	Pipe Reliner	$51.80	7A	4V	8Y	View
King	Laborers	Pipe Wrapper	$51.80	7A	4V	8Y	View
King	Laborers	Pot Tender	$50.86	7A	4V	8Y	View
King	Laborers	Powderman	$52.44	7A	4V	8Y	View
King	Laborers	Powderman's Helper	$50.86	7A	4V	8Y	View
King	Laborers	Power Jacks	$51.80	7A	4V	8Y	View
King	Laborers	Railroad Spike Puller - Power	$51.80	7A	4V	8Y	View
King	Laborers	Raker - Asphalt	$52.44	7A	4V	8Y	View
King	Laborers	Re-timberman	$52.44	7A	4V	8Y	View
King	Laborers	Remote Equipment Operator	$51.80	7A	4V	8Y	View
King	Laborers	Rigger/Signal Person	$51.80	7A	4V	8Y	View

King	Laborers	Rip Rap Person	$50.86	7A	4V	8Y	View
King	Laborers	Rivet Buster	$51.80	7A	4V	8Y	View
King	Laborers	Rodder	$51.80	7A	4V	8Y	View
King	Laborers	Scaffold Erector	$50.86	7A	4V	8Y	View
King	Laborers	Scale Person	$50.86	7A	4V	8Y	View
King	Laborers	Sloper (Over 20")	$51.80	7A	4V	8Y	View
King	Laborers	Sloper Sprayer	$50.86	7A	4V	8Y	View
King	Laborers	Spreader (Concrete)	$51.80	7A	4V	8Y	View
King	Laborers	Stake Hopper	$50.86	7A	4V	8Y	View
King	Laborers	Stock Piler	$50.86	7A	4V	8Y	View
King	Laborers	Swinging Stage/Boatswain Chair	$43.11	7A	4V	8Y	View
King	Laborers	Tamper & Similar Electric, Air & Gas Operated Tools	$51.80	7A	4V	8Y	View
King	Laborers	Tamper (Multiple & Self-propelled)	$51.80	7A	4V	8Y	View
King	Laborers	Timber Person - Sewer (Lagger, Shorer & Cribber)	$51.80	7A	4V	8Y	View
King	Laborers	Toolroom Person (at Jobsite)	$50.86	7A	4V	8Y	View
King	Laborers	Topper	$50.86	7A	4V	8Y	View
King	Laborers	Track Laborer	$50.86	7A	4V	8Y	View
King	Laborers	Track Liner (Power)	$51.80	7A	4V	8Y	View
King	Laborers	Traffic Control Laborer	$46.10	7A	4V	9C	View
King	Laborers	Traffic Control Supervisor	$46.10	7A	4V	9C	View
King	Laborers	Truck Spotter	$50.86	7A	4V	8Y	View
King	Laborers	Tugger Operator	$51.80	7A	4V	8Y	View
King	Laborers	Tunnel Work-Compressed Air Worker 0-30 psi	$120.61	7A	4V	9B	View
King	Laborers	Tunnel Work-Compressed Air Worker 30.01-44.00 psi	$125.64	7A	4V	9B	View
King	Laborers	Tunnel Work-Compressed Air Worker 44.01-54.00 psi	$129.32	7A	4V	9B	View
King	Laborers	Tunnel Work-Compressed Air Worker 54.01-60.00 psi	$135.02	7A	4V	9B	View
King	Laborers	Tunnel Work-Compressed Air Worker 60.01-64.00 psi	$137.14	7A	4V	9B	View
King	Laborers	Tunnel Work-Compressed Air Worker 64.01-68.00 psi	$142.24	7A	4V	9B	View
King	Laborers	Tunnel Work-Compressed Air Worker 68.01-70.00 psi	$144.14	7A	4V	9B	View
King	Laborers	Tunnel Work-Compressed Air Worker 70.01-72.00 psi	$146.14	7A	4V	9B	View
King	Laborers	Tunnel Work-Compressed Air Worker 72.01-74.00 psi	$148.14	7A	4V	9B	View
King	Laborers	Tunnel Work-Guage and Lock Tender	$52.54	7A	4V	8Y	View
King	Laborers	Tunnel Work-Miner	$52.54	7A	4V	8Y	View
King	Laborers	Vibrator	$51.80	7A	4V	8Y	View
King	Laborers	Vinyl Seamer	$50.86	7A	4V	8Y	View
King	Laborers	Watchman	$39.18	7A	4V	8Y	View

King	Laborers	Welder	$51.80	7A	4V	8Y	View
King	Laborers	Well Point Laborer	$51.80	7A	4V	8Y	View
King	Laborers	Window Washer/Cleaner	$39.18	7A	4V	8Y	View
King	Laborers - Underground Sewer & Water	General Laborer & Topman	$50.86	7A	4V	8Y	View
King	Laborers - Underground Sewer & Water	Pipe Layer	$51.80	7A	4V	8Y	View
King	Landscape Construction	Landscape Construction/Landscaping Or Planting Laborers	$39.18	7A	4V	8Y	View
King	Landscape Construction	Landscape Operator	$68.02	7A	3K	8X	View
King	Landscape Maintenance	Groundskeeper	$17.87		1		View
King	Lathers	Journey Level	$62.44	5D	1H		View
King	Marble Setters	Journey Level	$58.82	5A	1M		View
King	Metal Fabrication (In Shop)	Fitter	$15.86		1		View
King	Metal Fabrication (In Shop)	Laborer	$13.50		1		View
King	Metal Fabrication (In Shop)	Machine Operator	$13.50		1		View
King	Metal Fabrication (In Shop)	Painter	$13.50		1		View
King	Metal Fabrication (In Shop)	Welder	$15.48		1		View
King	Millwright	Journey Level	$63.94	7A	4C		View
King	Modular Buildings	Cabinet Assembly	$13.50		1		View
King	Modular Buildings	Electrician	$13.50		1		View
King	Modular Buildings	Equipment Maintenance	$13.50		1		View
King	Modular Buildings	Plumber	$13.50		1		View
King	Modular Buildings	Production Worker	$13.50		1		View
King	Modular Buildings	Tool Maintenance	$13.50		1		View
King	Modular Buildings	Utility Person	$13.50		1		View
King	Modular Buildings	Welder	$13.50		1		View
King	Painters	Journey Level	$43.40	6Z	2B		View
King	Pile Driver	Crew Tender	$67.31	7A	4C		View
King	Pile Driver	Crew Tender/Technician	$67.31	7A	4C		View
King	Pile Driver	Hyperbaric Worker - Compressed Air Worker 0-30.00 PSI	$77.93	7A	4C		View
King	Pile Driver	Hyperbaric Worker - Compressed Air Worker 30.01 - 44.00 PSI	$82.93	7A	4C		View
King	Pile Driver	Hyperbaric Worker - Compressed Air Worker 44.01 - 54.00 PSI	$86.93	7A	4C		View
King	Pile Driver	Hyperbaric Worker - Compressed Air Worker 54.01 - 60.00 PSI	$91.93	7A	4C		View
King	Pile Driver	Hyperbaric Worker - Compressed Air Worker 60.01 - 64.00 PSI	$94.43	7A	4C		View
King	Pile Driver	Hyperbaric Worker - Compressed Air Worker 64.01 - 68.00 PSI	$99.43	7A	4C		View
King	Pile Driver	Hyperbaric Worker -	$101.43	7A	4C		View

		Compressed Air Worker 68.01 - 70.00 PSI					
King	Pile Driver	Hyperbaric Worker - Compressed Air Worker 70.01 - 72.00 PSI	$103.43	7A	4C		View
King	Pile Driver	Hyperbaric Worker - Compressed Air Worker 72.01 - 74.00 PSI	$105.43	7A	4C		View
King	Pile Driver	Journey Level	$62.69	7A	4C		View
King	Plasterers	Journey Level	$59.42	7Q	1R		View
King	Playground & Park Equipment Installers	Journey Level	$13.50		1		View
King	Plumbers & Pipefitters	Journey Level	$89.19	6Z	1G		View
King	Power Equipment Operators	Asphalt Plant Operators	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Assistant Engineer	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Barrier Machine (zipper)	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Batch Plant Operator: concrete	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Bobcat	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Brokk - Remote Demolition Equipment	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Brooms	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Bump Cutter	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Cableways	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Chipper	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Compressor	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Concrete Finish Machine - Laser Screed	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Concrete Pump - Mounted Or Trailer High Pressure Line Pump, Pump High Pressure	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Concrete Pump: Truck Mount With Boom Attachment Over 42 M	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Concrete Pump: Truck Mount With Boom Attachment Up To 42m	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Conveyors	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Cranes friction: 200 tons and over	$71.26	7A	3K	8X	View
King	Power Equipment Operators	Cranes: 100 tons through 199 tons, or 150' of boom (including jib with attachments)	$69.85	7A	3K	8X	View
King	Power Equipment Operators	Cranes: 20 Tons Through 44 Tons With Attachments	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Cranes: 200 tons- 299 tons, or 250' of boom including jib with attachments	$70.57	7A	3K	8X	View
King	Power Equipment Operators	Cranes: 300 tons and over or 300' of boom including jib with attachments	$71.26	7A	3K	8X	View
King	Power Equipment Operators	Cranes: 45 Tons Through 99	$69.16	7A	3K	8X	View

		Tons, Under 150' Of Boom (including Jib With Attachments)					
King	Power Equipment Operators	Cranes: A-frame - 10 Tons And Under	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Cranes: Friction cranes through 199 tons	$70.57	7A	3K	8X	View
King	Power Equipment Operators	Cranes: through 19 tons with attachments, A-frame over 10 tons	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Crusher	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Deck Engineer/Deck Winches (power)	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Derricks, On Building Work	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Dozers D-9 & Under	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Drill Oilers: Auger Type, Truck Or Crane Mount	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Drilling Machine	$69.85	7A	3K	8X	View
King	Power Equipment Operators	Elevator And Man-lift: Permanent And Shaft Type	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Finishing Machine, Bidwell And Gamaco & Similar Equipment	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Forklift: 3000 Lbs And Over With Attachments	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Forklifts: Under 3000 Lbs. With Attachments	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Grade Engineer: Using Blue Prints, Cut Sheets, Etc	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Gradechecker/Stakeman	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Guardrail Punch	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Hard Tail End Dump Articulating Off- Road Equipment 45 Yards. & Over	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Hard Tail End Dump Articulating Off-road Equipment Under 45 Yards	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Horizontal/Directional Drill Locator	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Horizontal/Directional Drill Operator	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Hydralifts/Boom Trucks Over 10 Tons	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Hydralifts/Boom Trucks, 10 Tons And Under	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Loader, Overhead 8 Yards. & Over	$69.85	7A	3K	8X	View
King	Power Equipment Operators	Loader, Overhead, 6 Yards. But Not Including 8 Yards	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Loaders, Overhead Under 6 Yards	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Loaders, Plant Feed	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Loaders: Elevating Type Belt	$68.02	7A	3K	8X	View

King	Power Equipment Operators	Locomotives, All	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Material Transfer Device	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Mechanics, All (leadmen - $0.50 Per Hour Over Mechanic)	$69.85	7A	3K	8X	View
King	Power Equipment Operators	Motor Patrol Graders	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Mucking Machine, Mole, Tunnel Drill, Boring, Road Header And/or Shield	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Oil Distributors, Blower Distribution & Mulch Seeding Operator	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Outside Hoists (Elevators And Manlifts), Air Tuggers, Strato	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Overhead, Bridge Type Crane: 20 Tons Through 44 Tons	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Overhead, Bridge Type: 100 Tons And Over	$69.85	7A	3K	8X	View
King	Power Equipment Operators	Overhead, Bridge Type: 45 Tons Through 99 Tons	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Pavement Breaker	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Pile Driver (other Than Crane Mount)	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Plant Oiler - Asphalt, Crusher	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Posthole Digger, Mechanical	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Power Plant	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Pumps - Water	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Quad 9, Hd 41, D10 And Over	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Quick Tower - No Cab, Under 100 Feet In Height Based To Boom	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Remote Control Operator On Rubber Tired Earth Moving Equipment	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Rigger and Bellman	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Rigger/Signal Person, Bellman (Certified)	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Rollagon	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Roller, Other Than Plant Mix	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Roller, Plant Mix Or Multi-lift Materials	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Roto-mill, Roto-grinder	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Saws - Concrete	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Scraper, Self Propelled Under 45 Yards	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Scrapers - Concrete & Carry All	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Scrapers, Self-propelled: 45 Yards And Over	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Service Engineers - Equipment	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Shotcrete/Gunite Equipment	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Shovel, Excavator, Backhoe, Tractors Under 15 Metric Tons	$68.02	7A	3K	8X	View

King	Power Equipment Operators	Shovel, Excavator, Backhoe: Over 30 Metric Tons To 50 Metric Tons	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Shovel, Excavator, Backhoes, Tractors: 15 To 30 Metric Tons	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Shovel, Excavator, Backhoes: Over 50 Metric Tons To 90 Metric Tons	$69.85	7A	3K	8X	View
King	Power Equipment Operators	Shovel, Excavator, Backhoes: Over 90 Metric Tons	$70.57	7A	3K	8X	View
King	Power Equipment Operators	Slipform Pavers	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Spreader, Topsider & Screedman	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Subgrader Trimmer	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Tower Bucket Elevators	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Tower Crane Up To 175' In Height Base To Boom	$69.85	7A	3K	8X	View
King	Power Equipment Operators	Tower Crane: over 175’ through 250’ in height, base to boom	$70.57	7A	3K	8X	View
King	Power Equipment Operators	Tower Cranes: over 250' in height from base to boom	$71.26	7A	3K	8X	View
King	Power Equipment Operators	Transporters, All Track Or Truck Type	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Trenching Machines	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Truck Crane Oiler/driver - 100 Tons And Over	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Truck Crane Oiler/Driver Under 100 Tons	$68.02	7A	3K	8X	View
King	Power Equipment Operators	Truck Mount Portable Conveyor	$68.55	7A	3K	8X	View
King	Power Equipment Operators	Welder	$69.16	7A	3K	8X	View
King	Power Equipment Operators	Wheel Tractors, Farmall Type	$65.05	7A	3K	8X	View
King	Power Equipment Operators	Yo Yo Pay Dozer	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Asphalt Plant Operators	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Assistant Engineer	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Barrier Machine (zipper)	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Batch Plant Operator, Concrete	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Bobcat	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Brokk - Remote Demolition Equipment	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Brooms	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Bump Cutter	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Cableways	$69.16	7A	3K	8X	View
King	Power Equipment Operators-	Chipper	$68.55	7A	3K	8X	View

	Underground Sewer & Water						
King	Power Equipment Operators-Underground Sewer & Water	Compressor	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Concrete Finish Machine - Laser Screed	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Concrete Pump - Mounted Or Trailer High Pressure Line Pump, Pump High Pressure	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Concrete Pump: Truck Mount With Boom Attachment Over 42 M	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Concrete Pump: Truck Mount With Boom Attachment Up To 42m	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Conveyors	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Cranes friction: 200 tons and over	$71.26	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Cranes: 100 tons through 199 tons, or 150' of boom (including jib with attachments)	$69.85	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Cranes: 20 Tons Through 44 Tons With Attachments	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Cranes: 200 tons- 299 tons, or 250' of boom including jib with attachments	$70.57	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Cranes: 300 tons and over or 300' of boom including jib with attachments	$71.26	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Cranes: 45 Tons Through 99 Tons, Under 150' Of Boom (including Jib With Attachments)	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Cranes: A-frame - 10 Tons And Under	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Cranes: Friction cranes through 199 tons	$70.57	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Cranes: through 19 tons with attachments, A-frame over 10 tons	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Crusher	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Deck Engineer/Deck Winches (power)	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Derricks, On Building Work	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Dozers D-9 & Under	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Drill Oilers: Auger Type, Truck Or Crane Mount	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Drilling Machine	$69.85	7A	3K	8X	View
King	Power Equipment Operators-	Elevator And Man-lift:	$65.05	7A	3K	8X	View

	Underground Sewer & Water	Permanent And Shaft Type					
King	Power Equipment Operators-Underground Sewer & Water	Finishing Machine, Bidwell And Gamaco & Similar Equipment	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Forklift: 3000 Lbs And Over With Attachments	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Forklifts: Under 3000 Lbs. With Attachments	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Grade Engineer: Using Blue Prints, Cut Sheets, Etc	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Gradechecker/Stakeman	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Guardrail Punch	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Hard Tail End Dump Articulating Off- Road Equipment 45 Yards. & Over	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Hard Tail End Dump Articulating Off-road Equipment Under 45 Yards	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Horizontal/Directional Drill Locator	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Horizontal/Directional Drill Operator	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Hydralifts/Boom Trucks Over 10 Tons	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Hydralifts/Boom Trucks, 10 Tons And Under	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Loader, Overhead 8 Yards. & Over	$69.85	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Loader, Overhead, 6 Yards. But Not Including 8 Yards	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Loaders, Overhead Under 6 Yards	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Loaders, Plant Feed	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Loaders: Elevating Type Belt	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Locomotives, All	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Material Transfer Device	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Mechanics, All (leadmen - $0.50 Per Hour Over Mechanic)	$69.85	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Motor Patrol Graders	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Mucking Machine, Mole, Tunnel Drill, Boring, Road Header And/or Shield	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Oil Distributors, Blower Distribution & Mulch Seeding Operator	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Outside Hoists (Elevators And Manlifts), Air Tuggers, Strato	$68.02	7A	3K	8X	View

King	Power Equipment Operators-Underground Sewer & Water	Overhead, Bridge Type Crane: 20 Tons Through 44 Tons	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Overhead, Bridge Type: 100 Tons And Over	$69.85	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Overhead, Bridge Type: 45 Tons Through 99 Tons	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Pavement Breaker	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Pile Driver (other Than Crane Mount)	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Plant Oiler - Asphalt, Crusher	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Posthole Digger, Mechanical	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Power Plant	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Pumps - Water	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Quad 9, Hd 41, D10 And Over	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Quick Tower - No Cab, Under 100 Feet In Height Based To Boom	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Remote Control Operator On Rubber Tired Earth Moving Equipment	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Rigger and Bellman	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Rigger/Signal Person, Bellman (Certified)	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Rollagon	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Roller, Other Than Plant Mix	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Roller, Plant Mix Or Multi-lift Materials	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Roto-mill, Roto-grinder	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Saws - Concrete	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Scraper, Self Propelled Under 45 Yards	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Scrapers - Concrete & Carry All	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Scrapers, Self-propelled: 45 Yards And Over	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Service Engineers - Equipment	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Shotcrete/Gunite Equipment	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Shovel, Excavator, Backhoe, Tractors Under 15 Metric Tons	$68.02	7A	3K	8X	View
King	Power Equipment Operators-	Shovel, Excavator, Backhoe:	$69.16	7A	3K	8X	View

	Underground Sewer & Water	Over 30 Metric Tons To 50 Metric Tons					
King	Power Equipment Operators-Underground Sewer & Water	Shovel, Excavator, Backhoes, Tractors: 15 To 30 Metric Tons	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Shovel, Excavator, Backhoes: Over 50 Metric Tons To 90 Metric Tons	$69.85	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Shovel, Excavator, Backhoes: Over 90 Metric Tons	$70.57	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Slipform Pavers	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Spreader, Topsider & Screedman	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Subgrader Trimmer	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Tower Bucket Elevators	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Tower Crane Up To 175' In Height Base To Boom	$69.85	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Tower Crane: over 175’ through 250’ in height, base to boom	$70.57	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Tower Cranes: over 250' in height from base to boom	$71.26	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Transporters, All Track Or Truck Type	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Trenching Machines	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Truck Crane Oiler/driver - 100 Tons And Over	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Truck Crane Oiler/Driver Under 100 Tons	$68.02	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Truck Mount Portable Conveyor	$68.55	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Welder	$69.16	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Wheel Tractors, Farmall Type	$65.05	7A	3K	8X	View
King	Power Equipment Operators-Underground Sewer & Water	Yo Yo Pay Dozer	$68.55	7A	3K	8X	View
King	Power Line Clearance Tree Trimmers	Journey Level In Charge	$53.10	5A	4A		View
King	Power Line Clearance Tree Trimmers	Spray Person	$50.40	5A	4A		View
King	Power Line Clearance Tree Trimmers	Tree Equipment Operator	$53.10	5A	4A		View
King	Power Line Clearance Tree Trimmers	Tree Trimmer	$47.48	5A	4A		View
King	Power Line Clearance Tree Trimmers	Tree Trimmer Groundperson	$36.10	5A	4A		View
King	Refrigeration & Air Conditioning Mechanics	Journey Level	$84.01	6Z	1G		View
King	Residential Brick Mason	Journey Level	$58.82	5A	1M		View

King	Residential Carpenters	Journey Level	$32.06		1		View
King	Residential Cement Masons	Journey Level	$29.25		1		View
King	Residential Drywall Applicators	Journey Level	$46.43	7A	4C		View
King	Residential Drywall Tapers	Journey Level	$47.04	5P	1E		View
King	Residential Electricians	Journey Level	$36.01		1		View
King	Residential Glaziers	Journey Level	$45.90	7L	1H		View
King	Residential Insulation Applicators	Journey Level	$29.87		1		View
King	Residential Laborers	Journey Level	$26.18		1		View
King	Residential Marble Setters	Journey Level	$27.38		1		View
King	Residential Painters	Journey Level	$27.80		1		View
King	Residential Plumbers & Pipefitters	Journey Level	$39.43		1		View
King	Residential Refrigeration & Air Conditioning Mechanics	Journey Level	$54.12	5A	1G		View
King	Residential Sheet Metal Workers	Journey Level (Field or Shop)	$51.89	7F	1R		View
King	Residential Soft Floor Layers	Journey Level	$51.07	5A	3J		View
King	Residential Sprinkler Fitters (Fire Protection)	Journey Level	$50.89	5C	2R		View
King	Residential Stone Masons	Journey Level	$58.82	5A	1M		View
King	Residential Terrazzo Workers	Journey Level	$54.06	5A	1M		View
King	Residential Terrazzo/Tile Finishers	Journey Level	$24.39		1		View
King	Residential Tile Setters	Journey Level	$21.04		1		View
King	Roofers	Journey Level	$55.02	5A	3H		View
King	Roofers	Using Irritable Bituminous Materials	$58.02	5A	3H		View
King	Sheet Metal Workers	Journey Level (Field or Shop)	$85.88	7F	1E		View
King	Shipbuilding & Ship Repair	New Construction Boilermaker	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Carpenter	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Crane Operator	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Electrician	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Heat & Frost Insulator	$76.61	5J	4H		View
King	Shipbuilding & Ship Repair	New Construction Laborer	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Machinist	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Operating Engineer	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Painter	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Pipefitter	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Rigger	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Sheet Metal	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Shipfitter	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Warehouse/Teamster	$36.36	7V	1		View
King	Shipbuilding & Ship Repair	New Construction Welder / Burner	$36.36	7V	1		View

King	Shipbuilding & Ship Repair	Ship Repair Boilermaker	$46.15	7X	4J		View
King	Shipbuilding & Ship Repair	Ship Repair Carpenter	$44.95	7X	4J		View
King	Shipbuilding & Ship Repair	Ship Repair Crane Operator	$45.06	7Y	4K		View
King	Shipbuilding & Ship Repair	Ship Repair Electrician	$46.22	7X	4J		View
King	Shipbuilding & Ship Repair	Ship Repair Heat & Frost Insulator	$76.61	5J	4H		View
King	Shipbuilding & Ship Repair	Ship Repair Laborer	$46.15	7X	4J		View
King	Shipbuilding & Ship Repair	Ship Repair Machinist	$46.15	7X	4J		View
King	Shipbuilding & Ship Repair	Ship Repair Operating Engineer	$45.06	7Y	4K		View
King	Shipbuilding & Ship Repair	Ship Repair Painter	$46.15	7X	4J		View
King	Shipbuilding & Ship Repair	Ship Repair Pipefitter	$46.15	7X	4J		View
King	Shipbuilding & Ship Repair	Ship Repair Rigger	$46.15	7X	4J		View
King	Shipbuilding & Ship Repair	Ship Repair Sheet Metal	$46.15	7X	4J		View
King	Shipbuilding & Ship Repair	Ship Repair Shipwright	$44.95	7X	4J		View
King	Shipbuilding & Ship Repair	Ship Repair Warehouse / Teamster	$45.06	7Y	4K		View
King	Sign Makers & Installers (Electrical)	Journey Level	$49.44	0	1		View
King	Sign Makers & Installers (Non-Electrical)	Journey Level	$31.96	0	1		View
King	Soft Floor Layers	Journey Level	$51.07	5A	3J		View
King	Solar Controls For Windows	Journey Level	$13.50		1		View
King	Sprinkler Fitters (Fire Protection)	Journey Level	$82.39	5C	1X		View
King	Stage Rigging Mechanics (Non Structural)	Journey Level	$13.50		1		View
King	Stone Masons	Journey Level	$58.82	5A	1M		View
King	Street And Parking Lot Sweeper Workers	Journey Level	$19.09		1		View
King	Surveyors	Assistant Construction Site Surveyor	$68.02	7A	3K	8X	View
King	Surveyors	Chainman	$65.05	7A	3K	8X	View
King	Surveyors	Construction Site Surveyor	$69.16	7A	3K	8X	View
King	Telecommunication Technicians	Journey Level	$53.57	7E	1E		View
King	Telephone Line Construction - Outside	Cable Splicer	$41.81	5A	2B		View
King	Telephone Line Construction - Outside	Hole Digger/Ground Person	$23.53	5A	2B		View
King	Telephone Line Construction - Outside	Installer (Repairer)	$40.09	5A	2B		View
King	Telephone Line Construction - Outside	Special Aparatus Installer I	$41.81	5A	2B		View
King	Telephone Line Construction - Outside	Special Apparatus Installer II	$40.99	5A	2B		View
King	Telephone Line Construction - Outside	Telephone Equipment Operator (Heavy)	$41.81	5A	2B		View
King	Telephone Line Construction - Outside	Telephone Equipment Operator (Light)	$38.92	5A	2B		View
King	Telephone Line Construction - Outside	Telephone Lineperson	$38.92	5A	2B		View

King	Telephone Line Construction - Outside	Television Groundperson	$22.32	5A	2B		View
King	Telephone Line Construction - Outside	Television Lineperson/Installer	$29.60	5A	2B		View
King	Telephone Line Construction - Outside	Television System Technician	$35.20	5A	2B		View
King	Telephone Line Construction - Outside	Television Technician	$31.67	5A	2B		View
King	Telephone Line Construction - Outside	Tree Trimmer	$38.92	5A	2B		View
King	Terrazzo Workers	Journey Level	$54.06	5A	1M		View
King	Tile Setters	Journey Level	$54.06	5A	1M		View
King	Tile, Marble & Terrazzo Finishers	Finisher	$44.89	5A	1B		View
King	Traffic Control Stripers	Journey Level	$47.68	7A	1K		View
King	Truck Drivers	Asphalt Mix Over 16 Yards	$61.59	5D	4Y	8L	View
King	Truck Drivers	Asphalt Mix To 16 Yards	$60.75	5D	4Y	8L	View
King	Truck Drivers	Dump Truck	$60.75	5D	4Y	8L	View
King	Truck Drivers	Dump Truck & Trailer	$61.59	5D	4Y	8L	View
King	Truck Drivers	Other Trucks	$61.59	5D	4Y	8L	View
King	Truck Drivers - Ready Mix	Transit Mix	$61.59	5D	4Y	8L	View
King	Well Drillers & Irrigation Pump Installers	Irrigation Pump Installer	$17.71		1		View
King	Well Drillers & Irrigation Pump Installers	Oiler	$13.50		1		View
King	Well Drillers & Irrigation Pump Installers	Well Driller	$18.00		1		View

Washington State Department of Labor and Industries
Policy Statement
(Regarding the Production of "Standard" or "Non-standard" Items)

Below is the department's (State L&I's) list of criteria to be used in determining whether a prefabricated item is "standard" or "non-standard". For items not appearing on WSDOT's predetermined list, these criteria shall be used by the Contractor (and the Contractor's subcontractors, agents to subcontractors, suppliers, manufacturers, and fabricators) to determine coverage under RCW 39.12. The production, in the State of Washington, of non-standard items is covered by RCW 39.12, and the production of standard items is not. The production of any item outside the State of Washington is not covered by RCW 39.12.

1. Is the item fabricated for a public works project? If not, it is not subject to RCW 39.12. If it is, go to question 2.

2. Is the item fabricated on the public works jobsite? If it is, the work is covered under RCW 39.12. If not, go to question 3.

3. Is the item fabricated in an assembly/fabrication plant set up for, and dedicated primarily to, the public works project? If it is, the work is covered by RCW 39.12. If not, go to question 4.

4. Does the item require any assembly, cutting, modification or other fabrication by the supplier? If not, the work is not covered by RCW 39.12. If yes, go to question 5.

5. Is the prefabricated item intended for the public works project typically an inventory item which could reasonably be sold on the general market? If not, the work is covered by RCW 39.12. If yes, go to question 6.

6. Does the specific prefabricated item, generally defined as standard, have any unusual characteristics such as shape, type of material, strength requirements, finish, etc? If yes, the work is covered under RCW 39.12.

Any firm with questions regarding the policy, WSDOT's Predetermined List, or for determinations of covered and non-covered workers shall be directed to State L&I at (360) 902-5330.

WSDOT's
Predetermined List for
Suppliers - Manufactures - Fabricator

Below is a list of potentially prefabricated items, originally furnished by WSDOT to Washington State Department of Labor and Industries, that may be considered non-standard and therefore covered by the prevailing wage law, RCW 39.12. Items marked with an X in the "YES" column should be considered to be non-standard and therefore covered by RCW 39.12. Items marked with an X in the "NO" column should be considered to be standard and therefore not covered. Of course, exceptions to this general list may occur, and in that case shall be evaluated according to the criteria described in State and L&I's policy statement.

	ITEM DESCRIPTION	YES	NO
1.	Metal rectangular frames, solid metal covers, herringbone grates, and bi-directional vaned grates for Catch Basin Types 1, 1L, 1P, and 2 and Concrete Inlets. See Std. Plans		X
2.	Metal circular frames (rings) and covers, circular grates, and prefabricated ladders for Manhole Types 1, 2, and 3, Drywell Types 1, 2, and 3 and Catch Basin Type 2. See Std. Plans		X
3.	Prefabricated steel grate supports and welded grates, metal frames and dual vaned grates, and Type 1, 2, and 3 structural tubing grates for Drop Inlets. See Std. Plans.		X
4.	Concrete Pipe - Plain Concrete pipe and reinforced concrete pipe Class 2 to 5 sizes smaller than 60 inch diameter.		X
5.	Concrete Pipe - Plain Concrete pipe and reinforced concrete pipe Class 2 to 5 sizes larger than 60 inch diameter.		X
6.	Corrugated Steel Pipe - Steel lock seam corrugated pipe for culverts and storm sewers, sizes 30 inch to 120 inches in diameter. May also be treated, 1 thru 5.		X
7.	Corrugated Aluminum Pipe - Aluminum lock seam corrugated pipe for culverts and storm sewers, sizes 30 inch to 120 inches in diameter. May also be treated, #5.		X

	ITEM DESCRIPTION	YES	NO
8.	Anchor Bolts & Nuts - Anchor Bolts and Nuts, for mounting sign structures, luminaries and other items, shall be made from commercial bolt stock. See Contract Plans and Std. Plans for size and material type.		X
9.	Aluminum Pedestrian Handrail - Pedestrian handrail conforming to the type and material specifications set forth in the contract plans. Welding of aluminum shall be in accordance with Section 9-28.14(3).	X	
10.	Major Structural Steel Fabrication - Fabrication of major steel items such as trusses, beams, girders, etc., for bridges.	X	
11.	Minor Structural Steel Fabrication - Fabrication of minor steel Items such as special hangers, brackets, access doors for structures, access ladders for irrigation boxes, bridge expansion joint systems, etc., involving welding, cutting, punching and/or boring of holes. See Contact Plans for item description and shop drawings.	X	
12.	Aluminum Bridge Railing Type BP - Metal bridge railing conforming to the type and material specifications set forth in the Contract Plans. Welding of aluminum shall be in accordance with Section 9-28.14(3).		X
13.	Concrete Piling--Precast-Prestressed concrete piling for use as 55 and 70 ton concrete piling. Concrete to conform to Section 9-19.1 of Std. Spec..	X	
14.	Precast Manhole Types 1, 2, and 3 with cones, adjustment sections and flat top slabs. See Std. Plans.		X
15.	Precast Drywell Types 1, 2, and with cones and adjustment Sections. See Std. Plans.		X
16.	Precast Catch Basin - Catch Basin type 1, 1L, 1P, and 2 With adjustment sections. See Std. Plans.		X

	ITEM DESCRIPTION	YES	NO
17.	Precast Concrete Inlet - with adjustment sections, See Std. Plans		X
18.	Precast Drop Inlet Type 1 and 2 with metal grate supports. See Std. Plans.		X
19.	Precast Grate Inlet Type 2 with extension and top units. See Std. Plans		X
20.	Metal frames, vaned grates, and hoods for Combination Inlets. See Std. Plans		X
21.	Precast Concrete Utility Vaults - Precast Concrete utility vaults of various sizes. Used for in ground storage of utility facilities and controls. See Contract Plans for size and construction requirements. Shop drawings are to be provided for approval prior to casting		X
22.	Vault Risers - For use with Valve Vaults and Utilities X Vaults.		X
23.	Valve Vault - For use with underground utilities. See Contract Plans for details.		X
24.	Precast Concrete Barrier - Precast Concrete Barrier for use as new barrier or may also be used as Temporary Concrete Barrier. Only new state approved barrier may be used as permanent barrier.		X
25.	Reinforced Earth Wall Panels – Reinforced Earth Wall Panels in size and shape as shown in the Plans. Fabrication plant has annual approval for methods and materials to be used. See Shop Drawing. Fabrication at other locations may be approved, after facilities inspection, contact HQ. Lab.	X	
26.	Precast Concrete Walls - Precast Concrete Walls - tilt-up wall panel in size and shape as shown in Plans. Fabrication plant has annual approval for methods and materials to be used	X	

	ITEM DESCRIPTION	YES	NO
27.	Precast Railroad Crossings - Concrete Crossing Structure Slabs.	X	
28.	12, 18 and 26 inch Standard Precast Prestressed Girder – Standard Precast Prestressed Girder for use in structures. Fabricator plant has annual approval of methods and materials to be used. Shop Drawing to be provided for approval prior to casting girders. See Std. Spec. Section 6-02.3(25)A	X	
29.	Prestressed Concrete Girder Series 4-14 - Prestressed Concrete Girders for use in structures. Fabricator plant has annual approval of methods and materials to be used. Shop Drawing to be provided for approval prior to casting girders. See Std. Spec. Section 6-02.3(25)A .	X	
30.	Prestressed Tri-Beam Girder - Prestressed Tri-Beam Girders for use in structures. Fabricator plant has annual approval of methods and materials to be used. Shop Drawing to be provided for approval prior to casting girders. See Std. Spec. Section 6-02.3(25)A	X	
31.	Prestressed Precast Hollow-Core Slab – Precast Prestressed Hollow-core slab for use in structures. Fabricator plant has annual approval of methods and materials to be used. Shop Drawing to be provided for approval prior to casting girders. See Std. Spec. Section 6-02.3(25)A.	X	
32.	Prestressed-Bulb Tee Girder - Bulb Tee Prestressed Girder for use in structures. Fabricator plant has annual approval of methods and materials to be used. Shop Drawing to be provided for approval prior to casting girders. See Std. Spec. Section 6-02.3(25)A	X	
33.	Monument Case and Cover See Std. Plan.		X

	ITEM DESCRIPTION	YES	NO
34.	Cantilever Sign Structure - Cantilever Sign Structure fabricated from steel tubing meeting AASHTO-M-183. See Std. Plans, and Contract Plans for details. The steel structure shall be galvanized after fabrication in accordance with AASHTO-M-111.	X	
35.	Mono-tube Sign Structures - Mono-tube Sign Bridge fabricated to details shown in the Plans. Shop drawings for approval are required prior to fabrication.	X	
36.	Steel Sign Bridges - Steel Sign Bridges fabricated from steel tubing meeting AASHTO-M-138 for Aluminum Alloys. See Std. Plans, and Contract Plans for details. The steel structure shall be galvanized after fabrication in accordance with AASHTO-M-111.	X	
37.	Steel Sign Post - Fabricated Steel Sign Posts as detailed in Std Plans. Shop drawings for approval are to be provided prior to fabrication		X
38.	Light Standard-Prestressed - Spun, prestressed, hollow concrete poles.	X	
39.	Light Standards - Lighting Standards for use on highway illumination systems, poles to be fabricated to conform with methods and materials as specified on Std. Plans. See Specia Provisions for pre-approved drawings.	X	
40.	Traffic Signal Standards - Traffic Signal Standards for use on highway and/or street signal systems. Standards to be fabricated to conform with methods and material as specified on Std. Plans. See Special Provisions for pre-approved drawings	X	
41.	Precast Concrete Sloped Mountable Curb (Single and DualFaced) See Std. Plans.		X

	ITEM DESCRIPTION	YES	NO
42.	Traffic Signs - Prior to approval of a Fabricator of Traffic Signs, the sources of the following materials must be submitted and approved for reflective sheeting, legend material, and aluminum sheeting. **NOTE:** *** Fabrication inspection required. Only signs tagged "Fabrication Approved" by WSDOT Sign Fabrication Inspector to be installed	X	X
		Custom Message	Std Signing Message
43.	Cutting & bending reinforcing steel		X
44.	Guardrail components	X	X
		Custom End Sec	Standard Sec
45.	Aggregates/Concrete mixes	Covered by WAC 296-127-018	
46.	Asphalt	Covered by WAC 296-127-018	
47.	Fiber fabrics		X
48.	Electrical wiring/components		X
49.	treated or untreated timber pile		X
50.	Girder pads (elastomeric bearing)	X	
51.	Standard Dimension lumber		X
52.	Irrigation components		X

ITEM DESCRIPTION	YES	NO
53. Fencing materials		X
54. Guide Posts		X
55. Traffic Buttons		X
56. Epoxy		X
57. Cribbing		X
58. Water distribution materials		X
59. Steel "H" piles		X
60. Steel pipe for concrete pile casings		X
61. Steel pile tips, standard		X
62. Steel pile tips, custom	X	

Prefabricated items specifically produced for public works projects that are prefabricated in a county other than the county wherein the public works project is to be completed, the wage for the offsite prefabrication shall be the applicable prevailing wage for the county in which the actual prefabrication takes place.

It is the manufacturer of the prefabricated product to verify that the correct county wage rates are applied to work they perform.

See RCW 39.12.010
(The definition of "locality" in RCW 39.12.010(2) contains the phrase "wherein the physical work is being performed." The department interprets this phrase to mean the actual work site.

WSDOT's List of State Occupations not applicable to Heavy and Highway Construction Projects

This project is subject to the state hourly minimum rates for wages and fringe benefits in the contract provisions, as provided by the state Department of Labor and Industries.
The following list of occupations, is comprised of those occupations that are not normally used in the construction of heavy and highway projects.
When considering job classifications for use and / or payment when bidding on, or building heavy and highway construction projects for, or administered by WSDOT, these Occupations will be excepted from the included "Washington State Prevailing Wage Rates For Public Work Contracts" documents.

- Building Service Employees
- Electrical Fixture Maintenance Workers
- Electricians - Motor Shop
- Heating Equipment Mechanics
- Industrial Engine and Machine Mechanics
- Industrial Power Vacuum Cleaners
- Inspection, Cleaning, Sealing of Water Systems by Remote Control
- Laborers - Underground Sewer & Water
- Machinists (Hydroelectric Site Work)
- Modular Buildings
- Playground & Park Equipment Installers
- Power Equipment Operators - Underground Sewer & Water
- Residential *** ALL ASSOCIATED RATES ***
- Sign Makers and Installers (Non-Electrical)
- Sign Makers and Installers (Electrical)
- Stage Rigging Mechanics (Non Structural)

The following occupations may be used only as outlined in the preceding text concerning "WSDOT's list for Suppliers - Manufacturers - Fabricators"

- Fabricated Precast Concrete Products
- Metal Fabrication (In Shop)

Definitions for the Scope of Work for prevailing wages may be found at the Washington State Department of Labor and Industries web site and in WAC Chapter 296-127.

WAC 296-127-018 Agency filings affecting this section

Coverage and exemptions of workers involved in the production and delivery of gravel, concrete, asphalt, or similar materials.

(1) The materials covered under this section include but are not limited to: Sand, gravel, crushed rock, concrete, asphalt, or other similar materials.

(2) All workers, regardless of by whom employed, are subject to the provisions of chapter 39.12 RCW when they perform any or all of the following functions:

(a) They deliver or discharge any of the above-listed materials to a public works project site:

(i) At one or more point(s) directly upon the location where the material will be incorporated into the project; or

(ii) At multiple points at the project; or

(iii) Adjacent to the location and coordinated with the incorporation of those materials.

(b) They wait at or near a public works project site to perform any tasks subject to this section of the rule.

(c) They remove any materials from a public works construction site pursuant to contract requirements or specifications (e.g., excavated materials, materials from demolished structures, clean-up materials, etc.).

(d) They work in a materials production facility (e.g., batch plant, borrow pit, rock quarry, etc.,) which is established for a public works project for the specific, but not necessarily exclusive, purpose of supplying materials for the project.

(e) They deliver concrete to a public works site regardless of the method of incorporation.

(f) They assist or participate in the incorporation of any materials into the public works project.

(3) All travel time that relates to the work covered under subsection (2) of this section requires the payment of prevailing wages. Travel time includes time spent waiting to load, loading, transporting, waiting to unload, and delivering materials. Travel time would include all time spent in travel in support of a public works project whether the vehicle is empty or full. For example, travel time spent returning to a supply source to obtain another load of material for use on a public works site or returning to the public works site to obtain another load of excavated material is time spent in travel that is subject to prevailing wage. Travel to a supply source, including travel from a public works site, to obtain materials for use on a private project would not be travel subject to the prevailing wage.

(4) Workers are not subject to the provisions of chapter 39.12 RCW when they deliver materials to a stockpile.

(a) A "stockpile" is defined as materials delivered to a pile located away from the site of incorporation such that the stockpiled materials must be physically moved from the stockpile and transported to another location on the project site in order to be incorporated into the project.

(b) A stockpile does not include any of the functions described in subsection (2)(a) through (f) of this section; nor does a stockpile include materials delivered or distributed to multiple locations upon the project site; nor does a stockpile include materials dumped at the place of incorporation, or adjacent to the location and coordinated with the incorporation.

(5) The applicable prevailing wage rate shall be determined by the locality in which the work is performed. Workers subject to subsection (2)(d) of this section, who produce such materials at an off-site facility shall be paid the applicable prevailing wage rates for the county in which the off-site facility is located. Workers subject to subsection (2) of this section, who deliver such materials to a public works project site shall be paid the applicable prevailing wage rates for the county in which the public works project is located.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.051 and 43.22.270. 08-24-101, § 296-127-018, filed 12/2/08, effective 1/2/09. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104 and 92-08-101, § 296-127-018, filed 12/18/91 and 4/1/92, effective 8/31/92.]

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Overtime Codes

Overtime calculations are based on the hourly rate actually paid to the worker. On public works projects, the hourly rate must be not less than the prevailing rate of wage minus the hourly rate of the cost of fringe benefits actually provided for the worker.

1. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

B. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

C. The first two (2) hours after eight (8) regular hours Monday through Friday and the first ten (10) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other overtime hours and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

D. The first two (2) hours before or after a five-eight (8) hour workweek day or a four-ten (10) hour workweek day and the first eight (8) hours worked the next day after either workweek shall be paid at one and one-half times the hourly rate of wage. All additional hours worked and all worked on Sundays and holidays shall be paid at double the hourly rate of wage.

E. The first two (2) hours after eight (8) regular hours Monday through Friday and the first eight (8) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other hours worked Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

F. The first two (2) hours after eight (8) regular hours Monday through Friday and the first ten (10) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other overtime hours worked, except Labor Day, shall be paid at double the hourly rate of wage. All hours worked on Labor Day shall be paid at three times the hourly rate of wage.

G. The first ten (10) hours worked on Saturdays and the first ten (10) hours worked on a fifth calendar weekday in a four-ten hour schedule, shall be paid at one and one-half times the hourly rate of wage. All hours worked in excess of ten (10) hours per day Monday through Saturday and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

H. All hours worked on Saturdays (except makeup days if work is lost due to inclement weather conditions or equipment breakdown) shall be paid at one and one-half times the hourly rate of wage. All hours worked Monday through Saturday over twelve (12) hours and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

I. All hours worked on Sundays and holidays shall also be paid at double the hourly rate of wage.

J. The first two (2) hours after eight (8) regular hours Monday through Friday and the first ten (10) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked over ten (10) hours Monday through Saturday, Sundays and holidays shall be paid at double the hourly rate of wage.

K. All hours worked on Saturdays and Sundays shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid at double the hourly rate of wage.

M. All hours worked on Saturdays (except makeup days if work is lost due to inclement weather conditions) shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

N. All hours worked on Saturdays (except makeup days) shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

Overtime Codes Continued

1. O. The first ten (10) hours worked on Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays, holidays and after twelve (12) hours, Monday through Friday and after ten (10) hours on Saturday shall be paid at double the hourly rate of wage.

P. All hours worked on Saturdays (except makeup days if circumstances warrant) and Sundays shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid at double the hourly rate of wage.

Q. The first two (2) hours after eight (8) regular hours Monday through Friday and up to ten (10) hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked in excess of ten (10) hours per day Monday through Saturday and all hours worked on Sundays and holidays (except Christmas day) shall be paid at double the hourly rate of wage. All hours worked on Christmas day shall be paid at two and one-half times the hourly rate of wage.

R. All hours worked on Sundays and holidays shall be paid at two times the hourly rate of wage.

S. The first two (2) hours after eight (8) regular hours Monday through Friday and the first eight (8) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays and all other overtime hours worked, except Labor Day, shall be paid at double the hourly rate of wage. All hours worked on Labor Day shall be paid at three times the hourly rate of wage.

U. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays (except Labor Day) shall be paid at two times the hourly rate of wage. All hours worked on Labor Day shall be paid at three times the hourly rate of wage.

V. All hours worked on Sundays and holidays (except Thanksgiving Day and Christmas day) shall be paid at one and one-half times the hourly rate of wage. All hours worked on Thanksgiving Day and Christmas day shall be paid at double the hourly rate of wage.

W. All hours worked on Saturdays and Sundays (except make-up days due to conditions beyond the control of the employer)) shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid at double the hourly rate of wage.

X. The first four (4) hours after eight (8) regular hours Monday through Friday and the first twelve (12) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked over twelve (12) hours Monday through Saturday, Sundays and holidays shall be paid at double the hourly rate of wage. When holiday falls on Saturday or Sunday, the day before Saturday, Friday, and the day after Sunday, Monday, shall be considered the holiday and all work performed shall be paid at double the hourly rate of wage.

Y. All hours worked outside the hours of 5:00 am and 5:00 pm (or such other hours as may be agreed upon by any employer and the employee) and all hours worked in excess of eight (8) hours per day (10 hours per day for a 4 x 10 workweek) and on Saturdays and holidays (except labor day) shall be paid at one and one-half times the hourly rate of wage. (except for employees who are absent from work without prior approval on a scheduled workday during the workweek shall be paid at the straight-time rate until they have worked 8 hours in a day (10 in a 4 x 10 workweek) or 40 hours during that workweek.) All hours worked Monday through Saturday over twelve (12) hours and all hours worked on Sundays and Labor Day shall be paid at double the hourly rate of wage.

Z. All hours worked on Saturdays and Sundays shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid the straight time rate of pay in addition to holiday pay.

Overtime Codes Continued

2. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

   B. All hours worked on holidays shall be paid at one and one-half times the hourly rate of wage.

   C. All hours worked on Sundays shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid at two times the hourly rate of wage.

   F. The first eight (8) hours worked on holidays shall be paid at the straight hourly rate of wage in addition to the holiday pay. All hours worked in excess of eight (8) hours on holidays shall be paid at double the hourly rate of wage.

   G. All hours worked on Sunday shall be paid at two times the hourly rate of wage. All hours worked on paid holidays shall be paid at two and one-half times the hourly rate of wage including holiday pay.

   H. All hours worked on Sunday shall be paid at two times the hourly rate of wage. All hours worked on holidays shall be paid at one and one-half times the hourly rate of wage.

   O. All hours worked on Sundays and holidays shall be paid at one and one-half times the hourly rate of wage.

   R. All hours worked on Sundays and holidays and all hours worked over sixty (60) in one week shall be paid at double the hourly rate of wage.

   U. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked over 12 hours in a day or on Sundays and holidays shall be paid at double the hourly rate of wage.

   W. The first two (2) hours after eight (8) regular hours Monday through Friday and the first eight (8) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other hours worked Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage. On a four-day, ten-hour weekly schedule, either Monday thru Thursday or Tuesday thru Friday schedule, all hours worked after ten shall be paid at double the hourly rate of wage. The first eight (8) hours worked on the fifth day shall be paid at one and one-half times the hourly rate of wage. All other hours worked on the fifth, sixth, and seventh days and on holidays shall be paid at double the hourly rate of wage.

3. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

   A. Work performed in excess of eight (8) hours of straight time per day, or ten (10) hours of straight time per day when four ten (10) hour shifts are established, or forty (40) hours of straight time per week, Monday through Friday, or outside the normal shift, and all work on Saturdays shall be paid at time and one-half the straight time rate. Hours worked over twelve hours (12) in a single shift and all work performed after 6:00 pm Saturday to 6:00 am Monday and holidays shall be paid at double the straight time rate of pay. Any shift starting between the hours of 6:00 pm and midnight shall receive an additional one dollar ($1.00) per hour for all hours worked that shift. The employer shall have the sole discretion to assign overtime work to employees. Primary consideration for overtime work shall be given to employees regularly assigned to the work to be performed on overtime situations. After an employee has worked eight (8) hours at an applicable overtime rate, all additional hours shall be at the applicable overtime rate until such time as the employee has had a break of eight (8) hours or more.

   C. Work performed in excess of eight (8) hours of straight time per day, or ten (10) hours of straight time per day when four ten (10) hour shifts are established, or forty (40) hours of straight time per week, Monday through Friday, or outside the normal shift, and all work on Saturdays shall be paid at one and one-half times the hourly rate of wage. All work performed after 6:00 pm Saturday to 5:00 am Monday and Holidays shall be paid at double the hourly rate of wage. After an employee has worked eight (8) hours at an applicable overtime rate, all additional hours shall be at the applicable overtime rate until such time as the employee has had a break of eight (8) hours or more.

Overtime Codes Continued

3. E. All hours worked Sundays and holidays shall be paid at double the hourly rate of wage. Each week, once 40 hours of straight time work is achieved, then any hours worked over 10 hours per day Monday through Saturday shall be paid at double the hourly wage rate.

F. All hours worked on Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sunday shall be paid at two times the hourly rate of wage. All hours worked on paid holidays shall be paid at two and one-half times the hourly rate of wage including holiday pay.

H. All work performed on Sundays between March 16th and October 14th and all Holidays shall be compensated for at two (2) times the regular rate of pay. Work performed on Sundays between October 15th and March 15th shall be compensated at one and one half (1-1/2) times the regular rate of pay.

J. All hours worked between the hours of 10:00 pm and 5:00 am, Monday through Friday, and all hours worked on Saturdays shall be paid at a one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

K. Work performed in excess of eight (8) hours of straight time per day, or ten (10) hours of straight time per day when four ten (10) hour shifts are established, or forty (40) hours of straight time per week, Monday through Friday, or outside the normal 5 am to 6pm shift, and all work on Saturdays shall be paid at one and one-half times the hourly rate of wage. All work performed after 6:00 pm Saturday to 5:00 am Monday and Holidays, and all hours worked in excess of twelve (12) hours in a single shift shall be paid at double the hourly rate of wage.

After an employee has worked eight (8) hours at an applicable overtime rate, all additional hours shall be at the applicable overtime rate until such time as the employee has had a break of eight (8) hours or more. When an employee returns to work without at least eight (8) hours time off since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until he/she shall have the eight (8) hours rest period.

4. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

A. All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at double the hourly rate of wage. All hours worked on Saturdays, Sundays and holidays shall be paid at double the hourly rate of wage.

B. All hours worked over twelve (12) hours per day and all hours worked on holidays shall be paid at double the hourly rate of wage.

C. On Monday through Friday, the first four (4) hours of overtime after eight (8) hours of straight time work shall be paid at one and one half (1-1/2) times the straight time rate of pay, unless a four (4) day ten (10) hour workweek has been established. On a four (4) day ten (10) hour workweek scheduled Monday through Thursday, or Tuesday through Friday, the first two (2) hours of overtime after ten (10) hours of straight time work shall be paid at one and one half (1-1/2) times the straight time rate of pay. On Saturday, the first twelve (12) hours of work shall be paid at one and one half (1-1/2) times the straight time rate of pay, except that if the job is down on Monday through Friday due to weather conditions or other conditions outside the control of the employer, the first ten (10) hours on Saturday may be worked at the straight time rate of pay. All hours worked over twelve (12) hours in a day and all hours worked on Sunday and Holidays shall be paid at two (2) times the straight time rate of pay.

Overtime Codes Continued

4. D. All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at double the hourly rate of wage. All hours worked on Saturday, Sundays and holidays shall be paid at double the hourly rate of pay. Rates include all members of the assigned crew.

EXCEPTION:
On all multipole structures and steel transmission lines, switching stations, regulating, capacitor stations, generating plants, industrial plants, associated installations and substations, except those substations whose primary function is to feed a distribution system, will be paid overtime under the following rates:

The first two (2) hours after eight (8) regular hours Monday through Friday of overtime on a regular workday, shall be paid at one and one-half times the hourly rate of wage. All hours in excess of ten (10) hours will be at two (2) times the hourly rate of wage. The first eight (8) hours worked on Saturday will be paid at one and one-half (1-1/2) times the hourly rate of wage. All hours worked in excess of eight (8) hours on Saturday, and all hours worked on Sundays and holidays will be at the double the hourly rate of wage.

All overtime eligible hours performed on the above described work that is energized, shall be paid at the double the hourly rate of wage.

E. The first two (2) hours after eight (8) regular hours Monday through Friday and the first eight (8) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other hours worked Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

On a four-day, ten-hour weekly schedule, either Monday thru Thursday or Tuesday thru Friday schedule, all hours worked after ten shall be paid at double the hourly rate of wage. The Monday or Friday not utilized in the normal four-day, ten hour work week, and Saturday shall be paid at one and one half (1½) times the regular shift rate for the first eight (8) hours. All other hours worked Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

F. All hours worked between the hours of 6:00 pm and 6:00 am, Monday through Saturday, shall be paid at a premium rate of 20% over the hourly rate of wage. All hours worked on Sundays shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid at double the hourly rate of wage.

G. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked Monday through Saturday over twelve (12) hours and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

H. The first two (2) hours after eight (8) regular hours Monday through Friday and the first eight (8) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other overtime hours worked, except Labor Day, and all hours on Sunday shall be paid at double the hourly rate of wage. All hours worked on Labor Day shall be paid at three times the hourly rate of wage.

I. The First eight (8) hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked in excess of eight (8) per day on Saturdays shall be paid at double the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

J. The first eight (8) hours worked on a Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked in excess of eight (8) hours on a Saturday shall be paid at double the hourly rate of wage. All hours worked over twelve (12) in a day, and all hours worked on Sundays and Holidays shall be paid at double the hourly rate of wage.

K. All hours worked on a Saturday shall be paid at one and one-half times the hourly rate of wage, so long as Saturday is the sixth consecutive day worked. All hours worked over twelve (12) in a day Monday through Saturday, and all hours worked on Sundays and Holidays shall be paid at double the hourly rate of wage.

Overtime Codes Continued

4. L. The first twelve (12) hours worked on a Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked on a Saturday in excess of twelve (12) hours shall be paid at double the hourly rate of pay. All hours worked over twelve (12) in a day Monday through Friday, and all hours worked on Sundays shall be paid at double the hourly rate of wage. All hours worked on a holiday shall be paid at one and one-half times the hourly rate of wage, except that all hours worked on Labor Day shall be paid at double the hourly rate of pay.

M. All hours worked on Sunday and Holidays shall be paid at double the hourly rate. Any employee reporting to work less than nine (9) hours from their previous quitting time shall be paid for such time at time and one-half times the hourly rate.

N. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays, and all work performed between the hours of midnight (12:00 AM) and eight AM (8:00 AM) every day shall be paid at double the hourly rate of wage.

O. All hours worked between midnight Friday to midnight Sunday shall be paid at one and one-half the hourly rate of wage. After an employee has worked in excess of eight (8) continuous hours in any one or more calendar days, all additional hours shall be at the applicable overtime rate until such time as the employee has had a break of six (6) hours or more. All hours worked on Holidays shall be paid at double the hourly rate of wage.

P. All hours worked on Holidays shall be paid at one and one-half times the hourly rate of wage.

Q. The first four (4) hours after eight (8) regular hours Monday through Friday and the first eight (8) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked over twelve (12) hours Monday through Saturday shall be paid at double the hourly rate. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

R. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage, so long as Saturday is the sixth consecutive day worked. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

S. All hours worked on Saturdays and Holidays shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays shall be paid at double the hourly rate of wage.

T. The first two (2) hours of overtime for hours worked Monday-Friday shall be paid at one and one-half times the hourly rate of wage. All hours worked in excess of ten (10) hours per day shall be paid at double the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage. For work on Saturday which is scheduled prior to the end of shift on Friday, the first six (6) hours work shall be paid at one and one-half times the hourly rate of wage, and all hours over (6) shall be paid double the hourly rate of wage. For work on Saturday which was assigned following the close of shift on Friday, all work shall be paid at double the hourly rate of wage.

U. The first four (4) hours after eight (8) regular hours Monday through Friday and the first twelve (12) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. (Except on makeup days if work is lost due to inclement weather, then the first eight (8) hours on Saturday may be paid the regular rate.) All hours worked over twelve (12) hours Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

Overtime Codes Continued

4. V. Work performed in excess of ten (10) hours of straight time per day when four ten (10) hour shifts are established or outside the normal shift (5 am to 6pm), and all work on Saturdays, except for make-up days shall be paid at time and one-half (1 ½) the straight time rate.

In the event the job is down due to weather conditions, then Saturday may, be worked as a voluntary make-up day at the straight time rate. However, Saturday shall not be utilized as a make-up day when a holiday falls on Friday. All work performed on Sundays and holidays and work in excess of twelve (12) hours per day shall be paid at double (2x) the straight time rate of pay.

After an employee has worked eight (8) hours at an applicable overtime rate, all additional hours shall be at the applicable overtime rate until such time as the employee has had a break of eight (8) hours.

When an employee returns to work without a break of eight (8) hours since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until such time as the employee has had a break of eight (8) hours.

W. All hours worked on Saturdays (except makeup days if work is lost due to inclement weather conditions) shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

When an employee returns to work without at least eight (8) hours time off since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until such time as the employee has had a break of eight (8) hours.

X. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage. Work performed outside the normal shift of 6 am to 6pm shall be paid at one and one-half the straight time rate, (except for special shifts or three shift operations). All work performed on Sundays and holidays shall be paid at double the hourly rate of wage. Shifts may be established when considered necessary by the Employer.

The Employer may establish shifts consisting of eight (8) or ten (10) hours of work (subject to WAC 296-127-022), that shall constitute a normal forty (40) hour work week. The Employer can change from a 5-eight to a 4-ten hour schedule or back to the other. All hours of work on these shifts shall be paid for at the straight time hourly rate. Work performed in excess of eight hours (or ten hours per day (subject to WAC 296-127-022) shall be paid at one and one-half the straight time rate.

When due to conditions beyond the control of the Employer, or when contract specifications require that work can only be performed outside the regular day shift, then by mutual agreement a special shift may be worked at the straight time rate, eight (8) hours work for eight (8) hours pay. The starting time shall be arranged to fit such conditions of work.

When an employee returns to work without at a break of eight (8) hours since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until such time as the employee has had a break of eight (8) hours.

Overtime Codes Continued

4. Y. Work performed in excess of eight (8) hours of straight time per day, or ten (10) hours of straight time per day when four ten (10) hour shifts are established, or forty (40) hours of straight time per week, Monday through Friday, or outside the normal shift, and all work on Saturdays shall be paid at time and one-half the straight time rate. All work performed after 6:00 pm Saturday to 6:00 am Monday and holidays shall be paid at double the straight time rate of pay.

   Any shift starting between the hours of 6:00 pm and midnight shall receive an additional one dollar ($1.00) per hour for all hours worked that shift.

   After an employee has worked eight (8) hours at an applicable overtime rate, all additional hours shall be at the applicable overtime rate until such time as the employee has had a break of eight (8) hours or more.

Holiday Codes

5. A. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, and Christmas Day (7).

   B. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, the day before Christmas, and Christmas Day (8).

   C. Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (8).

   D. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, And Christmas Day (8).

   H. Holidays: New Year's Day, Memorial Day, Independence Day, Thanksgiving Day, the Day after Thanksgiving Day, And Christmas (6).

   I. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day (6).

   J. Holidays: New Year's Day, Memorial Day, Independence Day, Thanksgiving Day, Friday after Thanksgiving Day, Christmas Eve Day, And Christmas Day (7).

   K. Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday After Thanksgiving Day, The Day Before Christmas, And Christmas Day (9).

   L. Holidays: New Year's Day, Martin Luther King Jr. Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, And Christmas Day (8).

   N. Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, The Friday After Thanksgiving Day, And Christmas Day (9).

   P. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday And Saturday After Thanksgiving Day, The Day Before Christmas, And Christmas Day (9). If A Holiday Falls On Sunday, The Following Monday Shall Be Considered As A Holiday.

   Q. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day (6).

Holiday Codes Continued

5. R. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Day After Thanksgiving Day, One-Half Day Before Christmas Day, And Christmas Day. (7 1/2).

S. Paid Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, And Christmas Day (7).

T. Paid Holidays: New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, The Friday After Thanksgiving Day, Christmas Day, And The Day Before Or After Christmas (9).

Z. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (8).

6. A. Paid Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (8).

E. Paid Holidays: New Year's Day, Day Before Or After New Year's Day, Presidents Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Day, and a Half-Day On Christmas Eve Day. (9 1/2).

G. Paid Holidays: New Year's Day, Martin Luther King Jr. Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Day, and Christmas Eve Day (11).

H. Paid Holidays: New Year's Day, New Year's Eve Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday After Thanksgiving Day, Christmas Day, The Day After Christmas, And A Floating Holiday (10).

I. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday After Thanksgiving Day, And Christmas Day (7).

T. Paid Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, The Friday After Thanksgiving Day, The Last Working Day Before Christmas Day, And Christmas Day (9).

Z. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, And Christmas Day (7). If a holiday falls on Saturday, the preceding Friday shall be considered as the holiday. If a holiday falls on Sunday, the following Monday shall be considered as the holiday.

7. A. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, And Christmas Day (8). Any Holiday Which Falls On A Sunday Shall Be Observed As A Holiday On The Following Monday. If any of the listed holidays falls on a Saturday, the preceding Friday shall be a regular work day.

B. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, And Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

C. Holidays: New Year's Day, Martin Luther King Jr. Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

Holiday Codes Continued

7. D. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (8). Unpaid Holidays: President's Day. Any paid holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any paid holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

E. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (7). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

F. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, the last working day before Christmas day and Christmas day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

G. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day (6). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday.

H. Holidays: New Year's Day, Martin Luther King Jr. Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, the Last Working Day before Christmas Day and Christmas Day (9). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

I. Holidays: New Year's Day, President's Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day, The Friday After Thanksgiving Day, The Day Before Christmas Day And Christmas Day (9). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

J. Holidays: New Year's Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day and Christmas Day (6). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

K. Holidays: New Year's Day, Memorial Day, Independence Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, And Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

L. Holidays: New Year's Day, Memorial Day, Labor Day, Independence Day, Thanksgiving Day, the Last Work Day before Christmas Day, And Christmas Day (7). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

M. Paid Holidays: New Year's Day, The Day after or before New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Day, And the Day after or before Christmas Day (10). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

N. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (7). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. When Christmas falls on a Saturday, the preceding Friday shall be observed as a holiday.

P. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, And Christmas Day (7). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday.

Holiday Codes Continued

7. Q. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, the Last Working Day before Christmas Day and Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. If any of the listed holidays falls on a Saturday, the preceding Friday shall be a regular work day.

R. Paid Holidays: New Year's Day, the day after or before New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Day, and the day after or before Christmas Day (10). If any of the listed holidays fall on Saturday, the preceding Friday shall be observed as the holiday. If any of the listed holidays falls on a Sunday, the day observed by the Nation shall be considered a holiday and compensated accordingly.

S. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, Christmas Day, the Day after Christmas, and A Floating Holiday (9). If any of the listed holidays falls on a Sunday, the day observed by the Nation shall be considered a holiday and compensated accordingly.

T. Paid Holidays: New Year's Day, the Day after or before New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Day, and The Day after or before Christmas Day. (10). If any of the listed holidays falls on a Sunday, the day observed by the Nation shall be considered a holiday and compensated accordingly. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

V. Holidays: New Year's Day, President's Birthday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Day, the day before or after Christmas, and the day before or after New Year's Day. If any of the above listed holidays falls on a Sunday, the day observed by the Nation shall be considered a holiday and compensated accordingly.

W. Holidays: New Year's Day, Day After New Year's, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Eve Day, Christmas Day, the day after Christmas, the day before New Year's Day, and a Floating Holiday.

X. Holidays: New Year's Day, Day before or after New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Day, and the day before or after Christmas day. If a holiday falls on a Saturday or on a Friday that is the normal day off, then the holiday will be taken on the last normal workday. If the holiday falls on a Monday that is the normal day off or on a Sunday, then the holiday will be taken on the next normal workday.

Y. Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day. (8) If the holiday falls on a Sunday, then the day observed by the federal government shall be considered a holiday and compensated accordingly.

Z. Holidays: New Year's Day, President's Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day, The Friday After Thanksgiving Day, And Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

15. A. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, the day before Christmas Day and Christmas Day. (8) Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday.

B. Holidays: New Year's Day, Martin Luther King Jr. Day, President's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, and Christmas Day. (9)

C. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, the day before Christmas Day and Christmas Day. (8)

Holiday Codes Continued

15. D. Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, Christmas Day, and the day after Christmas.

E. Holidays: the day before New Years's Day, New Year's Day, Martin Luther King, Jr. Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, Friday after Thanksgiving Day, the day before Christmas, and Christmas Day. (12)

Note Codes

8. D. Workers working with supplied air on hazmat projects receive an additional $1.00 per hour.

L. Workers on hazmat projects receive additional hourly premiums as follows -Level A: $0.75, Level B: $0.50, And Level C: $0.25.

M. Workers on hazmat projects receive additional hourly premiums as follows: Levels A & B: $1.00, Levels C & D: $0.50.

N. Workers on hazmat projects receive additional hourly premiums as follows -Level A: $1.00, Level B: $0.75, Level C: $0.50, And Level D: $0.25.

P. Workers on hazmat projects receive additional hourly premiums as follows -Class A Suit: $2.00, Class B Suit: $1.50, Class C Suit: $1.00, And Class D Suit $0.50.

Q. The highest pressure registered on the gauge for an accumulated time of more than fifteen (15) minutes during the shift shall be used in determining the scale paid.

S. Effective August 31, 2012 – A Traffic Control Supervisor shall be present on the project whenever flagging or spotting or other traffic control labor is being utilized. Flaggers and Spotters shall be posted where shown on approved Traffic Control Plans or where directed by the Engineer. All flaggers and spotters shall possess a current flagging card issued by the State of Washington, Oregon, Montana, or Idaho. This classification is only effective on or after August 31, 2012.

T. Effective August 31, 2012 – A Traffic Control Laborer performs the setup, maintenance and removal of all temporary traffic control devices and construction signs necessary to control vehicular, bicycle, and pedestrian traffic during construction operations. Flaggers and Spotters shall be posted where shown on approved Traffic Control Plans or where directed by the Engineer. All flaggers and spotters shall possess a current flagging card issued by the State of Washington, Oregon, Montana, or Idaho. This classification is only effective on or after August 31, 2012.

U. Workers on hazmat projects receive additional hourly premiums as follows – Class A Suit: $2.00, Class B Suit: $1.50, And Class C Suit: $1.00. Workers performing underground work receive an additional $0.40 per hour for any and all work performed underground, including operating, servicing and repairing of equipment. The premium for underground work shall be paid for the entire shift worked. Workers who work suspended by a rope or cable receive an additional $0.50 per hour. The premium for work suspended shall be paid for the entire shift worked. Workers who do "pioneer" work (break open a cut, build road, etc.) more than one hundred fifty (150) feet above grade elevation receive an additional $0.50 per hour.

Note Codes Continued

8. V. In addition to the hourly wage and fringe benefits, the following depth and enclosure premiums shall be paid. The premiums are to be calculated for the maximum depth and distance into an enclosure that a diver reaches in a day. The premiums are to be paid one time for the day and are not used in calculating overtime pay.

Depth premiums apply to depths of fifty feet or more. Over 50' to 100' - $2.00 per foot for each foot over 50 feet. Over 101' to 150' - $3.00 per foot for each foot over 101 feet. Over 151' to 220' - $4.00 per foot for each foot over 220 feet. Over 221' - $5.00 per foot for each foot over 221 feet.

Enclosure premiums apply when divers enter enclosures (such as pipes or tunnels) where there is no vertical ascent and is measured by the distance travelled from the entrance. 25’ to 300’ - $1.00 per foot from entrance. 300’ to 600’ - $1.50 per foot beginning at 300’. Over 600’ - $2.00 per foot beginning at 600’.

W. Meter Installers work on single phase 120/240V self-contained residential meters. The Lineman/Groundmen rates would apply to meters not fitting this description.

X. Workers on hazmat projects receive additional hourly premiums as follows - Class A Suit: $2.00, Class B Suit: $1.50, Class C Suit: $1.00, and Class D Suit: $0.50. Special Shift Premium: Basic hourly rate plus $2.00 per hour.

When due to conditions beyond the control of the Employer or when an owner (not acting as the contractor), a government agency or the contract specifications requires that work can only be performed outside the normal 5 am to 6pm shift, then the special shift premium will be applied to the basic hourly rate. When an employee works on a special shift, they shall be paid a special shift premium for each hour worked unless they are in OT or Double-time status. (For example, the special shift premium does not waive the overtime requirements for work performed on Saturday or Sunday.)

Y. Tide Work: When employees are called out between the hours of 6:00 p.m. and 6:00 a.m. to work on tide work (work located in the tide plane) all time worked shall be at one and one-half times the hourly rate of pay.

Swinging Stage/Boatswains Chair: Employees working on a swinging state or boatswains chair or under conditions that require them to be tied off to allow their hands to be free shall receive seventy-five cents ($0.75) per hour above the classification rate.

Z. Workers working with supplied air on hazmat projects receive an additional $1.00 per hour.

Special Shift Premium: Basic hourly rate plus $2.00 per hour. When due to conditions beyond the control of the Employer or when an owner (not acting as a contractor), a government agency or the contract specifications require that more than (4) hours of a special shift can only be performed outside the normal 6 am to 6pm shift, then the special shift premium will be applied to the basic straight time for the entire shift. When an employee works on a special shift, they will be paid a special shift premium for each hour worked unless they are in overtime or double-time status. (For example, the special shift premium does not waive the overtime requirements for work performed on Saturday or Sunday.)

Note Codes Continued

9. A. Workers working with supplied air on hazmat projects receive an additional $1.00 per hour.

Special Shift Premium: Basic hourly rate plus $2.00 per hour. When due to conditions beyond the control of the Employer or when an owner (not acting as the contractor), a government agency or the contract specifications require that more than four (4) hours of a special shift can only be performed outside the normal 6 am to 6pm shift, then the special shift premium will be applied to the basic straight time for the entire shift. When an employee works on a special shift, they shall be paid a special shift premium for each hour worked unless they are in overtime or double-time status. (For example, the special shift premium does not waive the overtime requirements for work performed on Saturday or Sunday.)

Certified Crane Operator Premium: Crane operators requiring certifications shall be paid $0.50 per hour above their classification rate.

Boom Pay Premium: All cranes including tower shall be paid as follows based on boom length:

(A) – 130' to 199' – $0.50 per hour over their classification rate.
(B) – 200' to 299' – $0.80 per hour over their classification rate.
(C) – 300' and over – $1.00 per hour over their classification rate.

B. The highest pressure registered on the gauge for an accumulated time of more than fifteen (15) minutes during the shift shall be used in determining the scale paid.

Tide Work: When employees are called out between the hours of 6:00 p.m. and 6:00 a.m. to work on tide work (work located in the tide plane) all time worked shall be at one and one-half times the hourly rate of pay. Swinging Stage/Boatswains Chair: Employees working on a swinging stage or boatswains chair or under conditions that require them to be tied off to allow their hands to be free shall receive seventy-five cents ($0.75) per hour above the classification rate.

C. Tide Work: When employees are called out between the hours of 6:00 p.m. and 6:00 a.m. to work on tide work (work located in the tide plane) all time worked shall be at one and one-half times the hourly rate of pay. Swinging Stage/Boatswains Chair: Employees working on a swinging stage or boatswains chair or under conditions that require them to be tied off to allow their hands to be free shall receive seventy-five cents ($0.75) per hour above the classification rate.

Effective August 31, 2012 – A Traffic Control Supervisor shall be present on the project whenever flagging or spotting or other traffic control labor is being utilized. A Traffic Control Laborer performs the setup, maintenance and removal of all temporary traffic control devices and construction signs necessary to control vehicular, bicycle, and pedestrian traffic during construction operations. Flaggers and Spotters shall be posted where shown on approved Traffic Control Plans or where directed by the Engineer. All flaggers and spotters shall possess a current flagging card issued by the State of Washington, Oregon, Montana, or Idaho. These classifications are only effective on or after August 31, 2012.

D. Industrial Painter wages are required for painting within industrial facilities such as treatment plants, pipelines, towers, dams, bridges, power generation facilities and manufacturing facilities such as chemical plants, etc., or anywhere abrasive blasting is necessary to prepare surfaces, or hazardous materials encapsulation is required.

E. Heavy Construction includes construction, repair, alteration or additions to the production, fabrication or manufacturing portions of industrial or manufacturing plants, hydroelectric or nuclear power plants and atomic reactor construction. Workers on hazmat projects receive additional hourly premiums as follows -Level A: $1.00, Level B: $0.75, Level C: $0.50, And Level D: $0.25.

Appendix B

Purchase Order Documents

Tacoma Boulevard Pump Station Upgrade
Wet Well Mounted Vacuum Prime Pump Skid
Prepurchase Contract Documents

Prepared for

CITY OF PACIFIC

May 2019

Prepared by

Parametrix

PREPURCHASE CONTRACT DOCUMENTS
TACOMA BOULEVARD PUMP STATION UPGRADE
WET WELL MOUNTED VACUUM PRIME PUMP SKID

Prepared for: City of Pacific
Prepared by: Parametrix

CERTIFICATION

The technical material and data contained in this document were prepared under the supervision and direction of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below.

JOEL STEPHEN LINKE
STATE OF WASHINGTON
48954
REGISTERED
PROFESSIONAL ENGINEER

5/31/19

Prepared by Joel S. Linke, P.E.

Checked by Arthur G. Stokes, P.E.

Approved by John Carl Hungerford, P.E.

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Contract

CONTRACT
CITY OF PACIFIC
WET WELL MOUNTED VACUUM PRIME PUMP SKID FOR
TACOMA BOULEVARD PUMP STATION
CONTRACT NO. _____

THIS AGREEMENT made and entered into this 10 day of June, 2019, by and between the City of Pacific, a municipality incorporated and existing under the laws of the State of Washington, hereinafter called the "City," and Smith & Loveless, Inc., hereinafter called the "SELLER."

WITNESSETH:

SELLER Services. The SELLER shall furnish at its own cost and expense all labor, materials, equipment, and incidentals necessary to deliver, test, and warranty a wet well mounted vacuum prime pump skid to the Tacoma Boulevard Pump Station located near 427 Tacoma Boulevard, Pacific, WA 98047, in a good workmanlike manner and to the satisfaction of the City.

1. Contract Documents. The Contract Documents include the following: Instructions to Bidders, the SELLER's Proposal dated June 10, 2019, the City of Pacific Development Guidelines and Standard Details, and such other documents specifically incorporated by reference in this Contract.

WET WELL MOUNTED VACUUM PRIME PUMP SKID FOR TACOMA BOULEVARD PUMP STATION PROJECT ("Project"). The Project is detailed in the Scope of Work, Exhibit A, and the following documents, which are attached hereto and incorporated herein by reference:

- Project Specifications
- Drawings (provided for reference only)
- Payment and Performance Bonds (if not waived by City)
- Statement of Intent To Pay Prevailing Wages
- Affidavit of Wages Paid
- WSDOT Standard Specifications with Amendments (to the extent specifically incorporated by reference.)

2. Notice to Proceed; Time of Completion. The SELLER shall provide all required submittals and shop drawings within 6 weeks after the City issues a written Notice to Proceed, and shall deliver the pump skid within 20 weeks of submittal approval. All site work by the SELLER must be completed within thirty (30) calendar days of delivery of the pump skid to the site (inclusive of installation time by the City's installation Contractor). The time of beginning, rate of progress, and time of completion are essential conditions of this Contract.

3. Payment.

3.1 Payment amount and procedures. The City shall pay the SELLER for all work and services covered by this Contract in an amount that shall not exceed one hundred & fifty thousand $ 150,000), including applicable sales tax. The SELLER shall submit invoices for work and services performed as described in Section 01 11 00 in a format acceptable to the City. The City shall pay for the portion of the work described in the invoice that has been completed by the SELLER and approved by the City. The City's payment shall not constitute a waiver of the City's right to final inspection and acceptance of the work.

3.2 Defective or Unauthorized Work. If during the course of the Contract, the work rendered does not meet the requirements set forth in the Contract, the SELLER shall correct or modify the required work to comply with the requirements of the Contract. The City shall have the right to withhold payment for such work until it meets the requirements of the Contract. If the SELLER is unable, for any reason, to satisfactorily complete any portion of the work, the City may complete the work by contract or otherwise, and the SELLER shall be liable to the City for any additional costs incurred by the City. "Additional costs" means all reasonable costs incurred by the City, including legal costs and attorneys' fees, beyond the maximum contract price under this Contract. The City further reserves the right to deduct the cost to complete the work, including any additional costs, from any amounts due or to become due to the SELLER.

3.3 Final Payment; Waiver of Claim. Thirty (30) days after completion and final acceptance of the Project by the City as complying with the terms of this Contract, the City shall pay to the SELLER all sums due as provided by this Contract except those required to be withheld by law or agreed to in special contract provisions. THE SELLER'S ACCEPTANCE OF FINAL PAYMENT SHALL CONSTITUTE A WAIVER OF CLAIMS, EXCEPT THOSE PREVIOUSLY AND PROPERLY MADE AND IDENTIFIED BY THE SELLER AS UNSETTLED AT THE TIME REQUEST FOR FINAL PAYMENT IS MADE.

4. Prevailing Wage. The SELLER shall comply with and pay prevailing wages as required by Chapter 39.12 RCW, as it may be amended in the future. No worker, laborer or mechanic employed in the performance of any part of this Contract shall be paid less than the prevailing rate of wage as determined by the Industrial Statistician of the Department of Labor and Industries for the State of Washington.

Prior to making any payment under this Contract, the Seller must submit to the City an approved copy of the "Statement of Intent to Pay Prevailing Wages" from the Department of Labor and Industries. It is the Seller's responsibility to obtain and file the Statement. The Seller shall be responsible for all filing fees. Notice from Seller and all subcontractors of intent to pay prevailing wages and prevailing wage rates for the Project must be posted for the benefit of the workers. Each invoice shall include a signed statement that prevailing wages have been paid by the Seller and all subcontractors. Following the final acceptance of services rendered, Seller shall submit a "Affidavit of Wages Paid" for themselves and any subcontractors.

In case any dispute arises as to what are the prevailing rates of wages for work of a similar nature and such dispute cannot be adjusted by the parties of interest, including labor and management representatives, the matter shall be referred for arbitration to the Director of the Department of Labor and Industries of the State and his/her decision therein shall be final and conclusive and binding on all parties involved in the dispute as provided for by RCW 39.12.060, as it may be amended in the future.

5. Indemnification and Hold Harmless. The SELLER shall protect, defend, indemnify and hold harmless the City, its officers, officials, employees, agents, and volunteers from any and all claims, risks, injuries, damages, losses, suits, damages, judgments, and attorney's fees or other expenses of any kind arising out of or in any way connected with the performance of this Contract, except to the extent injuries and damages caused by the negligence of the City. The City's inspection or acceptance of any of the work shall not be grounds to avoid any of these covenants of indemnification.

Should a court of competent jurisdiction determine that this Contract is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the SELLER and the City, its officers, officials, employees, agents, and volunteers, the SELLER's liability under this section shall be only to the extent of the SELLER's negligence.

It is further specifically and expressly understood that the indemnification provided under this section constitutes the SELLER's waiver of immunity under Industrial Insurance, Title 51 RCW, solely for the purposes of this indemnification. This waiver has been mutually negotiated by the parties.

The provisions of this section shall survive the expiration or termination of this Contract.

6. **Compliance with Laws**. The SELLER shall comply with all federal, state, and local laws and regulations applicable to the work done under this Contract. Any violation of the provisions of these applicable laws and regulations shall be considered a violation of a material breach of this Contract and shall be grounds for cancellation, termination, or suspension of the Contract by the City, in whole or in part, and may result in ineligibility for further work for the City.

7. **Job Safety**.

7.1 **Work Site Safety**. SELLER shall take all necessary precaution for the safety of employees on the work site and shall comply with all applicable provisions of federal, state, and local regulations, ordinances, and codes.

8. **Warranty and Guarantee**. SELLER shall warrant and guarantee the materials and work as described in Section 22 11 16. SELLER shall be liable for any costs, losses, expenses, or damages including consequential damages suffered by the City resulting from defects in the SELLER's work including, but not limited to, cost of materials and labor expended by the City in making emergency repairs and cost of engineering, inspection, and supervision by the City. The SELLER shall hold the City harmless from any and all claims, which may be made against the City as a result of any defective work, and the SELLER shall defend any claims at its own expense. Where materials or procedures are not specified in the Contract, the City will rely on the professional judgment of the SELLER to make the appropriate selections. Such warranty obligations are in addition to and supplement the requirements of the Contract Documents.

9. **Correction of Defects**. SELLER shall be responsible for correcting all defects in workmanship and/or materials as required by the warranty described in Section 22 11 16 or that otherwise fail to meet the requirements and standards of the Contract Documents. Correction of defects shall be completed within seven (7) working days of receiving the City's written notice of such defects, or within a reasonable time as agreed by both parties. In emergencies where damage may result from delay or where loss of service may result, such corrections may be made by the City, in which case the SELLER shall pay all costs incurred by the City to perform the correction. In the event the SELLER does not timely correct defects, the correction work will be accomplished by the City and all associated costs shall be reimbursed to the City by the SELLER.

10. **SELLER's Risk of Loss**. It is understood that the whole of the work under this Contract is to be done at the SELLER's risk, and that he/she has familiarized himself/herself with all existing conditions and other contingencies likely to affect the work, and has made his/her bid accordingly, and that SELLER shall assume the responsibility and risk of all loss or damage to materials or work which may arise from any cause whatsoever prior to completion.

11. **Termination**.

a. Termination for Convenience. This Agreement may be terminated by the City at any time for public convenience, for the SELLER's insolvency or bankruptcy, or the SELLER's assignment for the benefit of creditors.

b. Termination For Cause. The Agreement may be terminated for cause upon the default of the SELLER.

c. Rights Upon Termination.

1. *With or Without Cause.* Upon termination for any reason, all finished or unfinished documents, reports, or other material or work of SELLER pursuant to this Agreement shall be submitted to the City, and SELLER shall be entitled to just and equitable compensation for any satisfactory work completed prior to the date of termination, not to exceed the total compensation set forth herein. SELLER shall not be entitled to any reallocation of cost, profit, or overhead. SELLER shall not in any event be entitled to anticipated profit on work not performed because of such termination. SELLER shall use its best efforts to minimize the compensation payable under this Agreement in the event of such termination. Upon termination, the City may take over the work and prosecute the same to completion, by contract or otherwise.

2. *Default.* If the Agreement is terminated for default, the SELLER shall not be entitled to receive any further payments under the Agreement until all work called for under the Contract has been completed by the City. Any extra cost or damage to the City resulting from such default(s) shall be deducted from any money due or coming due to the SELLER. The SELLER shall bear any extra expenses incurred by the City in completing the work, including all increased costs for completing the work and all damages sustained, or which may be sustained, by the City by reason of such default.

Conditions constituting default under this Contract include:

i. Failure or neglect to correct non-conforming work;

ii. Failure or neglect to provide sufficient resources for the work to ensure timely completion within the schedule as agreed in this Contract or otherwise established for completion of SELLER's work;

iii. Violation of applicable statutes and regulations;

iv. Disregard of the City's instructions or determinations;

iv. Material breach of other Contract requirements.

If the City determines that SELLER is in default, the City will provide SELLER with a written notice of default describing the conditions constituting default and giving SELLER fifteen (15) calendar days to cure the conditions of default to the satisfaction of the City. The determination of whether SELLER has cured the conditions of default shall be at the City's sole discretion. If the City is not satisfied that the conditions of default have been cured to the City's satisfaction, the City will then provide written notice to SELLER that this Contract is terminated.

d. Suspension. The City may suspend this Agreement, at its sole discretion. Any reimbursement for expenses incurred due to the suspension shall be limited to the SELLER's reasonable expenses, and shall be subject to verification. The SELLER shall resume performance of services under this Agreement without delay when the suspension period ends.

e. Notice of Termination for Convenience or Suspension. Notice of suspension or termination for convenience shall be given to the SELLER in writing upon seven (7) calendar days advance notice to SELLER.

12. Attorney's Fees and Costs. If any legal proceeding is brought for the enforcement of this Contract, or because of a dispute, breach, default, or misrepresentation in connection with any of

the provisions of this Contract, the prevailing party shall be entitled to recover from the other party, in addition to any other relief to which such party may be entitled, reasonable attorney's fees and other costs incurred in that action or proceeding.

13. **General Administration**. The Project Manager of the City shall have primary responsibility for the City under this Contract to oversee and approve all work performed as well as all financial invoices.

14. **Ownership of Documents**. On payment to the SELLER by the City of all compensation due under this Contract, all finished or unfinished documents and material prepared by the SELLER with funds paid by the City under this Contract shall become the property of the City and shall be forwarded to the City upon its request. Any records, reports, information, data, or other documents or materials given to or prepared or assembled by the SELLER under this Contract will be kept confidential and shall not be made available to any individual or organization by the SELLER without prior written approval of the City or by court order.

15. **Subletting or Assigning of Contracts**. Neither the City nor the SELLER shall assign, transfer, or encumber any rights, duties, or interests accruing from this Contract without the prior written consent of the other.

16. **Relationship of Parties.** The parties intend that an independent SELLER–client relationship will be created by this Contract. As SELLER is customarily engaged in an independently established trade which encompasses the specific service provided to the City hereunder, no agent, employee, representative, or subcontractor of SELLER shall be or shall be deemed to be the employee, agent, representative, or subcontractor of the City. None of the benefits provided by the City to its employees, including, but not limited to, compensation, insurance, and unemployment insurance, are available from the City to the SELLER or his employees, agents, representatives, or subcontractors. SELLER will be solely and entirely responsible for his acts and for the acts of SELLER's agents, employees, representatives, and subcontractors during the performance of this Contract. The City may, during the term of this Contract, engage other independent sellers to perform the same or similar work that SELLER performs hereunder.

17. **Nonwaiver of Breach**. The failure of the City to insist upon strict performance of any of the terms and rights contained in this Contract, or to exercise any option contained in this Contract in one or more instances, shall not be construed to be a waiver or relinquishment of those terms and rights and such terms and rights shall remain in full force and effect.

18. **Written Notice.** All communications regarding this Contract shall be sent to the Parties at the addresses listed below in the Contact information, unless otherwise notified. Any written notice shall become effective on delivery, but in any event on the date three (3) calendar days after the date of mailing by registered or certified mail, and shall be deemed sufficiently given if sent to the addressee at the address stated in this Contract.

19. **Discrimination.** The SELLER agrees not to discriminate against any employee or applicant for employment or any other person in the performance of this Agreement because of race, creed, color, national origin, marital status, sex, sexual orientation, age, disability, or other circumstance prohibited by federal, state, or local law or ordinance, except for a bona fide occupational qualification.

20. **Term.** This Contract shall be effective from the date of Contract execution through expiration of the warranty period as described in Section 8.

21. **Severability.** The provisions of this Contract are declared to be severable. If any provision in this Agreement is for any reason held by a court of competent jurisdiction to be invalid or

unconstitutional, such invalidity or unconstitutionality shall not affect the validity or constitutionality of any other provision.

22. Public Disclosure. SELLER understands that his bid response documents and any contract documents may be subject to release under the Public Records Act Chapter 42.56 RCW and the City may be required to be disclosed upon a request. SELLER acknowledges that he has advised to mark any records believed to be trade secrets or confidential in nature as "confidential." If records marked as "confidential" are found to be responsive to the request for records, the City as a courtesy to the SELLER, may elect to give notice to SELLER of the request so as to allow SELLER to seek a protective order from a Court. SELLER acknowledges and agrees that any records deemed responsive to a public records request may be released at the sole discretion and without notice by the City.

In the event of litigation, venue shall be within King County, Washington.

IN WITNESS WHEREOF the parties hereto have caused these presents to be duly executed.

CITY OF PACIFIC:

Signature: Leanne Guier
MAYOR, Leanne Guier

Date: 6/18/19

SELLER: Smith & Loveless Inc by:

Signature: John A Coffey

Print Name: John A Coffax

Title: Director Contracts / Credit

Date: June 10, 2019

Taxpayer ID #: 48-0924021

CITY CONTACT:

Print Name: Jim Morgan

253-929-1113

SELLER CONTACT:

Print Name: Joe Schmidt

Address: 14040 Santa Fe Trail Drive
Lenexa, KS. 66215

Phone 913-888-5201 ext 253

SELLER License #:
(if this is a new SELLER or if SELLER has never conducted work with the City, a W-9 form must be attached to this agreement)

Form **W-9**
(Rev. October 2018)
Department of the Treasury
Internal Revenue Service

Request for Taxpayer Identification Number and Certification

▶ Go to *www.irs.gov/FormW9* for instructions and the latest information.

Give Form to the requester. Do not send to the IRS.

Print or type. See Specific Instructions on page 3.

1 Name (as shown on your income tax return). Name is required on this line; do not leave this line blank.
SMTH AND LOVELESS, INC.

2 Business name/disregarded entity name, if different from above

3 Check appropriate box for federal tax classification of the person whose name is entered on line 1. Check only **one** of the following seven boxes.

☐ Individual/sole proprietor or single-member LLC ☐ C Corporation ☑ S Corporation ☐ Partnership ☐ Trust/estate

☐ Limited liability company. Enter the tax classification (C=C corporation, S=S corporation, P=Partnership) ▶

Note: Check the appropriate box in the line above for the tax classification of the single-member owner. Do not check LLC if the LLC is classified as a single-member LLC that is disregarded from the owner unless the owner of the LLC is another LLC that is **not** disregarded from the owner for U.S. federal tax purposes. Otherwise, a single-member LLC that is disregarded from the owner should check the appropriate box for the tax classification of its owner.

☐ Other (see instructions) ▶

4 Exemptions (codes apply only to certain entities, not individuals; see instructions on page 3):

Exempt payee code (if any)

Exemption from FATCA reporting code (if any)

(Applies to accounts maintained outside the U.S.)

5 Address (number, street, and apt. or suite no.) See instructions.
1404OSANTA FE TRAIL DRIVE

Requester's name and address (optional)

6 City, state, and ZIP code
LENEXA, KS 66215

7 List account number(s) here (optional)

Part I Taxpayer Identification Number (TIN)

Enter your TIN in the appropriate box. The TIN provided must match the name given on line 1 to avoid backup withholding. For individuals, this is generally your social security number (SSN). However, for a resident alien, sole proprietor, or disregarded entity, see the instructions for Part I, later. For other entities, it is your employer identification number (EIN). If you do not have a number, see *How to get a TIN*, later.

Note: If the account is in more than one name, see the instructions for line 1. Also see *What Name and Number To Give the Requester* for guidelines on whose number to enter.

Social security number
☐☐☐ - ☐☐ - ☐☐☐☐

or

Employer identification number
4 8 - 0 9 2 4 0 2 1

Part II Certification

Under penalties of perjury, I certify that:

1. The number shown on this form is my correct taxpayer identification number (or I am waiting for a number to be issued to me); and
2. I am not subject to backup withholding because: (a) I am exempt from backup withholding, or (b) I have not been notified by the Internal Revenue Service (IRS) that I am subject to backup withholding as a result of a failure to report all interest or dividends, or (c) the IRS has notified me that I am no longer subject to backup withholding; and
3. I am a U.S. citizen or other U.S. person (defined below); and
4. The FATCA code(s) entered on this form (if any) indicating that I am exempt from FATCA reporting is correct.

Certification instructions. You must cross out item 2 above if you have been notified by the IRS that you are currently subject to backup withholding because you have failed to report all interest and dividends on your tax return. For real estate transactions, item 2 does not apply. For mortgage interest paid, acquisition or abandonment of secured property, cancellation of debt, contributions to an individual retirement arrangement (IRA), and generally, payments other than interest and dividends, you are not required to sign the certification, but you must provide your correct TIN. See the instructions for Part II, later.

Sign Here **Signature of U.S. person ▶** **Date ▶** 01/17/2019

General Instructions

Section references are to the Internal Revenue Code unless otherwise noted.

Future developments. For the latest information about developments related to Form W-9 and its instructions, such as legislation enacted after they were published, go to *www.irs.gov/FormW9.*

Purpose of Form

An individual or entity (Form W-9 requester) who is required to file an information return with the IRS must obtain your correct taxpayer identification number (TIN) which may be your social security number (SSN), individual taxpayer identification number (ITIN), adoption taxpayer identification number (ATIN), or employer identification number (EIN), to report on an information return the amount paid to you, or other amount reportable on an information return. Examples of information returns include, but are not limited to, the following.

- Form 1099-INT (interest earned or paid)
- Form 1099-DIV (dividends, including those from stocks or mutual funds)
- Form 1099-MISC (various types of income, prizes, awards, or gross proceeds)
- Form 1099-B (stock or mutual fund sales and certain other transactions by brokers)
- Form 1099-S (proceeds from real estate transactions)
- Form 1099-K (merchant card and third party network transactions)
- Form 1098 (home mortgage interest), 1098-E (student loan interest), 1098-T (tuition)
- Form 1099-C (canceled debt)
- Form 1099-A (acquisition or abandonment of secured property)

Use Form W-9 only if you are a U.S. person (including a resident alien), to provide your correct TIN.

If you do not return Form W-9 to the requester with a TIN, you might be subject to backup withholding. See What is backup withholding, *later.*

Smith & Loveless, Inc.
14040 Santa Fe Trail Drive
Lenexa, Kansas 66215
913/888-5201

Name and Address:

Quotation Date:	3/18/2019
Inquiry Number:	28611
Engineer:	Parametrix
Job Location:	Pacific, WA
Project:	Tacoma Boulevard PS

Smith & Loveless, Inc., having an office at 14040 Santa Fe Trail Drive, Lenexa, Kansas 66215 (hereinafter referred to as "Seller"), hereby agrees to sell to the buyer designated below (hereinafter referred to as "Buyer"), the following equipment subject to all of the provisions set forth in this Sales Agreement. ***The Sales Representative is not an agent or employee of Seller and is not authorized to enter into any agreement on Seller's behalf or bind Seller in any way.***

Tacoma Boulevard PS

ONE **SMITH & LOVELESS®** Factory-Built **EVERLAST™** Series 3000 pumping station complete with fiberglass housing and structural steel base suitable for installation on top of a 4'-0" inside diameter wet well opening. The principal items of equipment include two vertical, close-coupled, vacuum-primed, 4", 4B2X*1 Smith & Loveless non-clog pumps, each capable of delivering 250 GPM at 42' TDH with a required static suction lift of 12.5', and each driven by 10 HP, 1760 RPM, 3 phase, 60 cycle, 230 volt premium efficiency motor; valves, 4" internal piping; central control panel with circuit breakers; motor starters and **QUICKSMART™** PLC automatic pumping level controls; priming pumps; ventilator, and all internal wiring.

Station provided with 4" flanged suction connections and 4" plain-end discharge connection with compression coupling.

Standard Equipment Included:

QUICKSMART™ PLC digital control package with color touch-screen with following display functions:
- High water alarm
- Field selectable pump alternation sequence (timed or sequential)
- Individual and totalizing running time meters
- Alarm silence switch with automatic reset
- Prime mode selector – Constant or On-Demand

NEMA 4 Station Control Panel
Float switch back-up level controls
Surge protection device
Hand-off-automatic selector switches
Vacuum priming system with **SONIC START®**
Pump failure/prime failure via common alarm contact
Duplex GFI convenience receptacle
Spare S&L mechanical seal and volute gasket
Spare 24V power supply transformer
Premium efficiency pump motor
25-Year enhanced warranty on **DURO-LAST®** Stainless Steel Base Plate
10-Year enhanced warranty on pump impeller and volute, base, and fiberglass enclosure
5-Year enhanced warranty on **QUICKSMART™** PLC control system

Optional Equipment Items Included:

DURO-LAST® Stainless Steel Base plate
RAPIDJACK® Check Valves
X-PELLERS® Super Clog-Resistant Mono-Port Impellers

Optional Equipment Items Included (cont'd):

Remote Alarm Contacts
Certified Pump Test Curves
Certified Motors
Insulated Hood
Wet Well Analog Signal Output
Third Pressure Gauge for common discharge
Blue Ribbon Model BC001 Birdcage submersible level transducer
Hydrostatic Testing
Dezurick Plug Valves

WARRANTY: 12 months of warranty (parts & labor) from date of start-up, not to exceed 18 months from date of shipment, is included.

Specifically Excluded Items:

Unloading, hauling from nearest unloading area and storage
Excavation, backfilling, grading and all field labor
Concrete, concrete work, grout or grouting
Concrete embedded items
Piping connections or any piping outside the pump station
Electrical wiring and conduit outside the pump station
Unpacking and installation of accessory items, including touch-up painting
PLC Program Copy (if applicable)

Smith & Loveless, Inc. will provide one electronic copy of the O&M on CD in PDF format and four hard copies of the O&M. Additional copies can be provided for $50 per copy.

DAMAGES: While every effort will be exerted to schedule your shipment in accordance with stated schedule, we are not in a position to assume any liability should an unforeseen circumstance arise which delays delivery, and we must, therefore, decline to accept liability for consequential, incidental, liquidated damages and/or penalty assessments as specified

PRICE, SUBMITTAL DATA & DELIVERY:

$ 150,000.00 USD

F.O.B. factory plus any taxes, which may apply. Truck/Rail freight allowed to the job site, rail siding or nearest unloading area-unloading to be by Buyer. Due to the spike in gas prices, which is beyond the control of Smith & Loveless at the time of our quotation/bid, a fuel surcharge may need to be assessed at time of shipment.

Four (4) days of supervision of initial operation over one trip is included. If additional days are required, Seller will furnish a factory-trained supervisor for $975 per day including travel time plus actual travel expenses.

With continuing approval of the Smith & Loveless Credit Department, payments terms are 100% Net 30 days from date of shipment, or at time of start-up, whichever occurs first.

Seller to send Submittal Data for approval 4-6 weeks after receipt of complete details at Seller's factory.

Manufacturing completion is estimated 14-16 weeks after receipt in Seller's office of approved Submittal Data and/or after all notations or comments have been clarified, approved and inserted into the manufacturing documents by the Seller. Variations in the time Submittal Data is returned to Seller and/or Submittal Data marked approved but which contain contingencies or variations may impact the completion time of the equipment.

ADDITIONAL TERMS AND CONDITIONS

1. GENERAL A. Buyer's execution of this Agreement constitutes Buyer's offer to purchase, on the terms and conditions set forth herein, the equipment described in this agreement, and such offer is irrevocable for thirty (30) days after Buyer executes and delivers to Seller this Agreement together with all necessary engineering data and information. Prices are firm for sixty (60) days after the bid date provided a firm order is received at the factory within that time period and provided approved Submittal Data is received at the factory within forty-five (45) days from the date submittals are forwarded from the factory._In the event firm orders and Submittal Data are not received by Seller within the times set forth above, then price and delivery estimates may change due to changes in the costs of material and labor and/or factory capacity at the time when the firm orders or approved Submittal Data is received by Seller. Seller reserves the right to amend this Sales Agreement if not signed and returned within sixty (60) days from the quotation date. In the event we are unable to ship within estimated period for reasons beyond our control, including a request by the Buyer to defer shipment, the prices are subject to adjustment to those prevailing at the time of shipment, but will not exceed 1-1/2% per month.
B. THIS AGREEMENT IS NOT BINDING ON SELLER UNLESS SIGNED ON SELLER'S BEHALF BY AN OFFICER OR MANAGER OF SELLER.

C. This Agreement constitutes the entire contract between the parties with respect to said equipment (any prior agreement, representation, covenant or warranty, written or oral, being superseded hereby) and may not be amended or modified except by a written instrument duly executed by both parties, the provisions of any purchase order or other document submitted by or on behalf of Buyer to the contrary notwithstanding.
D. All notices hereunder are to be in writing and mailed postage prepaid to the party being notified at the address indicated in this agreement or at such other address as may be designated in writing.
E. Remedies provided for herein are cumulative and are in addition to all other remedies as may be available at law or in equity.
F. This Agreement is governed by and subject to the laws of the State of Kansas and the Buyer by executing this agreement agrees to submit to the Jurisdiction of the State of Kansas and the venue for any disputes between the parties will be in the District Court of Johnson County, Kansas, or the Federal District Court of Kansas.

2. NOTICE TO PROCEED- Return to Seller of approved Submittal Data or notification to Seller that the submission of submittals will be waived, constitutes notice to Seller to proceed with manufacture. In the event Seller does not receive approved Submittal Data within forty-five (45) days after Seller's submission of submittal data for approval, then Seller reserves the right to amend price and delivery of the equipment being sold. Final approved Submittal Data means approval by Buyer (or Buyer's representative) of Seller's Submittal Data and/or after all notations or comments have been clarified, approved and inserted into Seller's manufacturing documents at which point Sellers estimated completion schedule commences. Variations in the time Submittal Data is returned to Seller and/or Submittal Data marked approved but which contain contingencies or variations may impact the completion time of the equipment. Seller agrees to furnish only the equipment included in Seller's quotation and/or as described and modified in the Submittal Data. Approval of the Submittal Data constitutes acceptance of the equipment in the configuration described therein. If Seller is directed to change the scope of the equipment after notice to proceed to manufacture, then Seller reserves the right to amend the price and delivery of the equipment.

3. EXCUSED PERFORMANCE- Seller is not liable for any failure or delay in performance hereof, with respect to delivery or otherwise, if such failure or delay is due to any cause beyond Seller's control including, but not limited to, any Act of God, war, civil disturbance, riot, labor difficulty, factory capacity, fire, other casualty, accident or supplier's failure or inability to perform.

4. CREDIT APPROVAL- The credit terms specified herein are subject to Seller's continuing approval of Buyer's credit and if, in Seller's sole judgment, Buyer's credit or financial standing is impaired as to cause Seller to deem itself insecure, Seller may withdraw the extension of credit and require other payment terms.

5. PAYMENT- Subject only to any credit terms, which Seller may extend, the total purchase price hereunder is due at such time, within or after the estimated shipment period specified herein, as said equipment is ready to be shipped. Buyer shall pay in full all invoices within the time for payment specified therein and Buyer's payment obligation is in no way dependent or contingent upon Buyer's receipt of payment from any other party. Any balance owed by Buyer for thirty (30) days or more after the same becomes due is subject to a 2% per month delinquency charge until paid. In addition to all other amounts due hereunder, Buyer shall reimburse Seller in full for all damages, costs and expenses, including reasonable attorneys' fees, which Seller may incur with respect to Buyer's breach of this Sales Agreement or the collection of past due amounts from Buyer. If Buyer is in default under this or any other agreement with Seller, Seller may, at its option, defer performance hereunder until such default is cured.

6. SECURITY INTEREST- Until all amounts due hereunder have been paid in full, Seller has a security interest in said equipment and has all rights of a secured party under the Uniform Commercial Code including, without limitation, the right to take possession of said equipment without legal process and the right to require Buyer to assemble said equipment and make it available to Seller at a place reasonably convenient to both parties. At Seller's request, Buyer shall execute any financing statement or statements submitted by Seller in order that Seller's security interest in said equipment may be perfected.

7. WARRANTY & LIABILITY- Seller warrants only that said equipment is free from defects in materials and workmanship as set forth in Seller's standard Certificate of Warranty furnished to Buyer at the time of final shipment. THIS WARRANTY IS EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING ALL IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE OR DESIGN AND WHICH ARE EXPRESSLY DISCLAIMED BY SELLER. Seller's sole responsibility with respect to any equipment which proves to be defective as to materials or workmanship is either to replace or to repair the same as is set forth in said Certificate of Warranty. Unless authorized in writing by Seller, Seller is not responsible for any charge or expense incurred for the modification, servicing or adjusting of said equipment after the same has been delivered to Buyer. Seller is not liable in association with its warranty or in any other capacity for any consequential, incidental or liquidated damages, late fees/damages or penalties.

8. CLAIM PERIOD- Buyer shall immediately inspect said equipment upon receipt thereof and immediately notify the carrier of any damage, shortage or other nonconformance. Seller is not obligated to consider any claim for damages, shortages or non-conformance unless notified by Buyer within ten (10) days after Buyer's receipt of said equipment.

9. CANCELLATION- Should Buyer cancel this agreement without Seller's prior written consent, Seller may, at its option, recover from Buyer a cancellation charge of not less than 20% of the purchase price hereunder. This cancellation charge is intended to compensate Seller for difficult-to-calculate economic losses, including but not limited to, material and labor costs, as well as loss of anticipated profits suffered due to cancellation.

10. SEVERABILITY – If any provision or provisions of this Agreement shall be held to be invalid, illegal, unenforceable or in conflict with the law of any jurisdiction, the validity, legality and enforceability of the remaining provisions shall not in any way be affected or impaired thereby.

11. STORAGE- If at such time, within or after the estimated shipment period specified herein, as Seller notifies Buyer that said equipment is ready to be shipped Buyer requests a delay in shipment, Seller may, at its option, agree to store said equipment for a period of time determined by Seller, provided that such agreement will not affect Buyer's obligation to pay in full all invoices as they become due, and provided further that for each month, or portion thereof, said equipment is so stored by Seller, Buyer shall pay to Seller as a storage fee an amount equal to 2% of the purchase price.

12. DRAWINGS, ILLUSTRATIONS AND MANUALS- Catalog and proposal drawings, bulletins, and other accompanying literature are solely for purpose of general style, arrangement and approximate dimensions. Seller may make any changes Seller deems necessary or desirable. Submittal for approval, if required, will be made after receipt of complete information from Buyer. Unless otherwise specified at the time of quotation, six sets will be furnished. Additional sets are at $25.00 per set. Installation, maintenance and operation manuals will be furnished in the number of copies specified at the time of quotation. If none specified, four will be provided at no added cost, with additional copies at $50.00 each.

13. PERMITS, LICENSES- Buyer at its sole cost and expense shall obtain all building or other permits or licenses with respect to the installation and operation of said equipment required by any federal, state or local governmental body.

14. PATENT INDEMNIFICATION- Seller shall, at its own expense, defend any suit instituted against Buyer, based on any claim that equipment furnished hereunder infringes any Letters Patent of the United States, and Seller shall pay any damages assessed against Buyer in any such suit, provided that Buyer, upon service of process upon Buyer, gives to Seller notice in writing of the institution of such suit, and permits Seller, through counsel chosen by Seller, to defend the same, and gives Seller all information in Buyer's possession and reasonable assistance and authority to enable Seller so to do. Seller shall have no liability or obligation to Buyer for patent infringement resulting from compliance by Seller with written instructions or specifications of Buyer concerning the structure, operation, material, or method of making equipment furnished hereunder.

Agreed to this 18 day of June 2019

City of Pacific
Buyer

By Leanne Guier
Print Name

By Leanne Guier
Authorized Signature

100 3rd Ave SE
Address
Pacific WA 98047

Is this purchase tax exempt? **Yes**____ **No** ✓

If **YES**, attach Sales Tax Exemption Certificate. Failure to provide tax exempt certificate prior to shipment will result in Buyer being responsible for all applicable taxes.

Agreed to this 10 day of June, 2019
at Lenexa, KS.

SMITH & LOVELESS,INC

By
Authorized Signature

Prepared by Joe Schmidt
Sales Representative

NOTE: The Sales Representative is not an agent or employee of Seller and is not authorized to enter into any agreement on Seller's behalf or to bind Seller in any way.

Division 01

General Requirements

SECTION 01 11 00
SUMMARY OF WORK

PART 1 – GENERAL

1.01 WORK COVERED BY PROCUREMENT CONTRACT DOCUMENTS

A. In general, this procurement contract includes the following major work efforts:

1. Procurement and delivery of wet well mounted vacuum prime pump skid with enclosure and accessories, in accordance with these specifications.

2. Startup and testing of the pumps.

3. Training of OWNER's employees.

4. Provision of O&M Manuals.

B. The project work is located at the following pump station site:

1. Tacoma Blvd Pump Station

   a. Nearest address: 427 Tacoma Blvd, Pacific, WA 98047.

1.02 WORK BY OTHERS

A. Installation of the pumps will be performed by a licensed CONTRACTOR (CONTRACTOR) under contract with the City of Pacific (OWNER) for the construction of the Tacoma Blvd Pump Station Upgrade Project. The CONTRACTOR will be selected at a later date.

1.03 DEFINITION OF TERMS AND RESPONSIBILITY

A. OWNER: City of Pacific.

B. SELLER: A manufacturer/supplier who supplies the pumps and accessories complete in all respects as described herein, including coordination with the CONTRACTOR, certification of installation, conducting testing and start-up, and training of OWNER's personnel. SELLER shall take full responsibility for all equipment provided by SELLER and its proper functioning and shall provide all necessary warranty service per the requirements set forth in this section. The pump skid shall be the end product of one responsible supplier, the SELLER.

C. CONTRACTOR: A CONTRACTOR to be selected subsequently to install the pump skid and assist with testing and start-up, under a separate contract between OWNER and CONTRACTOR.

1.04 SCHEDULE REQUIREMENTS

A. Within 14 days of Notice to Proceed, SELLER shall submit a detailed schedule to demonstrate they can meet the delivery deadline.

B. All required pump shop drawings and submittals shall be submitted no later than 6 weeks following the execution of the contract and/or notice-to-proceed.

C. Pump skid and accessories shall be delivered to the project site no later than 20 weeks after submittal approval.

   1. SELLER shall be responsible for coordinating with the CONTRACTOR for delivery of the pump skid.

D. All work at the pump station site by the SELLER and CONTRACTOR must be completed within thirty (30) calendar days of delivery of the pump skid to the site.

1.05 PAYMENT

A. Payment percentage of the pump procurement contract, for the products and services specified herein, shall be made in accordance with the following:

   1. 10 percent total after approval of submittals.

   2. 80 percent cumulative total after acceptance of factory testing and delivery to pump station site, and submittal of preliminary O&M Manual.

   3. 95 percent cumulative total after delivery to project sites; completion of start-up, testing, and training; and substantial completion acceptance of the pumps by the OWNER.

   4. 100 percent cumulative total after OWNER's final acceptance of the pumps and final O&M Manual.

1.06 ACCEPTABLE MANUFACTURER/SUPPLIER

A. Smith and Loveless pump skid equipment shall be supplied from:

   APSCO, LLC
   Attn: Joe Buckman
   PO Box 2639
   Kirkland, WA 98083
   jbuckman@apsco-llc.com
   425-822-3335, ext 116

1.07 SPECIAL PROJECT CONSIDERATIONS

A. The work will include supply and testing of pump skid at the OWNER's existing sewage pump station listed in this Contract. The SELLER shall plan his onsite work activities to

allow the existing sewage pump station to remain in operation at all times during construction.

B. Coordination with Others:

1. The OWNER shall be allowed unrestricted access to the site throughout the work for operation and maintenance of the existing sewage pump station.

2. The SELLER shall conduct its onsite operations so as to cause a minimum of interference with the work of others and shall cooperate fully with others, including utility providers or other contractors, to provide continued safe access to their respective portions of the site, as required to perform work under their respective contracts. The SELLER, working with the OWNER's Project Representative, shall schedule and coordinate work to avoid conflict with or delay to the utility providers and other contractors.

3. The SELLER shall conduct its onsite operations so as to cause a minimum of interference with neighboring homes and businesses and to maintain access to those homes and businesses at all times.

1.08 OWNER USE OF THE PROJECT SITE

A. The OWNER may utilize all or part of the existing site/facility during the entire period of construction to conduct the OWNER's normal operations. The SELLER shall cooperate and coordinate with the OWNER's Project Representative to facilitate the OWNER's operations and to minimize interference with the SELLER's operations at the same time. In any event, the OWNER shall be allowed access to the project site at all times during the period of construction.

1.09 WASTEWATER FACILITIES

A. The existing pumps are located in a pump station dry well. It is not anticipated that the SELLER will need access to the existing pumps. If the SELLER needs to enter the dry well, the SELLER is responsible for the safety of its own staff including but not limited to coordinating with the OWNER for procedures for entering the pump station dry well.

B. Portions of the existing sewage pump station are exposed to raw wastewater. The SELLER certifies that he is experienced and qualified to anticipate and meet the safety and health requirements of this project.

C. Workers involved with onsite work related to pumps within the existing sewage pump station may be exposed to disease producing organisms in wastewater. The SELLER shall require its personnel to observe proper hygienic precautions.

D. Solvents, gasoline, and other hazardous materials can enter the existing sewage pump station with incoming sewage, and, therefore, certain areas are hazardous to open flame, sparks, or unventilated occupancy. The SELLER shall take measures to assure its personnel observe proper safety precautions when working in these areas.

1.10 FORMAT

A. This specification is organized on the format promulgated by the Construction Specifications Institute (CSI Format).

B. This format assigns permanent numbers to all divisions and sections and, so far as possible, assigns all products, processes, activities, and construction requirements permanent places in the specifications.

C. These specifications are written in imperative mood and streamlined form. This imperative language is directed to the SELLER, unless specifically noted otherwise. The words "shall be" are included by inference where a colon (:) is used within sentences or phrases.

1.11 CITY AND MUNICIPAL CODES

A. Comply with Pacific Municipal Code, as applicable.

B. The Pacific Municipal Code is available for review online at: https://www.codepublishing.com/WA/Pacific/.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 00
SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. This section specifies procedures for SELLER's submittals. The SELLER shall submit descriptive information which will enable the OWNER to determine whether the proposed materials, equipment, testing, and schedule for fabrication are in general conformance to the design concept and in compliance with the pump procurement Contract Documents. The information to be submitted shall consist of drawings, specifications, descriptive data, certificates, test procedures, test results, and such other information, all as specifically required in the pump procurement Contract Documents.

1.02 RESPONSIBILITIES

A. The SELLER shall be responsible for the accuracy and completeness of the information contained in each submittal and shall ensure that the material, equipment, testing, and schedule for fabrication shall be as described in the submittal. The SELLER shall verify that the material and equipment described in each submittal conforms to the requirements of the pump procurement Contract Documents. If the information shows deviations from the pump procurement Contract Documents, the SELLER shall, by statement in writing accompanying the submittal, identify the deviations and state the reason and notify the OWNER in each case for approval. The SELLER shall notify the OWNER if they are aware of any conflict with submittals being provided by the Contractor.

B. SELLER shall submit submittals electronically in a searchable PDF format to the OWNER AND ENGINEER and will be returned to the SELLER electronically in PDF format.

C. The OWNER, or its representative, will review the submittals with reasonable promptness, making comments regarding required corrections. Unless otherwise specified in the Specifications, the OWNER will review the Shop Drawings within fourteen (14) calendar days after receipt of the submittal for review and return the review comments or marked up copies to the SELLER.

D. The SELLER shall make any required corrections required by the OWNER and respond to all review comments, within fourteen (14) calendar days after receipt of the comments.

E. The OWNER's acceptance of such submittal shall not relieve SELLER from responsibility for deviation from the Drawings or Specifications, unless the SELLER has in writing called the OWNER's attention to such deviation at the time of submission, and secured the OWNER's written approval; nor does the OWNER's acceptance of a submittal relieve the SELLER from responsibility for errors in the submittal.

PART 2 – PRODUCTS

2.01 SUBMITTAL PROCEDURES

A. All submittals, shop drawings, catalog cuts, etc., unless otherwise specifically noted, shall be approved and certified by the SELLER as conforming to the drawings and specifications. Copies of all shop drawings, catalog cuts, or other submittals, with the SELLER's approval indicated thereon, should be sent to the OWNER within one (1) working day of the SELLER's approval.

B. Submittal Identification and Status: Each item of submittal to be incorporated into the project shall be cross-referenced to the specification section(s) so as to identify clearly the use for which it is intended.

C. Submittal Reviews: All submittals shall be reviewed, approved, and certified by the SELLER, prior to submittal to the OWNER.

D. Variations: Variations from Contract requirements are discouraged. If submittals show variations from the Contract requirements, the SELLER shall describe such variations in writing, separate from the drawings, at the time of submission. If the OWNER approves any such variation, the OWNER will issue an appropriate Contract modification, except that, if the variation is minor or does not involve a change in price or in time or performance, a modification need not be issued.

E. Warrants for Variations: When requesting a variation, the SELLER shall warrant:

   1. That they have reviewed the entire Contract in order to establish that the variation, when incorporated, will be compatible with all other elements of construction.

   2. That they shall take any action and bear any additional expense which may arise by reason of incorporation and that it will be compatible with all other elements of construction.

   3. That they shall take any action and bear any additional expense which may arise by reason of incorporating the proposed variation, including but not limited to change in its or other elements of construction resulting from the incompatibility of the proposed variation with any other element of construction.

F. Manufacturer's Certificates of Conformance or Compliance: Pre-printed certifications will not be acceptable. The original of all manufacturer's certifications shall name the appropriate item of equipment and/or material, specification, standard, or other document specified as controlling the quality of that item, and shall have attached thereto certified copies of test reports upon which the certifications are based. All certificates shall be signed by the manufacturer's official authorized to sign certificates of conformance or compliance.

G. Certified Factory Test Reports: Before delivery of materials and equipment, certified copies of the reports of all tests listed in the technical sections (and referenced publications) shall be submitted and approved. The testing shall have been performed in a laboratory meeting the requirements specified herein. The test shall have been performed within one (1) year of submittal of the reports for approval. Test reports shall be accompanied by notarized certificates from the manufacturer certifying that the material and equipment proposed to be supplied is of the same type, quality, manufacture, and

make as that tested. If test results are required to be witnessed by an independent testing laboratory, that laboratory shall certify the test report. Unless specified otherwise, factory tests shall be non-witnessed tests.

H. Complete Submittals: All submittals for each specification section are to be presented as a complete bound volume. To the maximum extent possible, this requirement is to be followed. The SELLER's advanced coordination and communication with the OWNER and ENGINEER is encouraged related to all partial submittals.

2.02 SUBMITTAL AND EQUIPMENT DELIVERY SCHEDULES

A. The SELLER shall submit a schedule to include the date of submission for approval of all shop drawings and submittals, required approval dates of all submittals, planned shipping and delivery dates of the equipment, and any other critical path items related to the completion of this Contract. The schedule may be in graph or tabular form.

B. The SELLER shall promptly report to the OWNER any conditions which the SELLER feels will require revision of the schedule and shall promptly submit proposed revisions in the schedule for review. When such changes are accepted by the OWNER, the revised schedule shall be followed by the SELLER.

2.03 SUBMITTALS AND SHOP DRAWINGS

A. SELLER shall submit the following minimum information with their submittals or shop drawings for each model or type of unit supplied by the SELLER:

1. Manufacturer's catalog information, physical and operational description, and specifications.

2. List of all variances from Technical Specifications:

   a. Failure to specifically list and fully explain all variance will be cause for rejection of the submittal.

3. Any other required information to clearly and readily demonstrate compliance with all parts of the Technical Specifications.

4. Installation instructions.

5. Design calculations.

6. Manufacturer's Certification of Factory Applied Coating System and coating system technical data sheets, including SDS.

7. Manufacturer's guarantee as specified.

8. Any additional information listed elsewhere in the Technical Specifications and required to be submitted.

B. When revised for resubmission, SELLER shall clearly identify changes made since previous submission.

C. The SELLER shall not order any materials prior to receipt of the OWNER's approval of submittal. Work performed before acceptance of submittal shall be at the SELLER's own risk. In the event of termination for convenience, the City will not be responsible for any materials ordered prior to submittal approval.

D. Substitutions: Any substitutions proposed by the SELLER shall require submittals to fully enable the OWNER to evaluate the proposed substitution. All submittals shall clearly note and explicitly describe all details of any proposed and/or OWNER approved substitutions or deviations from the Contract Documents. The OWNER's approval of any submittal does not release the SELLER from responsibility for deviations from the Contract Documents. The approval of any Shop Drawing that substantially deviates from the requirement of the Contract Documents shall be evidenced by a change order.

2.04 FINAL SUBMITTALS

A. The SELLER, prior to requesting final payment, shall obtain and submit the following items to the OWNER:

1. Written guarantees, where required.

2. Final O&M Manual.

3. Certificates of installation and field testing (submitted by SELLER's local representative).

4. Releases from all parties who are entitled to claims against the subject project, property, or improvement pursuant to the provisions of law.

PART 3 – EXECUTION

3.01 TRANSMITTAL PROCEDURE

A. General:

1. Submittals shall be accompanied by Submittal Transmittal Form provided by the OWNER, or an OWNER approved substitute form. Submittals for various items shall be made with a single form when the items taken together constitute a manufacturer's package or are so functionally related that expediency indicates checking or review of the group or package as a whole.

2. A unique number, sequentially assigned, shall be noted on the transmittal form accompanying each item submitted. Original submittal numbers shall have the following format: "XX"; where "XX" is the sequential number assigned by the CONTRACTOR. Resubmittals shall have the following format: "XX-Y"; where "XX" is the originally assigned submittal number and "Y" is a sequential letter assigned for resubmittals, i.e., A, B, or C being the 1st, 2nd and 3rd resubmittals, respectively. Submittal 02-B, for example, is the second resubmittal of Submittal 2.

B. Submittal Completeness: Submittals which do not have all the information required to be submitted are not acceptable and will be returned without review.

C. SELLER Review: SELLER shall review all submittals for completeness and conformance to the Contract Documents prior to submittal to the OWNER for review. SELLER shall mark the submittals as being accepted by the SELLER. Any submittals which are not marked by the SELLER as accepted may be rejected and returned to the SELLER without review.

D. Submittal Priority: When multiple submittals have been sent to the OWNER for review, SELLER shall indicate priority for receipt of reviewed submittals. OWNER will attempt to review and reply to the highest priority submittals in the most timely manner when SELLER indicates that there is a priority.

3.02 REVIEW PROCEDURE

A. Unless otherwise agreed, the OWNER will review and return the submittal indicating one of the following actions on the submittal transmittal form.

1. If the review indicates that the material, equipment, test, or work method is in general conformance with the design concept and complies with the Contract Documents, submittal copies will be marked "NO EXCEPTION TAKEN" and given Review Action 1 on the Submittal Transmittal Form. In this event, the SELLER may begin to incorporate into the work the material or equipment covered by the submittal.

2. If the review indicates that the submittal is insufficient or that limited corrections are required, copies will be marked "MAKE CORRECTIONS NOTED" and be given Review Action 2 on the Submittal Transmittal Form. The SELLER may begin incorporating the material and equipment covered by the submittal in accordance with the noted corrections.

3. If the review indicates that the material, equipment, test, or work method is not in general conformance with the design concept or in compliance with the Contract Documents, copies of the submittal will be marked "REVISE AND RESUBMIT" or "SUBMIT SPECIFIED ITEM" and given Review Action 3 or 4 on the Submittal Transmittal Form. Except at its own risk, the SELLER shall not undertake work covered by such submittals until a new submittal is made and returned marked either "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS NOTED."

4. If the review reveals that the submittal is insufficient or contains incorrect data, copies will be marked "REJECTED" and given Review Action 5. If the comments are of a nature that can be addressed with submittal of specified items without a resubmittal, copies will be further marked "SUBMIT SPECIFIED ITEM" and given Review Action 4 on the Submittal Transmittal Form. If the comments require a revision and resubmittal, copies will be further marked "REVISE AND RESUBMIT" and given a Review Action 3 on the Submittal Transmittal Form. Except at its own risk, the SELLER shall not undertake work covered by such a submittal until the attached comments have been either confirmed by a separate written communication or the submittal has been revised, resubmitted, and returned marked either "NO EXCEPTION TAKEN" or "MAKE CORRECTIONS NOTED."

END OF SECTION

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SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 – GENERAL

1.01 GENERAL

A. This section specifies the Operation and Maintenance (O&M) Manual required to be provided by the SELLER.

B. The O&M manual shall include all installation, operation, maintenance, handling, storage, assembly, erection and other pertinent information for all equipment materials, and finishes furnished and installed as part of the project and supplied by the SELLER.

1.02 SUBMITTALS

A. Preliminary Manuals: Submit two bound, hard paper copies and one electronic copy (searchable PDF format) for OWNER's review.

B. Final Manuals: Submit two bound, hard paper copies, and one electronic copy (searchable PDF format) of the Final Manual.

1.03 QUALITY ASSURANCE

A. Equipment manufacturer or system supplier shall prepare manuals for equipment and systems.

1.04 GENERAL

A. Furnish for each item of equipment or system as specified in the individual specification sections.

B. Manual Format:

1. Size: 8-1/2 inches by 11 inches.

2. Paper: 20-pound minimum, white for typed pages.

3. Text: Manufacturer's printed data, or neatly typewritten.

4. Three-hole punch data for binding and composition; arrange printing so that punched holes do not obliterate data.

5. Provide fly-leaf for each separate product, or each piece of operating equipment, with typed name of equipment, equipment number(s), specification section number(s), and manufacturer(s) name(s); and provide with heavy section dividers with numbered plastic index tabs for major components.

6. Provide each manual with title page and typed table of contents with consecutive page numbers. Place contents of entire set, identified by volume number, in each binder.

7. Cover: Identify each volume with typed or printed title "OPERATION AND MAINTENANCE MANUAL, VOLUME NO. ____ OF ____", if applicable, and list:

    a. Project title.

    b. Designate the system or equipment for which it is intended.

    c. Identity of separate structure as applicable.

    d. Identity of general subject matter covered in the manual. Identity of equipment number and specification section.

8. Assemble and bind material in same order as specified, as much as possible.

9. Material shall be suitable for reproduction, with quality equal to original. Photocopying of material will be acceptable, except for material containing photographs or detailed graphics.

10. Binders:

    a. Preliminary Manuals: Heavy paper covers.

    b. Final Manuals: Commercial quality, substantial, permanent, three-ring locking slant "D" style binders with durable, cleanable, plastic covers.

11. Table of contents neatly typewritten, arranged in a systematic order:

    a. CONTRACTOR, name of responsible principal, address, and telephone number.

    b. List of each product required to be included, indexed to content of each volume.

    c. List with each product the name, address, and telephone number of subcontractor, supplier, installer, and maintenance contractor, as appropriate:

        1) Identify area of responsibility of each.

        2) Provide local source of supply for parts and replacement.

    d. Identify each product by product name and other identifying numbers or symbols as set forth in the Contract Documents.

12. Product Data:

    a. Include only those sheets that are pertinent to a specific product.

    b. Clearly annotate each sheet to:

        1) Identify specific product or part installed.

2) Identify data applicable to installation.

3) Delete references to inapplicable information.

13. Drawings:

a. Supplement product data with Drawings as necessary to clearly illustrate:

1) Relations of component parts of equipment and systems.

2) Control and flow diagrams.

3) Coordinate Drawings with project record documents to ensure correct illustration of completed installation.

4) Do not use project record documents as maintenance manual drawings.

5) Provide reinforced three-hole punched binder envelope, bind in with text.

6) Reduced to 8-1/2 inches by 11 inches, or 11 inches by 17 inches folded to 8 1/2 inches by 11 inches.

7) Where reduction is impractical, fold and place in 8-1/2-inch by 11-inch envelopes bound in text.

8) Identify specification section and product on Drawings and envelopes.

14. Instructions and Procedures: Within text as required to supplement product data.

a. Handling, storage, maintenance during storage, assembly, erection, installation, adjusting, testing, operating, shutdown in emergency, troubleshooting, maintenance, interface, and as may otherwise be required.

b. Organize in a consistent format under separate heading for each different procedure.

c. Provide a logical sequence of instructions for each procedure.

d. Provide information sheet for OWNER's personnel, including:

1) Proper procedures in the event of failure.

2) Instances that might affect the validity of warranties or bonds.

15. Warranties, Bonds, and Service Agreements.

1.05 MANUALS FOR EQUIPMENT AND SYSTEMS

A. Content for Each Unit (or Common Units) and System:

1. Description of unit and component parts including controls, accessories, and appurtenances:

   a. Function, normal operating characteristics, and limiting conditions.

   b. Performance curves, engineering data, nameplate data, and factory and field tests.

   c. Complete nomenclature and commercial number of replaceable parts.

2. Operating Procedures:

   a. Start-up, break-in, routine, and normal operating instructions.

   b. Test procedures and results of factory tests where required.

   c. Regulation, control, stopping, and emergency instructions.

   d. Description of operation sequence by control manufacturer.

   e. Shutdown instructions for both short and extended durations.

   f. Summer and winter operating instructions, as applicable.

   g. Safety precautions.

   h. Special operating instructions.

   i. Installation instructions.

3. Maintenance and Overhaul Procedures:

   a. Routine operations.

   b. Guide to troubleshooting.

   c. Disassembly, removal, repair, reinstallation, and reassembly.

4. Installation Instructions: Including alignment, adjusting, calibrating, and checking.

5. Original manufacturer's parts list, illustrations, detailed assembly drawings showing each part with part numbers and sequentially numbered parts list, and diagrams required for maintenance.

6. Spare parts ordering instructions and list of recommended spare parts.

7. Where applicable, identify installed spares and other provisions for future work (e.g., reserved panel space, unused components, wiring, terminals).

8. Manufacturer's printed operating and maintenance instructions.
9. As-installed, color-coded piping diagrams.
10. Charts of valve tag numbers, with location and function of each valve, if applicable.
11. Description of Warranty.

B. Content for Each Electric or Electronic Item or System:

1. Description of Unit and Component Parts:
   a. Function, normal operating characteristics, and limiting conditions.
   b. Performance curves, engineering data, nameplate data, and tests.
   c. Complete nomenclature and commercial number of replaceable parts.
   d. Interconnection wiring diagrams, including all control and lighting systems.
2. Circuit Directories of Panelboards:
   a. Electrical service.
   b. Controls.
   c. Communications.
3. List of electrical relay settings, and control and alarm contact settings.
4. Electrical interconnection wiring diagram, including control and lighting systems.
5. As-installed control diagrams by control manufacturer.
6. Operating Procedures:
   a. Routine and normal operating instructions.
   b. Sequences required.
   c. Safety precautions.
   d. Special operating instructions.
7. Maintenance Procedures:
   a. Routine operations.
   b. Guide to troubleshooting.

c. Adjustment and checking.

d. List of relay settings; control and alarm contact settings.

8. Manufacturer's printed operating and maintenance instructions.

9. List of original manufacturer's spare parts, manufacturer's current prices, and recommended quantities to be maintained in storage.

C. Detailed Master List:

1. Provide a detailed master list as a separate section within the operating and maintenance manual.

2. Subdivide sections into the following categories:

a. Equipment with spare parts list with current prices.

b. Recommended equipment expendables to be on hand.

c. Recommended test equipment.

d. Miscellaneous loose items which have relevant importance.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

Division 22

Plumbing

SECTION 22 11 16

WET WELL MOUNTED VACUUM PRIME PUMP SKID

PART 1 – GENERAL

1.01 SUMMARY

A. This section covers the supply and testing for a wet well mounted vacuum prime pump skid including vacuum prime system, discharge valves, a control panel, and other items as described in this section. The pumps shall be designed for heavy duty service and designed for pumping raw sewage and wastewater containing solids, rags, and other fibrous materials without clogging.

B. Furnish stainless steel skid mounted pumps with discharge header, valves, piping accessories, QuickSmart pump logic controller, and all other accessories that perform all operations in connection with this specification.

C. Provide assistance to the installing contractor regarding installation, alignment, start-up and testing, and operator training.

D. The pump skid manufacturer shall warrant all equipment provided under this section, whether or not it is manufactured by the pump skid manufacturer, so that there is one source for warranty and product service. Technicians specifically trained and certified by the manufacturer to support the product and employed by the pump supplier shall service the pumps and motors.

E. The complete packaged pump skid system shall be certified and listed by UL for conformance to U.S. and Canadian Standards. The station shall be UL-QCZJ certified and listed.

F. If the pump skid and control panel are larger than shown on the Contract Drawings or do not fit the configuration shown, the pump skid supplier shall be responsible for any change order costs.

1.02 SUBMITTALS

A. Proposal:

1. Proposal Form.

2. Product Data:

   a. Manufacturer, model, and horsepower.

   b. Manufacturer's published warranty documents.

   c. Pump performance curves demonstrating compliance with performance requirements.

3. Additional information as selected by pump skid supplier.

B. Shop Drawings and product data prior to manufacture:

1. Catalog information, descriptive literature, specifications, and identification of materials of construction for all pieces of equipment.

2. Manufacturer, model, weight, and horsepower or other pertinent information for each piece of equipment.

3. Manufacturer's published warranty documents.

4. Pump performance curves demonstrating compliance with performance requirements. Indicate all specified duty points and recommended limits of operation graphically on pump performance curve. Include curves for efficiency, brake horsepower, and net positive suction head required, each plotted against flow in gallons per minute (gpm).

5. Manufacturer's NPSH required curve.

6. Pump impeller type, size, and identification.

7. Detailed drawings showing the equipment dimensions, size, and locations of connections and weights of associated equipment.

8. Complete dimensional drawings of mounted equipment and skid, including pumps, motors, valves, piping connections, control panel, details of construction, and weights.

9. Valve product technical submittal data shall contain the following information and data:

   a. Product data sheets for each make and model.

   b. Complete catalog information, descriptive literature, specifications, and identification of materials of construction.

   c. Dimensions, port shape, diameter, weight, and capacity.

   d. Materials of construction, with ASTM reference and grade.

   e. Pressure rating.

   f. Manufacturer's product brochure, cut-sheets, and parts diagrams.

   g. Flow coefficient and/or pressure drop data.

10. Factory applied coating system.

11. Mechanical seal information.

12. Size and template for anchor bolts for pump skid.

13. Bearing life calculations.

14. Power and control wiring diagrams, including terminals and numbers.

15. Motor Submittal Data:

    a. Completed Motor Data Form.

        1) Note that the motor nameplate shall be as stated in this section. Any horsepower above the specified nameplate horsepower provided by the motor shall be included in the service factor.

    b. Motor manufacturer motor data sheet.

    c. Guaranteed minimum efficiency at rated load at rated voltage.

    d. Guaranteed minimum power factor at rated load at rated voltage.

    e. Expected efficiency at 1/2, 3/4, and full load at rated voltage.

    f. Expected power factor at 1/2, 3/4, and full load at rated voltage.

    g. Motor no-load current at rated voltage.

    h. Full-load current at rated voltage.

    i. Full-load current at 110 percent voltage.

    j. Starting current at rated voltage.

    k. Full-load speed.

    l. Certified copy of test report for identical motor tested in accordance with NEMA MG 1 Part 31 and IEEE Standard 112, Test Method B.

16. Control cabinet:

    a. Include in the submittal the following:

        1) All components product data sheets.

        2) Panel layout depicting equipment placement.

        3) Heat calculations.

        4) Wiring diagrams for power and signals.

        5) I/O list for operating the pumps skid.

        6) A detailed written functional description of the programming including list of input signals, output signals, status tags, and description of control functions.

        7) Submit a description of the control functions generating the output signals and calculated values.

8) Detailed testing plan for each I/O data point and calculated value for the field testing and commissioning plan.

9) Complete elementary (ladder) diagrams.

10) Submit written descriptions explaining ladder diagram operation, system operation, and analog signal processing.

17. Spare parts list to maintain equipment for a period of 5 years.

C. Prior to factory testing submittals:

1. Complete installation and start-up instructions.

2. Procedure for factory testing.

3. Preliminary Operations and Maintenance Manuals.

a. Operation and Maintenance (O&M) Manual shall be submitted in accordance with Section 01 78 23. The O&M Manual shall include the following at a minimum:

1) Final approved submittal information.

2) Manufacturer's operation and maintenance data for all pump, motor, and other skid components including but not limited to preventative and periodic maintenance recommendations, wiring diagrams, lubrication instructions including type and frequency, mechanical seal replacement instructions, testing and troubleshooting procedures, etc. Strikeout all non-applicable information.

3) Certified factory and field pump performance test results.

4) Spare parts list and approximate current pricing.

5) Certificate of installation and testing.

6) Warranty documents.

7) Contact information for Manufacturer's Representative and installing Contractor.

D. Prior to shipment to jobsite submittals:

1. Field testing procedure.

2. Certified factory test results.

E. Prior to Substantial Completion and OWNER acceptance of pump:

1. Manufacturer's Certificate of Proper Installation.

2. Certified field test results.

F. Closeout Submittals:

1. Final Operations and Maintenance Manuals in accordance with Section 01 78 23. Final manual shall include Manufacturer's Certificate of Proper Installation and certified field pump test results.

1.03 QUALITY ASSURANCE

A. Unit Responsibility: In order to ensure coordination, all pumps, motors, power cable, pump bases, and accessories shall be supplied by one pump skid manufacturer.

B. All pumping equipment furnished under this section shall be of a design and manufacture that has been used in similar applications and it shall be demonstrated as such to the satisfaction of the Owner.

C. Coordination: Ensure the manufacturer adequately coordinates with the variable frequency drive supplier to produce a system that functions as specified.

D. All of the valves shall be products of well-established manufacturers who are fully experienced, reputable, have been selling the products specified herein for a minimum of 10 years, and are qualified in the manufacture of the particular product furnished.

E. All valves shall be designed, constructed, and installed in accordance with the requirements and procedures of applicable AWWA standards and shall comply with these Specifications as applicable.

F. Skid supplier shall have a minimum of 5 consecutive years of experience of building similar projects.

G. Control Cabinet shall comply with the latest version of the following requirements:

1. NEC.

2. UL 508.

3. Local codes and ordinances.

H. Variances: In instances where two or more codes are at variance, the most restrictive requirements shall apply.

1.04 SOURCE QUALITY CONTROL

A. All components of the pump station shall be given an operational test at the pump station manufacturer's facility to check for excessive vibration or leaks in the piping or seals, and to correct operation of the automatic control and vacuum priming systems and all auxiliary equipment. Installed pumps shall take suction from a deep wet well, simulating actual service conditions. The control panel shall undergo both a dry logic test and a full operational test with all systems operating.

B. Each pump shall be factory tested and certified test results submitted prior to shipment of pumps. The Engineer shall be given notice of the factory pump testing a minimum of 14 days in advance of testing:

1. Impeller, motor rating, and electrical connections shall be checked for compliance to the specifications.

2. Certified copy of test report for identical motor tested in accordance with NEMA MG 1 Part 31 and IEEE Standard 112, Test Method B.

3. Performance Testing: Each pump shall be operationally tested to demonstrate compliance with performance requirements. The pumps shall be tested at full speed with the minimum water depth specified. A minimum of five test points shall be plotted on the full speed pump curve showing horsepower, efficiency, and head and flow from shut-off head to the specified run out condition plus 20 percent. During the testing, each pump shall be run continuously for a minimum of 30 minutes. Performance testing shall conform to the most recent Hydraulic Institute Standards test codes, ANSI/HI 14.6, Acceptance Grade 1U.

4. Hydrostatic Testing: Each pump shall be hydrostatically tested that conforms to the most recent Hydraulic Institute Standards test procedures in ANSI/HI 14.6. The hydrostatic test shall be held for at least 10 minutes. At no time during the test shall the casing show undue deflection or signs of weakness at any point, nor shall the casing show sweating through porous metal or leaking through cracks or other defects.

5. After performance and hydrostatic testing, the cable insulation shall be tested again for moisture content and insulation defects.

6. Tabulated and graphical test results shall be certified by the manufacturer and submitted for approval by the Engineer prior to shipment of the pumps.

1.05 SPARE PARTS

A. At a minimum, the following spare parts shall be provided for each size of pump:

1. One spare volute gasket and one spare seal gasket.

2. One mechanical seal for each pump supplied.

3. One set of any special tools required to disassemble or reassemble the pump.

4. Any additional parts needed to maintain the equipment for a period of 5 years.

B. Control Cabinet Spare Parts:

1. Two pilot light lamps for each unique type installed.

2. One spare relay for each unique type installed.

C. Package to prevent damage during handling and storage.

D. Label with project number, part name and number, and description.

1.06 WARRANTY

A. The pump skid and associated equipment (including control panel) shall be warranted for a period of not less than 1 year. The warranty shall begin on the date of commissioning or 6 months after the date of shipment, whichever comes first. The warranty shall cover defects in materials, workmanship, corrosion, and physical failures occurring in normal service when installed in accordance to the manufacturer's recommendations.

   1. The warranty shall be comprehensive and non-prorated. Defective parts or equipment shall be replaced or repaired without cost to the OWNER. No deductibles shall be allowed for travel time, service hours, repair parts cost, etc.

B. The stainless steel baseplate shall be covered by a 25-year non-rated warranty. The stainless steel base shall be warranted against structural failure and perforation due to corrosion.

C. The motor adapter, volute, impeller, and fiberglass enclosure shall be covered by a 10-year pro-rated warranty. The fiberglass enclosure shall be warranted against failure of the fiberglass components. The microprocessor controller, panel display unit and submersible level transducer shall be covered by a 5-year pro-rated warranty. The pro-rated warranties shall be computed on a monthly basis starting at shipment and shall cover replacement parts only.

1.07 PROTECTION

A. Box, crate, or otherwise completely enclose and protect all equipment during shipment, handling, and storage.

B. Protect equipment from exposure to elements and keep all items thoroughly dry at all times.

C. Store motors, electrical equipment, and other equipment with moving parts in weather tight warehouses at a maintained temperature of 60 degrees F minimum.

D. Painted Surfaces: Protect against impact, abrasion, discoloration, and other damage.

E. Protect electrical equipment, controls, and insulation against moisture or water damage.

1.08 CRITICAL SPEED AND VIBRATION

A. Each complete pump assembly shall have no critical or resonant frequencies or multiples of resonant frequencies within 30 percent above and 30 percent below the range of pump speeds and blade pass frequencies required to meet the Performance Requirements. Complete assemblies shall be free of objectionable or destructive vibration throughout the specified operating range.

B. Vibration levels shall comply with the most recent edition of the Hydraulic Institute Standards.

C. Motor vibration shall conform to NEMA MG1.

D. Verify that equipment is mutually compatible and free of resonance over the complete operating range.

PART 2 – PRODUCTS

2.01 MANUFACTURERS AND PRODUCTS

A. Pump Skid:

1. Smith and Loveless Wet Well Mounted Vacuum Prime Pump Station.

   a. Everlast Series 3000.

2.02 PERFORMANCE CRITERIA

A. Pump Performance:

1. Pumping Condition A[1] – Rated Capacity at Full Speed:

   a. Capacity: 250 gpm.

   b. Total Head: 42 feet.

   c. Minimum Hydraulic Efficiency: 37.6 percent.

   d. Approximate Pump Speed: 1,760 rpm.

2. Pumping Condition B[1] – Run Out at Full Speed:

   a. Approximate Capacity: 400 gpm.

   b. Total Head: 32 feet.

   c. Minimum Hydraulic Efficiency: 44.7 percent.

3. Pumping Condition C[1] – High Head at Full Speed:

   a. Approximate Capacity: 80 gpm.

   b. Total Head: 50 feet.

   c. Minimum Hydraulic Efficiency: 12.8 percent.

4. Minimum Shut-Off Head: 54 feet.

5. Minimum Hydraulic Efficiency at Best Efficiency Point: 43 percent.

6. Maximum Motor Nameplate: 10 horsepower.[2, 3, 4]

7. Minimum Suction Diameter: 4 inches.

8. Minimum Discharge Diameter: 4 inches.

Notes:

[1] Pumping conditions shall be as defined in the standards of the Hydraulic Institute and are exclusive of losses through the pump casing.

[2] Motor horsepower rating shall not be exceeded over the range of operation summarized by Pumping Conditions A, B, and C.

[3] Motors shall not exceed 80 dBA at 3 feet.

[4] Any motor horsepower supplied greater than the specified amount shall be included in the service factor.

B. Pumps shall operate without cavitation or undue vibration under all conditions from the specified minimum flow to the specified maximum flow within the range of water levels in the existing wet well shown on the Drawings.

2.03 PUMPS WITH X-PELLERS

A. The pumps shall be vertical, dry-pit, centrifugal non-clog type of heavy cast-iron construction, especially designed for the use of mechanical seals. In order to minimize seal wear caused by linear movement of the shaft, the shaft bearing nearest the pump impeller shall be locked in place so that end play is limited to the clearance within the bearing. To minimize seal wear resulting from shaft deflection caused by the radial thrust of the pump, the shaft from the top of the impeller to the lower bearing supporting the impeller shall have a minimum diameter of 1-7/8 inches for Motor Frame Sizes 213 through 286; 2-1/8 inches for Motor Frame Sizes 324 and 326; and 3 inches for Motor Frame Size 364 and larger. No deviation from the specified shaft diameter or tolerances will be allowed. The dimension from the lowest bearing to the top of the impeller shall not exceed 6 inches.

B. The bearing nearest the impeller shall be designed for the combined thrust and radial load. The upper bearing shall be free to move linearly with the thermal expansion of the shaft and shall carry only radial loads.

C. The shaft shall be solid stainless steel through the mechanical seal to eliminate corrosion and abrasive rust particles. Removable shaft sleeves will not be acceptable if the shaft under the sleeve does not meet the specified minimum diameter.

D. The pump shall have an integral adapter providing a large water reservoir above the impeller to provide for positive exclusion of air from the impeller. The seal shall be inside this area to assure lubrication. Pumps which do not use hollow priming adapters for positive lubrication of the seal will not be acceptable. Self-priming pumps are not acceptable. The pump controls must be set so that the main pumps cannot be turned on unless the pumps are filled with liquid, and the pump is completely primed.

E. The pump shall be constructed so as to permit priming from the lower pressure area behind the impeller. Priming from high-pressure connections, which tends to cause solids to enter and clog the priming system, will not be acceptable. As an additional measure to

prevent plugging, all passages in the priming system which contain liquid shall be at least equivalent to a 2-1/2-inch (64 mm) opening. The priming bowl shall be transparent, enabling the operator to monitor the priming level.

F. The pump shall be arranged so that the rotating element can easily be removed from the casing without disconnecting the electrical wiring or disassembling the motor, impeller, backhead or seal, so that any foreign object may be removed from the pump or suction line.

G. Enclosed impellers shall be used. Wear plates are not acceptable.

H. The pump shaft shall be sealed against leakage by a single mechanical seal constructed so as to be automatically drained and primed each time the pump is drained and primed. Water that lubricates the mechanical seal shall be automatically drained from around the seal if the pump loses prime in order to allow both the pump and the seal to be drained, thereby preventing freezing and breakage of the seal during power outages in sub-freezing temperatures.

I. The seal shall be of carbon and ceramic materials with the mating surfaces lapped to a flatness tolerance of one light band. The rotating ceramic shall be held in mating position with the stationary carbon by a stainless steel spring. The entire seal assembly shall be held in place by a bronze seal housing to prevent excessive heat buildup. Use of cast-iron or other ferrous material for the seal housing shall not be acceptable.

J. The pump volute shall be furnished with fronthead mounting adapters, bolted to the station floor for rigidity, and gasketed for a gas-tight seal.

K. The pump volute shall be of heavy, cast iron construction, free from projections that might cause clogging or interfere with flow through the pump.

L. X-Peller: The pump impeller shall be of the enclosed mono-port type made of close-grained cast-iron and shall be in dynamic balance when pumping wastewater. The dynamic balance shall be obtained without the use of balance weights or liquid filled chambers. The impeller shall be designed to allow for the trimming of the impeller to meet design condition changes without altering the balance. The eye of the impeller as well as the port shall be large enough to permit the passage of a sphere 3 inches (76 mm) in diameter in accordance with nationally recognized codes. To further prevent clogging, the impeller port shall have a minimum area of 10.6 inch^2 (6,840 mm^2). The impeller shall be keyed with a stainless steel key and secured to the motor shaft by a stainless steel cap screw equipped with a Nylock or other suitable self-locking device. The impeller shall not be screwed or pinned to the motor pump shaft and shall be readily removable without the use of special tools. All impellers less than full diameter shall be trimmed inside the impeller shrouds. The shrouds shall remain full diameter so that close minimum clearance from shrouds to volute is maintained. Both the end of the shaft and the bore of the impeller shall be tapered to permit easy removal of the impeller from the shaft.

2.04 MOTORS

A. The pump motors shall be vertical, solid shaft, NEMA P-base, squirrel-cage induction-type, suitable for 3 phase, 60 Hertz, 240-volt electric current. The motors shall

have Class F insulation. Insulation temperature shall, however, be limited to Class B. The motors shall have normal starting torque and low-starting current, as specified by NEMA Design B characteristics. The motors shall be open drip-proof design with forced air circulation by integral fan. Openings for ventilation shall be uniformly spaced around the motor frame. Leads shall be terminated in a cast connection box and shall be clearly identified.

B. The motors shall have a minimum 1.15 service factor. The service factor shall be reserved for the owner's protection. The motors shall not be overloaded beyond their nameplate rating, at the design conditions, nor at any head in the operating range as specified under Operating Conditions.

C. The motor-pump shaft shall be centered, in relation to the motor base, within .005 inch (0.127 mm). The shaft runout shall not exceed .003 inch (0.076 mm).

D. The motor shaft shall equal or exceed the diameter specified in this section at all points from the drive end bearing to the top of the impeller hub.

E. A bearing cap shall be provided to hold the bottom motor bearing in a fixed position. Bearing housings shall be provided with fittings for lubrication as well as purging old lubricant.

F. The motor shall be fitted with heavy lifting eyes or lugs, capable of supporting the entire weight of the pump and motor.

G. The pump motors shall be Premium Efficiency type, per NEMA MG-1 table 12-12, Inverter Ready per NEMA Part 31.4.4.2, with cast-iron frames, and be UL Recognized and CSA Approved. The motor windings shall be 200 C Inverter Spike-Resistant magnet wire and the rotors shall have an epoxy coating for corrosion protection.

2.05 CONTROL CABINET

A. The control equipment shall be mounted in a NEMA Type 4 steel enclosure with two hinged, lockable doors and a steel barrier partition down the middle. One side of the divider shall house the three-phase circuits (motor starters and circuit protectors, etc.), and the other shall house the single-phase control circuits and low voltage components. The microprocessor and low voltage controls shall be accessible without exposing the three-phase high voltage supply, and the pump station controller shall be operable without opening the enclosure door.

B. The control panel shall be supported on adjustable, extruded aluminum mounting legs, secured to the station baseplate. The slotted legs shall also serve as mounting points for auxiliary items, such as the vacuum priming subassembly.

   1. Dissimilar metals shall be electrically isolated from each other.

C. All components within the control panel shall be UL listed or recognized, and the complete station control panel itself shall be labeled as a UL 508A General Use Industrial Control Panel. The electrical equipment in the panel shall be protected by a surge protective device.

D. To facilitate wire tracing and servicing, the control wiring shall be run in enclosed wireways, with removable covers, rather than tied up in bundles.

E. Control relays up to 6-amp capacity shall be the modular, plug-in type, with integral LED indicating lights to show activation. Larger control relays and vacuum pump contactors shall be enclosed to be "finger safe".

F. A duplex GFI protected convenience outlet shall be provided in the station for operation of 120-volt AC devices.

G. Thermal magnetic air circuit breakers shall be provided for branch disconnect service and short-circuit protection of all auxiliary circuits, and motor circuit protectors with lockout capability shall be provided for each pump motor. Only instantaneous trip magnetic type motor circuit protectors, matched to the motor inrush current, shall be used for the motor circuits, for added protection from low-level faults. Thermal magnetic circuit breakers will not be allowed for pump motor service.

H. Magnetic across-the-line starters with 24-volt coils and solid-state overload protection for each phase shall be provided for each pump motor to give positive protection against phase unbalance, thermal overload, phase loss and ground fault. To provide the fastest trip speed and for ground fault protection, only solid-state overload protection will be used. Motor starters using heater coils will not be acceptable. Each single-phase auxiliary motor shall be equipped with an over-current protection device in addition to the branch circuit breaker, or shall be impedance protected. All wiring shall be labeled with thermal transfer self-laminating labels and a coded wiring diagram shall be provided.

I. Individual NEMA 4 oil-tight Hand-Off-Automatic selector switches shall be provided for each pump. The switches shall be 3-position rotary-type with spring return on the Hand position, and mounted on the top of the station control panel for easy access from either side.

J. To control the operation of the pumps with variations of liquid level in the wet well, and monitor the station control, environmental and alarm functions, a specially preprogrammed, dedicated PLC-based control system shall be provided. The QUICKSMART™ controller shall interface with the wet well level transducer, panel display unit, motor starters, environmental system, accessories and alarm functions through isolated digital and analog input and output ports as required. The digital controls shall operate on 24 volts or less, to eliminate shock hazard. The 24-volt power supply shall be overload protected to be "crowbar safe" and will return to operation when a short is removed. Program integrity shall be maintained by battery-backed RAM.

   1. Alarms that shall be available for telemetry system (telemetry system by others):

      a. Pump Failure to Pump Alarm.

      b. Maximum Number of Pump Starts and Logging.

      c. Pump Failure to Prime Alarm.

d. High Water Alarm.

e. Vacuum Leak.

2. Analog monitoring that shall be available for telemetry system (telemetry system by others):

a. Wet Well Level Indication and Trending.

K. A NEMA 4 rated display unit shall be mounted through the front of the panel to provide operator input to and visual output from the PLC controller. This interface shall be a 7-inch-wide (178 mm) screen graphic interface with DSTN 65K-color Liquid Crystal Display with backlighting and resistive-type touch screen, for data input and programming.

L. The display shall have a "sleep" feature to prolong screen life. A minimum of 11 (eleven) menu screens shall be available for display and management of pump and station control functions including, but not limited to:

1. Standard Features Graphical pump running indication.

2. General alarm indication.

3. Individual alarm indicators for each alarm function (with time and date).

4. Lead pump indication.

5. Alarm silencing.

6. Digital indication of air temperature.

7. Digital and graphical indication of wet well level.

8. Digital indication of elapsed run time for each pump.

9. Digital indication of elapsed run time for parallel pump operation.

10. Digital indication of level control and alarm settings.

11. Date and time indication with set time functionality.

12. Heater/blower running indication.

13. Alarm logging, coded for "time active" or "return time" time cleared for the last 500 events by date and time.

14. "Help" screens.

15. Wet well simulation.

16. Prime mode selection (On-demand or CONSTANT PRIME®).

M. The following Field Programming Functions shall be available:

1. Select English or Spanish language display mode.
2. Reset wet well On, Off and alarm levels or return to default settings.
3. Reset heater or vent fan thermostat set points or return to default settings.
4. Select sequenced or timed pump alternation and select alternation time interval.
5. Select any pump to remain as lead pump.
6. Silence audible alarm.
7. Reset running time meters.
8. Set date/time.
9. Set max starts per hour.
10. Wet well level simulation from touch screen, overriding submersible pressure transducer signal.
11. Prime mode selection (On-demand or CONSTANT PRIME®).

N. The QUICKSMART™ control system shall be designed to allow alternation of the pumps by either a time clock or alternation at the end of each pumping cycle. Selection of the alternation method and setting of the interval for timed alternation shall be easily done without opening the panel. The panel display shall indicate which pump is currently the lead pump.

O. A resistance temperature device (RTD) shall be provided to monitor the ambient temperature in the pump station, and to control the operation of the ventilation blower and the 500-watt station heater.

P. The liquid level in the wet well shall be monitored by a submersible hydrostatic pressure transducer with minimum 3-inch-diameter stainless steel sensor diaphragm and corrosion resistant protective baffle plate, providing a 4-20 mA signal to the pump control unit. The transducer shall be designed and rated for use in wastewater pump station wet wells.

1. The body of the transducer shall be made of 316 stainless steel. The transducer shall have dual arrestor technology for lightning and surge protection. The pressure transducer shall have a threaded strain relief connection for the wire conductor. The process connection shall be an oiled filled diaphragm. The transducer shall be rated for an external pressure of 500 psi.
2. Submersible transducer shall be Blue Ribbon Model BC001 Birdcage or approved equal. Contractor shall include a bellows style atmospheric isolator to prevent moisture from entering the capillary tube of the pressure transducer. The bellows shall be located in the control panel.

Q. The control system shall take the signal from the level transducer and provide a continuous readout of the wet well level in feet and tenths of a foot, through the panel display unit. It shall also be the means of setting the pump on and off points and alarm levels. As a minimum, the controller shall be capable of digitally setting "On" levels for lead and lag pumps, an "Off" level, and a minimum of two alarm levels. Provisions shall be made for the pumps to operate in parallel should the level in the wet well continue to rise above the starting level for the lag pump.

1. A minimum of three (3) displacement switches shall be provided to automatically operate the pump in back-up mode, in case of failure of the digital control system or the submersible level transducer. The back-up system shall be entirely independent of the digital system. A 30-foot (9 m) color-coded cord shall be provided with each switch. The cord shall have a corrosion-resistant vinyl jacket and be multi-stranded to prevent fatigue. The displacement switch cords and the cable for the submersible pressure transducer shall enter the wet well through cord grip seals mounted to a removable, gasketed floor plate.

2. The floor plate shall allow the displacement switches and transducer to be adjusted or removed and replaced without having to enter or reach into the wet well.

2.06 VACUUM PRIME SYSTEM

A. A vacuum priming system shall be furnished to prime the main pumps. The system shall be as shown on the vacuum priming schematic and shall include two vacuum pumps, providing one standby vacuum pump. Vacuum pumps shall have corrosion-resistant internal components. The vacuum priming system shall be complete with large port vacuum control solenoid valves, **SONIC START®** prime level sensor, float-operated check valves to protect the vacuum pumps, and all necessary shut-off valves as shown on the piping schematic. The float-operated check valves shall have a transparent body for visual inspection. All hoses and tubing used in the priming system shall be at least 3/8-inch (9.5 mm) nominal diameter. The air discharged from the vacuum pumps shall be piped into the wet well.

B. The vacuum pumps shall be mounted on adjustable extruded aluminum slotted rail supports and shall be operated through finger safe relays with a "push-to-operate" manual override feature.

C. The solenoid valves used in the vacuum priming system shall be of the high flow, direct acting brass body type, with threaded ports, NBR seals and 300 Series stainless steel plunger, rod, plate and springs. The minimum orifice diameter shall be 5/16 inch (8 mm). The solenoid valves shall be UL Listed, with Class F coil rating and of suitable voltage and thermal capacity for the application. The solenoid valve shall be capable of being disassembled without the use of special tools.

D. Liquid level in the pump priming chamber shall be monitored by a **SONIC START®** resonant frequency liquid level probe. The probe shall be equipped with a piezoelectric drive and sensitive circuits to detect frequency shifts when the probe is covered by liquid. The probe shall be completely sealed and have a 316L stainless steel housing for corrosion resistance. It shall be provided with a wiring connector molded of

PolyPhenylSulfone, an amorphous high-performance thermoplastic for impact and chemical resistance. The probe shall have a plug-in connector to facilitate easy removal.

E. The **SONIC START®** probe shall be provided with red and green light emitting diodes as a diagnostic tool to indicate connectivity, prime status or a fault condition. In addition, a magnetic key shall be provided to allow external operation of the unit for troubleshooting or for manual override. Systems utilizing an electrode, mechanical means such as a float, or that require any type of electrical or moving parts inside the priming chamber, which may accumulate debris, short-out, bind or fail will not be acceptable.

F. The priming system shall automatically provide positive lubrication of the mechanical seal each time a main pump is primed. To prevent excessive stoppage due to grease accumulation, no passageway in the priming system through which the pumped liquid must pass shall be smaller than the equivalent of a 2-1/2-inch (64 mm) opening.

G. The vacuum priming system shall have two field selectable modes of operation. In the "On-Demand" mode, the priming system will operate only after a pump is called on to run, and if it is not primed.

H. Once primed, the pump will be allowed to run. In the "Constant Prime" mode, both pumps are kept primed continuously, and ready to start immediately when called for.

2.07 VENTILATION BLOWER

A. A ventilating blower capable of delivering 250 CFM at 0.1-inch (118 l/s at 2.5mm) static water pressure shall be provided to remove the heat generated by continuous motor operation. The ventilating blower shall be turned On and Off automatically by the station controller. The temperature settings to operate the fan shall be adjustable using the interface display. A heavy extruded aluminum louvered grille with adjustable openings shall cover the discharge of the blower. A similar grille shall be provided in the other end of the station enclosure for air intake.

2.08 ELECTRIC HEATER

A. A 500-watt electric heater controlled by the station controller, shall be furnished. The temperature settings to operate the heater shall be adjustable using the interface display. The heater shall be rigidly mounted in the station to prevent removal.

2.09 PIPING

A. The pump suction connections shall be drilled and tapped for a 125-pound American Standard flange for easy attachment of the suction risers. The discharge line from each pump shall be fitted with a Rapid-Jack check valve and eccentric plug valve. Size, location and quantity of check valves and plug valves shall be as shown on the construction drawing. The check valve shall be of the spring-loaded type with external lever arm and an easily replaced resilient seat for added assurance against vacuum leaks. Check valves shall have stainless steel shaft with replaceable bronze shaft bushings. Ball-type check valves shall not be acceptable. An operating wrench shall be provided for the plug valves. All station pipes and fittings shall be capable of passing a 3-inch (76 mm) spherical solid.

B. Protrusions through the station floor shall be sealed where necessary to effect sealing between the equipment chamber and the wet well. The suction and discharge connections, where the connections pass through the floor, shall be sealed by gaskets to prevent corrosive, noxious fumes from entering the station. Welded joints that do not allow adjustment or replacement will not be considered for this application. The pump station manufacturer shall extend the suction and discharge connections below the floor at the factory so that field connections can be made without disturbing the gas-tight seals. Once the station is installed, however, it shall be possible to remove the entire 4-inch or 6-inch (100 mm or 150 mm) suction pipes through the station floor without having to enter the wet well to unbolt them.

C. The manufacturer of the pump station shall provide a compression-type sleeve coupling for installation on the common discharge pipe. A minimum of two anchoring points shall be provided on the bottom of the station baseplate for attachment of coupling joint restraints, which shall be provided by the installing contractor.

2.10 RAPID-JACK CHECK VALVES

A. The cast iron check valve body shall be designed so that the upper portion may be easily removed, without disturbing the end flange seals to adjacent piping, to service the shaft, arm and clapper or to remove any material which may be causing clogging. Provide one spare body gasket for each valve.

2.11 SKID BASEPLATE

A. The pump skid baseplate shall be fabricated from 1/2-inch thick 316 stainless steel with a pitting resistance equivalent number of 24.0 or greater. Surface shall be glass bead blasted to remove surface contamination and passivated to provide a uniform finish.

2.12 ECCENTRIC PLUG VALVES

A. Type: Eccentric plug valves, straight flow, nonlubricated, resilient plug type with port suitable for drip tight, bi-directional shutoff at the specified design pressure. Valves must have a minimum of 80 percent of adjacent full pipe area in sizes up to 20 inches; and a minimum of 100 percent of adjacent full pipe area in sizes 24 inches and larger.

B. Rating:

1. Twelve Inches and Smaller: 175 psi.

C. Body: Cast iron, ASTM A126, Class B.

D. Plug: Cast iron, ASTM A126, Class B, or cast iron, ASTM A436 (Ni-resist), or ductile iron, ASTM A536.

E. Plug Facing: EPDM.

F. No wetted parts of bronze, copper, or aluminum.

G. Body Seats: Welded-in overlay of 90 percent nickel content on all surfaces contacting the plug face.

H. Packing: Buna V-flex or TFE adjustable.

I. Ends: Flanged, grooved in accordance with AWWA C606 for rigid joints, or mechanical joint for buried valves.

J. Operators:

1. Six Inches and Smaller: Lever operated, unless otherwise indicated.

2. Provide operating wrench for plug valves.

K. Manufacturers and Products:

1. DeZurik.

2. Or equal.

2.13 FIBERGLASS ENCLOSURE

A. The pump station shall be enclosed by a hinged fiberglass cover made of molded reinforced orthophthalic polyester resins with a minimum of 30 percent glass fibers with a minimum average length of 1-1/4 inches (32 mm). The outside of the enclosure shall be coated with a polyester protective in-mold coating for superior resistance to weathering, ultraviolet radiation, yellowing and chalking. The completed fiberglass enclosure shall be resistant to mold, mildew, fungus and corrosive liquids and gasses normally found in pump station environments. The dimensions of the enclosure shown on the drawings shall be considered a minimum, for internal component clearances and accessibility, and nothing smaller will be acceptable. The cover shall have a suitable drip-lip around the edge and shall be provided with a hasp and staple connection to the floor plate to allow the pump chamber to be locked with a padlock.

B. The cover shall be attached with a multi segment stainless steel hinge, constructed of 7-gauge (406 mm) (minimum) type 304 stainless steel with a 3/8-inch-diameter (9.5 mm) stainless steel pin and supporting at least 75 percent of the width of one end. Stainless steel bolts with tamperproof heads and a full width 3/8-inch-thick (9.5 mm) anodized aluminum backing plate shall anchor the hinge to the fiberglass cover.

C. Dual high-pressure gas struts shall be provided to counteract the dead weight of the cover assembly and limit the maximum lifting force required for opening to less than 20 pounds (9 kg). The cover shall be self-latching upon opening, with a manually operated release for closing. Duplex heavy gauge safety chains shall be provided to prevent over-extension. All hardware and components of the cover assembly that are exposed to the weather shall be constructed of corrosion-resistant materials.

D. Heavy extruded aluminum, adjustable ventilating louvers shall be provided on each end of the fiberglass cover, which are capable of being closed during cold weather operation.

2.14 SYSTEM CONSTRUCTION

A. The station shall be constructed in one complete, factory-built assembly. It shall be sized to rest on the top of the wet well as detailed in the construction drawings.

B. The pump casings and discharge piping shall be mounted in relation to the station floor as detailed in the construction drawings. All installed valves, piping and fittings shall be capable of passing a 3-inch-diameter (76 mm) spherical solid. All pump components and station piping, including the suction pipe connections, shall be removable without having to enter the wet well. The suction and discharge connections, where the connections pass through the floor, shall be sealed by gaskets, rather than being welded, to allow adjustment and replacement.

C. Enclosures utilized to house the valve train and/or controls, which are defined under OSHA Article 29CFR, Parts 1910 as a Confined Space shall not be acceptable.

D. To allow on-site maintenance of the pumps, a stanchion with lifting arm shall be provided to lift each pump. The lifting arm shall have a hook over the center of the motor to support a hoist (provided by others) for removal of the motors, impellers and pumps from the station.

E. Manway:

1. An aluminum manway cover fabricated of 1/4-inch (6.3 mm) treadplate, located exterior to the fiberglass pump chamber shall be provided, complete with padlocking provisions.

2. The manway shall be an integral part of the station floor plate and provide access to the wet well. The minimum open area of the manway access into the wet well shall be at least 4.2 square feet (0.39 m^2).

3. The manway cover shall have a three color 7-inch by 10-inch (178 mm by 254 mm) (minimum) corrosion-resistant sign permanently affixed to it, reading "DANGER – Before Entering, Test for Explosive Gases. Test for Oxygen Deficiency. Supply Fresh Air to Work Area".

4. The aluminum manway cover sections shall be secured with tamperproof fasteners to prevent unauthorized removal.

2.15 ACCESSORIES

A. Anchor Bolts: Type 316 stainless steel, sized by the pump station manufacturer and shall be provided and installed by the Contractor.

B. Pressure Gauges:

1. Provide 4-inch (100 mm) Bourdon tube-type compound vacuum/pressure gauges with 3-1/2-inhc (89 mm) dial, fitted with a brass stop valve and a manual air relief valve shall be provided for each pump. The gauges shall be mounted apart from the pumps, on a bracket attached to the control panel support structure and connected to the pump

discharge taps by flexible tubing to minimize vibration. The range of each gauge shall be 30 inches HG/30 psi. The dial shall be white with black markings and the gauge itself shall have an accuracy of 1 percent of scale. The gauge shall be American made, with a Zytel Nylon case with 1/2-inch (13 mm) blow-out plug, stainless steel bezel, acrylic lens and phosphorus bronze tube with brass socket. Temperature compensation shall be provided by an internal compensating diaphragm. Gauges shall be protected from the service fluid by a Buna-N elastomer "boot" diaphragm within the stem, and the Bourdon tube and the space between the Bourdon tube and the internal isolating diaphragm shall be filled with low temperature instrument oil, completely isolating the gauge components from the fluid being measured.

2. A minimum of three pressure gauges shall be provided.

   a. Upstream side of check valve for Pump 1.

   b. Upstream side of check valve for Pump 2.

   c. Common discharge header prior to leaving the skid.

C. Safety Guards:

1. OSHA compliant.

2. Hinged access doors at lubrication points.

2.16 SHOP/FACTORY FINISHING

A. Manufacturer's standard coating system.

PART 3 – EXECUTION

3.01 PROTECTION AND HANDLING

A. Manufacturer's Instruction:

1. Protect all products or equipment in accordance with manufacturer's written directions.

2. Store products or equipment in locations to avoid physical damage to items while in storage.

3. Handle products or equipment in accordance with manufacturer's recommendations and instructions.

B. Protect equipment from exposure to elements and keep thoroughly dry. Provide packaging and equipment protection suitable for outdoor exposure.

C. Painted surfaces shall be protected against impact, abrasion, discoloration, and other damage. Painted equipment surfaces that are damaged prior to acceptance shall be repainted.

D. All parts shall be protectively wrapped and/or packaged, using materials commensurate with the weight and configuration of the part, the method of handling, and the method of transportation.

E. Contact or pressure points shall be sufficiently protected when using steel or elastic banding.

F. Equipment too heavy to be handled or transported by one person shall be adapted for handling with pallet trucks and/or forklifts.

G. Painted surfaces which will come in contact with lifting forks or other handling equipment (such as the bottom of cabinets or skid base frame members) shall be sufficiently padded with heavy corrugated cardboard, foam, or other protective materials.

H. Small equipment and skids shall be mounted on wooden pallets designed for fork lifting. This equipment shall be bolted (using existing holes in the frame) or strapped to the pallet to prevent tipping. Equipment and skids too large to be mounted on pallets shall have wooden block bolted or strapped to the base foundation pads to prevent paint degradation during handling, assembly, and installation.

I. Electrical equipment, controls, and instrumentation shall be protected against moisture or water damage.

3.02 FIELD QUALITY CONTROL

A. Pump station manufacturer shall provide a minimum of 10 hours of on-site service for certification of installation, start-up testing, and training. Training shall instruct operating personnel in the operation, maintenance, and adjustment of the system and installation.

B. Installation Support:

1. Pump skid supplier shall provide installation support to the Contractor such that the equipment is installed in accordance with the manufacturer's recommendations.

2. An authorized service representative of the manufacturer shall visit the project site to witness the following and to certify in writing that the equipment and controls have been properly installed, aligned, lubricated, adjusted and readied for operation.

   a. Inspection, checking and adjusting the equipment.

   b. Startup and field testing for proper operation.

   c. Performing field adjustments to ensure that the equipment installation and operation comply with requirements.

3. Installation Certification: A manufacturer's authorized representative shall inspect and test each pump for proper installation, lubrication, alignment, and connection. Submit written certification of installation to the Engineer.

4. Training:

   a. An authorized training representative of the manufacturer shall visit the project site to instruct the OWNER's personnel in the operation and maintenance of the equipment, including step-by-step troubleshooting with necessary test equipment. Instruction shall be specific to the models of equipment provided.

   b. The representative shall have at least 2 years of experience in training.

   c. Training shall be scheduled a minimum of 2 weeks in advance of the first session.

   d. Proposed training material and a detailed outline of each lesson shall be submitted for review. Comments shall be incorporated into the material. The training materials shall remain with the trainees.

   e. The Owner may videotape the training for later use with the Owner's personnel.

      1) Owner acknowledges that a video agreement with SELLER will need to be signed before the training can be recorded.

C. Pump Performance Testing: A manufacturer's authorized representative shall witness and assist with the performance testing of each pump to verify smooth operation and satisfactory performance. Hydraulic performance in the project wet well shall be adequate to demonstrate compliance with performance requirements.

D. Pump Lift Test: A manufacturer's authorized representative shall witness and assist the Contractor to demonstrate successful removal of a pump from the skid using Owner's crane system.

E. Test Results: Test results certified by the pump manufacturer's authorized representative shall be submitted to the Engineer for approval prior to the Owner's acceptance of the equipment.

F. Coordination: All testing shall be coordinated with the Engineer, Owner, and installing contractor.

G. Should tests indicate an unsatisfactory operation, such as noise, leaks, poor pump performance, the manufacturer's representative shall assist the Contractor in diagnosing the conditions. The malfunction shall be corrected at no cost to the Owner and the tests repeated as defined herein.

H. Replace any failed or damaged parts at no cost to Owner.

END OF SECTION