

LIFT STATION 34 & 37 REHABILITATION

LACEY PROJECT NUMBER PW 2023-05

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**SPECIFICATIONS AND BID DOCUMENTS
DEPARTMENT OF PUBLIC WORKS**

LACEY PROJECT NUMBER PW 2023-05

***CITY OF LACEY
WASHINGTON***

CITY OFFICIALS

MAYOR

ANDY RYDER

DEPUTY MAYOR

MALCOLM MILLER

COUNCIL MEMBERS

LENNY GREENSTEIN

MICHAEL STEADMAN

CAROLYN COX

ED KUNKEL

ROBIN VAZQUEZ

INTERIM CITY MANAGER

RICK WALK

CITY ATTORNEY

DAVID S. SCHNEIDER

DIRECTOR OF PUBLIC WORKS

SCOTT EGGER, P.E.

CITY ENGINEER

AUBREY COLLIER, P.E., S.E.

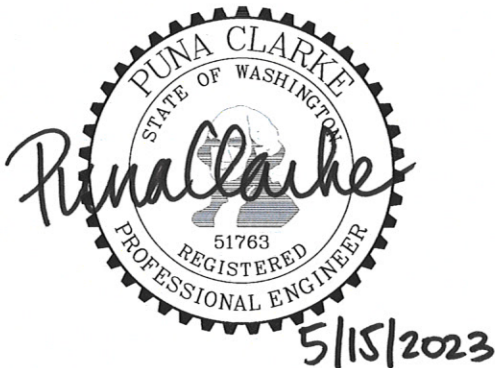
CITY OF LACEY

LIFT STATION 34 & 37 REHABILITATION

PROJECT NO. PW 2023-05

I hereby certify that the Project Specifications were prepared by me or under my direct supervision and I am duly registered Engineer under the laws of the State of Washington.

Puna Clarke
City of Lacey
360-491-5600



Sections A, B, and C

Shelby Asato
Consor North America, Inc.
206-462-7030



Lacey General Special Provisions, Section D

Brian Casey
Casey Civil, PLLC
253-735-5700



May 3, 2023

Division 43

Michael Wallis
Industrial Systems, Inc.
360-718-7267



Division 26, 40

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ADVERTISEMENT FOR BIDS
LIFT STATION 34 & 37 REHABILITATION

NOTICE IS HEREBY GIVEN that sealed bids will be received by the City of Lacey at City Hall, Lacey, Washington until **2:30 p.m., June 8, 2023**, at which time bids will be publicly opened via a live video stream. Links to the YouTube live video stream can be found at <https://cityoflacey.org/rfp-rfq-rfi/> under the specific project section and on the specific project page on the Builders Exchange website located at http://bxwa.com/bxwa_toc/pub/2080/toc.html for the following work:

This contract provides for the construction improvements of sewer Lift Stations 34 and 37. The improvements of these stations will feature the installation of new submersible wastewater pumps & appurtenances, electrical and control system modifications, and other work required. Work includes the removal and replacement of existing submersible pumps, piping, and appurtenances, as well as the removal, abandonment, and installation of new electrical and control system components and other work.

Each bid must be accompanied by a certified check for five percent of the amount of the proposal made payable to the City Treasurer, or an approved bid bond for five percent of the amount of the proposal executed on the approved form attached to these specifications. If bid bond is used, the five percent may be shown in dollars and cents or the form may be filled in by inserting therein, in lieu thereof, "five percent of the amount of the accompanying proposal". Check of unsuccessful bidders will be returned immediately upon award of contract.

The City Council reserves the right to reject any and all bids and to waive all informalities.

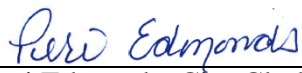
Plans, Specifications, and Addenda for this project are available through the "City of Lacey" on-line plan room. Free of charge access is provided by going to <http://bxwa.com> and clicking on: "Posted Projects", "Public Works", "City of Lacey", and "Projects Bidding". Bidders are asked to "Register" in order to receive automatic email notification of future addenda and to be placed on the "Bidders List". Any questions regarding this contract can be directed to:

Brandon McAllister, P.E.
bmcallis@ci.lacey.wa.us

The range for this project is \$1,000,000.00 to \$1,300,000.00.

A NON-MANDATORY PREBID CONFERENCE IS SCHEDULED FOR May 25, 2023 AT 9am. We will meet at Lift Station 34, address 800 Torden Ln SE, Olympia, WA 98513. From I-5S or I5N: Follow I-5S or I-5S to Martin Way E. Take Exit 114. Continue on Martin Way E. Turn Left onto Ridgeview Dr SE. Turn Left onto Steilacoom Rd SE. Turn Left onto Torden Ln SE.

Publish: **06/08/2023**
06/15/2023



Peri Edmonds, City Clerk
City of Lacey, Washington

A INSTRUCTIONS

INSTRUCTIONS TO BIDDERS

Bidders shall examine contract and bid documents and the site and shall satisfy themselves as to conditions that exist.

Each Bidder shall submit to the City Clerk, Lacey, Washington a sealed bid endorsed upon the outside wrapper with **LIFT STATION 34 & 37 REHABILITATION** at the time and place designated in the advertisement.

Bids may be delivered in person to Lacey City Hall, 420 College Street SE, or by mail to City of Lacey 420 College St SE Lacey, WA 98503.

Bids will be publicly opened via a live video stream. Links to the YouTube live video stream can be found at <https://cityoflacey.org/rfp-rfq-rfi/> or under the specific project section and on the specific project page on the Builders Exchange website.

The City of Lacey is committed to offering reasonable accommodations to persons with disabilities. We invite any person with special needs to contact the City Clerk at (360) 491-3212 at least seventy-two (72) hours before the meeting to discuss any special accommodations that may be necessary. Citizens with hearing impairment may call the TDD line at (800) 833-6388.

Each Bidder shall complete the proposal with prices in figures with the extension properly computed. The proposal must be properly signed by a duly authorized agent. Proposal must acknowledge addenda, if any, received.

If alternates are included in the proposal the Bidder shall complete the alternates. The City will award the contract to the lowest responsible Bidder as determined by the Special Provisions. The City reserves the right to delete alternates after award.

A Bidder will be deemed not responsible if the Bidder does not meet the mandatory bidder responsibility criteria in RCW 39.04.350(1).

The City does not pre-qualify Bidders. However, if the apparent low Bidder has not already been determined qualified, the City shall afford seven (7) days after notification for the low Bidder to provide evidence for evaluation, as to capability to perform the work. The evaluation will include consideration of experience, personnel, equipment, financial resources as well as performance record. The information must be sufficient to enable the Bidder to obtain the required qualification rating prior to the award of the contract.

No bidder may withdraw his bid after the hour set for the opening of bids or before award of the contract unless said award is delayed for a period of forty-five (45) days.

CONTRACT PARTS

The contract to be executed as a result of this bid consists of multiple parts, all of which pertain as if fully attached hereto and Bidder shall consider all parts as a complete document. In the event of discrepancies between the various parts, precedent shall be in the following order:

1. Contract Form,
 2. Addenda (if any),
 3. Proposal Form,
 4. Special Provisions,
 5. Technical Specifications, if included,
 6. Contract Plans,
 7. WSDOT Standard Specifications for Road, Bridge, and Municipal Construction,
 8. City of Lacey Development Guidelines and Public Works Standards, and
 9. WSDOT Standard Plans for Road, Bridge and Municipal Construction
- The Bidder is directed to complete and return the forms in Section B as a bid proposal.

BIDDER'S CHECKLIST

The bidder's attention is especially called to the following forms which must be executed in full as required, and submitted with the bid proposal:

1. Proposal: The unit prices bid must be shown in the space provided.
2. Proposal Signature Sheet: To be filled in and signed by the bidder. All addenda must be acknowledged.
3. Bid Deposit: Any bid shall be accompanied by a deposit of cash, certified check, cashier's check, or surety bond, in an amount equal to at least five percent (5%) of the total amount bid. Checks shall be payable to the City Clerk, City of Lacey, Washington.

If a surety bond is used, it shall be submitted on a form furnished by the Commission and signed by the bidder and his surety company. The sureties' "attorney-in-fact" must be registered with the Washington State Insurance Commissioner. The power of attorney must also be submitted with the bond. See Specification section 1-02.7 for more information.

4. Non-Collusion and Debarment Affidavit
5. Subcontractors List

The following form must be submitted within 24 hours following the bid submittal deadlines.

6. Certification of Compliance with Wage Payment Statutes

The following must be submitted by 2:30 P.M. of the second business day following the bid submittal deadline:

7. Supplemental Criteria per Specification section 1-02.14

The following must be completed before the contract can be awarded:

8. L&I training on the requirements related to public works and prevailing wages per RCW 39.04.350
9. Certification of Employment Security Department (ESD) good standing

The following forms are to be executed after the contract is awarded:

10. Contract: This agreement to be executed by the successful bidder
11. Performance and Payment Bond
12. Insurance Certificate

Bidder's Checklist

- | | |
|---|--|
| 1. Proposal | |
| 2. Proposal Signature Sheet | |
| Addenda Acknowledged | |
| 3. Bid Deposit | |
| Power of Attorney included if applicable | |
| 4. Non-Collusion and Debarment Affidavit | |
| 5. Subcontractor List | |
| 6. Certification of Compliance with Wage Payment Statutes | |
| 7. Contractor has verified they can meet bidding qualifications/supplemental criteria | |
| 8. L&I Public Works Prevailing Wage Training | |
| 9. ESD Certification | |

B

BID DOCUMENTS

CITY OF LACEY

Lift Station 34 & 37 Rehabilitation

Lacey Contract Number: PW 2023-05

Federal Aid Project Number:

WSDOT Contract Number:

TIB Contract Number:

Contract Proposal

DATE: _____

The undersigned, as bidder, has examined the bid documents as prepared by the Public Works Department, City of Lacey.

The undersigned, as bidder, proposes to furnish all material and perform all labor in accordance with the bid documents at the following prices.

Bidder must fill in unit prices in figures for each item and total.

Bidder shall sign this proposal form and submit all required paperwork with the bid.

A Sewer - LS34

No.	Quantity	Unit	Item ID	Item Description	Unit Price	Extended Price
A1	50000	MC	104-010	Minor Change	\$1.00	\$50,000.00
A2	1	LS	109-010	Mobilization	LUMP SUM	
A3	1	LS	110-010	Project Temporary Traffic Control	LUMP SUM	
A4	2000	HR	110-070	Portable Changeable Message Sign		
A5	1	LS	202-510	Removal of Structures and Obstructions	LUMP SUM	
A6	1	LS	722-510	Lift Station	LUMP SUM	
A7	1	LS	722-520	Pumps & Mechanical	LUMP SUM	
A8	1	LS	722-540	Electrical, Controls & Telemetry	LUMP SUM	
A9	1	LS	723-510	Bypass Pumping	LUMP SUM	
A10	1	LS	850-792	Project Closeout	\$5,000.00	\$5,000.00

Schedule A Subtotal: _____

Tax Rate (%) : 9.50 Tax: _____

Schedule A Total: _____

B Sewer - LS37

No.	Quantity	Unit	Item ID	Item Description	Unit Price	Extended Price
B1	50000	MC	104-010	Minor Change	\$1.00	\$50,000.00
B2	1	LS	109-010	Mobilization	LUMP SUM	
B3	1	LS	202-510	Removal of Structures and Obstructions	LUMP SUM	
B4	1	LS	722-510	Lift Station	LUMP SUM	

B5	1	LS	722-520	Pumps & Mechanical	LUMP SUM	
B6	1	LS	722-540	Electrical, Controls & Telemetry	LUMP SUM	
B7	1	LS	723-510	Bypass Pumping	LUMP SUM	
B8	1	LS	850-792	Project Closeout	\$5,000.00	\$5,000.00

Schedule B Subtotal: _____

Tax Rate (%) : 9.50 Tax: _____

Schedule B Total: _____

Contract Total: _____
(All Schedules)

The undersigned also agrees as follows:

- Within 10 calendar days after the contract is awarded to sign and return the contract and provide insurance documents.
- That this proposal cannot be withdrawn within 45 days after receipt of bids.
- That it is the understanding that the City of Lacey may accept or reject any or all bids.
- The undersigned hereby agrees to pay for labor not less than the prevailing rates of wages per the bid documents.
- Enclosed with this proposal is a bid deposit in the sum of 5% of the bid total amount which it is agreed shall be collected and retained by the City of Lacey as liquidated damages in the event this proposal is accepted by the City of Lacey with 45 calendar days after the receipt of bids and the undersigned fails to execute the contract and the required bond with the City of Lacey, under the conditions thereof, within 10 calendar days after the undersigned is notified that said proposal has been accepted, otherwise said bid deposit shall be returned to the undersigned upon demand.
- A Performance/Payment Bond will be furnished to the City with the contract.
- Retention will be held on this contract per RCW 60.28.011.

Addenda Receipt Acknowledged

Signature of Bidder

Date

(If an Individual, Partnership, or Non-Incorporated organization)

Firm Name

Please Print

Phone

Address of Bidder: _____

Name and Address of Firm Members:

Signature of Bidder (if a Corporation)

Title: _____

Firm Name: _____ Phone: _____

Business Address: _____

Incorporated under the Laws of the State of _____

Officers

Address

President: _____

Secretary: _____

Treasurer: _____

BID DEPOSIT SELECTION

A bid deposit in an amount of five percent (5%) of the total bid amount is attached hereto:

CASH ☐ In the amount of _____

CASHIER'S CHECK ☐ In the amount of _____

CERTIFIED CHECK ☐ In the amount of _____

BID BOND ☐ In the amount of 5% of the total bid amount

**CONTRACTOR'S BID DEPOSIT SURETY BOND
to City of Lacey, Washington**

We, _____, as Principal, existing under and by virtue of the laws of the State of Washington and authorized to do business in the State of Washington, and _____, as Surety, organized and existing under the laws of the State of _____, are held and firmly bound unto the City of Lacey, a Washington municipality, as Obligee, in the penal sum of 5% of the total amount bid, not to exceed \$ _____, for the payment of which we jointly and severally bind ourselves, and our legal representatives and successors.

WHEREAS, the Principal has submitted a bid for **LIFT STATION 34 & 37 REHABILITATION**.

NOW THEREFORE, the condition of the obligation is such that if the Obligee shall accept the bid of Principal and make timely award to the Principal according to the terms of the bid documents; and the Principal shall, within ten days after notice of the award, exclusive of the day of notice, enter into the contract with the Obligee and furnish the contractor's bonds (performance and payment bonds) with Surety satisfactory to the Obligee in an amount equal to 100% of the amount of the bid proposed including additives, alternatives and Washington State sales tax, then this obligation shall be null and void; otherwise if the Principal fails to enter into the contract and fails to furnish the contractor's bonds within ten days of notice of award, exclusive of the day of notice, the amount of the bid deposit shall be forfeited to the Obligee, payable by the Surety; but in no event will the Surety's liability exceed the face amount of this bid bond.

This bond may be executed in two 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 original power of attorney for the officer executing on behalf of the surety.

PRINCIPAL (CONTRACTOR)

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:

NON-COLLUSION AND DEBARMENT AFFIDAVIT

State of _____)

)ss

County of _____)

I, the undersigned, being duly sworn, deposes and says that the person, firm, association, copartnership or corporation herein named, has not either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in the preparation and submission of a proposal of the City of Lacey for consideration in the award of a contract on the improvement described as follows.

I further certify that, except as noted below, the firm, association or corporation or any person in a controlling capacity associated therewith or any position involving the administration of State or federal funds; is not currently under suspension, debarment, voluntary exclusion, or determination of ineligibility by any federal or State agency; has not been suspended, debarred, voluntarily excluded or determined ineligible by any federal or State agency within the past three years; does not have a proposed debarment pending; and has not been indicted, convicted, or had a civil judgment rendered against said person, firm, association or corporation by a court of competent jurisdiction in any matter involving fraud or official misconduct within the past three years.

I further acknowledge that by signing my signature, I am deemed to have signed and have agreed to the provisions of this affidavit.

Name of Project

Name of Firm

Signature of Authorized Member

Sworn to before me this

_____ day of _____, 20 _____

Notary Public

(CORPORATE SEAL)

CERTIFICATION OF COMPLIANCE WITH WAGE PAYMENT STATUTES

The bidder hereby certifies that, within the three-year period immediately preceding the bid solicitation date, the bidder is not a “willful” violator, as defined in RCW 49.48.082, of any provision of chapters 49.46, 49.48, or 49.52 RCW, as determined by a final and binding citation and notice of assessment issued by the Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction.

I certify under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

Bidder’s Business Name

Signature of Authorized Official*

Printed Name

Title

Date

City

State

Check One:

Sole Proprietorship ☐ Partnership ☐ Joint Venture ☐ Corporation ☐

State of Incorporation, or if not a corporation, State where business entity was formed:

If a co-partnership, give firm name under which business is transacted:

** If a corporation, proposal must be executed in the corporate name by the president or vice-president (or any other corporate officer accompanied by evidence of authority to sign). If a co-partnership, proposal must be executed by a partner.*

This form must be submitted with the Bid Proposal or as a Supplement to the Bid no later than 24 hours after the time for delivery of the Bid Proposal, as provided for in Section 1-02.9 of the Contract Provisions.

**CERTIFICATION OF EMPLOYMENT SECURITY DEPARTMENT (ESD)
GOOD STANDING AND NUMBER**

The bidder hereby provides an ESD number and certifies that per RCW 39.04.350 and Title 50 RCW, in which the City will verify prior to entering into contract with the Contractor, that the Bidder has a valid ESD number and is deemed to be in good standing with Washington State's Employment Security Department.

I certify under penalty of perjury under the laws of the State of Washington that the foregoing is true and correct.

Bidder's Business Name

Employment Security Department (ESD) Number

WA State Unified Business Identifier (UBI #)

Signature of Authorized Official*

Printed Name

Title

Date

City

State

.

SUBCONTRACTOR LIST

Prepared in compliance with RCW 39.30.060 as amended

To Be Submitted with the Bid Proposal

Project Name: _____

Failure to list subcontractors with whom the bidder, if awarded the contract, will directly subcontract for performance of the work of structural steel installation and rebar installation, heating, ventilation and air conditioning, plumbing, as described in Chapter 18.106RCW, and electrical, as described in Chapter 19.28 RCW or naming more than one subcontractor to perform the same work will result in your bid being non-responsive and therefore void.

Subcontractor(s) with whom the bidder will directly subcontract that are proposed to perform the work of structural steel installation and rebar installation, heating, ventilation and air conditioning, plumbing, as described in Chapter 18.106 RCW, and electrical as described in Chapter 19.28 RCW **must** be listed below. The work to be performed is to be listed below the subcontractor(s) name.

To the extent the Project includes one or more categories of work referenced in RCW 39.30.060, and no subcontractor is listed below to perform such work, the bidder certifies that the work will either (i) be performed by the bidder itself, or (ii) be performed by a lower tier subcontractor who will not contract directly with the bidder.

Subcontractor Name: _____
Work to be Performed: Structural steel installation

Subcontractor Name: _____
Work to be Performed: Rebar installation

Subcontractor Name: _____
Work to be Performed: Plumbing

Subcontractor Name: _____
Work to be Performed: Electrical

Subcontractor Name: _____
Work to be Performed: Heating ventilation and air conditioning

* Bidder's are notified that is the opinion of the enforcement agency that PVC or metal conduit, junction boxes, etc, are considered electrical equipment and therefore considered part of electrical work, even if the installation is for future use and no wiring or electrical current is connected during the project.

C CONTRACT DOCUMENTS

CONSTRUCTION CONTRACT

THIS AGREEMENT, made and effective as of the date of the last signature below, between the City of Lacey, hereinafter called Owner, under and by virtue of the charter, laws and ordinances of the said Owner and the laws of the State of Washington, and

_____ hereinafter called Contractor,

WITNESSETH:

That in consideration of the payment, covenants and agreement hereinafter mentioned, attached and made a part of this Agreement, to be made and performed by the parties hereto, the parties covenant and agree as follows regarding:

City of Lacey Contract No. **PW 2023-05** for the “**LIFT STATION 34 & 37 REHABILITATION**” project in the sum of _____

Dollars

(\$ _____) including applicable sales tax.

1. The Contractor shall do all work and furnish all tools, materials and equipment in accordance with and as described in the attached Plans and Specifications, and in full compliance with the terms, conditions and stipulations herein set forth and attached, now referred to and by such reference incorporated herein and made a part hereof as fully for all purposes as if here set forth at length, and shall perform any alterations in or in addition to the work covered by this Contract and every part thereof and any force account work which may be ordered as provided in this Contract and every part thereof.

The Contractor shall provide and bear the expense of all materials, labor, equipment, tools, implements and conveniences and things of every description that may be requisite for the transfer of materials and for constructing and completing the work provided for in this Contract and every part thereof, except such as are mentioned in the Specifications to be furnished by the Owner.

2. The Owner hereby promises and agrees with the Contractor to employ, and does employ the Contractor to provide the materials and to do and cause to be done the above described work and to complete and finish the same according to the attached Plans and Specifications and the schedule of unit or itemized prices hereto attached, at the time and in the manner and upon the conditions provided for in this Contract and every part thereof.
3. Contractor, for himself and for his heirs, executors, administrators, successors, assigns, does hereby agree to the full performance of all the covenants herein contained upon the part of Contractor.
4. It is further provided that no liability shall attach to Owner or Agent thereof by reason of entering into this Contract, except as expressly provided herein.

5. Payments will be made under the Contract according to the schedule of rates and prices and the specification attached and made a part thereof. Partial payments under the Contract will be made at the request of the Contractor not more than once each month upon approval of the Owner, as hereinafter specified, provided they are in accordance with the provisions of RCW 60.28.010. There will be reserved and retained from monies earned by the Contractor, as determined by such monthly estimates, a sum equal to 5 percent of the Contract price.

Payment of the retained percentage shall be withheld for a period of forty-five (45) days following the final acceptance of the work and materials by the Owner, and shall be paid the Contractor at the expiration of said forty-five (45) days in event no claims, as provided by law, have been filed against such funds; and provided further, that releases have been obtained from all departments and agencies having jurisdiction over the activities of the Contractor. In the event such claims are filed, Contractor shall be paid such retained percentages less an amount sufficient to pay any such claims together with a sum sufficient to pay the cost of such action, and to cover attorney fees as determined by the Owner.

6. Requests for review of substitute items of material or equipment will not be accepted by the Owner or Agent from anyone other than the Contractor. If the Contractor wishes to furnish a substitute item, the Contractor shall make written application to the Owner's Agent for acceptance thereof, certifying that the proposed substitute will perform adequately the functions called for by the general design, be similar and of equal substance to that specified and be suited to the same use and capable of performing the same function as that specified. All variations of the proposed substitute from that specified shall be identified in the application and available maintenance, repair and replacement service will be indicated. The application will also contain an itemized estimate of all costs that will result directly or indirectly from acceptance of such substitute, which shall be considered by the Owner in evaluating the proposed substitute. The Owner may require the Contractor to furnish at the Contractor's expense, additional data about the proposed substitute. The Owner will be the sole judge of acceptability, and no substitute will be ordered without the Owner's prior written acceptance. The Owner may require the Contractor to furnish at the Contractor's expense, a special performance guarantee or other surety with respect to any other substitute.

The Owner or Agent will record the time and expenses in evaluating substitutions proposed by the Contractor. Whether or not the Owner accepts a proposed substitute, the Contractor shall reimburse the Owner for the costs of evaluating any proposed substitute.

7. The Owner reserves the right, after the final payment has been made, to claim and recover by process of law such sums as may be sufficient to make good any defects in the equipment or to recover any over-payment resulting from dishonest acts of the Contractor.
8. The contract time will commence to run, and the Contractor shall start to perform his obligation under the contract documents, on the day indicated in the Notice to Proceed given by Owner to Contractor; but in no event shall contract time commence to run later than the 30th calendar day after the date when both Owner and Contractor execute the Contract. A Notice to Proceed may be given at any time within thirty (30) calendar days after the date when both Owner and Contractor execute the Contract.

9. The Contractor shall guarantee the materials and workmanship for a period of one (1) year from and after the date of final acceptance by the Owner.

If, within said guarantee period, repairs are required which, in the opinion of the Owner, are rendered necessary as a result of work or materials which are inferior, defective or not in accordance with the terms of the Contract, the Contractor shall, promptly upon receipt of notice from the Owner, and without expense to the Owner, (a) correct all defects and place in satisfactory condition in every particular all of such guaranteed work and materials; (b) make good all damage which in the opinion of the Owner is caused by such defects; and (c) make good any other work or material or the equipment and contents of a building, structure or site disturbed in fulfilling any such guarantee.

If the Contractor, after notice, fails within ten (10) days to proceed to comply to the terms of this guarantee, the Owner may have the defects corrected, and the Contractor and his Surety shall be liable for all expense incurred, provided, however, that in case of an emergency where, in the opinion of the Owner, delay would cause serious loss or damage, repairs may be made without notice being given to the Contractor and the Contractor shall pay the cost thereof.

IN WITNESS WHEREOF, the said Contractor has executed this instrument and the City Manager, pursuant to resolution duly adopted, has caused this instrument to be executed in the name of the City of Lacey the day and year first above-written.

Contractor Date

Contractor's Registration Number (UBI No.)

City of Lacey Business License Number

City Manager Date

ATTEST:
By:

City Clerk

APPROVED AS TO FORM:
By :

City Attorney

**CONTRACTOR'S PERFORMANCE/PAYMENT BOND
to City of Lacey, Washington**

The City of Lacey, Washington, in Thurston County, has awarded to _____ (Contractor), as Principal, a contract for the construction of the project designated as **LIFT STATION 34 & 37 REHABILITATION**, Project No. **2023-05** in Lacey, Washington, and said Principal is required under the terms of the Contract to furnish a performance/payment bond in accordance with chapter 39.08 Revised Code of Washington (RCW).

The Principal, and _____ (Surety), a corporation, organized under the laws 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 Lacey, as Obligee, in the sum of \$_____ total Contract amount (including Washington State sales tax), subject to the provisions herein.

The obligations of this bond shall become null and void, if and when the Principal, its heirs, executors, administrators, successors, or assigns shall well and faithfully perform all of the Principal's obligations under the Contract and 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; shall pay all persons in accordance with chapters 39.08, 39.12, and 60.28 RCW, including all workers, laborers, mechanics, subcontractors, and material suppliers, and all persons who shall supply such contractor or subcontractor with provisions and supplies for the carrying on of such work; shall warranty the work as provided in the Contract and shall indemnify and hold harmless the Obligee from any defects in the workmanship and materials incorporated into the work for the period identified in the Contract; and if such 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, 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 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 original power of attorney for the officer executing on behalf of the surety.

PRINCIPAL (CONTRACTOR)

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:

**DECLARATION OF OPTION FOR MANAGEMENT OF
STATUTORY RETAINED PERCENTAGE**

- A. I hereby elect to have the retained percentage of this contract held in a fund by the City of Lacey until forty-five (45) days following final acceptance of the work.

Contractor (please print)

Date

Signature

- B. I hereby elect to have the City of Lacey invest the retained percentage of this contract from time to time as such retained percentage accrues and in accordance with RCW Ch. 60.28.

I hereby designate _____ as the repository for the escrow of said funds.

I hereby further agree to be fully responsible for payment of all costs or fees incurred as a result of placing said percentage in escrow and investing it as authorized by statute.

The City of Lacey shall not be liable in any way for any costs or fees in connection therewith.

Contractor (please print)

Date

Signature

- C. I hereby elect to hold a retainage bond.

Contractor (please print)

Date

Signature

D SPECIAL PROVISIONS

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SPECIAL PROVISIONS

INTRODUCTION TO THE SPECIAL PROVISIONS

(January 19, 2022 APWA GSP)

The work on this project shall be accomplished in accordance with the *Standard Specifications for Road, Bridge and Municipal Construction*, 2022 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 these Special Provisions, all of which are made a part of the Contract Documents, shall govern all of the Work.

These Special Provisions are made up of both General Special Provisions (GSPs) 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.

The project-specific Special Provisions are not labeled as such, but are generally denoted with (*****). The GSPs are labeled under the headers of each GSP, with the effective date of the GSP and its source, except WSDOT uses a date only (2nd on list). For example:

(March 8, 2013 APWA GSP)
(April 1, 2013)
(May 1, 2013 Lacey GSP)

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
- City of Lacey Development Guidelines and Public Works Standards, current edition

Contractor shall obtain copies of these publications, at Contractor’s own expense.

DESCRIPTION OF WORK

This contract provides for the construction improvements of sewer Lift Stations 34 and 37. The improvements of these stations will feature the installation of new submersible wastewater pumps & appurtenances, electrical and control system modifications, and other work required. Work includes the removal and replacement of existing submersible pumps, piping, and appurtenances, as well as the removal, abandonment, and installation of new electrical and control system components and other work.

1-01 DEFINITIONS AND TERMS

1-01.3 Definitions

(January 19, 2022 APWA GSP)

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 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 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.

1-02.1(1) Supplemental Qualifications Criteria

(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 C of these Special Provisions.

1-02.2 Plans and Specifications

(June 27, 2011 APWA GSP)

Delete this section and replace it with the following:

Information as to where Bid Documents can be obtained or reviewed will be found in the Call for Bids (Advertisement for Bids) for the work.

After award of the contract, plans and specifications will be issued to the Contractor at no cost as detailed below:

To Prime Contractor	No. of Sets	Basis of Distribution
Reduced plans (11" x 17")	3	Furnished automatically upon award
Contract Provisions	3	Furnished automatically upon award
Large plans (22" x 34")	3	Furnished only upon request

Additional plans and Contract Provisions may be obtained by the Contractor from the source stated in the Call for Bids, at the Contractor's own expense.

1-02.4 Examination of Plans, Specifications and Site of Work

1-02.4(1) General

(December 30, 2022 APWA GSP Option B)

The first sentence of the ninth paragraph, beginning with "Prospective Bidder desiring...", is revised to read:

Prospective Bidder desiring an explanation or interpretation of the Bid Documents, shall request the explanation or interpretation in writing by close of business 5 business days preceding the bid opening to allow a written reply to reach all prospective Bidders before the submission of their Bids.

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

(March 3, 2022 Lacey 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 it with the following:

The Bidder shall submit a completed Contractor Certification Wage Law Compliance form, provided by the Contracting Agency. Failure to return this certification within 24 hours of the bid opening 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 bid by a joint venture shall be executed in the joint venture name and signed by a member of the joint venture.

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

(March 3, 2022 Lacey GSP)

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 Call for Bids clearly marked on the outside of the envelope, or as otherwise required in the Bid Documents, to ensure proper handling and delivery.

If supplemental information is due after the Bid Proposal is due, the document(s) shall be submitted as follows:

1. In a sealed envelope labeled the same as for the Proposal, with “Supplemental Information” added, or
2. By e-mail to the following e-mail address: ProjectAdmin@ci.lacey.wa.us

All other information required to be submitted with the Bid Proposal must be submitted with the Bid Proposal itself, at the time stated in the Call for Bids.

Proposals that are received as required will be publicly opened and read as specified in Section 1-02.12. The Contracting Agency will not open or consider any Bid Proposal that is received after the time specified in the Call for Bids for receipt of Bid Proposals, or received in a location other than that specified in the Call for Bids. The Contracting Agency will not open or consider any “Supplemental Information” that is received after the time specified, or received in a location other than that specified in the Call for Bids.

If an emergency or unanticipated event interrupts normal work processes of the Contracting Agency so that Proposals cannot be received at the office designated for receipt of bids as specified in Section 1-02.12 the time specified for receipt of the Proposal will be deemed to be extended to the same time of day specified in the solicitation on the first work day on which the normal work processes of the Contracting Agency resume.

1-02.10 Withdrawing, Revising, or Supplementing Proposal

(July 23, 2015 APWA GSP)

Delete this section in its entirety, 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.

1-02.12 Public Opening of Proposals

(November 20, 2020 Lacey GSP)

Delete and replace this section with the following:

Proposals will be opened and publicly read by live video stream per the “Instructions to Bidders” in Section A of these Specifications at the time as indicated in the call for Bids

1-02.13 Irregular Proposals

(December 30, 2022 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 (WSDOT Form 271-015), if applicable, as required in Section 1-02.6;
 - h. The Bidder fails to submit or properly complete a Disadvantaged Business Enterprise Certification (WSDOT Form 272-056), if applicable, as required in Section 1-02.6;
 - i. The Bidder fails to submit Written Confirmation (WSDOT Form 422-031) from each DBE firm listed on the Bidder’s completed DBE Utilization Certification that they are in agreement with the bidder’s DBE 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 Provision;
 - j. The Bidder fails to submit DBE 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 DBE Bid Item Breakdown (WSDOT Form 272-054), 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 DBE Trucking Credit Forms (WSDOT Form 272-058), 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 in this Section:

The Contracting Agency will verify that the Bidder meets the mandatory bidder responsibility criteria in RCW 39.04.350(1). Evidence that the Bidder meets Supplemental Criteria shall be provided by the Bidder as stated later in this Section.

Relevant Experience & Reference Checks

A. Criterion: The Bidder shall have successfully completed (1) one public work project within the last (5) five years, and the Bidder or Subcontractor shall have successfully completed (2) projects of a similar size and scope within the last (5) five years. In evaluating whether the projects were “successfully completed,” the Owner may check owner references for the previous projects and may evaluate the owner’s assessment of the Bidder performance. In conducting reference checks, the Owner may include itself as a reference if the bidder has performed work for the Owner, even if the bidder did not identify the Owner as a reference. The assessment may include but is not limited to the following areas:

- a. Administration / Management / Supervision
 - i. Supervision and decision making
 - ii. Coordination and communication with subcontractors and suppliers
 - iii. Submission of documents, reports, material submittals
 - iv. Timeliness of progress schedules
 - v. Public safety and traffic control
 - vi. Compliance with laws, ordinances and regulations
 - vii. Maintenance of employee safety standards
 - viii. Coordination and cooperation with department personnel on project matters
 - ix. Relations with the general public, other agencies and/or adjacent contractors
- b. Quality of Work
 - i. Adherence to plans and specifications
 - ii. Standards of Workmanship
 - iii. Completion of final (punch list) work
- c. Progress of Work
 - i. Completion of project within allotted time
 - ii. Scheduling and execution of schedule
 - iii. Delivery of materials and supplies
 - iv. Operation and use of equipment
 - v. Use of personnel
- d. Equipment
 - i. Condition
 - ii. Maintenance
 - iii. Proper/Suitable equipment used

B. Documentation: The Bidder shall submit a list of projects to the Owner. Public work is as defined in RCW 39.04.010. For the purposes of meeting this criterion, the Owner has determined that “similar

size and scope to this project” means projects that have the following characteristics: Construction or rehabilitation of wastewater lift stations. The information about each project shall include the following:

- Contractor’s name (identify as bidder or subcontractor)
- Owner’s name and contact information for the owner’s representative;
- Contract amount;
- Date of Completion;
- A brief description of the scope of the project and how the project is similar to this project

As evidence that the Bidder meets the mandatory and supplemental responsibility criteria stated above, the apparent low Bidder must submit to the Contracting Agency by 2:30 P.M. of the second business day following the bid submittal deadline, documentation verifying that the Bidder meets all of the supplemental criteria together with supporting documentation including but not limited to that detailed above (sufficient in the sole judgment of the Contracting Agency) demonstrating compliance with all supplemental responsibility criteria. The Contracting Agency reserves the right to request such documentation from other Bidders as well, and to request further documentation as needed to assess Bidder responsibility. 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 (but is not required to) 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 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. Obtain, and furnish a copy of, a business license to do business in the city or county where the work is located.
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

1-03.3 Execution of Contract

(January 19, 2022 APWA GSP)

Revise this section to read:

Within 3 calendar days of Award date (not including Saturdays, Sundays and Holidays), the successful Bidder shall provide the information necessary to execute the Contract to the Contracting Agency. The Bidder shall send the contact information, including the full name, email address, and phone number, for the authorized signer and bonding agent to the Contracting Agency.

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, a satisfactory bond as required by law and Section 1-03.4, and the Transfer of Coverage form for the Construction Stormwater General Permit with sections I, III, and VIII completed when provided. 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).

1-03.7 Judicial Review

(December 30, 2022 APWA GSP)

Revise this section to read:

All decisions made by the Contracting Agency regarding the Award and execution of the Contract or Bid rejection shall be conclusive subject to the scope of judicial review permitted under Washington Law. Such review, if any, shall be timely filed 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.

1-04 SCOPE OF THE WORK

1-04.2 Coordination of Contract Documents, Plans, Special Provisions, Specifications, and Addenda

(November 20, 2020 Lacey GSP)

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 presiding over 3, 3 over 4, and so forth):

1. Contract Form,
2. Addenda (if any),
3. Proposal Form,
4. Special Provisions,
5. Technical Specifications, if included,
6. Contract Plans,
7. WSDOT Standard Specifications for Road, Bridge, and Municipal Construction,
8. City of Lacey Development Guidelines and Public Works Standards, and
9. WSDOT Standard Plans for Road, Bridge and Municipal Construction

1-04.4(1) Minor Changes

(May 30, 2019 APWA GSP)

Delete the first paragraph and replace it with the following:

Payments or credits for changes amounting to \$10,000 or less may be made under the Bid item “Minor Change”. At the discretion of the Contracting Agency, this procedure for Minor Changes may be used in lieu of the more formal procedure as outlined in Section 1-04.4, Changes. All “Minor Change” work will be within the scope of the Contract Work and will not change Contract Time.

1-04.5 Procedure, Protest, and Dispute by the Contractor

(January 22, 2022 APWA GSP)

Revise item 1 of the first paragraph to read:

1. Give a signed written notice of protest to the Engineer or the Engineer’s field Inspectors within 5 calendar days of receiving a change order or an Engineer’s Written Determination.

1-04.6 Variation in Estimated Quantities

(May 25, 2006 APWA GSP)

Supplement this Section with the following:

The quantity for “Portable Changeable Message Sign” has been entered into the Proposal only to provide a common proposal for bidders. Actual quantities will be determined in the field as the work progresses, and will be paid at the original bid price, regardless of final quantity. These bid items shall not be subject to the provisions of 1-04.6 of the Standard Specifications.

1-04.6 Variations in Estimated Quantities

(December 30, 2022 APWA GSP Option B)

Revise the first paragraph to read:

Payment to the Contractor will be made only for the actual quantities of Work performed and accepted in conformance with the Contract. When the accepted quantity of Work performed under a unit item varies from the original Proposal quantity, payment will be at the unit Contract price for all Work unless the total accepted quantity of the Contract item, adjusted to exclude added or deleted amounts included in change orders accepted by both parties, increases or decreases by more than 25 percent from the original Proposal quantity, and if the total extended bid price for that item at time of award is equal to or greater than 10 percent of the total contract price at time of award. In that case, payment for contract work may be adjusted as described herein.

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

(July 23, 2015 APWA GSP, Option 1)

The Engineer shall furnish to the Contractor one time only all principal lines, grades, and measurements the Engineer deems necessary for completion of the work. These shall generally consist of one initial set of:

1. Slope stakes for establishing grading;
2. Curb grade stakes;
3. Centerline finish grade stakes for pavement sections wider than 25 feet; and
4. Offset points to establish line and grade for underground utilities such as water, sewers, and storm drains.

On alley construction projects with minor grade changes, the Engineer shall provide only offset hubs on one side of the alley to establish the alignment and grade.

1-05.4(2) Survey Control and Electronic Files

(August 10, 2010 Lacey GSP)

Add the following new section:

The Contractor shall re-establish the survey control used in design by using existing survey monuments and other control points as provided by the City.

When requested by the Contractor, the City will provide an electronic version of the construction plans (drawings), for use by the Contractor at the Contractor's own risk. In all cases, the approved paper construction plans are the official contract documents. If the Contractor wishes to use the electronic version of the construction plans for the purposes of providing surveying of the proposed improvements, it shall be the Contractor's responsibility to verify that any coordinates used from the electronic file match the station and offset location given in the contract construction plans. Construction plans are diagrammatic in nature. The coordinate locations of the various graphic elements within the electronic files may not necessarily be precisely shown with respect to their coordinate position. In all cases, the location callouts in the contract construction plans shall govern.

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 Inspections and Operational Testing **(October 1, 2005 APWA GSP)**

Delete this section and replace it with the following:

1-05.11(1) 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.

1-05.11(2) 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.

1-05.11(3) Operational Testing

It is the intent of the Contracting Agency to have at the Physical 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 operational testing they shall be fully tested under operating conditions for the time period specified to ensure their acceptability prior to the Physical Completion Date. During and following the test period, 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 to be tested during this period 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. The Physical Completion Date cannot be established until testing and corrections have been completed to the satisfaction of the Engineer.

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(1) One-Year Guarantee Period

(March 8, 2013 APWA GSP)

Add the following new section:

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.

1-05.14 Cooperation with Other Contractors

(August 3, 2015 Lacey GSP)

Supplement this section with the following:

The Contractor shall coordinate residential refuse and recycling pick-up with Pacific Disposal (360) 923-0111. Construction activities shall be planned so that there is no interruption of services.

1-05.15 Method of Serving Notices

(December 30, 2022 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.

1-05.16 Water and Power

(October 1, 2005 APWA GSP)

Add the following new section:

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.

1-05.18 Record Drawings

(April 2, 2018 Lacey GSP Option B)

Add the following new section:

The Contractor shall maintain one set of full size plans for Record Drawings, updated with clear and accurate red-lined field revisions on a daily basis, and within 2 business days after receipt of information that a change in Work has occurred. The Contractor shall not conceal any work until the required information is recorded.

This Record Drawing set shall be used for this purpose alone, shall be kept separate from other Plan sheets, and shall be clearly marked as Record Drawings. These Record Drawings shall be kept on site at the Contractor's field office, and shall be available for review by the Contracting Agency at all times. The Contractor shall bring the Record Drawings to each progress meeting for review.

The preparation and upkeep of the Record Drawings is to be the assigned responsibility of a single, experienced, and qualified individual. The quality of the Record Drawings, in terms of accuracy, clarity,

and completeness, is to be adequate to allow the Contracting Agency to modify the computer-aided drafting (CAD) Contract Drawings to produce a complete set of Record Drawings for the Contracting Agency without further investigative effort by the Contracting Agency.

The Record Drawing markups shall document all changes in the Work, both concealed and visible. Items that must be shown on the markups include but are not limited to:

Actual dimensions, arrangement, and materials used when different than shown in the Plans.

Changes made by Change Order or Field Order.

Changes made by the Contractor.

Accurate locations of storm sewer, sanitary sewer, water mains and other water appurtenances, structures, conduits, light standards, vaults, width of roadways, sidewalks, landscaping areas, building footprints, channelization and pavement markings, etc. Include pipe invert elevations, top of castings (manholes, inlets, etc.).

If the Contract calls for the Contracting Agency to do all surveying and staking, the Contracting Agency will provide the elevations at the tolerances the Contracting Agency requires for the Record Drawings.

When the Contract calls for the Contractor to do the surveying/staking, the applicable tolerance limits include, but are not limited to the following:

	Vertical	Horizontal
As-built sanitary & storm invert and grate elevations	± 0.01 foot	± 0.01 foot
As-built monumentation	± 0.01 foot	± 0.01 foot
As-built waterlines, inverts, valves, hydrants	± 0.01 foot	± 0.01 foot
As-built ponds/swales/water features	± 0.01 foot	± 0.01 foot
As-built buildings (fin. Floor elev.)	± 0.01 foot	± 0.01 foot
As-built gas lines, power, TV, Tel, Com	± 0.01 foot	± 0.01 foot
As-built signs, signals, etc.	N/A	± 0.01 foot

Making Entries on the Record Drawings:

Use erasable colored pencil (not ink) for all markings on the Record Drawings, conforming to the following color code:

Additions - Red
Deletions - Green
Comments - Blue
Dimensions - Graphite

Provide the applicable reference for all entries, such as the change order number, the request for information (RFI) number, or the approved shop drawing number.

Date all entries.

Clearly identify all items in the entry with notes similar to those in the Contract Drawings (such as pipe symbols, centerline elevations, materials, pipe joint abbreviations, etc.).

The Contractor shall certify on the Record Drawings that said drawings are an accurate depiction of built conditions, and in conformance with the requirements detailed above. The Contractor shall submit final

Record Drawings to the Contracting Agency. Contracting Agency acceptance of the Record Drawings is one of the requirements for achieving Physical Completion.

A lump sum price has been included in the Proposal for this work under the Lift Station bid item. Any additional costs anticipated or incurred by the Contractor for the work shall be included in the various lump sum unit price bid items as found in the Proposal. Payment for this item will be made once Record Drawings have been submitted and approved.

1-06 CONTROL OF MATERIAL

1-06.1 Approval of Materials Prior to Use **(April 3, 2017 WSDOT GSP 1-06.1.OPT1.GR1)**

The second sentence of first paragraph is revised to read:

For each proposed material that is required to be submitted for approval using either the QPL or RAM process the Contractor will be allowed to submit for approval two material sources or manufacturers per material type at no cost. Additional material sources or manufacturers may be submitted for approval and will be processed at a cost of \$125.00 per material source or manufacturer submitted by QPL submittal and \$400.00 per material submitted by RAM. All costs for processing additional material sources or manufacturers will be deducted from monies due or that may come due to the Contractor. Subject to a request by the Contractor and a determination by the Engineer the costs for processing may be waived.

1-06.1 Approval of Materials Prior to Use **(January 4, 2016 Lacey GSP)**

The second sentence of first paragraph is revised to read:

The Contractor shall use the Qualified Product List (QPL), the Aggregate Source Approval (ASA) Database, or the City of Lacey Request for Approval of Material (COL RAM) form.

1-06.1(2) Request for Approval of Material (RAM)

The first paragraph is revised to read:

The COL RAM shall be used with all submittals. The COL RAM shall be prepared by the Contractor in accordance with the instructions and submitted to the engineer for approval before the material is incorporated into the Work.

Supplement this section with the following:

The Contractor shall submit sufficient information that describes the materials proposed as defined and described in these specifications and plans within 20 working days following the Notice to Proceed.

The City of Lacey has identified the following items as long lead items.

1. Isolation Pedestal
2. Motor Starters
3. Pumps and Motors
4. Pipe

Long lead items shall be submitted within 10 working days of Notice to Proceed. The list above may not include all long lead items. The Contractor is responsible for identifying all items and shall notify the Engineer of any additional items.

The Contractor shall submit one electronic of catalog cuts, shop drawings, and a material testing sample, as required for all items to be used in this contract for approval. The Contractor shall circle or highlight products and materials that are specific to this project, and cross out items that are not for this project.

All items not in exact compliance with the specifications must be noted as a change. The Contractor shall include an explanation, product specifications, sample articles, and any other items that will aid the Engineer in approving an item not in exact accordance with the specifications.

All submittals shall be submitted in Adobe Acrobat format and submittals that exceed 10 pages shall include a table of contents. Submittals that are not submitted in the format outlined may be rejected outright and the Contractor is required to resubmit in the correct format. The form and the submittal shall be sent in the same e-mail. Submittals that exceed 10 MB shall either be provided on a CD, a flash drive or via an internet link.

The Engineer will review submittals within 10 working days. The Contractor may request additional working days if approval or disapproval is not received in 10 working days. The Contractor may not request additional working days for failure to submit sufficient information to approve an item, or for rejection of an item not in accordance with the specifications.

Resubmittals shall be submitted within 5 working days from City's transmittal, to the contractor, of the Engineer reviewed submittal. If the submittal is "Rejected", the contractor shall resubmit the entire submittal. If the submittal is marked "Revise and Resubmit", the contractor shall submit items that are identified in the Engineer's comments.

Any material purchased or labor performed prior to such approval shall be at the Contractor's risk. The Contractor must receive all material approvals before the materials will be allowed on the project.

1-06.6 Recycled Materials **(January 4, 2016 APWA GSP)**

Delete this section, including its subsections, and replace it with the following:

The Contractor shall make their best effort to utilize recycled materials in the construction of the project. Approval of such material use shall be as detailed elsewhere in the Standard Specifications.

Prior to Physical Completion the Contractor shall report the quantity of recycled materials that were utilized in the construction of the project for each of the items listed in Section 9-03.21. The report shall include hot mix asphalt, recycled concrete aggregate, recycled glass, steel furnace slag and other recycled materials (e.g. utilization of on-site material and aggregates from concrete returned to the supplier). The Contractor's report shall be provided on DOT form 350-075 Recycled Materials Reporting.

1-07 LEGAL RELATIONS AND RESPONSIBILITIES 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.

1-07.1 Laws to be Observed **(April 3, 2006 WSDOT GSP)**

Supplement this section with the following:

Confined spaces are known to exist at the following locations:

- Wet wells
- Manholes

The Contractor shall be fully responsible for the safety and health of all on-site workers and compliant with Washington Administrative Code (WAC 296-809).

The Contractor shall prepare and implement a confined space program for each of the confined spaces identified above. The Contractor's Confined Space program shall be sent to the contracting agency at least 30 days prior to the Contractor beginning work in or adjacent to the confined space. No work shall be performed in or adjacent to the confined space until the plan is submitted to the Engineer as required. The Contractor shall communicate with the Engineer to ensure a coordinated effort for providing and maintaining a safe worksite for both the Contracting Agency's and Contractor's workers when working in or near a confined space.

All costs to prepare and implement the confined space program shall be included in the bid prices for the various items associated with the confined space work.

1-07.2 State Sales Tax **(June 27, 2011 APWA GSP)**

Delete this section, including its sub-sections, in its entirety and replace it with the following:

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).

1-07.6 Permits and Licenses

(February 14, 2023 Lacey GSP)

Section 1-07.6 is supplemented with the following:

The Contractor shall be responsible for obtaining the permits listed below. The Contractor shall obtain any additional permits as necessary. All costs to obtain and comply with permits shall be included in the applicable Bid items for the Work involved.

NAME OF DOCUMENT	PERMITTING AGENCY
Electrical	City of Lacey

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

(February 14, 2023 Lacey GSP)

The Contractor shall prepare a project-specific spill prevention, control, and countermeasures plan (SPCC Plan), and shall implement the plan for the duration of the project. No on-site construction activities may commence until the Contracting Agency accepts a SPCC Plan for the project. An SPCC Plan template and guidance information is available at <https://wsdot.wa.gov/engineering-standards/environmental-guidance/stormwater-water-quality>.

The SPCC Plan shall address all fuels, petroleum products, hazardous materials, and other materials defined in Chapter 447 of the WSDOT Environmental Manual M 31-11. Occupational safety and health requirements that may pertain to SPCC Plan implementation are contained in, but not limited to, WAC 296-824 and WAC 296-843. The SPCC Plan shall address conditions that may be required by Section 3406 of the current International Fire Code, or as approved by the local Fire Marshal.

Implementation Requirements

The Contractor shall update the SPCC Plan throughout project construction so that the written plan reflects actual site conditions and practices. The Contractor shall update the SPCC Plan at least annually and maintain a copy of the updated SPCC Plan on the project site. The Contractor shall fully implement the SPCC Plan, as accepted and updated, at all times.

SPCC Plan Element Requirements

The SPCC Plan shall set forth the following information in the following order:

1. Responsible Personnel – Identify the names, titles, and contact information for the personnel responsible for implementing and updating the plan and for responding to spills.
2. Spill Reporting – List the names and telephone numbers of the Federal, State, and local agencies the Contractor shall notify in the event of a spill as referenced in the abovementioned template.
3. Spill Prevention – Describe the following items:
 - a. The contents and locations of spill response kits that the Contractor shall supply and maintain that are appropriately stocked, located in close proximity to hazardous materials and equipment, and immediately accessible.
 - b. Security measures for potential spill sources to prevent accidental spills and vandalism.
 - c. Site inspection procedures and frequency.
4. Spill Response – Outline the response procedures the Contractor shall follow for each scenario listed below, indicating that if hazardous materials are encountered or spilled during construction, the Contractor shall do everything possible to control and contain the material until appropriate measures

can be taken. Include a description of the actions the Contractor shall take and the specific on-site spill response equipment that shall be used to assess the spill, secure the area, contain and eliminate the spill source, clean up spilled material, decontaminate equipment, and dispose of spilled and contaminated material:

- a. A spill of each type of hazardous material present.
- b. Stormwater that has come into contact with hazardous materials.
- c. A release or spill of any unknown preexisting contamination and contaminant sources (such as buried pipes or tanks) encountered during project Work.

Payment

If no bid item for “SPCC Plan” is included in the proposal, any work described in this section shall be incidental to the project.

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

[\(December 30, 2022 APWA GSP\)](#)

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-: VII 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.

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 not 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:

\$1,000,000	Each Occurrence
\$2,000,000	General Aggregate
\$2,000,000	Products & Completed Operations Aggregate
\$1,000,000	Personal & Advertising Injury each offence
\$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:

\$1,000,000	Combined single limit each accident
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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.

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.

1-07.23(1) Construction Under Traffic

(January 5, 2015 WSDOT 1-07.23(1).OPT5.FR1)

Section 1-07.23(1) is supplemented with the following

Lane closures are subject to the following restrictions:

If the Engineer determines the permitted closure hours adversely affect traffic, the Engineer may adjust the hours accordingly. The Engineer will notify the Contractor in writing of any change in the closure hours.

Lane closures are not allowed on any of the following:

1. A holiday,
2. A holiday weekend; holidays that occur on Friday, Saturday, Sunday or Monday are considered a holiday weekend. A holiday weekend includes Saturday, Sunday, and the holiday.
3. After noon on the day prior to a holiday or holiday weekend, and
4. Before noon on the day after the holiday or holiday weekend.

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 **(May 25, 2006 APWA GSP)**

Add the following new section:

1-08.0(1) Preconstruction Conference **(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:

- To review the initial progress schedule;
- To establish a working understanding among the various parties associated or affected by the work;
- To establish and review procedures for progress payment, notifications, approvals, submittals, etc.;
- To establish normal working hours for the work;
- To review safety standards and traffic control; and
- 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:

- A breakdown of all lump sum items;
- A preliminary schedule of working drawing submittals; and
- A list of material sources for approval if applicable.

1-08.0(2) Hours of Work
(December 8, 2014 APWA GSP)

Except in the case of emergency or unless otherwise approved by the Engineer, the normal working hours for the Contract shall be any consecutive 8-hour period between 7:00 a.m. and 6:00 p.m. Monday through Friday, exclusive of a lunch break. If the Contractor desires different than the normal working hours stated above, the request must be submitted in writing prior to the preconstruction conference, subject to the provisions below. The working hours for the Contract shall be established at or prior to the preconstruction conference.

All working hours and days are also subject to local permit and ordinance conditions (such as noise ordinances).

If the Contractor wishes to deviate from the established working hours, the Contractor shall submit a written request to the Engineer for consideration. This request shall state what hours are being requested, and why. Requests shall be submitted for review no later than 5 prior to the day(s) the Contractor is requesting to change the hours.

If the Contracting Agency approves such a deviation, such approval may be subject to certain other conditions, which will be detailed in writing. For example:

1. On non-Federal aid projects, requiring the Contractor to reimburse the Contracting Agency for the costs in excess of straight-time costs for Contracting Agency representatives who worked during such times. (The Engineer may require designated representatives to be present during the work. Representatives who may be deemed necessary by the Engineer include, but are not limited to: survey crews; personnel from the Contracting Agency's material testing lab; inspectors; and other Contracting Agency employees or third party consultants when, in the opinion of the Engineer, such work necessitates their presence.)
2. Considering the work performed on Saturdays, Sundays, and holidays as working days with regard to the contract time.
3. Considering multiple work shifts as multiple working days with respect to contract time even though the multiple shifts occur in a single 24-hour period.
4. If a 4-10 work schedule is requested and approved the non working day for the week will be charged as a working day.
5. If Davis Bacon wage rates apply to this Contract, all requirements must be met and recorded properly on certified payroll

1-08.0(2)A Lacey Hours of Work
(October 16, 2014 Lacey GSP Option A)

Add the following new section:

Lacey Municipal Code (LMC) Chapter 14.38.010, prohibits outside construction activities between the hours of 9:00 p.m. and 7:00 a.m. in or adjacent to residential zones of the City. A waiver to this ordinance will not be allowed, except in case of emergency, or where operations are necessary during such hours in order to promote the safety of the traveling public as shown in theses specifications or as determined by the Engineer.

1-08.1(7)A Subcontracting
(December 30, 2022 APWA GSP)

Delete the ninth paragraph, beginning with "On all projects, the Contractor shall certify..."..

1-08.3(2)A Type A Progress Schedule
(December 30, 2022 APWA GSP)

Revise this section to read:

The Contractor shall submit five (5) copies of a Type A Progress Schedule no later than at the preconstruction conference, 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
(July 23, 2015 APWA GSP)

Delete this section in its entirety, 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. The Contractor shall commence construction activities on the project site within ten days of the Notice to Proceed Date, 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.

1-08.4(1) Order Of Work
(***)**

Add the following new section:

Prior to starting construction and issuance of notice to proceed by the City, the Contractor shall furnish the Contracting Agency with a schedule, sequence, and method of proceeding with the work. This schedule shall address all items herein and must be approved by the Contracting Agency prior to commencing any construction operations.

The following specific requirements shall be included into the project schedule:

- Temporary bypass pumping for LS 34 and 37 shall not occur simultaneously

1-08.5 Time for Completion

(March 13, 1995 WSDOT GSP 1-08.5OPT7.FR1)

This project shall be physically completed within **250 working days**.

1-08.5 Time for Completion

(December 30, 2022 APWA GSP Option B)

Revise the third and fourth paragraphs to read:

Contract time shall begin on the first working day following the **30 calendar days** after the Notice to Proceed date. If the Contractor starts work on the project at an earlier date, then contract time shall begin on the first working day when onsite work begins.

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. The statement will be identified as a Written Determination by the Engineer. If the Contractor does not agree with the Written Determination of working days, the Contractor shall pursue the protest procedures in accordance with Section 1-04.5. By failing to follow the procedures of Section 1-04.5, 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

1-08.6 Suspension of Work

(February 15, 2023 Lacey GSP)

Contract time may be suspended for procurement of critical materials (Procurement Suspension). In order to receive a Procurement Suspension, the Contractor shall within 21 calendar days after execution by the Contracting Agency, place purchase orders for all materials deemed critical by the Contracting Agency for physical completion of the contract. The Contractor shall provide copies of purchase orders for the critical materials. Such purchase orders shall disclose the purchase order date and estimated delivery dates for such critical material.

The Contractor shall show procurement of the materials anticipated to be critical materials as activities in the Progress Schedule. If approved Progress Schedule indicates that the materials procurement are critical activities, and if the Contractor has provided documentation that purchase orders are placed for the critical materials within the prescribed 21 calendar days, then contract time will be suspended upon physical completion of all critical work except that work dependent upon the critical materials. Items anticipated to be critical materials include but are not limited to:

Pumps

Charging of contract time will resume upon delivery of the critical materials to the Contractor or **90 calendar days**, whichever occurs first.

1-08.9 Liquidated Damages **(March 3, 2021 APWA GSP, Option B)**

Revise the second and third paragraphs to read:

Accordingly, the Contractor agrees:

1. To pay (according to the following formula) liquidated damages for each working day beyond the number of working days established for Physical Completion, and
2. To authorize the Engineer to deduct these liquidated damages from any money due or coming due to the Contractor.

Liquidated Damages Formula

$$LD=0.15C/T$$

Where:

LD = liquidated damages per working day (rounded to the nearest dollar)

C = original Contract amount

T = original time for Physical Completion

When the Contract Work has progressed to Substantial Completion as defined in the Contract, the Engineer may determine the Contract 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

1-09.7 Mobilization

(December 30, 2022 APWA GSP)

Delete this Section and replace it with the following:

Mobilization consists of preconstruction expenses and the costs of preparatory Work and operations performed by the Contractor which occur before 10 percent of the total original amount of an individual Bid Schedule is earned from other Contract items on that Bid Schedule. Items which are not to be included in the item of Mobilization include but are not limited to:

1. Any portion of the Work covered by the specific Contract item or incidental Work which is to be included in a Contract item or items.
2. Profit, interest on borrowed money, overhead, or management costs.
3. Any costs of mobilizing equipment for force account Work.

Based on the lump sum Contract price for “Mobilization”, partial payments will be made as follows:

1. When 5 percent of the total original Bid Schedule amount is earned from other Contract items on that original Bid Schedule, excluding amounts paid for materials on hand, 50 percent of the Bid Item for mobilization on that original Bid Schedule, 5 percent of the total of that original Bid Schedule, or 5 percent of the total original Contract amount, whichever is the least, will be paid.
2. When 10 percent of the total original Bid Schedule amount is earned from other Contract items on that original Bid Schedule, excluding amounts paid for materials on hand, 100 percent of the Bid Item for mobilization on that original Bid Schedule, 10 percent of the total of that original Bid Schedule, or 10 percent of the total original Contract amount, whichever is the least, will be paid.
3. When the Substantial Completion Date has been established for the project, payment of any remaining amount Bid for mobilization will be paid.

Nothing herein shall be construed to limit or preclude partial payments otherwise provided by the Contract.

1-09.9 Payments

(December 30, 2022 APWA GSP)

Section 1-09.9 is revised to read:

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.

Failure to perform obligations under the Contract by the Contractor may be decreed by the Contracting Agency to be adequate reason for withholding any payments until compliance is achieved.

Upon completion of all Work and after final inspection (Section 1-05.11), the amount due the Contractor under the Contract will be paid based upon the final estimate made by the Engineer and presentation of a Final Contract Voucher Certification to be signed by the Contractor. The Contractor's signature on such voucher shall be deemed a release of all claims of the Contractor unless a Certified Claim is filed in accordance with the requirements of Section 1-09.11 and is expressly excepted from the Contractor's certification on the Final Contract Voucher Certification. The date the Contracting Agency signs the Final Contract Voucher Certification constitutes the final acceptance date (Section 1-05.12).

If the Contractor fails, refuses, or is unable to sign and return the Final Contract Voucher Certification or any other documentation required for completion and final acceptance of the Contract, the Contracting Agency reserves the right to establish a Completion Date (for the purpose of meeting the requirements of RCW 60.28) and unilaterally accept the Contract. Unilateral final acceptance will occur only after the Contractor has been provided the opportunity, by written request from the Engineer, to voluntarily submit such documents. If voluntary compliance is not achieved, formal notification of the impending establishment of a Completion Date and unilateral final acceptance will be provided by email with delivery confirmation from the Contracting Agency to the Contractor, which will provide 30 calendar days for the Contractor to submit the necessary documents. The 30 calendar day period will begin on the date the email with delivery confirmation is received by the Contractor. The date the Contracting Agency unilaterally signs the Final Contract Voucher Certification shall constitute the Completion Date and the final acceptance date (Section 1-05.12). The reservation by the Contracting Agency to unilaterally accept the Contract will apply to Contracts that are Physically Completed in accordance with Section 1-08.5, or for Contracts that are terminated in accordance with Section 1-08.10. Unilateral final acceptance of the Contract by the Contracting Agency does not in any way relieve the Contractor of their responsibility to comply with all Federal, State, tribal, or local laws, ordinances, and regulations that affect the Work under the Contract.

Payment to the Contractor of partial estimates, final estimates, and retained percentages shall be subject to controlling laws.

1-09.9 Payments

(November 20, 2020 Lacey GSP)

Section 1-09.9 is supplemented with the following:

Progress payments and the Final Contract Voucher Certification (FCVC) will be transmitted electronically to the Contractor for signature. The Contractor shall apply all signatures electronically using the software provided by the Contracting Agency. Within 21 days of execution of the Contract, the Contractor shall submit the names, email addresses, and text-message capable phone numbers for the authorized signers and shall bear the name, phone number and email of the officer providing this authorization. Delegation of authority to sign progress payments and the FCVC shall be by the officer authorized to sign the Contract.

1-09.11(3) Time Limitation and Jurisdiction

(December 30, 2022 APWA GSP)

Revise this section to read:

For the convenience of the parties to the Contract it is mutually agreed by the parties that all 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 all 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 all such claims or causes of action. It is further mutually agreed by the parties that when 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 all records deemed necessary by the Contracting Agency to assist in evaluating the claims or action.

1-09.13(1) General

(January 19, 2022 APWA GSP)

Revise this section to read:

Prior to seeking claims resolution through arbitration or litigation, the Contractor shall proceed in accordance with Sections 1-04.5 and 1-09.11. The provisions of Sections 1-04.5 and 1-09.11 must be complied with in full as a condition precedent to the Contractor's right to seek claim resolution through binding arbitration or litigation.

Any claims or causes of action which the Contractor has against the Contracting Agency arising from the Contract shall be resolved, as prescribed herein, through binding arbitration or litigation.

The Contractor and the Contracting Agency mutually agree that those claims or causes of action which total \$1,000,000 or less, which are not resolved by mediation, shall be resolved through litigation unless the parties mutually agree in writing to resolve the claim through binding arbitration.

The Contractor and the Contracting Agency mutually agree that those claims or causes of action in excess of \$1,000,000, which are not resolved by mediation, shall be resolved through litigation unless the parties mutually agree in writing to resolve the claim through binding arbitration.

1-09.13(3)A Arbitration General
(January 19, 2022 APWA GSP)

Revise the third paragraph to read:

The Contracting Agency and the Contractor mutually agree to be bound by the decision of the arbitrator, and judgment upon the award rendered by the arbitrator may be entered in the Superior Court of the county in which the Contracting Agency's headquarters is located, provided that where claims subject to arbitration are asserted against a county, RCW 36.01.050 shall control venue and jurisdiction of the Superior Court. The decision of the arbitrator and the specific basis for the decision shall be in writing. The arbitrator shall use the Contract as a basis for decisions.

1-09.13(4) Venue for Litigation
(December 30, 2022 APWA GSP)

Revise this section to read:

Litigation shall be brought in the Superior Court of the county in which the Contracting Agency's headquarters is located, provided that where claims are asserted against a county, RCW 36.01.050 shall control venue and jurisdiction of the Superior Court. It is mutually agreed by the parties that when litigation occurs, the Contractor shall permit the Contracting Agency to have timely access to all records deemed necessary by the Contracting Agency to assist in evaluating the claims or action.

1-10 TEMPORARY TRAFFIC CONTROL

1-10.1 General
(January 3, 2017 Lacey GSP)

Supplement this section with the following:

Delays to traffic shall be held to a minimum. There shall be no restrictions or interruptions to traffic on Saturdays, Sundays or Holidays. In addition, there shall be no restrictions or interruptions to traffic after 12:00 noon on the day prior to a holiday or holiday weekend.

There shall be no delay to medical, fire, police, or other emergency vehicles with flashing lights or sirens. The Contractor shall alert all flaggers and personnel of this requirement.

The Contractor shall be responsible for removing the permanent traffic signs, as deemed necessary by the Engineer, and shall install and maintain any temporary signs necessary for the safety of the public.

The Contractor shall maintain pedestrian access at all times, without having pedestrians enter the travel lane.

All lane restrictions shall be held to a minimum time and length. Lane closures shall comply with the traffic control plans and these specifications. If the Contractor wishes to deviate from the plans, the Contractor shall submit a traffic control plan to the Engineer, at no additional cost, that complies with the MUTCD, and the Traffic Control Plans, for approval by the Engineer within (5) five working days before the proposed lane closure. If the Engineer determines that lane restrictions are causing congestion, the

Contractor will be required to open any lanes, as determined by the Engineer, until the congestion is eliminated.

During non-working hours, Saturdays, Sundays, and Holidays, the Contractor shall keep all lanes open to traffic throughout the limits of the project with the lane and sidewalk area completely clear of all material, tools, personnel, and equipment as directed by the Engineer.

1-10.4(3) Reinstating Unit Items With Lump Sum Traffic Control **(August 2, 2004 WSDOT GSP)**

Section 1-10.4(3) is supplemented with the following:

The bid proposal contains the item “Project Temporary Traffic Control,” lump sum and the additional temporary traffic control items listed below. The provisions of Section 1-10.4(1), Section 1-10.4(3), and Section 1-10.5(3) shall apply.

“Portable Changeable Message Sign”, per hour.

2-02 REMOVAL OF STRUCTURES AND OBSTRUCTIONS

2-02.1 Description

(*** Lacey)**

Supplement this section with the following:

The following items plus all materials resulting from incidental work including clearing; grubbing and roadside cleanup shall be removed from the job site, disposed of in a waste site or when noted on the plans, delivered to the City.

This work consists of but shall not be limited to the following items:

- Pavement
- Concrete
- Fencing
- Submersible Wastewater Pumps
- Sewer Pipe
- Sewer Valves and Fittings
- Electrical Conduit and Conductors

2-02.2 Video

(March 3, 2022 Lacey GSP)

Add the following new section:

The Contractor shall provide pre-construction video of the existing conditions for the construction area including all easements, streets, alleys, and driveways within the project area. Further, video shall include existing drainage, driveways, sidewalks, and other frontage improvements. The Contractor shall also

provide pre-construction video of the existing conditions of each face of an existing structure (houses, garages, sheds, fences, etc.), within 30 feet of the construction area.

The Contractor shall provide a copy of the video, in electronic format , to the City prior to any construction.

All costs for providing and furnishing the pre-construction video shall be considered incidental to the Project and no other payment will be allowed.

2-02.3 Construction Requirements

(*** Lacey GSP)**

Supplement this section with the following:

Unless otherwise noted, catch basins and manholes shall be removed entirely.

Where shown on the plans, catch basins, manholes, and inlets may be removed to a point 5 feet below the subgrade and the cavity filled with gravel borrow compacted to 95% of maximum density. Where existing pipe is to be abandoned, the Contractor shall seal the pipe with commercial concrete.

The removal of an existing hydrant assembly shall consist of turning off the gate valve, removing the existing hydrant assembly, valve box and anything else that is within 2' of the finished grade. Cap or plug the existing valve after the existing hydrant assembly has been removed. The Contractor shall return the existing fire hydrant assembly to the City. If the existing hydrant is damaged due to the Contractor's negligence, the Contractor shall replace the hydrant with a new hydrant.

City staff will remove desired components from the project site(s), including but not necessarily limited to:

- Motor starters

Contractor shall provide City with two weeks written notice that the project is ready for salvage efforts. City will complete salvage efforts within a single business day. Contractor shall remove and dispose of all remaining items in full accordance with all governing regulations.

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

(October 16, 2016 Lacey GSP)

Supplement this section with the following:

In removing pavement, sidewalks, and curbs, the Contractor shall:

1. Mark all cut lines in the field and have the Engineer approve them prior to commencing cutting operations. The Engineer reserves the right to adjust removal to the nearest construction joint.
2. Make a vertical saw cut between any existing pavement, sidewalk, or curb that is to remain and the portion to be removed.
3. All sawcuts shall be continuous and made with saws designed specifically for this purpose; no skip cutting, wheel cutting, or jack hammering will be allowed unless given prior approval by the Engineer.

4. Replace at no expense to the Contracting Agency any pavement designated to remain that is damaged during the removal of other pavement. All damaged sidewalks and curbs shall be replaced to the nearest existing joint.
5. Haul all broken-up pieces of pavement, sidewalks, and curbs to an off-project disposal site.

All transitions to existing asphalt or cement concrete driveways, parking lots, curb and gutter and walkways shall be vertically sawcut full-depth with straight, uniform edges. Existing asphalt pavement roadway edge may be cut with a wheel, provided the wheel cut is full depth and no damage occurs to the pavement which is to remain. Neither impact tools nor pavement breakers may be used for trench crossing of existing pavement. Trench crossing of existing pavement shall be vertically sawcut.

When sawcutting the existing roadway is needed to widen the road to perform excavation, the Contractor shall take extra precaution to make a neat, uniform cut, and shall sawcut pavement to full depth, regardless of number of passes necessary. Compaction of asphalt near the sawcut is critical and a vertical, neat line sawcut is required. If in the opinion of the Engineer, the cut is not satisfactory due to Contractor's workmanship or equipment, or if the sawcut becomes damaged and irregular, the Contractor shall fix the problem to the satisfaction of the Engineer, at Contractor's own expense.

Existing asphalt pavement shall be expected to have a 12 inch thickness. No additional compensation for saw cutting shall be considered unless the depth of the total pavement is greater than 24 inches. If a remnant of a concrete panel remains, the panel shall be removed as directed by the Engineer utilizing Unsuitable Foundation Excavation Incl. Haul.

The Contractor may grind the existing pavement in lieu of excavation and haul. Spoils from grinding can be stockpiled and used and paid for per sections 4-04.3(12), 4-04.4 and 4-04.5. If the Contractor elects to grind and stockpile the existing pavement, all costs and expenses necessary to furnish all labor, equipment, tools and materials shall be incidental to other bid items and no additional compensation will be allowed.

2-02.5 Payment

(March 18, 2015 Lacey GSP)

Delete this section and replace with the following:

"Removal of Structures and Obstructions", lump sum.

The lump sum contract price for these bid items shall be full compensation for all labor, equipment and materials necessary to complete the requirements of this section.

2-07 WATERING

2-07.3 Construction Requirements

(October 16, 2009 Lacey GSP)

Supplement this section with the following:

If the Contractor anticipates the use of City water, the Contractor shall apply for a water meter through the City of Lacey. Any damage rendered to the meter shall be repaired or replaced by the Contracting Agency and those costs deducted from monies due to the Contractor. All water used shall be metered and used sparingly for the entire length of the project. The Contractor will not be charged for water used on the project.

The Contractor shall use the water to keep the project site clean and to control dust during and after construction hours as determined by the Engineer.

2-07.4 Measurement

(October 16, 2009 Lacey GSP)

Delete and replace this section with the following:

The Contractor shall apply for a construction meter through the Contracting Agency. All water used shall be measured with the Contracting Agency supplied meter.

2-07.5 Payment

(February 14, 2023 Lacey GSP)

Delete and replace this section with the following:

The Contractor will not be charged for water used on this project. A construction meter will also be provided for a deposit and can be obtained at the City of Lacey Maintenance Service Center. Any costs to repair meters damaged by the Contractor shall be recovered from monies due the Contractor.

All costs to use or apply water as directed by the Engineer, including but not limited to supplying tank trucks, reduced pressure backflow assemblies (RPBA), and certification of approved backflow prevention methods, shall be considered incidental to the project and no other payment will be allowed.

7-05 MANHOLES, INLETS, CATCH BASINS, AND DRYWELLS

7-05.3(8) Manhole Treatment

(October 30, 2018 Lacey GSP)

Section 7-05.3(8) is added with the following:

The manhole shall be thoroughly pressure washed using a minimum of 3,000 psi in preparation for the application to remove any dirt, debris, or loose material. All manhole joints and pipe penetrations shall be watertight to prevent infiltration or ex-filtration prior to application of the product. Final surface preparation shall be in accordance with the coating manufacturer's recommendations.

Manhole treatment shall require that a protective coating be applied to completely and uniformly cover the manhole floor, interior wall, and underside of lid at the thickness indicated by the manufacturer. Finished surface shall be smooth. All joints and penetrations shall be water tight prior to application of the product. The product shall be installed in accordance with the manufacturer's instructions by a factory certified applicator.

The Contractor shall be responsible to provide confined space entry for the coating inspector. The City shall be responsible to pay for the services of an independent NACE certified coatings inspector for the following:

1. Inspect and perform testing of all the surface preparation prior to the application of coatings.
2. Inspect and perform testing of coatings in the wetwell.
3. Provide a written report to the Owner after testing is completed. The contractor is responsible to correct all deficiencies noted in the report.

The coating material shall be 125 mils Raven 405, 250 mils SprayWall by SprayRoq Protective Lining Systems or 1" of SewperCoat PG by Kerneos Inc and primer if needed per manufacturer recommendations.

7-05.5 Payment

(*****)

Supplement this section with the following:

All costs for "Manhole Treatment" shall be incidental to "Lift Station" pay item.

7-17 SANITARY SEWERS

7-17.1 Description

(October 29, 2010 Lacey GSP)

Supplement this section with the following:

Various transition couplings, flanged coupling adapters, transition couplings with follower flanges and gaskets, and other miscellaneous couplings and fittings may be required for performance under this project.

It shall be the Contractor's responsibility to determine what specific couplings, adapters, and fittings that will be used to make connections shown on the plans. The Engineer has shown specific existing material types, and nominal sizes using the best information available. The Engineer has not determined the specific dimensions of existing materials.

7-17.2 Materials

(November 20, 2020 Lacey GSP)

Delete this section and replace with the following:

Gravity Sewer Pipe - Pipe used for gravity sewer shall meet the requirements of WSDOT Section 9-05.12(1) Solid Wall PVC Sanitary Sewer Pipe. All pipe shall be white or green in color.

PVC Pressure Pipe – All pipe less than 4 inches in diameter shall be Schedule 80 PVC, ASTM D1784. All pipe 4 through 12 inches in diameter, shall be PVC C900 DR 14, meeting the requirements of WSDOT Section 9-30.1. A combination of solvent weld and PVC threaded schedule 80 fittings may be required to properly plumb the pump discharge piping to and through the valve vault. All pipe shall be grey, green or white in color. No sewer pipe installed in this project shall be blue.

Pipe Restraint - Where pipe is specified as restrained joint pipe 4 inches through 10 inches in diameter, use PVC C900/RJ Restrained Joint Pipe Certa-Lok by CertainTeed Corporation, Eagle Loc 900 by JM Eagle or Diamond Lok-21 by Diamond Plastics. The plastic pipe shall conform to the latest revision of the following specifications, PVC Compound ASTM D1784 Class 12454, Gasket ASTM F477, Manufacturing ASTM D2241. Pipe shall be certified NSF and meet requirements of Dimension Ratio 14.

Pipe Restraint - Where specified as restrained joint pipe larger than 10 inches in diameter, the pipe shall be restrained using bell joint restraint devices that have a working pressure of at least 200 psi with a

minimum safety factor of 2:1 and shall be EBAA Iron, Inc., MEGALUG series 2800, Uni-Flange Series 1390, Romac Industries, Inc., U.S. Gripper, or approved equal.

Ductile Iron Pipe - All ductile iron pipe shall conform to ANSI/AWWA C151/A21.51. Thickness class 52 specifications. Ductile iron pipe for sewer shall be ordered as bare pipe without cement lining and without outside coating. The pipe shall be lined on the inside to a minimum of 35 mils thick with Protecto 401 or 15 mils thick with 3M ScotchKote 134 fusion bonded epoxy. The pipe shall be coated on the outside to a minimum of 20 mils thick with Ceramawrap Ceramic Epoxy or 15 mils thick with 3M ScotchKote 134 fusion bonded epoxy. Coatings shall be applied according to the manufacturers' requirements by a certified applicator of the product. Coatings shall not be applied to pipe, fittings or valves in the field by the contractor.

Ductile Iron Fittings for sewer mains - All ductile iron pipe fittings shall be compact ductile iron style and shall be ordered bare (without cement lining or outer coating) and then be coated with epoxy rated for sewer by a professional coating firm. Coatings applied by the fitting manufacturer shall be excepted pending approval of the coating material submitted. Coatings/linings shall be Protecto 401, Ceramawrap or 3M ScotchKote 134 per the Ductile iron pipe specifications shown above. Mechanical joint (MJ) fittings shall be installed with an approved mechanical joint restraint device. The mechanical joint restraint device shall have a working pressure of at least 250 psi with a minimum safety factor of 2:1 and conform to ANSI A21.10 and AWWA C110. Products shall be EBAA Iron, Inc., MEGALUG Series 2000PV, Romac Industries, Inc., U.S. Gripper, or approved equal.

Eccentric Plug Valves for sewer mains – Valves 3” through 12” shall have a round full port opening (100% pipe area), comply with AWWA C517 specifications and be constructed of cast or ductile iron. Flanged valves shall be drilled to ANSIB16.1, Class 125 specifications and mechanical Joint valves shall comply with ANSI/AWWA C111/A21.11 specifications. Valves shall be eccentric quarter turn with resilient encapsulated plug, have 95% nickel seat, u-cup stem seal and permanently lubricated stainless steel bearings. Valves shall be 175psi working pressure. 3” and 4” valves shall be standard ¼ turn operation. Valves 6” and larger shall have a totally enclosed, sealed and permanently lubricated worm gear actuator with stainless shaft. Valves for buried service shall have a gear box and be designed for underground applications. Buried valves shall be fitted with standard 2” square hub operator. 3” and 4” valves installed in vaults shall be supplied with hand lever bar to attach to hub. Valves 6” and larger in vaults shall be supplied with hand wheel operator attached to gear box. Plug valves for sewer service shall be coated by the manufacturer on the inside and outside with the manufacturers epoxy coating rated for sewer. Valves shall conform to AWWA C509-80 and be Crispin 800 series, Pratt -Ballcentric, or Milliken - Millcentric.

PVC Ball Valves – 2” and smaller PVC ball valves shall be Schedule 80 PVC or Poly true union valves with red handle. Cepex, Spears, KBI or approved equal. Valves shall be threaded FIPT x FIPT Style.

Lift Station Check Valves- Check valves shall be sewer rated bronze on bronze style seat with an outside lever and spring. Valves shall be coated by the manufacturer on the inside and outside with the manufacturers epoxy coating rated for sewer. Check valves shall be ordered and installed in the vault as one right hand and one left hand model with the outside levers furthest away from each other (outside of piping configuration).

Lift Station By-Pass Pumping Connections- The valve vault emergency by-pass pumping connections shall be 6 inch 316 stainless steel male cam lock style fittings. Fittings shall have an stainless female cap installed. Cam lock fittings shall face “UP” as shown on the detail and be clearly visible and accessible for connection with 6 inch by-pass hose from above through the vault hatch opening.

Tapping Valves shall be resilient wedge gate valves and shall be coated by the manufacturer on the inside and outside with the manufacturers epoxy coating rated for sewer.

Valves shall be bolted to tees and the crosses with flanged ends. Joint materials for flanges shall be 1/8 inch thick one piece, cloth inserted rubber gaskets conforming to AWWA C107-78, rated for sewer service. Bolts, nuts and hardware for all flanged and mechanical joints in the wet well and valve vault shall be 316 stainless steel only, meeting the current provisions of American National Standard ANSI/AWWA C111/A 21.11 for rubber gasket joints for cast iron or ductile iron pipe and fittings.

Valve boxes shall be EJ Ironworks or Olympic Foundry VB-950, 6-3/4 inch OD with recessed handle type iron cover marked "CITY OF LACEY SEWER".

All pipe shall be new and in good condition with no visible signs of UV damage, fading or other defects.

7-17.3(2) Cleaning and Testing

7-17.3(2)A General

(March 3, 2022 Lacey GSP)

The first sentence shall be deleted and replaced with the following:

All sewer force mains and appurtenances shall be tested in sections of convenient length under a hydrostatic pressure of not less than 175 psi for 15 minutes.

Supplement this section with the following:

All pipe installed shall be tested in accordance with WSDOT Section 7-09.3(23).

All sanitary sewer pipe, including laterals, shall be high-velocity cleaned, televised and approved prior to paving. Hydrant flushing lines is not an acceptable method of cleaning. If rocks or other debris are found in manholes, the Contractor shall re-clean the sewer pipe.

7-17.5 Payment

(*****)

Section 7-17.5 is supplemented with the following:

All costs to furnish and install sewer pipe where indicated by the City and detailed in the plans shall be included in the unit contract price per lump sum for "Pumps & Mechanical" and shall be full compensation for all labor, material, and equipment to furnish, place, assemble, and install force main sewer pipe, complete in place, including tees, bends, caps, reducers, special fittings, thrust blocking, dewatering, testing, and connection to existing system. Further, all excavation, hauling, disposal, compaction and other required earthwork shall be included.

All costs to furnish and install concrete pads shall be incidental to the unit contract price for each item and no other pay shall be allowed.

7-22 LIFT STATION

(October 29, 2010 Lacey GSP)

Add the following new section:

7-22.1 Description

(October 29, 2010 Lacey GSP)

The Contractor shall furnish and install the submersible pumps, pump guide rail system, discharge piping, electrical and control system, electrical power, raceways, wiring, discharge system equipment, and all lift station appurtenances as shown in these Special Provisions, the Plans, the Technical Specifications and the Standard Specifications, except as modified herein.

This work consists of furnishing, installing, testing and placing in satisfactory and successful operation all equipment, materials, devices and necessary appurtenances to provide a complete sanitary sewer pump station, together with such other miscellaneous installations and equipment hereinafter specified and/or shown in the Plans. This work shall include all materials, appliances and apparatus not specifically mentioned herein or shown in the Plans, but which are necessary to make a complete working installation of all systems shown in the Plans or described herein or in the Technical Specifications.

7-22.2(1) Electrical System

(***)**

General

See the Technical Specifications and Plans for detailed information.

Permits & Fees

The Contractor shall obtain and pay for all licenses, permits and inspections required by laws, ordinances and rules governing work specified herein. The Contractor shall arrange for inspection of work by the inspectors and shall give the inspectors all necessary assistance in their work of inspection.

The Contractor shall consult with and follow the requirements of the local fire, power, telephone, and television utilities serving the area and shall coordinate his work with them.

As-Built Drawings

The Contractor shall maintain, in addition to any reference drawings, an as-built set of prints, on which all deviations from the original design shall be drafted in a neat, legible manner with red colored pen or pencil. The red-lined plans shall identify all revisions including addenda items, change orders, and Contractor revisions. The Contractor is responsible to revise panel schedules and load calculations as required.

Upon completion of the lift station electrical work, the Contractor shall deliver the red-lined plans and one set of machine drafted as-built drawings on reproducible mylar to the City. The Contractor shall provide two copies of electronic as-built drawings in AutoCAD or DXF file format on usb drive.

Shop Drawing Submittals

The Contractor shall submit to the Engineer, detailed shop drawings, to include:

1. Manufacturer's Catalog Data.
2. Complete Physical and Technical Data.
3. Wiring Diagrams where applicable.
4. Detailed Reference (written or highlighted) noting compliance with the appropriate specification section and applicable item numbers within that section.
5. Other Descriptive Data as required by the Engineer.

Shop drawings shall be submitted individually, attached to an e-mail noting the specification and section being submitted and shall be, but not limited to the items of equipment listed below:

1. All panelboards, showing breaker arrangement with circuit numbers and devices powered.
2. Motor starters and controls designating where items are intended to be used and equipment being controlled.
3. Telemetry and Communications
4. Transformers (Dry Type)
5. TVSS
6. Disconnect Switches
7. Wiring Devices
8. Device Boxes
9. Coverplates
10. Raceways and Connectors
11. Copper Wire
12. All Specialty Systems not listed above.
13. Any other items requested by Engineer.

All submittals shall have a completed City provided submittal form attached to the transmittal. Submittals deemed too large to be transmitted via e-mail shall be transmitted to the Engineer via usb drive. A printed copy of the digital submittal form shall be included with any physical media transmitted. The submittal form will be completed and returned to the Contractor indicating the submittal status.

7-22.3(3)B Operation, Maintenance And Service Manuals, And Parts Books **(October 29, 2010 Lacey GSP)**

The systems manufacturer or their authorized local dealer shall furnish three copies each of the manuals and books listed below for each unit provided under this contract.

Operating Instructions

Manual shall include description and illustration of all switchgear controls and indicators, engine and generator controls and indicators, and control and power subsystems.

Parts Books

Manual shall illustrate and list all assemblies, subassemblies and components, except standard fastening hardware (nuts, bolts, washers, etc.).

Preventative Maintenance Instructions

Manual shall include instructions on the complete system that cover daily, weekly, monthly, biannual, and annual maintenance requirements and include a complete lubrication chart.

Routine Test Procedures

Manual shall include test procedures for all electronic and electrical circuits and for the main AC generator.

Troubleshooting Chart

Manual shall cover the complete lift station system showing description of trouble, probable cause, and suggested remedy.

Recommended Spare Parts List

Manual shall list all consumables anticipated to be required during routine maintenance and testing, and all spare non-consumable items recommended by the subsystem manufacturer.

Wiring Diagrams and Schematics

Manual shall include wiring diagrams, schematics, and the function of all electrical components.

Electrical System Instructions and Manuals

A preliminary copy of manuals, complete except for the bound cover, shall be submitted 20 days prior to completion of the project for checking and review. One electronic and three (3) bound, corrected copies shall be delivered to the City 20 days prior to scheduled instruction periods after review of the preliminary copy. Submit a receipt for the manuals to the Engineer with the completed form.

Manuals shall contain shop drawings, final wiring diagrams, operating and maintenance (O&M) instructions, replacement parts lists, and equipment nameplate data for all equipment and systems installed. Control systems equipment submittals shall contain step-by-step circuit description information designed to acquaint maintenance personnel with equipment operation in each mode of operation. Manuals shall contain original brochures supplied by manufacturers indicating the exact equipment installed. Photo Xerox copies of originals will not be accepted.

Each type of device provided shall be identified in the O & M Manual using the same identification as shown in the plans and specifications. The information included must be the exact equipment installed not the complete "line" of the Manufacturer. Where sheets show the equipment installed and other equipment, the installed equipment shall be neatly and clearly identified on such sheets. Parts lists shall give full ordering information assigned by the original parts manufacturer. Relabeled and/or renumbered parts information as reassigned by contractor or equipment supplier is not acceptable.

The following information shall be provided for each device:

1. Manufacturer's name, address and phone number.
2. Local supplier's name, address and phone number.
3. Complete parts lists including quantities and manufacturer's part numbers.
4. Installation instructions.
5. Recommended maintenance items including maintenance procedure and recommended interval of maintenance listed in hours of operation, calendar unit or other similar time unit.

The hard copies of the O & M Manual shall be assembled in a loose leaf, 3-ring, hard cover binder. The information contained in the manuals shall be grouped in an orderly arrangement by specification index. The manuals shall have a typewritten index and divider sheets between categories with identifying tabs. The covers shall be imprinted with the name of the project, City, Electrical Engineer, Contractor, and year of completion. The back edge shall be imprinted with the name of the project, City, and year of completion. The electronic copy of the O&M Manual shall be assembled in the same order as the hard copy, with each section as an individual pdf file. As a minimum, the following selection shall be broken out:

1. Light Fixtures
2. Lamps and Ballasts - referenced to each fixture type
3. Panelboards and Transformers
4. Motor Controls
5. Instrumentation
6. Telemetry
7. TVSS
8. Motors
9. Pumps
10. Pressure Transmitter
11. Flow Meter
12. Valves and Fittings
13. Generator and ATS

Wiring diagrams for each system shall be complete for the specific system installed. "Typical" line diagrams will not be acceptable unless properly marked to indicate the exact field installation.

7-22.4 Measurement

(*****)

No unit of measure shall apply to the lump sum price for “Lift Station”.

No unit of measure shall apply to the lump sum price for “Pumps & Mechanical”.

No unit of measure shall apply to the lump sum price for “Electrical, Controls, & Telemetry”.

The Contractor shall provide the required schedule of values indicating critical progress points of each bid item to facilitate submission and processing of partial payment request(s) of lump sum bid items.

7-22.5 Payment

(*****)

Payment will be made in accordance with Section 1-04.1, for each of the following bid items that are included in the proposal.

“Pumps & Mechanical” Per lump sum.

The unit contract price per lump sum for “ Pumps & Mechanical” shall be full compensation for all labor, materials and equipment to remove the existing pumps and to provide and install the specified pumps, including one complete spare pump assembly, bases, pump discharge piping, decontactor plugs and all other equipment, assemblies and subassemblies peripheral and appurtenant to the pumps as shown on the Plans and described in the Project Technical Specifications, and these Special Provisions.

One spare pump is required for each lift station.

“Electrical, Controls, & Telemetry”, Per lump sum

The unit contract price per lump sum for “Electrical, Controls, & Telemetry” shall be full compensation for all labor, materials and equipment required to provide and install the conduits, power and signal lines, and all other equipment, assemblies, subassemblies and work appurtenant and peripheral to the pump station electrical, controls, and telemetry as shown on the Plans and described in the Project Technical Specifications, and these Special Provisions.

”Lift Station”, per lump sum.

The unit contract price per lump sum for “Lift Station” shall be full pay for all labor, services, materials, and equipment to, furnish, place, fabricate, assemble, and install all lift station elements not included in “Pumps and Mechanical” and “Electrical, Controls, and Telemetry” but necessary to complete the lift station rehabilitation. Items include but are not limited to testing/startup services, coating/manhole treatment, surrounding reinforced concrete slab, cable tray, instructional sessions, permits, penetration sealing, record drawings all excavation, hauling, disposal, backfill materials, crushed surfacing base course below slabs, gravel, backfill compaction and other required earthwork, completing and submitting lift station checklists and all other work to provide a complete and operating lift station, as shown on the Plans and described in the Project Technical Specifications, and these Special Provisions.

7-23 SANITARY SEWER BYPASS PUMPING

7-23.1 General

(October 29, 2010 Lacey GSP)

The Contractor is required to furnish all materials, labor, equipment, power, and maintenance, etc. to implement a temporary pumping system for the purpose of diverting the existing sanitary sewer flow around the work area as needed for the duration of the project. The bypass system as supplied by the contractor shall meet the requirements of all codes and regulatory agencies having jurisdiction, these general specifications and the technical specifications.

The design, installation, and operation of the temporary pumping system shall be the Contractor's responsibility. The Contractor shall employ the services of a subcontractor who can demonstrate to the engineer that he specializes in the design and operation of temporary bypass pumping systems. The subcontractor shall provide at least five (5) references of projects of a similar size and complexity as this project performed by his firm within the past five years.

7-23.1(1) Bypass Pumping Plan
(October 29, 2010 Lacey GSP)

The Contractor shall submit a detailed description of the proposed pumping system and the bypass pumping contractor's references for review and approval at the pre-construction conference. A separate pre-bypass pumping meeting will be conducted within 4 weeks of submittal of the bypass pumping plan and at minimum 2 weeks prior to the bypass pumping, at which time the Contracting Agency will notify the Contractor of any deficiencies or corrections that are required. Re-submittal of the corrected bypass pumping plan is required. Provided the corrected bypass pumping plan is satisfactory, an additional pre-bypass pumping meeting will not be required.

The Contractor shall submit to the Contracting Agency detailed plans and descriptions outlining all provisions and precautions to be taken by the Contractor regarding handling of existing wastewater flows. This plan must be specific and complete, including such items as schedules, locations, elevations, capacities of equipment, materials, and all other incidental items necessary and/or required to ensure proper protection of the facilities, including protection of the access and bypass pumping locations from damage due to the discharge flows, and compliance with the requirements and conditions specified in these Contract Documents. Work on or abandonment of the gravity sanitary sewer system or existing lift station shall not begin until all provisions and requirements have been approved by the Contracting Agency.

The bypass pumping plan shall include but not be limited to the following details:

1. Staging areas for pumps
2. Sewer plugging method and types of plugs
3. Size and location of manholes or access points for suction and discharge hose or piping
4. Calculations for selection of bypass pumping pipe size
5. Number, size, material, location and method of installation of suction piping
6. Number, size, material, method of installation and location of installation of discharge piping
7. Bypass pump sizes, capacity, solids handling capacity and number of each size to be on site and power requirements
8. Calculations of static lift, friction losses, and flow velocity (pump curves showing pump operating range) shall be submitted
9. Standby power generator size, location (if used)
10. Downstream discharge plan
11. Method of protecting discharge manholes or structures from erosion and damage
12. Thrust and restraint block sizes and locations
13. Sections showing suction and discharge pipe depth, embedment, select fill and special backfill
14. Method of noise control for each pump and/or generator
15. Any temporary pipe supports and anchoring requirements
16. Design plans and computation for access to bypass pumping locations indicated on the drawings
17. Schedule for installation of and maintenance of bypass pumping lines
18. List of spare parts and support equipment to be maintained on site
19. Secondary containment type and size, and plan for deployment
20. Methods for monitoring and assuring equipment is operating per plan
21. Alarm Response Plan which shall include contacting City of Lacey Shop

22. Contingency plan for spill, leak, or other discharge

7-23.2 Equipment

(October 29, 2010 Lacey GSP)

All pumps used shall be fully automatic self-priming units that do not require the use of foot valves or vacuum pumps in the priming system. The pumps may be electric or diesel powered. All pumps used must be constructed to allow dry running for long periods of time to accommodate the cyclical nature of effluent flows. Pumps shall be capable of pumping solids with a nominal spherical dimension of three (3) inches without clogging.

The Contractor shall provide the necessary stop/start controls for each pump.

The Contractor shall include one stand-by pump of each size to be maintained on site. Back up pumps shall be online, isolated from the primary pumping system by a valve.

The pumps shall be contained inside a temporary portable secondary containment structure(s) to contain any fuel or sewage that may spill during the normal course of operation.

Discharge Piping – In order to prevent the accidental spillage of flows, all discharge systems shall be temporarily constructed of rigid pipe with positive, restrained joints. Under no circumstances will “irrigation” type piping or glued PVC pipe be allowed. Discharge hose will only be allowed in short sections and by specific permission from the Engineer.

Noise levels of equipment shall meet Washington State noise level requirements. Contractor shall make the necessary provisions to control the noise of the temporary pumping equipment such that the noise generated by the equipment is limited to 55 dBA during the day (7 AM to 10 PM) and 45 dBA at night (10 PM to 7 AM) at property lines. Depending on the pumping equipment that is used, meeting this requirement may require the use of sound attenuating enclosures as well as other provisions and measures.

7-23.3 System Requirements

7-23.3(1) Design Requirements

(October 29, 2010 Lacey GSP)

Bypass pumping systems shall have sufficient capacity to pump the duty point(s) as identified on the drawings. The Contractor shall provide all pipeline plugs, pumps of adequate size to handle peak flow, and temporary discharge piping to ensure that the total flow of the gravity collection system can be safely diverted around the project area. Bypass pumping systems will be required to be operated 24 hours per day.

Temporary sewer bypass systems shall be designed by a registered Professional Engineer in the State of Washington. Engineer shall have demonstrated experience in the design of pumping systems of comparable size and complexity.

The Contractor shall have adequate standby equipment available and ready for immediate operation and use in the event of an emergency or breakdown. One standby pump for each size pump utilized shall be installed at the mainline flow bypassing locations, ready for use in the event of primary pump failure.

Bypass pumping system shall be capable of bypassing the flow around the work area and be sized to handle any amount of flow up to full available flow as defined by the Contracting Agency into the work area as necessary for satisfactory performances of work.

The Contractor shall make all arrangements for bypass pumping during the time when the gravity sewer main is shut down for any reason. System shall overcome any existing force main pressure on discharge.

7-23.3(2) Performance Requirements

(October 29, 2010 Lacey GSP)

It is essential to the operation of the existing system being bypassed that no interruptions in the flow occur throughout the duration of the project. To this end, the Contractor shall provide, maintain, and operate all temporary facilities such as dams, plugs, pumping equipment (both primary and back-up units as required), conduits, all necessary power, and all other labor and equipment necessary to intercept the incoming flow before it reaches the point where it would interfere with his work, carry it past the work area and return it to the existing wastewater collection system downstream of his work.

The design, installation and operation of the temporary pumping system shall be the Contractor's responsibility. The Contractor shall be on-site within one hour if the alarm is triggered. The bypass system shall be programmed to first call two (2) Contractor numbers. A third number, if possible, shall be added, to include the City of Lacey Maintenance Center 360-491-5644 as a courtesy. It is the Contractor's responsibility to respond to any and all alarms that are triggered by the bypass system. It is not the City's responsibility to respond to the bypass system alarm. The bypass system shall meet the requirements of all codes and regulatory agencies having jurisdiction. It shall be the responsibility of the Contractor to schedule and perform the work in a manner that does not cause or contribute to incidents of overflows, releases or spills of sewage from the sanitary sewer system or the bypass pumping operation.

The Contractor shall provide all necessary means to safely convey the sewage past the work area. The Contractor will not be permitted to stop or impede the main flows under any circumstances.

The Contractor shall divert the flow around the work area in a manner that will not cause damage to, or surcharging of Contracting Agency's system and will protect public and private property from damage and flooding.

During all bypass pumping operations, the Contractor shall protect the Contracting Agency's system (Pumping Station, Conveyance System, etc.) as applicable from damage inflicted by any equipment. The Contractor shall be responsible for all physical damage to the Contracting Agency's system caused by human or mechanical failure.

The Contractor shall protect water resources, wetlands, and other natural resources.

7-23.3(3) Field Quality Control and Maintenance

7-23.3(3)A Tests

(October 29, 2010 Lacey GSP)

The Contractor shall perform leakage and pressure tests of the bypass pumping discharge piping using clean water prior to the actual operation. The Engineer shall be given three working days notice prior to testing.

7-23.3(3)B Inspection

(October 29, 2010 Lacey GSP)

Contractor shall inspect the bypass pumping system on a continuous basis to ensure the system is working correctly. Contractor shall monitor pump power source fuel levels and make arrangements for timely refueling as needed.

7-23.3(3)C Maintenance Service

(October 29, 2010 Lacey GSP)

Contractor shall ensure the temporary pumping system is properly maintained and a responsible operator shall be on hand at all times when pumps are operating.

7-23.3(3)D Extra Materials

(October 29, 2010 Lacey GSP)

Spare parts for pumps and piping shall be kept on site as required by the bypass pumping plan.

Adequate hoisting equipment for each pump and accessories shall be maintained on the site.

7-23.3(4) Spills

(October 29, 2010 Lacey GSP)

Contractor is fully responsible for any damage that may result from an inadequate or improper installation, maintenance or operation, or failure of any kind of the sewer bypass pumping system.

In the event of a spill, the Contractor shall contact the LOTT Spill Reporting Group at (360) 528-5700 and the City of Lacey Maintenance Center at 360-491-5644.

Spills or leaks of sewage to surface waters or drainage courses is prohibited. In the event of sewage spills, the Contractor shall immediately take whatever actions are deemed necessary to stop and remedy the results of the spill. Should the Contractor not take immediate action, the Owner will be entitled to take whatever actions are deemed necessary to stop, contain, and decontaminate a spill, at the Contractor's expense.

Costs incurred by the Contractor or Owner, including penalties imposed on the Owner as a result of any sewage spill caused by the Contractor, its employees, or subcontractors, shall be borne in full by the Contractor, including legal fees and other expenses to the Contractor or Owner resulting directly or indirectly from the spill.

7-23.3(5) Installation and Removal

(October 29, 2010 Lacey GSP)

Contractor is responsible for locating any existing utilities in the area selected for the bypass pipelines. The Contractor shall locate bypass pipelines to minimize any disturbance to project execution and shall obtain approval of the pipeline locations from the Contracting Agency as noted in the bypass pumping plan. All costs associated with relocating utilities and obtaining all approvals shall be paid by the Contractor.

If the system has to be drained to effect the work, such as for a cut-over or connection, Contractor shall provide the necessary temporary pumping and/or storage equipment to drain or remove the sewage from the excavation and/or system.

The Contractor shall remove manhole sections or make connections to the existing conveyance system and construct temporary bypass pumping structures only at the access location indicated on the Plans and is required to provide adequate suction conduit.

Plugging or blocking of flows shall incorporate a primary and secondary plugging device. When plugging or blocking is no longer needed for performance and acceptance or work, it is to be removed in a

manner that permits the sewage flow to slowly return to normal without surge, to prevent surcharging or causing other major disturbances downstream.

When working inside a manhole or wet well, the Contractor shall exercise caution and comply with OSHA requirements when working in the presence of sewer gases, combustible or oxygen-deficient atmospheres, and confined spaces.

The temporary bypass pump discharge pipeline shall be located off streets and sidewalks and on shoulders of the roads where possible without causing delay to the project. When the bypass pipeline crosses local streets and private driveways that are in service, the Contractor shall employ traffic rated crossing devices or place the bypass pipelines in trenches and cover with temporary pavement. Upon completion of the bypass pumping operations, and after receipt of written permission from the Contracting Agency, the Contractor shall remove all the bypass pumping system piping, restore all property to pre-construction condition, and restore all pavement. The Contractor is responsible for obtaining any approvals for placement of the temporary pipeline from the Contracting Agency.

7-23.4 Measurement

[\(October 29, 2010 Lacey GSP\)](#)

No unit of measurement shall apply to the lump sum price for “Bypass Pumping”.

7-23.5 Payment

[\(October 29, 2010 Lacey GSP\)](#)

Payment will be made in accordance with Section 1-04.1, for the following bid item that is included in the proposal.

“Bypass Pumping”, lump sum.

The unit contract price per lump sum for “Bypass Pumping” shall be full pay for all labor, materials, and equipment to furnish, place, assemble, install and operate the bypass pumping system complete in place, including pumps, piping, valves, control systems, generators, permits, traffic control, testing, wyes, tees, special fittings, joint materials, operators and all other work to provide and operate a complete and operating bypass pumping system. Further, all labor, equipment, and materials required for decommissioning, disassembly and removal from the site shall be included.

8-50 MISCELLANEOUS

8-50.2 PROJECT CLOSEOUT

[\(April 2, 2018 Lacey GSP\)](#)

Description

This work shall consist of completing all miscellaneous items of work in accordance with the Plans and these Specifications that are required to achieve Completion and Final Acceptance, as identified by the Engineer and the Contracting Agency. This work may include but is not limited to punch list items, record drawings, O&M Manuals, training, material acceptance documents, copies of the approved “Affidavit of Prevailing Wages Paid” for the Contractor and all Subcontractors, and any other work required in these Plans and Specifications that has not been completed.

Measurement

No unit of measurement shall apply to the lump sum price for “Project Closeout”.

Payment

“Project Closeout”, lump sum.

The unit contract price per lump sum for “Project Closeout” includes all compensation for all costs of completing the miscellaneous items of work identified by the Contracting Agency prior to final acceptance of the Project. A fixed lump sum price has been included in the Proposal for this work. Any additional costs anticipated or incurred by the Contractor for the work shall be included in the various lump sum and unit price bid items as found in the Proposal. Neither partial payment, nor additional compensation shall be allowed

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LIFT STATION 34 & 37 REHABILITATION PROJECT
FOR
CITY OF LACEY

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SECTION 26 05 00 – GENERAL REQUIREMENTS FOR ELECTRICAL WORK

PART 1 GENERAL

1.1 SUMMARY

- A. This Section specifies general requirements applicable to all electrical work to be completed at the facility. This may include such things as underground conduit, surface conduit, motors, control components and similar.
- B. Section includes:
 - 1. Scope
 - 2. Definitions
 - 3. Reference Standards
 - 4. Quality Assurance
 - 5. Submittals
 - 6. Drawings
 - 7. Project Site Conditions
 - 8. Equipment Coordination
 - 9. Basis of Design
 - 10. Products
 - 11. Execution – General
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1.2 SCOPE

- A. This section specifies general requirements for electrical work. Detailed requirements for specific electrical items are specified in other sections but are subject to the general requirements of this section.
- B. Related Sections:
 - 1. The Contract Documents are complementary; what is called for by one is as binding as if called for by all.
 - 2. It is the Contractor's responsibility for scheduling and coordinating the Work of subcontractors, suppliers, and other individuals or entities performing or furnishing any of Contractor's Work.
- C. Interfaces to Equipment, Instruments, and Other Components:
 - 1. The Drawings, Specifications, and overall design are based on preliminary information furnished by various equipment manufacturers, which identify a minimum scope of supply from the manufacturers. This information pertains to, but is not limited to, instruments, control devices, electrical equipment, packaged mechanical systems, and control equipment provided with mechanical systems.

2. Provide all material and labor needed to install the actual equipment furnished. Include additional conduit, wiring, terminals, or other electrical hardware to the work, which may be necessary to make a complete functional installation, based on the actual equipment furnished:
 - a. Make all changes necessary to meet the manufacturer's wiring requirements.
 3. Submit all such changes and additions for acceptance in accordance with requirements of the City of Lacey Section D: Special Provisions.
 4. Review the complete set of Drawings and Specifications in order to ensure that all items related to the electrical power and control systems are completely accounted for. Include items that appear on Drawings or in Specifications from another discipline in the scope of Work:
- D. All electrical equipment and systems for the entire project shall comply with the requirements of Division 26, whether referenced in the individual equipment specifications or not:
1. The requirements of Division 26 apply to all electrical work specified in other Divisions and Sections, Control Panels (CPs), Instruments, and other electrical enclosures.
 2. The Owner is not responsible for any additional costs due to the failure of the Contractor to notify all Subcontractors and suppliers of the Division 26 requirements.
- E. Contract Documents:
1. General:
 - a. The Drawings and Specifications are complementary and are to be used together to fully describe the Work.
 2. Contract Drawings:
 - a. The electrical Drawings show in a diagrammatic manner, the desired locations, and arrangements of the components of the electrical work. Follow the Drawings as closely as possible. Use professional judgment and coordinate with the other trades to secure the best possible installation. Use the entire Drawing set for construction purposes.
 - b. Locations of equipment, control devices, instruments, boxes, and panels are approximate only, exercise professional judgment in executing the Work to ensure the best possible installation:
 - 1) The equipment locations and dimensions shown on plans and elevations are approximate. Use the Shop Drawings to determine the proper layout, foundation, and pad requirements for final installation. Coordinate with all Subcontractors to ensure that all electrical equipment is compatible with other equipment and space requirements. Make changes required to accommodate differences in equipment dimensions.

- 2) The Contractor has the freedom to select any of the named manufacturers, as identified in the individual specification sections. The Engineer has designed the spatial equipment layout based upon a single manufacturer and has not confirmed that every named manufacturer's equipment fits in the allotted space. It is the Contractor's responsibility to ensure that the equipment being furnished fits within the defined space.

c. Installation Details:

- 1) The Contract Drawings include typical installation details, which show the means and methods the Contractor is to use to install electrical equipment. For cases where a typical detail does not apply, develop installation details that may be necessary for completing the Work, and submit these details for review by the Engineer.

1.3 DEFINITIONS

- A. **WIRING, 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:** A 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 block diagram is a diagram of a system, instrument, computer, or program in which selected portions are represented by annotated boxes and interconnecting lines.
- D. **CONNECTION DIAGRAM:** A connection diagram includes all of the devices in a system and shows their physical relationship to each other 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. Interconnection diagrams shall show all external connections between terminals of equipment and outside points, such as motors and auxiliary devices. References shall be shown to all connection diagrams which interface to the interconnection diagrams. Interconnection diagrams shall be of the continuous line type. 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.
 2. Each wire identification as actually installed shall be shown. The wire identification for each end of the same wire shall be identical. All devices and equipment shall be identified. Terminal blocks shall be shown as actually installed and identified in the equipment complete with individual terminal identification.

3. All jumpers, shielding and grounding termination details not shown on the equipment connection diagrams shall be shown on the interconnection diagrams. Wires or jumpers shown on the equipment connection diagrams shall not be shown again on the interconnection diagram. Signal and DC circuit polarities and wire pairs shall be shown. Spare wires and cables shall be shown.
- F. ARRANGEMENT, LAYOUT, and/or OUTLINE DRAWINGS: An arrangement, layout, and 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.

1.4 REFERENCE STANDARDS

- A. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section insofar as specified and modified herein. In the event of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.
- B. Unless otherwise specified, references to documents shall mean the documents in effect on the effective date of the Agreement. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or other- wise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.

Reference	Title
NECA-1	National Electrical Contractors Association – Standard Practices for Good Workmanship in Electrical Contracting
NFPA-70 NFPA-70E	National Electrical Code (NEC) Electrical Safety in the Workplace
NEMA	National Electrical Manufacturers Association
IEEE	Institute of Electrical and Electronic Engineers
IES	Illuminating Engineering Society
IBC	International Building Code
WAC	Washington Administration Code

1.5 QUALITY ASSURANCE

- A. IDENTIFICATION OF LISTED PRODUCTS:
1. Electrical equipment and materials shall be listed for the purpose for which they are to be used, by an independent testing laboratory. Three such organizations are Underwriters Laboratories (UL), Factory Mutual (FM), and Electrical Testing Laboratories (ETL).

Independent testing laboratory shall be acceptable to the 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 inspection at the manufacturer's place of assembly. All costs and expenses incurred for such inspections shall be included in the original contract price. Contractor shall comply with Washington Administrative Code regulations concerning Listing requirements for electrical equipment.

- B. FACTORY TESTS: Where specified in the individual product specification section, factory tests shall be performed at the place of fabrication and performed on completion of manufacture or assembly. The costs of factory tests shall be included in the contract price.

- C. HANDLING AND STORAGE:

1. In accordance with the WSDOT Standard Specification Section 1-06.4.

1.6 SUBMITTALS

- A. PROCEDURES: Submittals to comply with requirements of the City of Lacey Section D: Special Provisions.

- B. SUBMITTAL ITEMS FOR THIS SECTION:

1. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the noting of some errors, but the overlooking of others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.
 2. Where submitted items deviate from specification requirements, a list of any specification sections that are not being met by the submitted item must be provided. The list is to be organized by specification section and paragraph and shall list the product requirement and in what way submitted item does not comply with the requirement. A detailed written explanation of the reasons for requesting the deviation must also be included.
 - a. The Owner shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance with the specifications.
 - b. Failure to include a list of the specification section deviations along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
 3. Include product data sheets of equipment, devices, and materials requested by the individual specification sections.

- a. Catalog information shall include technical specifications and application information, including ratings, range, weight, accuracy, etc.
 - b. Catalog cuts shall be edited to show only the items, model numbers, and information which are applicable and crossing out all inapplicable information.
 - c. Submittals are to made electronically in PDF format, the PDF shall be organized by specification section and linked to an index. The PDF shall be searchable. Submittals that are not submitted in the format outlined may be rejected outright and the Contractor is required to resubmit in the correct format.
- 4. Provide Seismic calculations for anchoring and support of equipment as required.
 - 5. Interconnection diagram: The Contractor shall prepare interconnection diagrams depicting all cable requirements together with their actual terminations as specified.
 - 6. Safety disconnect switch list including legend with equipment tag, equipment description, and power feeder circuit source and location information.
 - 7. Maintenance Data: For all equipment and for components to include in maintenance and service manuals specified in City of Lacey Section D: Special Provisions Section 7-22.3(3)B.
 - 8. Manufacturer's written instructions for testing, adjusting and troubleshooting.

1.7 WARRANTY

- A. Provide a written warranty covering the work done under this Division as required by the General Conditions.
- B. Apparatus:
 - 1. Free of defects of material and workmanship and in accord with the Contract Documents.
 - 2. Built and installed to deliver its full rated capacity at the efficiency for which it was designed.
 - 3. Operate at full capacity without objectionable noise or vibration.
- C. Systems: Any system damage caused by failures of any system component shall be included.

1.8 DRAWINGS

- A. Where the Contractor is required to provide information on drawings as part of the specified work, such drawings shall be prepared on 11-inch by 17-inch paper, and on USB drive in AutoCAD or DXF file format. Drawings shall be complete with borders and title blocks clearly identifying project name, equipment and the scope of the drawing. Drawing quality and size of presentation shall be such as to permit 50 percent reduction of such drawings for insertion in operation and maintenance manuals. Drawings deemed illegible shall be rejected.

- B. Where the Contractor is required to provide equipment or system submittal information on drawings as part of the specified work, such drawings shall be prepared on 11-inch by 17-inch paper and shall be included in PDF format. Drawings shall be complete with borders and title blocks clearly identifying project name, equipment and the scope of the drawing. Drawing quality and size of presentation shall be such as to permit 50 percent reduction of such drawings for insertion in operation and maintenance manuals. Drawings deemed illegible shall be rejected.

1.9 PROJECT/SITE CONDITIONS

- A. GENERAL: Unless otherwise specified, equipment and materials shall be sized and derated for the ambient condition of 40 degrees C at an elevation ranging from sea level to 500 feet without exceeding the manufacturer's stated tolerances.
- B. HAZARDOUS (CLASSIFIED) AREAS: The wet well, valve vault, and cable trench areas are designated as 'Classified' in accordance with the NEC, NFPA 820. See drawings for locations and Class designations.
- C. SEISMIC: Electrical equipment supports, and anchorage shall be designed and installed in accordance to local regional seismic requirements.

1.10 ELECTRICAL NUMBERING SYSTEMS

- A. TAGGING: All circuit raceways shall be tagged at all terminations, panels, pull boxes, junction boxes, etc. in accordance with the assigned numbers on the circuit/raceway schedule and schematic/plan drawings. The tags shall be installed in a clean and high workmanship manner. In addition to tags at the terminations, exposed raceways shall be tagged at each side of concealment.
- B. PREFIX MODIFIERS: The following prefix modifiers shall be used when scheduling/tagging cables and raceway:

Raceway Prefix	Type of Function
H	Power above 600V
P	Power 120V to 600V
C	Control or power - 120V or less
S	Low level signal (less than 90-volt communication or less than 30-volt instrumentation)
D	Data
PC	Composite of power 120 to 600V and control
F	Optical Fiber
PSP, CSP	Spare power, spare control

1. Examples of raceway numbering for the project are:

- a. P-E: Conduit from main control enclosure to isolation pedestal for pump 1 power circuit.
 - b. S-G: Conduit from main control enclosure to isolation pedestal for level transducer circuit.
- C. RACEWAY NUMBERS: Where circuit/raceway numbers have not been assigned, Contractor shall assign raceway numbers in accordance with the system outlined in the drawings.

1.11 CONDUCTOR NUMBERS:

- A. WIRE MARKERS: All control and signal conductors in panels, pull boxes, power, instrument, and relay compartments of motor control centers, control cabinets, instrument cabinets, field cabinets and control stations, as well as connections to mechanical equipment, shall be tagged at each end with legible, coded tight-fitting wire-marking sleeve showing the complete wire designation. The letters and numbers that identify each wire shall be machine printed on sleeves with permanent black ink. The sleeves shall be shrunk to fit the conductor with hot air after installation. Adhesive strips are not acceptable.
- B. INTERNAL WIRING: Wiring shall have the same descriptions, to the greatest extent, as the projects original drawings. Wiring shall have labels at each end.
- C. FIELD WIRING: Wiring shall have the same descriptions, to the greatest extent, as the projects original drawings. Wiring shall have labels at each end.

1.12 EQUIPMENT COORDINATION

- A. The Contractor is responsible to coordinate the equipment supplied from various manufacturers and vendors. This includes but is not limited to:
 - 1. Obtaining specific information on equipment ratings and sizes and verifying the electrical components supplied meet, or match the requirements such as voltage, phase, frequency, starter types, etc.
 - 2. Shall provide equipment that will fit within the space allocated and meet OSHA and NEC clearances.
 - 3. Shall provide coordinated electrical installations with the supplied equipment's electrical power and control requirements.
 - 4. Shall provide power and control equipment, wiring, and raceways to meet the requirements of the mechanical equipment supplied.
 - 5. Shall provide all necessary control wiring and components for any special requirements from an equipment manufacturer.
- B. The Contractor shall verify as a minimum:

1. Correct voltage, phase and frequency
 2. Size and space requirements
 3. Mounting requirements
 4. Correct motor starter type and NEMA size
 5. Proper coordination with the controls and Facility Integrator
- C. Any discrepancies between the electrical equipment and other equipment shall be brought to the immediate attention of the Owner.

1.13 TEMPORARY POWER

- A. Temporary power is not currently available to the project site. Contractor shall coordinate and provide temporary power at the project site when required and necessary. If temporary power is to be provided by PUD, contractor to coordinate.

1.14 BASIS OF DESIGN

- A. The basis of the mechanical and electrical design is the installation of equipment and motors as shown in the electrical one-line drawing(s) and load/panel schedules. In the event that different equipment motors are provided in order for the vendor's equipment to meet mechanical performance requirements, the contractor shall coordinate various suppliers, vendors, and subcontractors to change the required electrical conduit, cables, breakers, starter units and accessories, etc. as necessary to meet the vendor's equipment installation requirements of the National Electrical Code. The traits and characteristics of all provided materials, equipment, and devices shall meet the specifications. These changes to materials, equipment, and devices shall be at no cost to the Owner. Electrical submittal information shall be coordinated with the equipment and motors provided.

PART 2 PRODUCTS

2.1 EQUIPMENT AND MATERIALS

- A. GENERAL: Equipment and materials shall be new and free from defects. All material and equipment of the same or a similar type shall be of the same manufacturer throughout the work. Standard production materials shall be used wherever possible.
- B. EQUIPMENT FINISH: Unless otherwise specified, electrical equipment shall be painted with the manufacturer standard ANSI 61 grey.
- C. GALVANIZING: Where specified, galvanizing shall be in accordance with WSDOT Standard Specifications Division 9: Materials.

2.2 WIRE MARKERS

- A. Each power and control conductor shall be identified at each panel or equipment terminal to which it is connected. All conductors shall have heat shrinkable identification sleeves.

- B. Conductors shall be identified in accordance with Section 26 05 00. Adhesive strips are not acceptable.
- C. The letters and numbers that identify each wire shall be machine printed on sleeves with permanent black ink with figures 1/8 inch high. Sleeves shall be yellow or white tubing and sized to fit the conductor insulation. Shrink the sleeves with hot air after installation to fit the conductor.
- D. Conductor and Wire Marker Manufacturer:
 - 1. TMS Thermofit Marker System by Raychem Co
 - 2. Sleeve style wire marking system by W. H. Brady Co.
 - 3. Or approved equal

2.3 RACEWAY TAGS

- A. Tags shall be:
 - 1. Manufactured of permanent metal or heavy mill plastic.
 - 2. Fastened to the raceways at both ends of the tag with permanent fasteners.
 - a. Fastened to the raceways at both ends of the tag with permanent fasteners.
 - 3. Tag numbers shall be 1-inch tall and machine printed. Hand labeled tags are unacceptable.

2.4 NAMEPLATES – PHENOLIC LEGENDS

- A. Nameplates shall be provided on all equipment as shown on the contract drawings. Electrical devices, including but not limited to panels, instruments, disconnect switches, indicating lights, control switches, meters, and all electrical equipment enclosures as shown.
- B. Nameplates shall be made of 1/16-inch-thick machine engraved laminated phenolic as shown on the contract documents Phenolic Legends sheet. Coloring, sizing and engraving shall be as shown on the contract document.
- C. Provide warning nameplates on all panels and equipment which contain multiple power sources. Lettering shall be white on red background.

2.5 VINYL LEGENDS

- A. Vinyl legends shall be provided on all equipment, both interior and exterior to panels as shown on the contract drawings.
- B. Sizing, coloring and printing shall be as shown on the Vinyl Legends sheet and shall be placed as shown on the contract drawings.

2.6 TERMINAL BLOCKS

- A. Terminal blocks shall be provided for use in the Isolation panel and in the existing Main control cabinet as required for field connections.
- B. Terminal blocks shall be as listed in the contract drawings Approved material list and shall be sized appropriately for conductor size and amperage.

PART 3 EXECUTION

3.1 GENERAL

A. CONSTRUCTION

- 1. The work under Division 26 shall be performed in accordance with these specifications.
- 2. Unless otherwise detailed or dimensioned, electrical layout drawings are diagrammatic. The Contractor shall coordinate the field location of electrical material or equipment with the work of other disciplines and subcontractors. Minor changes in location of electrical material or equipment made prior to installation shall be made at no cost to the Owner.
- 3. The Contractor shall perform core drilling and provide link seal on all conduit penetrations into below grade structures, ie. vaults and wet well.
- 4. All conduit to be PVC coated galvanized rigid. Exceptions to be flexible conduit for final connection to flowmeter and PVC conduit for utility service.

B. HOUSEKEEPING:

- 1. Electrical equipment shall be protected from dust, water and damage. The main control cabinet and isolation pedestal shall be wiped free of dust and dirt, kept dry, and shall be vacuumed on the inside within 30 days of acceptance of the work.
- 2. Before final acceptance, the Contractor shall touch up any scratches on equipment. Contractor shall thoroughly clean the scratch, primer, and apply manufacturer paint. Deeper scratches may require a light sanding to even out the surface before priming and painting.
- 3. Electrical equipment temporarily exposed to weather, debris, liquids, or damage during construction shall be adequately protected.

C. ELECTRICAL EQUIPMENT LABELING:

- 1. Electrical equipment shall have field marked signs and labeling to warn qualified persons of the potential electric arc flash hazards per NEC Article 110.16 Flash Protection.
- 2. Electrical distribution equipment and utilization equipment shall be provided with field labels to identify the power source and the load as specified. Refer to NEC Article 110.22 for Identification of Disconnecting Means installation criteria. Specific information is

required such as the equipment tag number and equipment description of both the power source and the load equipment.

- D. MOTOR CONNECTIONS: Verify that the motors are coordinated with the pump disconnect receptacles and plugs provided for on the isolation pedestal including the horsepower, current, and voltage rating as well as the pump cabling size for sizing the accessory handle.
- E. CONDUCTOR INSTALLATION: Other than the main control cabinet, an enclosure containing disconnecting means, overcurrent devices, or electrical equipment shall not be used as a wireway or raceway for conductors not terminating within the enclosure. Provide wireways, raceways, termination boxes, or junction boxes external to the enclosure for the other conductors.

3.2 HANDLING AND STORAGE

- A. In accordance with the WSDOT Standard Specification Section 1-06.4.

3.3 TESTING

- A. GENERAL: Prior to energizing the electrical circuits, insulation resistance measurements tests shall be performed using a 1000-volt megohmmeter to verify the conductor is acceptable for use on the project. The test measurements shall be recorded on the specified forms and provided in accordance with Section 26 08 00 and as listed below.
- B. INSULATION RESISTANCE MEASUREMENTS:
 - 1. GENERAL:
 - a. Insulation resistance measurements shall be made on conductors and energized parts of electrical equipment (600V or less). Minimum acceptable values of insulation resistance shall be in accordance with the applicable ICEA, NEMA or ANSI standards for the equipment or material being tested, unless otherwise specified. The ambient temperature at which insulation resistance is measured shall be recorded on the test form.
 - b. Insulation resistance measurements shall be recorded. Insulation with resistance of less than 10 megohms is not acceptable.
 - 2. CONDUCTOR AND CABLE TESTS: The phase-to-ground insulation resistance shall be measured for all circuits rated 120 volts and above except lighting circuits. Measurements may be made with motors and other equipment connected. Solid state equipment shall be disconnected, unless the equipment is normally tested by the manufacturer at voltages in excess of 1000 volts DC.
 - 3. MOTOR TESTS: Installed motors shall be tested per Section 26 08 00 shall be completed for each motor after installation. Motors shall have their insulation resistance measured before they are connected. Motors 50 HP and larger shall have their insulation resistance measured at the time of delivery as well as when they are connected. Insulation resistance values less than 10 megohms are not acceptable.

- C. PRE-FUNCTIONAL TEST CHECKOUT: Functional testing shall be performed in accordance with the requirements of Section 26 08 00. Prior to functional testing, all protective devices shall be adjusted and made operative.
 - 1. Submit a description of the proposed functional test procedures prior to the performance of functional checkout.
 - 2. Prior to energization of equipment, perform a functional checkout of the control circuit. Checkout:
 - a. Energizing each control circuit.
 - b. Operating each control device, alarm device, or monitoring device.
 - c. Operate each interlock to verify that the specified action occurs.
- D. Verify motors are connected to rotate in the correct direction. Verification may be accomplished by momentarily energizing the motor, provided the Contractor confirms that neither the motor nor the driven equipment will be damaged by reverse operation or momentary energization.

3.4 ADJUSTING

- A. Adjust moving parts and operable components to function smoothly, and lubricate as recommended by manufacturer.
- B. Set field-adjustable switches and circuit-breaker trip ranges.
- C. Set field-adjustable time delay relays and seal fail reset switches.

3.5 CLEANING

- A. On completion of installation, inspect interior and exterior of enclosures. Remove paint splatters and other spots. Vacuum dirt and debris; do not use compressed air to assist in cleaning. Repair exposed surfaces to match original finish.

3.6 OPERATION AND MAINTENANCE MANUALS

- A. Comply with City of Lacey Section D: Special Provisions Section 7-22.3(3)B.

END OF SECTION

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SECTION 26 05 19 – LOW-VOLTAGE CONDUCTORS, WIRES AND CABLES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Scope.
2. Reference Standards.
3. Quality Assurance.
4. Definitions.
5. Submittals.
6. Products.
7. Execution.

1.2 SCOPE

A. This section specifies cables, conductors and fibers including:

1. Stranded copper cables, conductors, and wire rated 600 volts insulation used for power; lighting, analog, digital, or pulse signals and control circuits.
2. Copper cables and coax cable rated 300-volt insulation used for data, communication, and signaling.

1.3 REFERENCE STANDARDS

- A. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section insofar as specified and modified herein. In the event of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.
- B. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section insofar as specified and modified herein. In the event of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.
1. Unless otherwise specified, references to documents shall mean the documents in effect on the effective date of the Agreement. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.

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
ICEA S-95-658/ NEMA WC70	Non-shielded 0-2kV Cables
NFPA 70	National Electric Code (NEC)
UL 44	Rubber-Insulated Wires and Cables
UL 83	Thermoplastic-Insulated Wires and Cables

1.4 QUALITY ASSURANCE

- A. REQUIREMENTS: Section 26 05 00 General Requirements for Electrical Work
- B. The manufacturer shall warranty the above specified equipment for twelve months from equipment start-up or eighteen months from the date of shipment, whichever occurs first, to be free from defects in design, workmanship or materials.

1.5 DEFINITIONS

- A. LOW LEVEL ANALOG: A signal that has a full output level of 100 millivolts or less. This group includes thermocouples and resistance temperature detectors.
- B. PULSE FREQUENCY: Counting pulses such as those emitted from speed transmitters.
- C. HIGH LEVEL ANALOG: Signals with full output level greater than 100 millivolts but less than 30 volts, including 4-20 mA transmission.
- D. DISCRETE EVENTS: Dry contact closures monitored by solid state equipment. If the conductors connecting to dry contacts enter enclosures containing power or control circuits and cannot be isolated from such circuits in accordance with NEC Article 725, this signal shall be treated as low voltage control.
- E. LOW VOLTAGE CONTROL: Contact closures monitored by relays, or control circuits operating at less than 30 volts and 250 milliamperes.

1.6 SUBMITTALS

- A. PROCEDURES: Submittals to comply with requirements of the City of Lacey Section D: Special Provisions.

B. SUBMITTAL ITEMS FOR THIS SECTION:

1. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the noting of some errors, but the overlooking of others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.
2. Where submitted items deviate from specification requirements, a list of any specification sections that are not being met by the submitted item must be provided. The list is to be organized by specification section and paragraph and shall list the product requirement and in what way submitted item does not comply with the requirement. A detailed written explanation of the reasons for requesting the deviation must also be included.
 - a. The Owner shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance with the specifications.
 - b. Failure to include a list of the specification section deviations along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
3. Include product data sheets of equipment, devices, and materials requested by the individual specification sections.
 - a. Catalog information shall include technical specifications and application information, including ratings, range, weight, accuracy, etc.
 - b. Catalog cuts shall be edited to show only the items, model numbers, and information which are applicable and crossing out all inapplicable information.
 - c. Submittals are to be made electronically in PDF format, the PDF shall be organized by specification section and linked to an index. The PDF shall be searchable. Submittals that are not submitted in the format outlined may be rejected outright and the Contractor is required to resubmit in the correct format.
4. Catalog cuts showing information of the conductors and cables to be supplied under this section.
5. Field test reports showing conductor and cable insulation resistance test results.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Approved manufacturers are listed in the Cable Specification Sheets located at the end of this specification section.

2.2 GENERAL

- A. CABLE SPECIFICATION SHEETS (CABLESPEC): General requirements for conductors and cables specified in this Section are listed on CABLESPEC sheets.

2.3 COLOR CODING

A. POWER AND CONTROL CABLES:

1. Wire coloring shall conform to the color code shown in the table below.
2. Insulation on phase conductors run in conduits sizes #10 AWG and smaller shall be colored, #8 AWG and larger may have black insulation with plastic tape of the appropriate color from the table below.
3. Insulation on the grounded conductor (neutral) sizes #8 AWG and smaller shall be colored, #6 AWG and larger may have black insulation with plastic tape of white or gray in accordance with the table below.

Description	120/208V	277/480V	Control
Phase A (Left)	Black	Brown	--
Phase B (Center)	Red	Orange	--
Phase C (Right)	Blue	Yellow	--
Neutral	White	Gray	White
Ground	Green	Green	Green
120 VAC Control	--	--	Red
120 VAC Control Neutral	--	--	White
24 VDC Control (+)	--	--	Dark Blue
24 VDC Control (-)	--	--	White-Blue Stripe
12 VDC Control (+)	--	--	Orange
12 VDC Control (-)	--	--	Yellow
Intrinsic Safe	--	--	Purple
Signal Ground	--	--	Green/yellow stripe

4. All control wiring in control panels or other enclosures that is powered from an external source and is not disconnected by the control panel disconnect shall be terminated at a disconnecting terminal block upon entering the enclosure. The color of the wire shall then be changed to yellow to identify it as being powered from an external source. Provide identification nameplate on exterior of enclosure to indicate sources of external power.
 5. All wiring in industrial machines and equipment shall be in accordance with NFPA 79. Notify owner of any deficiencies noted during installation.
 6. Multi-conductor power cable colors shall be manufacturer's standard.
 7. Cables sized No. 6 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. The cables shall be tagged at terminations and in pull boxes, hand holes and manholes.
- B. SIGNAL AND DATA CABLES: Unless otherwise specified, cables shall be color coded black and white for pairs or black, red, and white for triads.

2.4 POWER AND CONTROL CONDUCTORS AND CABLE, 600 VOLT

- A. SINGLE CONDUCTOR: Single conductor cable shall be stranded copper and shall be used in conduits for power and control circuits. Single conductor cable shall be provided in accordance with CABLESPEC "THHN/THWN-2" type of conductors unless otherwise specified.

2.5 SIGNAL, DATA AND INSTRUMENTATION CABLES

A. GENERAL:

1. Signal cable shall be provided for instrument signal transmission, alarm, communication, and other circuits as specified. Circuit shielding shall be provided in addition to cable shielding.
2. Single circuit signal cable shall be provided in accordance with CABLESPEC "INS," unless otherwise specified.
3. Terminal blocks shall be provided at cable junction for running signal leads and shield drain wires. Each conductor shall be identified at such junctions.
 - a. Shields shall not be used as a ground path.
 - b. Shields shall be grounded at one end only. Ground at main control cabinet or pump panel end.
 - c. Signal, data, and communication cables shall be terminated and spliced on terminal strips properly mounted and labeled in accordance with this Section and Section 26 05 00. No exceptions.
4. CABLE SPECIFICATION SHEETS (CABLESPEC): General requirements for conductors and cables specified in this Section are listed on CABLESPEC sheets in Section 26 05 19-3.7.

2.6 WIRE MARKERS

A. 600 VOLT AND 300 VOLT RATED CONDUCTORS:

1. Per 26 05 00 Paragraph 2.2.

2.7 SPLICING AND TERMINATING MATERIALS

A. 600-VOLT AND 300-VOLT RATED CONDUCTORS:

1. In-line splices and taps shall not be used. All circuits shall be continuous through all junction boxes, wireways, pull boxes, etc. until the circuit conductors are terminated at suitable terminal strips within main control cabinet, distribution panel or Isolation pedestal.

2.8 CORD GRIPS

- ### A.
- Cord grips shall be provided where specified on the Drawings to attach flexible cord to equipment enclosures and mounting brackets. Cord grips shall consist of a threaded stainless-steel body and compression nut with a neoprene bushing and stainless-steel wire mesh for strain relief. Cord grip shall provide a watertight seal at enclosure interface and sized to accommodate the flexible cord.

PART 3 EXECUTION

3.1 GENERAL

- ### A.
- Conductors shall be identified at each connection terminal and at splice points. The identification marking system shall comply with Section 26 05 00.
- ### B.
- Pulling wire and cable into conduit or trays shall be completed without damaging or putting undue stress on the insulation or jacket. Manufacture recommended and UL Listed pulling compounds are acceptable lubricants for pulling wire and cable. Grease is not acceptable.
- ### C.
- Raceway construction shall be complete, cleaned, and protected from the weather before cable is installed. Where wire or cable exits a raceway, a wire or cable support shall be provided.
- ### D.
- All wiring shall be stripped to an appropriate length and terminated at a terminal strip. Ensure terminal block termination point is in contact with the conductor and not the wire insulation.

3.2 600-VOLT CONDUCTOR AND CABLE

- ### A.
- Conductors in panels and electrical equipment shall be bundled and laced at intervals not greater than 6 inches, spread into trees and connected to their respective terminals. Lacing is not necessary in plastic panel wiring duct. Lacing shall be made up with plastic cable ties. Cable ties shall be tensioned and cut off by using a tool specifically designed for the purpose such as a Panduit GS2B. Other methods of cutting cable ties are unacceptable.

- B. Conductors crossing hinges shall be bundled into groups not exceeding 10 to 15 conductors and protected using nylon spiral flexible covers to protect conductors. Provide oversized plastic panel wiring duct within panels and panelboards.
- C. Raceway fill limitations shall be as defined by NEC.
- D. Motor terminations shall be made with manufacturer's cabling wired to pump power plugs connecting to the Isolation pedestal panel. Motor wiring from controller shall be terminated on terminal strips provided interior to the Isolation pedestal.

3.3 SIGNAL CABLE

- A. Circuits shall be run as individually shielded twisted pairs or triads. In no case shall a circuit be made up using conductors from different pairs or triads. Triads shall be used wherever 3-wire circuits are required. Terminal blocks shall be provided at instrument cable junctions, and circuits shall be identified at such junctions unless otherwise specified. Signal circuits shall be run without splices between instruments, terminal boxes, or panels.
- B. Shields shall not be used as a signal conductor.
- C. Common ground return conductors for two or more circuits are not acceptable.
- D. Unless otherwise specified, shields shall be bonded to the signal ground bus at the control panel and isolated from ground and other shields at other locations. Terminals shall be provided for running signal leads and shield drain wires through junction boxes.
- E. Cable for low-level instrumentation circuits shall be run continuously between final terminations without splices or intermediate terminal blocks unless otherwise specifically shown or specified.
- F. Spare circuits and the shield drain wire shall be terminated on terminal blocks at both ends of the cable run and be electrically continuous through terminal boxes. Shield drain wires for spare circuits shall not be grounded at either end of the cable run.

3.4 INSTALLATION

- A. Raceway fill shall be as scheduled, and shall not exceed NEC limitations.
- B. Feeder, branch, control and instrumentation circuits shall not be combined in a raceway, cable tray, junction or pull box, except as permitted in the following:
 - 1. Where specifically indicated on the drawings.
 - 2. Where field conditions dictate and written permission is obtained from the Owner.
 - 3. Control circuits shall be isolated from the feeder and branch power and instrumentation circuits but combining of control circuits with power is permitted as noted below.
 - a. The combinations shall comply with the following:

- 1) 12 VDC, 24 VDC and 48 VDC may be combined.
- 2) All AC circuits shall be isolated from all DC circuits.
- 3) All intrinsically safe circuits shall be separated from other circuits by placing them in separate conduit or a 2" separation of air space.
4. Instrumentation circuits shall be isolated from feeder and branch power and control circuits but combining of instrumentation circuits is permitted.
 - a. The combinations shall comply to the following:
 - 1) Analog signal circuits may be combined.
 - 2) Digital circuits may be combined but isolated from analog signal circuits.
5. Multiple branch circuits for lighting, receptacle and other 120 VAC circuits are allowed to be combined into a common raceway.
 - a. Contractor is responsible for making the required adjustments in conductor and raceway size, in accordance with all requirements of the NEC, including but not limited to:
 - 1) Up sizing conductor size for required Ampacity de-ratings for the number of current-carrying conductors in the raceway.
 - 2) The neutral conductors may not be shared.
 - 3) Up sizing raceway size for the size and quantity of conductors.
- C. Whenever a cable leaves a raceway, a cable support shall be provided. Conductors in panels and electrical equipment shall be bundled and laced at intervals not greater than 6 inches, spread into trees and connected to their respective terminals. Lacing shall be made up with plastic cable ties. Lacing is not necessary in plastic panel wiring duct. Conductors crossing hinges shall be bundled into groups not exceeding 12 and shall be so arranged that they will be protected from chafing when the hinged member is moved.
- D. Slack shall be provided in junction and pull boxes, hand holes and manholes. Slack shall be sufficient to allow cables or conductors to be routed along the walls of the box. Amount of slack shall be equal to largest dimension of the box. Where plastic panel wiring duct is provided for wire runs, lacing is not required. Plastic panel wiring duct shall not be used in manholes and hand holes.
- E. Do not exceed cable manufacturer's maximum recommended pulling tension. Use dynamometer or break-away swivel on pulls exceeding 150 feet.
- F. Observe manufacturer's minimum recommended pulling and training radii.
- G. At each end of the run leave sufficient cable for termination.

- H. In-line splices and tees are not allowed.
- I. Ground cable shields at one end only. Unless otherwise specified, ground the shields at the panel end.
- J. Protect all cables against moisture during and after installation.
- K. Signal and control cable suspended into the wet well shall be provided with heavy duty wire mesh cord grip of flexible stainless-steel wire to take the tension from the cable termination. Strain relief system shall be suitably anchored. See contract drawings for additional information.
- L. Circuits provided under this Section shall not be direct buried.

3.5 TERMINATIONS

- A. Terminations shall be on terminal blocks as identified in Section 26 05 00.
- B. Each conductor shall be identified with a wire marker at each terminal to which it is connected. The marking system shall comply with Section 26 05 00.
- C. Electrical spring connectors (wire nuts) shall not be used for any purpose on any cable specified under this Section.

3.6 TESTING

A. GENERAL:

- 1. The Contractor shall test conductors and cable in accordance with Section 26 08 00. Instrument and Data Cables shall be subjected to additional tests as specified in this section.

B. INSTRUMENT CABLE:

- 1. Each signal pair or triad shall be tested for electrical continuity. Any pair or triad exhibiting a loop resistance of less than or equal to 50 ohms shall be deemed satisfactory without further test. For pairs with greater than 50-ohm loop resistance, the Contractor shall calculate the expected loop resistance considering loop length and intrinsic safety barriers if present. Loop resistance shall not exceed the calculated value by more than 5 percent.
- 2. Each shield drain conductor shall be tested for continuity. Shield drain conductor resistance shall not exceed the loop resistance of the pair or triad.
- 3. Each conductor (signal and shield drain) shall be tested 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. A 500-volt megohmmeter shall be used for insulation resistance measurements.

3.7 CABLE SPECIFICATIONS

A. GENERAL: Conductor, wire, and cable types for different locations, service conditions and raceway systems are specified on individual cable specification sheets. Scheduled and unscheduled conductors, wires, and cables shall be installed in accordance with the CABLESPEC SHEETS.

B. CABLE SPEC SHEETS: The following CABLE SPEC sheets are included in this section:

CABLE SPEC	Volts	Product	Purpose
THHN/THWN-2	600	Single conductor PVC, nylon jacket power and control cable	Power and control conductors for use in conduit raceways.
INS	600	Single Pair/Triad #18 ST plus overall shield,	Instrumentation

CABLE SPECIFICATION SHEETS (CABLESPECs) begin on next sheet:

Cable System Identification: THHN/THWN-2

Description:	Single conductor polyvinyl chloride (PVC), nylon jacket power and control cable for sizes No. 14 AWG and larger.
Voltage:	600 volts
Conductor Material:	Bare annealed copper; stranded in accordance with ASTM B3 & B8
Insulation:	Heat and moisture resistant colored polyvinyl chloride, 90 degree C dry, 90 degree C wet, in accordance with ICEA S-95-658/NEMA WC70.
Jacket:	Nylon or UL-listed jacket.
Manufacturer(s):	Southwire, Cerrowire, Encore Wire
Uses Permitted:	Power, control, lighting, receptacle and appliance circuits
Installation:	Install in accordance with Section 26 05 19.
Testing:	Test in accordance with this Section and Sections 26 05 00 and 26 08 00.

Cable System Identification: INS

Description: Single twisted, shielded pair or triad, 18 AWG, instrumentation cable, rated for wet and dry locations.

Voltage: 600 volts

Conductor Material: Bare annealed copper; stranded in accordance with ASTM B8

Insulation: PVC/Nylon

Shield: 100 percent, 1.35 mil aluminum-Polyester tape with 20 AWG 7-strand tinned copper drain wire

Jacket: 48 mil flame-resistance polyvinylchloride

Flame Resistance: UL 1685, ICEA T-29-520 and IEEE 1202.

Manufacturer(s): Single Pair: BELDEN 1120A, or approved equal. Single Triad: BELDEN 1121A, or approved equal.

Installation: Install in accordance with Section 26 05 19.

Testing: Test in accordance with this Section and Sections 26 05 00 and 26 08 00.

END OF SECTION

SECTION 26 05 29 – HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
1. Scope
 2. Reference Standards
 3. Quality Assurance
 4. Submittals
 5. Products
 6. Execution

1.2 SCOPE

- A. This Section specifies requirements for design, furnishing and installation of support systems for electrical raceways, cables and enclosures.

1.3 REFERENCE STANDARDS

- A. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section insofar as specified and modified herein. In the event of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.
- B. Unless otherwise specified, references to documents shall mean the documents in effect on the effective date of the Agreement. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.

Reference	Title
ANSI C80.1	Rigid Steel Conduit-Zinc Coated
ANSI C80.3	Electrical Metallic Tubing-Zinc Coated
ASTM A48 REV A	Gray Iron Castings
ASTM F512	Smooth-Wall Polyvinylchloride Conduit and Fittings for Underground Installation
FEDSPEC WW-C-581E	Conduit, Metal, Rigid and Intermediate; and Coupling, Elbow, and Nipple, Electrical Conduit; Zinc Coated
FEDSPEC W-C-1094A	Conduit and Conduit Fittings, Plastic, Rigid
NEMA ICS 6	Industrial Control and Systems Enclosures

Reference	Title
NEMA TC2	Electrical Plastic Tubing (EPT) and Conduit (EPC 40 and EPC 80)
NEMA TC6	PVC and ABS Plastic Utilities Duct for Underground Installation
NEMA 250	Enclosures for Electrical Equipment (1000 volts maximum)
NFPA 70	National Electrical Code (NEC)
NFPA 79	Electrical Standards for Industrial Machinery
UL 6	Rigid Metal Electrical Conduit
UL 360	Liquid Tight Flexible Electrical Conduit
UL 651	Rigid Nonmetal Electrical Conduit

1.4 QUALITY ASSURANCE

- A. REQUIREMENTS: Section 26 05 00 General Requirements for Electrical Work
- B. The manufacturer shall warranty the above specified equipment for twelve months from equipment start-up or eighteen months from date of shipment, whichever occurs first, to be free from defects in design, workmanship or materials.

1.5 SUBMITTALS

- A. PROCEDURES: Submittals to comply with requirements of the City of Lacey Section D: Special Provisions.
- B. SUBMITTAL ITEMS FOR THIS SECTION:
 - 1. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the noting of some errors, but the overlooking of others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.
 - 2. Where submitted items deviate from specification requirements, a list of any specification sections that are not being met by the submitted item must be provided. The list is to be organized by specification section and paragraph and shall list the product requirement

and in what way submitted item does not comply with the requirement. A detailed written explanation of the reasons for requesting the deviation must also be included.

- a. The Owner shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance with the specifications.
 - b. Failure to include a list of the specification section deviations along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
3. Include product data sheets of equipment, devices, and materials requested by the individual specification sections.
 - a. Catalog information shall include technical specifications and application information, including ratings, range, weight, accuracy, etc.
 - b. Catalog cuts shall be edited to show only the items, model numbers, and information which are applicable and crossing out all inapplicable information.
 - c. Submittals are to made electronically in PDF format, the PDF shall be organized by specification section and linked to an index. The PDF shall be searchable. Submittals that are not submitted in the format outlined may be rejected outright and the Contractor is required to resubmit in the correct format.
 4. Supports, seismic bracing, and other electrical system mounting elements are generally not shown on the plan drawings. Hangers, supports, seismic restraints, and other electrical system mounting elements shall be submitted.

PART 2 PRODUCTS

2.1 RACEWAY SUPPORTS

A. CONDUIT SUPPORTS

1. Framing channel with end caps and straps shall be provided to support groups of conduit. Individual conduit supports shall be one-hole pipe straps used with clamp backs and nesting backs where required. Material as specified herein.
2. Conduit supports for PVC coated rigid steel and PVC conduit systems shall be stainless steel strut (kindorf or Unistrut) with stainless steel pipe straps.

- B. MATERIALS: Table A specifies the type of raceway supports required for each location and application.

Table A

Location	Framing Channel and Accessories	Threaded Rod, Hardware, & Fittings
Outdoor	316 Stainless Steel	316 Stainless Steel
Submerged	316 Stainless Steel	316 Stainless Steel
Headspace	316 Stainless Steel	316 Stainless Steel
Chemical Corrosive	316 Stainless Steel	316 Stainless Steel
Process Corrosive	316 Stainless Steel	316 Stainless Steel

2.2 EQUIPMENT SUPPORTS

- A. Equipment supports shall be installed where shown on the drawings and as required to support the panels and enclosures being installed.
- B. Equipment support materials shall adhere to Table A above unless specified otherwise on the drawings.
- C. Equipment supports shall be installed per details in the Construction Documents.

2.3 CABLE SUPPORTS

- A. Provide stainless steel strain relief cable support grips for high ball and pump cables.
 - 1. Float switch – Molex, Woodhead Max-loc 130097-034
 - 2. Pump Cables – Molex, Series 130094 (size as needed for pump cabling diameter)

2.4 ANCHOR BOLTS

- A. Anchor bolts shall be as specified in WSDOT Standard Specifications Division 9: Materials.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Hangers and supports shall be installed with spacing between support points in compliance with all applicable codes.
- B. The cut ends of support channels shall be smoothed and without burrs left from cutting.
- C. See drawings for cable support installation of high-ball float switch and level transducer.

END OF SECTION

SECTION 26 05 33 – RACEWAYS, BOXES, AND FITTINGS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Scope
 - 2. Reference Standards
 - 3. Quality Assurance
 - 4. Submittals
 - 5. Products
 - 6. Installation
 - 7. Raceway Specification Sheets

1.2 SCOPE

- A. This section covers the furnishing and installation of electrical conduits, wireways, pull boxes, electrical vaults, hand holes, and fittings. Raceways shall be provided for lighting, receptacles, power, control, instrumentation, signaling and grounding systems.

1.3 REFERENCE STANDARDS

- A. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section insofar as specified and modified herein. In the event of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.
- B. Unless otherwise specified, references to documents shall mean the documents in effect on the effective date of the Agreement. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.

Reference	Title
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ANSI C80.3	Electrical Metallic Tubing-Zinc Coated
ASTM F512	Smooth-Wall Polyvinylchloride Conduit and Fittings for Underground Installation
FEDSPEC WW-C-581E	Conduit, Metal, Rigid and Intermediate; and Coupling, Elbow, and Nipple, Electrical Conduit; Zinc Coated
FEDSPEC W-C-1094A	Conduit and Conduit Fittings, Plastic, Rigid
NEMA ICS 6	Industrial Control and Systems Enclosures
NEMA TC2	Electrical Plastic Tubing (EPT) and Conduit (EPC 40 and EPC 80)
NEMA TC6	PVC and ABS Plastic Utilities Duct for Underground Installation

1.4 QUALITY ASSURANCE

- A. REQUIREMENTS: Section 26 05 00 General Requirements for Electrical Work
- B. The manufacturer shall warranty the above specified equipment for twelve months from equipment start-up or eighteen months from date of shipment, whichever occurs first, to be free from defects in design, workmanship or material.

1.5 SUBMITTALS

- A. PROCEDURES: Submittals to comply with requirements of the City of Lacey Section D: Special Provisions.
- B. SUBMITTAL ITEMS FOR THIS SECTION:
 - 1. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the noting of some errors, but the overlooking of others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.
 - 2. Where submitted items deviate from specification requirements, a list of any specification sections that are not being met by the submitted item must be provided. The list is to be organized by specification section and paragraph and shall list the product requirement and in what way submitted item does not comply with the requirement. A detailed written explanation of the reasons for requesting the deviation must also be included.
 - a. The Owner shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance with the specifications.

- b. Failure to include a list of the specification section deviations along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration.
- 3. Include product data sheets of equipment, devices, and materials requested by the individual specification sections.
 - a. Catalog information shall include technical specifications and application information, including ratings, range, weight, accuracy, etc.
 - b. Catalog cuts shall be edited to show only the items, model numbers, and information which are applicable and crossing out all inapplicable information.
 - c. Submittals are to made electronically in PDF format, the PDF shall be organized by specification section and linked to an index. The PDF shall be searchable. Submittals that are not submitted in the format outlined may be rejected outright and the Contractor is required to resubmit in the correct format.

1.6 HANDLING AND STORAGE:

- A. In accordance with the WSDOT Standard Specification Section 1-06.4.

PART 2 PRODUCTS

2.1 RACEWAY

- A. General requirements for raceway materials specified in this section are listed in the RACESPECS sheets at the end of this section. The type of raceway to be used for any given area and application shall conform to the requirements of Table A in this section.
- B. Unused conduits shall be provided with conduit seal caps.
- C. All conduit shall be PGRS (PVC coated galvanized rigid steel).

2.2 BOXES AND FITTINGS

- A. Provide Meyers hub fittings for all conduit penetrations into enclosures.
- B. Provide unions where shown on the drawings for ease of separating conduit segments.

2.3 RACEWAY SUPPORTS

- A. All support systems for electrical systems shall be as specified in Section 26 05 29.

2.4 UNDERGROUND MARKING TAPE

- A. Underground marking tape shall be for early warning protection of digging around buried conduits and shall be provided and installed as specified in City of Lacey Section D: Special Provisions Section 7-08.3(8).

2.5 NAMEPLATES

- A. Nameplates shall be provided for all pull and junction boxes in accordance with the requirements of Section 26 05 00. Nameplate numbering shall be as indicated on the drawings. Where no wording is specified, the Contractor shall provide the functional description of the device on the nameplate or as required by the Engineer and Owner. Any nameplates provided where the wording is not specified shall first be approved by the Engineer and Owner.

PART 3 EXECUTION

3.1 INSTALLATION:

- A. Table A specifies the type of raceway required for each location and application. Unscheduled conduit, (i.e. lighting, convenience outlets, etc.), not shown on the drawings shall be in accordance with Table A below.

Table A

Location	Application/Condition	RACESPEC
Outdoor	Exposed	PGRS
Concealed	Power circuits beneath slab-on-grade	PGRS
Underground	Power circuits directly buried	PGRS
Underground	Instrumentation, communications and data signals directly buried	PGRS
Hazardous corrosive	Exposed	PGRS

3.2 CONDUIT

A. GENERAL:

1. The number of directional changes of a conduit shall be limited to 360 degrees in any run between pull boxes.
2. Conduit runs shall be limited to a maximum of 400 feet, less 100 feet or fraction thereof, for every 90 degrees of change in direction.
3. Provide pull and junction boxes per code. When shown on drawings, box or manhole sizes shall be considered to be minimum sizes and shall be upsized by the Contractor for ease of pulling wire or if required by NEC.
4. All threaded connections must be copper coated and tightened appropriately.
5. All underground conduit runs must be inspected by owner or owner's representative before being covered.

B. OUTDOOR CONDUIT SYSTEMS:

1. In general, Contractor shall be responsible for determining conduit routing that conforms to the specified installation requirements as shown on the drawings.
2. Conduit installation shall conform to the requirements of the RACESPEC sheets and the following specified installation requirements:
 - a. Exposed conduit: Install parallel or perpendicular to structural members and surfaces. Install conduit horizontally and allow minimum headroom of 7 feet.
 - b. Route two or more exposed conduits in the same general routing parallel with symmetrical bends.
 - c. Maintain minimum spacing between exposed parallel conduit and piping runs in accordance with the following when the runs are greater than 30 feet:
 - 1) Between instrumentation and 600 VAC and less power: 12 inches
 - 2) Between process, gas, air and water pipes: 6 inches
 - d. Space exposed conduit installed on supports not more than 10 feet apart. Space multiple conduits in parallel and use framing channel.
 - e. Cap conduits or plug flush conduits during construction to prevent entrance of dirt, trash, and water. Cap or plug empty conduits designated as “future”, “spare”, or “empty” and include a pulling line accessible at both ends. Use anti-seize compound on cap and plug threads prior to installation.
 - f. Determine concealed conduit stub-up locations from the manufacturer’s shop drawings. Terminate concealed conduit for future use in specified equipment.
 - g. Install conduit flush with structural surfaces with galvanized couplings and plugs. Caps and plugs shall match the conduit system.
 - h. Provide concealed portions of conduits for future equipment where the drawings indicate future equipment. Match the existing installation for duplicate equipment.
 - i. Terminate conduits that enter enclosures with Myers hub fittings that match the NEMA rating of the enclosure.

C. UNDERGROUND CONDUIT SYSTEM: Excavation, and backfilling work shall conform to respective sections of these specifications. Underground conduit shall conform to the following requirements:

1. Underground conduit bend radius shall be not less than 1 foot minimum at vertical risers and shall be not less than NEC allowances elsewhere.

2. Where conduit and are terminated underground, the conduit shall extend at least 2 feet past the concrete. Conduits shall be capped and threads protected. Steel surfaces shall be given two coats of epoxy paint.
3. Underground conduits and conduit banks shall have 2 feet minimum earth cover unless otherwise shown.
4. Conduits not encased in concrete and passing through walls with one side in contact with earth shall be sealed watertight with special rubber gasketed sleeve and joint assemblies or with sleeves and modular rubber sealing elements (Link-seal).
5. Thoroughly swab conduits and raceways on the inside, immediately upon completion of installation.
6. Backfill duct banks with clean fill compacted to 90-percent in 6-inch lifts.
7. Separate power conduits from signal conduit within the same duct bank by 12" or greater separation where possible.

3.3 RACEWAY NUMBERING

- A. Each conduit shall be provided with a number tag at each end and in each manhole, hand hole, or pull box.
- B. Within electrical vaults, glue raceway tag to manhole wall next to raceway penetration.

3.4 RACEWAY SCHEDULE

- A. GENERAL: Raceways are scheduled on the drawings.

3.5 RACESPEC SHEETS

- A. The following RACESPECS are included in Paragraph 3.6.
 1. PGRS

3.6 RACEWAY SPECIFICATION SHEETS (RACESPEC)

- A. RACEWAY SPECIFICATION SHEETS (RACESPEC) – PGRS

Raceway Identification	PGRS
Description	Galvanized Rigid Steel Conduit, Corrosion-Resistant, Polyvinyl Chloride (PVC) Coated.
	Provide factory made and coated elbows.

Compliance	ANSI and UL. The PVC coated rigid galvanized steel conduit shall meet NEMA RN1-2005 and UL-6 PVC adhesion performance requirements.				
Finish	<p>PGRS shall be hot-dip galvanized rigid steel conduit as specified in 26 05 33-7.03 GRS, with a PVC Coating. The PVC coating shall be gray, minimum 40 mils thick, bonded to the outside and continuous over the entire length of the conduit except at the threads, and be free of blisters, bubbles, or pinholes. Thread protectors shall be used on the exposed threads of the PVC coated conduit</p> <p>A 2-mil coat of urethane enamel coating shall be bonded to the inside. Coating shall be free of pinholes. Bond strength shall exceed the tensile strength of the PVC coat.</p>				
Minimum size	¾ inch				
Fittings	Similarly coated to the same thickness as the conduit and provided with Type 316 stainless steel hardware. Conduit and fittings shall be manufactured by the same company Conduit and fittings shall be coated by the same company. Male threads on elbows and nipples, and female threads on fittings or conduit couplings shall be protected by application of urethane coating.				
Covers	PVC coated covers shall have a NEMA 4X rating and stainless-steel hardware.				
Conduit Bodies	40% Oversized conduit bodies with covers as specified above.				
Hubs	<p>Hubs for connection of conduit to junction, device, or terminal boxes shall be threaded cast ferrous alloy.</p> <p>Hubs shall have the same PVC coating as the conduit and insulating grounding bushings. Hubs shall utilize a neoprene “O” ring and shall provide a watertight connection.</p>				
Boxes					
	<table> <tr> <td>Nonhazardous</td><td>Type FD cast ferrous with PVC coating for all device boxes and for junction boxes less than 6 inches square.</td></tr> <tr> <td>Hazardous</td><td>NEMA Class 4X stainless steel or nonmetallic for junction boxes 6 inches square and larger.</td></tr> </table>	Nonhazardous	Type FD cast ferrous with PVC coating for all device boxes and for junction boxes less than 6 inches square.	Hazardous	NEMA Class 4X stainless steel or nonmetallic for junction boxes 6 inches square and larger.
Nonhazardous	Type FD cast ferrous with PVC coating for all device boxes and for junction boxes less than 6 inches square.				
Hazardous	NEMA Class 4X stainless steel or nonmetallic for junction boxes 6 inches square and larger.				
Manufacturers	Ocal Blue, Plasti-Bond, Perma-Cote.				
Installation	Plastic coated conduit shall be made up tight, threaded, and installed using tools approved by the PVC-coated conduit manufacturer.				

Exposed conduit threads shall be covered by a plastic overlap coated and sealed per manufacturer's recommendations.

Pipe wrenches and channel locks shall not be used for tightening plastic-coated conduits. Damaged areas shall be patched, using manufacturer's recommended material. The area to be patched shall be built up to the full thickness of the coating. Painted fittings are not acceptable.

PVC coated conduit shall be supported away from the structure using PVC coated conduit wall hangers or PVC coated conduit mounting hardware.

Damaged work shall be replaced.

Training

Installers shall be trained and certified in the proper installation techniques provided by the PVC-coated conduit system manufacture. Proof of certification shall be provided.

END OF SECTION

SECTION 26 08 00 – COMMISSIONING OF ELECTRICAL SYSTEMS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Scope
 - 2. Reference Standards
 - 3. Quality Assurance
 - 4. Submittals
 - 5. Products
 - 6. Testing
 - 7. Functional Checkout

1.2 SCOPE

- A. This section specifies the acceptance testing of electrical materials, equipment, and systems. Provide all labor, tools, material, power, and other services necessary to provide the specified tests.
- B. All testing required herein and the test results shall also be submitted and documented as required within the specific sections.
- C. Test results for a specific piece of equipment shall also be included in the operation and maintenance manual(s).
- D. All settings of motor circuit protectors shall be submitted and documented.
- E. All settings of soft starter parameters shall be submitted and documented.

1.3 REFERENCE STANDARDS

- A. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section insofar as specified and modified herein. In the event of conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.
- B. Unless otherwise specified, references to documents shall mean the documents in effect on the effective date of the Agreement. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.

Reference	Title
ANSI/NETA ATS- 2021	Standard for Acceptance Testing Specifications for Electrical Power Distribution Equipment Systems

- C. APPLICATION: Where testing in accordance with this section and other Division 26 Sections is required or recommended by the above standards are to be completed prior to energization, the required tests, including the retesting after the correction of found defects must be complete, and the submittal of final test reports to the Owner for review shall be completed prior to the energizing of material, equipment, or systems.

1.4 QUALITY ASSURANCE

- A. REQUIREMENTS: Section 26 05 00 General Requirements for Electrical Work.
- B. Comply with section 5, General, of the ANSI/NETA ATS – 2021 standard for safety, test equipment requirements.

1.5 SUBMITTALS

- A. PROCEDURES: Submittals to comply with requirements of the City of Lacey Section D: Special Provisions.
- B. SUBMITTAL ITEMS FOR THIS SECTION:
1. Proposed testing procedures including proposed test report forms.
 2. Test reports including documentation for all tests performed. Test reports shall be submitted for review prior to the equipment being energized.
 3. Execution plan including schedule.

PART 2 PRODUCTS

2.1 TESTING EQUIPMENT AND INSTRUMENTS

- A. The test equipment, instruments and devices used for testing shall be calibrated to test equipment standards with references traceable to the National Institute of Standards and Technology. The test equipment, instruments and devices shall have current calibration stickers indicating date of calibration, deviation from standard, name of calibration laboratory and technician, and date of next recalibration.

2.2 PRODUCT DATA

- A. The following information shall be provided and shall comply with requirements of the City of Lacey Section D: Special Provisions.

1. Test reports: Provide the report required in NETA ATS-2021 paragraph 5.4. Results shall be placed on the forms specified in this Section. Test reports shall also be part of the operation and maintenance manuals.
 - a. The test report shall include the following:
 - 1) Summary of project.
 - 2) Description of equipment tested.
 - 3) Description of tests.
 - 4) Device settings.
 - 5) Test data.
 - b. Test data records shall include the following
 - 1) Equipment Identification.
 - 2) Nameplate data.
 - 3) Date of testing.
 - 4) Expected test value/result.
 - 5) Actual test result.
 - 6) Testing results outside of acceptable limits.
2. Short circuit analysis and protective device curves.
3. Defects: Notify the Owner of any material or workmanship found defective within 24 hours of discovery.

PART 3 EXECUTION

3.1 TESTING

A. GENERAL

1. Ensure that all testing performed is in strict conformance with the electrical acceptance tests specified herein. Contact the Owner 10 days prior to the testing to allow witnessing of all tests.
2. The test measurements shall be recorded on specific forms for the subject test.
3. Testing shall be per ANSI/NETA ATS 2021. Provide testing data sheet for the following:

a. Cables – Low voltage (600 VAC maximum)

- 1) Testing for cabling shall also comply with WSDOT Standard Specifications section 8-20.3(11)

b. AC Induction Motors

- 1) Testing for pump motor shall also comply with the City's Lift Station Pump Pre-Startup Check List for electrical checks.

B. FUNCTIONAL CHECKOUT:

1. Comply with all requirements of 26 05 00.
2. Functional testing shall be performed in accordance with the requirements of this Section. Prior to functional testing, all protective devices shall be adjusted and made operative. Prior to energizing the equipment, perform a functional checkout of the control circuits. Checkout shall consist of energizing each control circuit and operating each control, alarm or malfunction device and each interlock in turn to verify that the specified action occurs. Submit a description of proposed functional test procedures prior to the performance of functional checkout.
3. Verify that motors are connected to rotate in the correct direction. Verification may be accomplished by momentarily energizing the motor after confirming that neither the motor nor the driven equipment will be damaged by reverse operation.
4. Verify all parameters of soft starters are set for motors provided and operate accordingly.
5. Verify installation of new motor contactors engage when energized and that auxiliary contacts close.
6. Verify starting and stopping of motors using Hand/Off/Auto switches on existing pump panels.
7. Verify lock-out operation of pumps due to pump motor thermal relay trip, and resetting of relay.

END OF SECTION

SECTION 40 61 13 – PROCESS CONTROL SYSTEM GENERAL PROVISIONS

PART 1 GENERAL

1.1 SUMMARY

- A. This section specifies general requirements which are applicable to providing instrumentation and controls for the process system
- B. The requirements of this section are applicable to all work to be completed by the Facility Integrator and as specified in all sections of 40 61 XX, 40 67 XX, 40 72 XX, and 40 78 XX. Where XX refers to any specification section beginning with the preceding section numbers.
- C. Electrical requirements applicable to this work are specified in Division 26.
- D. Section includes:
 - 1. Scope
 - 2. Definitions
 - 3. Quality Assurance
 - 4. Submittals
 - 5. Products
 - 6. Installation
 - 7. Testing

1.2 SCOPE

- A. The work consists of a qualified Facility Integrator to provide the requirements on this specification section as well as those listed or referenced herein.
 - 1. New primary process measurement devices to include wetwell high level float switch and replacement of existing level transducer at each site.
 - 2. New custom Isolation pedestal control panels at each site.
 - 3. Provide and coordinate removal and installation of contactors, soft starts, and motor circuit protectors in the existing control panels with the Contractor.
 - 4. Provide and coordinate removal and installation of seal fail / overtemp relays in the existing control panels with the Contractor.
 - 5. Submittal documentation for process systems instrumentation and control including schedules, drawings, product manuals.
 - 6. Maintaining construction RECORD/AS BUILT of submittal documentation and incorporating interconnection detail from other sections submittals to show accurately process systems instrumentation and control wiring as complete from circuits start and end connections.

7. Configuration set up, calibration, testing process systems instrumentation and controls.
 8. Training.
 9. Factory test process control panel customized fabrication(s).
 10. Deliver process control panel customized fabrication(s) to site.
- B. PROGRAMMING: Verification of level measurement after installation of new level transducer and adjust SCADA/PLC reading and or scaling will be performed by City personnel.

1.3 DEFINITIONS

- A. GENERAL: Definitions of terminology related to Instrumentation and Industrial Electronic Systems used in the specifications as defined in IEEE 100, ISA S51.1, and NEMA ICS 1.
- B. VENDOR PACKAGE PROCESS CONTROL SYSTEM: A system of equipment and hardware provided by a vendor used for control, monitoring process conditions, control feedback and process performance for an associated vendor package equipment system which interfaces to the control system.
- C. TWO-WIRE TRANSMITTER: An instrument which derives operating power supply from the signal transmission circuit and requires no separate power supply connections. A two-wire transmitter produces a 4 to 20 milliampere current regulated signal in a series circuit from a 24-volt direct current driving potential and a maximum circuit resistance of 600 ohms. A two-wire transmitter is also referred to as looped power.
- D. FOUR-WIRE TRANSMITTER: An instrument which derives operating power from separate power supply connections. A four-wire transmitter produces a 4 to 20 milliampere current regulated signal in a series circuit with a maximum circuit resistance of 600 ohms. Four-wire transmitters typically require 120Vac or 24Vdc input power supply.
- E. GALVANIC ISOLATION: Electrical node having no direct current path to another electrical node. Galvanic isolation refers to a device with electrical inputs and/or outputs which are isolated from ground, the device case, the process fluid, and separate power supply terminals. Inputs and/or outputs may be externally grounded without affecting the characteristics of the devices or providing path for circulation of ground currents.
- F. PANEL: An instrument support system which may be a flat surface, a partial enclosure, or a complete enclosure for instruments and other devices used in process control systems including consoles, cabinets and racks. Panels provide mechanical protection, electrical isolation, and protection from dust, dirt, moisture, and chemical contaminants which may be present in the atmosphere.
- G. DATA SHEETS: Data sheets shall refer to ISA S20 or ISA TR20.00.01 latest version.
- H. SIGNAL TYPES:

1. LOW-LEVEL ANALOG: Signal with full output level of 100 millivolts or less including thermocouples and resistance temperature detectors.
 2. HIGH-LEVEL ANALOG: Signals with full output level greater than 100 millivolts but less than 30 volts, including 4 to 20 mA transmission.
 3. PULSE FREQUENCY: Counting pulses emitted from speed or flow transmitters.
 4. DISCRETE CONTROL OR EVENTS: Dry contact closures and signals monitored by solid state equipment, relays, or control circuits typically rated for 120 volts AC or 24 volts DC.
- I. FACILITY INTEGRATOR: A firm engaged in the business of detailed control system design and engineering, custom panel fabrication, instrumentation component purchase, instrumentation tuning, system and panel assembly, and testing the specified process control and industrial automation systems.
 - J. PROGRAMMER: City personnel designated for the programming and adjustment to the existing level controller after replacement of the level transducer.
 - K. OIT: Acronym for Operator Interface Terminal
 - L. SCADA: Acronym for Supervisory Control And Data Acquisition
 - M. PLC: Acronym for Programmable Logic Controller – synonymous with Programmable Automation Controller (PAC) for purposes of this project

1.4 QUALITY ASSURANCE

- A. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section insofar as specified and modified herein. In the event of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
- B. Unless otherwise specified, references to documents shall mean the documents in effect on the effective date of the Agreement. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.

Reference	Title
IEEE 100	Standard Dictionary of Electrical and Electronics Terms
ISA S5.4	Instrument Loop Diagrams
ISA S20	Specification Forms For Process Measurement and Control Instrumentation, Primary Elements, and Control Valves
ISA S51.1	Process Instrumentation Terminology
ISA TR20.00.01	Specification Forms for Process Measurement and Control Instruments Part 1: General Considerations
NEMA ICS 1	General Standards for Industrial Control and Systems

1.5 FACILITY INTEGRATOR

- A. The Contractor shall engage one of the facility integrators approved by the City:
 1. Technical Systems Incorporated (TSI) – 2303 196th Street SW, Lynnwood, WA 98036 – (425) 775-5696
 2. Systems Interface Incorporated (SII) - 10802 47th Ave. Mukilteo, WA. 94250 – (425) 481-1225
 3. No Substitutions

1.6 PROGRAMMER RESPONSIBILITY

- A. Verification of level measurement after installation of new level transducer and adjust SCADA/PLC reading and or scaling as needed.
- B. Programming and or adjusting existing setpoint and level ranges in the existing level controller for the replacement location of the transducer head.

1.7 FACILITY INTEGRATOR RESPONSIBILITY

- A. GENERAL
 1. The specified control system and instrumentation integration including new control panels, panel modifications, instrument supply and calibration, testing, startup, operational testing, and training shall be performed by the Facility Integrator.
 2. The control system components shall, as far as practical, be of one manufacturer.
 3. The components, devices, and control system equipment shall be recognized industrial quality products. Recognized commercial or office grade products are prohibited.

4. Facility Integrator shall lead the effort to coordinate with the Contractor, Owner and Engineer to ensure the control system meets the requirements to interconnect all controlled and monitored equipment correctly.
5. The specified system performance shall be demonstrated to and accepted by the Owner and the Engineer.
6. The Facility Integrator shall provide factory acceptance testing. During the factory testing, the Facility Integrator shall coordinate with Owner for completion of the Owner's Pre-Startup Witness testing standard review forms.
7. The Facility Integrator shall provide site acceptance testing. During the site acceptance testing, the Facility Integrator shall coordinate with Owner for completion of the Owner's Lift Station start-up package standard review forms.
8. Provide isolation pedestal and coordinate with Contractor for each site.
9. Provide new motor control equipment and seal fail / overtemp equipment. Coordinate replacement of existing motor and controls equipment and seal fail / overtemp relays as shown on the contract drawings with the Contractor for each site.
10. Provide new level control equipment, including float switch and level transducers. Coordinate as required with the Contractor and provide units for each site.

B. PRE-SUBMITTAL CONFERENCE:

1. Schedule a pre-submittal conference with the Owner and Engineer within 30-calendar days after Contract award to discuss the work equipment, submittal format, and establish the framework for project coordination and communication.
 - a. Provide materials 10-days prior to the conference:
 - b. Product descriptive literature with a statement that the item is as specified.
 - c. Proposed equal products with comparative listing of the published specifications for the specified item and the proposed item.
 - d. A copy of this specification section, with addendum updates included, and all referenced and applicable sections, with addendum updates included, with each paragraph check-marked to indicate specification compliance or marked to indicate requested deviations from specification requirements.
2. The pre-submittal conference will not replace the Product and Shop Drawing Submittal review process.

C. PROCESS EQUIPMENT COORDINATION

1. Facility Integrator shall provide wiring interconnect diagrams for equipment being replaced and for new equipment being provided. Coordinate to collect equipment wiring information from other Sections to show as installed diagrams.
2. Integrate, furnish, and install equipment in conformance with the drawings, specifications, and the recommendations of the equipment manufacturer and the related processes equipment manufacturers.
3. Facility Integrator shall obtain manufacturer's technical information for items of equipment not provided with, but directly connected to, the control system. Provide the necessary coordination and components for correct signal interfaces between specified equipment and the control system.
4. Facility Integrator shall coordinate with project subcontractors and equipment suppliers.
5. Facility Integrator shall provide installation supervision for the duration of the project.
6. Conflicts between the plans, specifications, manufacturer/vendor drawings and installation instructions, etc., shall be presented to the Owner for resolution before proceeding.

1.8 CONTRACTOR RESPONSIBILITY

A. GENERAL

1. The Contractor shall help coordinate the work of the Facility Integrator and shall provide access and support for their activities.
2. The Contractor shall help coordinate the installation and replacement of existing equipment with the Facility Integrator and installing contractor.

1.9 SUBMITTALS

A. PROCEDURES: Submittals to comply with requirements of the City of Lacey Section D: Special Provisions

B. Product Data: For each type of device and system:

1. Include product data sheets and equipment brochures showing standard products and specified accessories.
 - a. Mark data sheets to clearly show exact product and options being provided.
 - b. Data sheets shall be edited to show exact product and options being provided. Inapplicable equipment or options shall be crossed out.
2. Manufacturer's installation instruction excerpts that apply to this project:
 - a. Mounting requirements
 - b. Electrical connection diagrams

- c. Calibration procedures
- d. Operation and maintenance information
- e. Warranty information

C. SUBMITTAL DRAWINGS

1. GENERAL

- a. Prepare drawings in AutoCAD version 2020 or later with borders and title blocks identifying the project and system.
- b. Diagrams shall carry a uniform and coordinated set of wire numbers and terminal block numbers. The wire numbers shall match the Owner's original drawings to the best extent possible.
- c. Drawings shall contain every detail contained in the Owner's original drawings. Every component and symbol shall be represented.
- d. Loop drawing numbers and file names are to be based on equipment tag numbers.
- e. Provide the following submittal drawings
 - 1) Arrangement and layout drawings
 - a) Show arrangement and layout to scale. Add components and wiring to the unique panel drawings as required to complete a fully integrated operation. Include on the drawings a Bill of Material that identifies all components in the arrangement and layout.
 - b) Drawings shall have a layout key with every component identified and labeled as shown on the Owner's original drawings.
 - c) Component names shall be as listed on the Owner's original drawings.
 - 2) Schematic diagrams
 - a) Show components of a control panel internally wired between devices. Show terminal blocks used for internal wiring or field wiring, identified as such.
 - b) Wire labels shall have the same description and numbers as practical as possible to the Owner's original drawings.
 - 3) Loop diagrams
 - a) Provide the unique loop diagram for each piece of equipment.

PART 2 PRODUCTS

2.1 GENERAL

A. MATERIALS AND QUALITY:

1. Provide process control hardware new, free from defects, and industrial- grade, as specified. Each type of instrument, instrument accessory, and device used throughout the work shall be manufactured by one firm, where possible.
2. Electronic process control hardware shall be of solid-state construction with printed or etched circuit boards of glass epoxy of sufficient thickness to prevent warping.

B. ENCLOSURES:

1. For the purposes of this project, the enclosures shall be as listed in the Bill of Materials in the Owner's original drawings.

2.2 NAMEPLATES

- #### A.
- Provide nameplates for all field mounted instrument, analyzer, or equipment. Include the equipment title, the equipment tag number, and power source(s) in the nameplate inscription. Provide machine engraved laminated black phenolic nameplates with white lettering for equipment identification with 1/8-inch-high lettering.

2.3 SPARES:

A. Provide spares as listed below.

1. Terminal Blocks – 5 of each type used
2. Relays Bases – 1 of each type used
3. Seal Fail / Overtemp Relay – 1 of each type used
4. Soft Start – 1 of each type used

PART 3 EXECUTION

3.1 INSTALLATION

- #### A.
- Install process control hardware in locations that are accessible for operation and maintenance services. Process control hardware not accessible shall be reinstalled at no cost to the Owner.
- #### B.
- Install process control hardware in accordance with product manufacturer's requirements.
- #### C.
- Ensure process control hardware is grounded per NEC and manufacturer's requirements.
- #### D.
- Provide proper clearance for process control hardware for heat dissipation and access.
- #### E.
- Ensure UL/FM or equal listings/markings/labels are viewable after installation.

- F. Provide secure mounting of all process control hardware (such as DIN rail mount).
- G. Provide electrical circuit protection for process control hardware if not integral or if not provided by other means of protection.

3.2 TESTING

- A. FACTORY ACCEPTANCE TEST (FAT): Reference Section 40 67 16, completed prior to SAT.
- B. SITE ACCEPTANCE TEST (SAT) shall be included as part of the system start-up: The acceptance test shall demonstrate a functional stable operation of all wiring, and equipment operating or simulated conditions. The test shall also demonstrate proper operation of all digital or sequential control. All start/stop and similar commands and all discrete status inputs shall be tested for proper operation. In addition, all alarms, both analog and discrete, shall be tested. The Contractor shall schedule the site acceptance test at least 2 weeks ahead of testing date with approval of City.
- C. In addition to the SAT testing in Section 40 67 16, the SAT shall include the requirements as follows:
 - 1. Verify that the equipment and all cables have been properly installed and have not been damaged.
 - 2. Copy parameter settings from the existing soft starters and use for setup on new unit except for motor settings which shall be appropriately set for the pumps being supplied.
 - 3. The test shall include operation of the soft starter and demonstrate that the pumps operate accordingly.
 - 4. Verify starting and stopping of motors using Hand/Off/Auto switches on existing pump panels after installation of new motor control equipment, ie. soft starters and or contactors.
 - 5. Verify existing indicator lights for motors operate appropriately after installation of new motor control equipment, ie. running, fault.
 - 6. Verify existing indicator lights for seal fail / overtemp operate appropriately after installation of new pump seal fail / overtemp relays.
 - 7. Test float switch connection and verify existing indicator light and controls operate appropriately.
 - 8. Test level transducer operation and verify controls operate appropriately.
 - 9. During the SAT, the Contractor and Facility Integrator shall coordinate with the Owner for completion of the Owner's Lift Station start-up package standard review forms. All items noted for change shall be completed prior to final acceptance.

- D. DELIVERY INSPECTION: Notify the Owner upon arrival of any material or equipment to be incorporated into the work. Remove protective covers or otherwise provide access in order that the City may inspect such items.

END OF SECTION

SECTION 40 67 16 – CONTROL PANELS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Scope
 - 2. Panel Information
 - 3. Panel Design
 - 4. Quality Assurance
 - 5. Submittals
 - 6. Performance Requirements
 - 7. Products
 - 8. General

1.2 SCOPE

- A. This section specifies requirements for process control panels and hardware required for custom fabrication.
- B. Provide the instrument, control, and monitoring features indicated on the electrical drawings. Panels shall be arranged to separate control and instrument devices from power wiring. Panel shall be arranged for dedicated field wiring terminations rated for 600 Vac or less for power, control, and instrument signal wiring shall be fabricated by a UL-508A recognized facility and shall bear the appropriate UL 508A Industrial Control Panel label. Panels for Hazardous (Classified) Locations shall bear the appropriate UL 698A label.
- C. Comply with the specified products in Sections 40 61 13. Panels that do not comply with the specified products and specified wiring method shall not be accepted. Cost to retrofit the panel as specified shall be borne by the panel supplier. Corrections or modifications to UL 508A Industrial Control Panels shall be transported to the panel supplier's facility for corrections, testing, relabeling and inspection, unless local modification is accepted by the AHJ.
- D. Field modifications require a UL inspector site inspection for approval of panel corrections and to re-label the panel after the field modifications are completed, unless local modification is accepted by the AHJ.
- E. Submittal drawing requirements specified in 40 61 13.
- F. Label panels with fault current rating per NEC article 409.110.

1.3 REFERENCE STANDARDS

- A. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section insofar as specified and modified herein. In the event of conflict

between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.

1. American National Standards Institute (ANSI).
2. ASTM International (ASTM):
 - a. B75, Standard Specification for Seamless Copper Tube.
3. National Electrical Manufacturers Association (NEMA):
 - a. 250, Enclosures for Electrical Equipment (1000 Volts Maximum).
 - b. ICS 4, Industrial Control and Systems: Terminal Blocks.
4. National Fire Protection Association (NFPA):
 - a. 70, National Electrical Code (NEC).
5. Underwriters Laboratories, Inc. (UL):
 - a. 508A, Standard for Safety Industrial Control Panels.
 - b. 913, Standard for Safety, Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations.
 - c. 698A, Industrial Control Panels Relating to Hazardous (Classified) Locations.

1.4 DEFINITIONS

- A. The term "panel" refers to control panels or enclosures including the isolation pedestal.
- B. Foreign Voltages: Voltages that may be present in circuits when the panel main power is disconnected.
 1. Intrinsically Safe Circuit: A circuit in which any spark or thermal effect is incapable of causing ignition of a mixture of flammable or combustible material in air under test conditions as prescribed in UL 913.
- C. Cable: Multi-conductor, insulated, with outer sheath containing either building wire or instrumentation wire.
- D. Instrumentation Cable:
 1. Multiple conductor, insulated, twisted or untwisted, with outer sheath.
 2. Instrumentation cable is typically either TSP (twisted-shielded pair) or TST (twisted-shielded triad) and is used for the transmission of low current or low voltage signals.

- E. Ground Fault Circuit Interrupter (GFCI): A type of device (e.g., circuit breaker or receptacle) which detects an abnormal current flow to ground and opens the circuit preventing a hazardous situation.
- F. Programmable Logic Controller (PLC): A specialized industrial computer using programmed, custom instructions to provide automated monitoring and control functions by interfacing software control strategies to input/output devices. Synonymous with Programmable Automation Controller (PAC) for purposes of this project
- G. Remote Terminal Unit (RTU): An industrial data collection device designed for location at a remote site, that communicates data to a host system by using telemetry such as radio, cellular, or leased lines.
- H. Input/Output (I/O): Hardware for the moving of control signals into and/or out of a PLC or RTU.
- I. Supervisory Control and Data Acquisition (SCADA): Used in process control applications, where programmable logic controllers (PLCs) perform control functions but are monitored and supervised by computer workstations.
- J. Digital Signal Cable: Used for the transmission of digital communication signals between computers, PLCs, RTUs, etc.
- K. Uninterruptible Power Supply (DC UPS):
 - 1. A backup power unit that provides continuous power when the normal power supply is interrupted.
 - 2. Provided in Main control cabinet as shown on the drawings.
 - 3. Sized to provide a minimum of 4 hours of continuous operation of all connected components or as listed on the drawings or in the specifications.
- L. Loop Calibrator: Portable testing and measurement tool capable of accurately generating and measuring 4-20ma DC analog signals.

1.5 QUALITY ASSURANCE

- A. REQUIREMENTS: Section 40 61 13 Process Control System General Provisions
- B. The manufacturer shall warranty the above specified equipment for twelve months from equipment start-up or eighteen months from date of shipment, whichever occurs first, to be free from defects in design workmanship or materials
- C. Entire assembly shall be affixed with a UL 508A or 698A label "Listed Enclosed Industrial Control Panel" prior to shipment to the jobsite.
- D. Each panel shall have an affixed fuse identification list.
- E. Each panel shall have the affixed vinyl and phenolic legends as shown on the drawings.

- F. Each panel shall have an affixed power and short circuit rating label.

1.6 SUBMITTALS

- A. Submittals to comply with requirements of the City of Lacey Section D: Special Provisions

- B. SUBMITTAL ITEMS FOR THIS SECTION:

1. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the noting of some errors, but the overlooking of others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.
2. Where submitted items deviate from specification requirements, a list of any specification sections that are not being met by the submitted item must be provided. The list is to be organized by specification section and paragraph and shall list the product requirement and in what way submitted item does not comply with the requirement. A detailed written explanation of the reasons for requesting the deviation must also be included.
 - a. The Owner shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance with the specifications.
 - b. Failure to include a list of the specification section deviations along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration
3. Include product data sheets of equipment, devices, and materials requested by the individual specification sections.
 - a. Catalog information shall include technical specifications and application information, including ratings, range, weight, accuracy, etc.
 - b. Catalog cuts shall be edited to show only the items, model numbers, and information which are applicable and crossing out all inapplicable information.
 - c. Submittals are to made electronically in PDF format, the PDF shall be organized by specification section and linked to an index. The PDF shall be searchable. Submittals that are not submitted in the format outlined may be rejected outright and the Contractor is required to resubmit in the correct format.

- C. Submittal items required include:

1. Submit items specified in Section 40 61 13
2. Arrangement and Layout Drawings
3. Exterior panel layout

4. Interior panel layout
5. Bill of Materials
6. Connection Diagrams.
7. Phenolic Nameplate and engraving schedule: (at a minimum, shall be as shown in the drawings)
 - a. Indicate engraving by line
 - b. Character size
 - c. Nameplate size
 - d. Panel and equipment tag number and description
8. Vinyl label schedule: (at a minimum, shall be as shown in the drawings)
9. Manufacturer's operation and maintenance information as specified in City of Lacey Section D: Special Provisions Section 7-22.3(3)B. Manual shall include final reviewed submittal redlined to show AS BUILT conditions; and separate record of all final configuration, jumper, and switch settings.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Enclosures (See drawings for specific models)
 1. Nvent/Hoffman Enclosures, Inc
 2. Saginaw Control and Engineering
- B. Panel Heaters (See drawings for specific models)
 1. Nvent/Hoffman Enclosures, Inc.
 2. Pfannenberger
- C. Thermostat and Hygrostat (See drawings for specific models)
 1. Stego.
- D. Terminal Blocks per specifications Section 40 78 53.
- E. Pump Power Receptacles and Plugs (See drawings for specific models)
 1. Meltric DSN series

2.2 FABRICATION

- A. General:
 1. Fabricate panels with instrument arrangements and dimensions identified in the Contract Documents.
 2. Provide panel(s) with the required enclosure rating per NEMA 250 to meet classifications identified in the Contract Documents.

3. Devices installed in panel openings shall have a NEMA enclosure rating at least equal to the panel enclosure rating.
4. Short circuit current rating of panel:
 - a. 10,000A, minimum.
5. Panels and pedestals to be located outdoors shall be fabricated from 316 stainless steel and shall utilize appropriate hinge and locking components. Panel(s) shall be completely assembled at the Contractor's factory:
 - a. No fabrication other than correction of minor defects or minor transit damage shall be performed on panels at the jobsite.
6. Finish opening edges of panel cutouts to smooth and true surface conditions.
7. Panel shall meet all requirements of UL 508A
 - a. If more than one (1) disconnect switch is required to disconnect all power within a panel or enclosure, unless otherwise required by UL 508A, provide a cautionary marking as shown on the contract drawings Vinyl labels "CAUTION" and the following or equivalent, "THIS EQUIPMENT IS SUPPLIED BY MORE THAN ONE POWER SOURCE."
8. Provide control panel in accordance with NEC Article 409 - Industrial Control Panels:
 - a. In the event of any conflict between NEC Article 409 and UL 508A, the more stringent requirement shall apply.
9. Panel shall meet all requirements of UL 698A
 - a. Provide intrinsically safe circuit extensions from panels in unclassified locations into hazardous classified locations in accordance with the NEC as required by UL 698A.
- B. Pedestal-Mounted Panels:
 1. Welded construction.
 2. Completely enclosed, self-supporting and gasketed dust-tight.
 3. Rolled lip around all sides of enclosure door opening.
 4. Seams and corners welded and ground smooth to touch and smooth in visual appearance.
 5. Full height, fully gasketed flush pan doors.
 6. Full length piano hinges rated for 1.5 times door plus instrument weight.
 7. Doors with 3-point latch and L-shaped, quarter-turn padlockable handles.
 8. Appropriate conduit, wiring, and instrument openings shall be provided.

9. Isolation pedestal enclosure shall be constructed of a minimum of 12-gauge stainless steel.
- C. Component Mounting and Placement:
1. Components shall be installed per manufacturer instructions. Double-faced tape will not be permitted.
 2. Control relays and other control auxiliaries shall be mounted on DIN rail mounting channels where practical.
 3. Terminal blocks shall be mounted in the enclosures with ample clearance to allow visual guidance for installing wires.
 4. Components mounted in the panel interior shall be fastened to an interior sub- panel using machine screws:
 - a. Fastening devices shall not project through the outer surface of the panel enclosure.
 5. Locate and install all devices and components so that connections can be easily made and ample room is provided for servicing each item.
- D. Follow UL recommendations.

2.3 CONTROL DEVICES

- A. Seal Fail / Overtemp Relays shall be provided in accordance with Sections 40 78 53 for installation in existing control panel.
- B. Hygrostat shall be provided in accordance with this section and per the contract drawings Approved Materials List.

2.4 MOTOR CONTROL EQUIPMENT

- A. Motor control equipment shall be provided for installation in existing control panels as shown on the contract drawings.

2.5 INTERNAL WIRING

- A. See Section 40 67 33

PART 3 EXECUTION

3.1 TEST PLANS AND REPORT

- A. The Contractor shall be required to prepare and submit for review and approval the following:
 1. Factory Acceptance Test Plan and procedures.
 2. Site Acceptance Test Plan and procedures.

3. Test Schedules.

4. Test Reports.

3.2 FACTORY TESTING

- A. Factory Acceptance Test (FAT) and verification for all deliverable equipment, programs, and associated documentation shall be performed prior to shipment of the system. The tests shall verify that the equipment is manufactured and assembled correctly, is operating as designed, and is in compliance with the contractual requirements. The tests shall verify that the hardware meet the functional and performance requirements of the project. The FAT shall be performed at the Contractor's factory and shall be witnessed by Owner personnel.
- B. Factory testing shall include a point-to-point wiring continuity test.
- C. A visual inspection of all components to ensure they are free of damage and installation as shown on the contract drawings. Labeling of components and wiring are to also be visually inspected and compared against the contract documents.
- D. All control components are to be energized to demonstrate proper operation.
- E. During the FAT, the facility integrator shall coordinate with Owner for completion of the Owner's Witness testing standard review forms. All items noted for change shall be completed prior to delivery to site for installation.
- F. The Contractor shall schedule the factory test at least 2 weeks ahead of factory test date with approval of City.

3.3 INSTALLATION

- A. Isolation pedestal panels shall be mounted as shown on the contract drawings.
- B. Provide panels with the laminated Record As-built schematic, connection, and interconnection diagrams placed in a water proof clear bag in the panel document holder.
- C. Vacuum clean control panels and cabinets.

3.4 SITE ACCEPTANCE TESTING

- A. A Site Acceptance Test (SAT) shall be performed at the site. The final documentation will then be reviewed for completeness. Site Acceptance Testing shall be witnessed by City personnel.
- B. The SAT shall include the requirements as follows:
 - 1. The acceptance test shall verify that the equipment and all cables have been properly installed, have not been damaged, and have not failed in shipment or storage.
 - 2. The test shall include operation of the heater unit and demonstrate that the pump receptacles and plug connections work accordingly when connected to the pumps.

3. During the SAT, the Contractor and Facility Integrator shall coordinate with the Owner for completion of the Owner's Lift Station start-up package standard review forms. All items noted for change shall be completed prior to final acceptance.
- C. After one week of operation without notable events or failures, finalize the wiring between the new Isolation pedestal panel and the existing Main control cabinet. Organize unused wiring to provide a neat and clean appearance.

END OF SECTION

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SECTION 40 67 33 – PANEL WIRING

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Scope
 - 2. Reference Standards
 - 3. Quality Assurance
 - 4. Submittals
 - 5. Installation
 - 6. Testing

1.2 SCOPE

- A. This section specifies wiring requirements for wiring of process control panels.
- B. Comply with the specified products in Sections 40 61 13 and 40 67 16. Panels that do not comply with the specified products and specified logic method, hardwired or PLC logic, shall not be accepted. Cost to retrofit the panel as specified shall be borne by the panel supplier. Corrections or modifications to UL 508A Industrial Control Panels shall be transported to the panel supplier's facility for corrections, testing, relabeling and inspection, unless local modification is accepted by the AHJ.
- C. All panel wiring is to be completed within a UL 508A certified fabrication facility. Field modifications require a UL inspector site inspection for approval of panel corrections and to re-label the panel after the field modifications are completed, unless local modification is accepted by the AHJ.
- D. Refer to Control Panels - Section 40 67 16 that specifies requirements for manufacturer, vendor, and Contractor provided panels that may include motor controllers, combination motor starters, control devices, and logic devices as shown on the electrical drawings. These requirements apply to this section as well.

1.3 QUALITY ASSURANCE

- A. REQUIREMENTS: Section 40 61 13 Process Control System General Provisions
- B. The manufacturer shall warranty workmanship for twelve months from equipment start-up or eighteen months from date of shipment, whichever occurs first, to be free from defects in design workmanship or materials.
- C. REFERENCE STANDARDS:
 - 1. This Section incorporates by reference the latest revisions of the following documents. They are part of this Section insofar as specified and modified herein. In the event of

conflict between the requirements of this Section and those of the listed documents, the requirements of this Section shall prevail.

2. Unless otherwise specified, references to documents shall mean the documents in effect on the effective date of the Agreement. If referenced documents have been discontinued by the issuing organization, references to those documents shall mean the replacement documents issued or otherwise identified by that organization or, if there are no replacement documents, the last version of the document before it was discontinued.

Reference	Title
NEMA 250	Tests for Flammability of Plastic Materials for Parts in Devices and Appliances
UL 94	Tests for Flammability of Plastic Materials for Parts in Devices and Appliances
UL 508A	Industrial Control Panels
UL 698A	Industrial Control Panels Relating to Hazardous (Classified) Locations

D. LISTED PRODUCTS

1. Equipment and components to be Underwriters Laboratory (UL) listed for the purpose per Section 40 61 13 or UL recognized.
2. Provide factory applied UL 508A labels for control panels. Where intrinsic safety barriers are used within a control panel, provide UL 698A factory applied label as required by UL.

1.4 SUBMITTALS

A. PROCEDURES: Section 40 61 13 and Submittals to comply with requirements of the City of Lacey Section D: Special Provisions.

B. SUBMITTAL ITEMS FOR THIS SECTION:

1. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the noting of some errors, but the overlooking of others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.
2. Where submitted items deviate from specification requirements, a list of any specification sections that are not being met by the submitted item must be provided. The list is to be organized by specification section and paragraph and shall list the product requirement and in what way submitted item does not comply with the requirement. A detailed written explanation of the reasons for requesting the deviation must also be included.

- a. The Owner shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance with the specifications.
 - b. Failure to include a list of the specification section deviations along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration
3. Include product data sheets of equipment, devices, and materials requested by the individual specification sections.
- a. Catalog information shall include technical specifications and application information, including ratings, range, weight, accuracy, etc.
 - b. Catalog cuts shall be edited to show only the items, model numbers, and information which are applicable and crossing out all inapplicable information.
 - c. Submittals are to made electronically in PDF format, the PDF shall be organized by specification section and linked to an index. The PDF shall be searchable. Submittals that are not submitted in the format outlined may be rejected outright and the Contractor is required to resubmit in the correct format.
- C. Submittal items required include:
- 1. Wire Types
 - 2. Labeling materials and methods
 - 3. Wireways
 - 4. Hinge wiring method description

PART 2 PRODUCTS

2.1 WIRE MARKERS

- A. Wire markers shall be printed heat shrink type as specified in Section 26 05 00.

PART 3 EXECUTION

3.1 INTERNAL PANEL WIRING

- A. Panel control wiring: 120V wiring that is not connected directly to a breaker, Single red conductor stranded copper NFPA No. 70 Type MTW/TEW No. 14 AWG minimum. Single white conductor stranded copper Type MTW/TEW No. 14 AWG for control neutral conductors.
- B. Breaker panel wiring: Single Black conductor stranded copper NFPA No. 70 Type MTW/TEW No. 12 AWG minimum for wiring to breakers in the breaker panel and single White 12 AWG minimum for neutral conductors used in the breaker panel.

- C. All 12VDC+ conductors shall be NFPA No. 70 Type MTW/TEW No. 16 AWG, orange. All 12VDC- conductors shall be NFPA No. 70 Type MTW/TEW No. 16 AWG, yellow.
- D. All 24VDC+ conductors shall be NFPA No. 70 Type MTW/TEW No. 16 AWG, dark blue. All 24VDC- conductors shall be NFPA No. 70 Type MTW/TEW No. 16 AWG, white with blue stripe.
- E. All intrinsically safe wires shall be purple.
- F. Panel instrument wiring/Analog inputs: Twisted No. 18 AWG shielded twisted pair. Connect the shield drain on the pump control panel end.
- G. Panel power wiring: Conductors specified in Division 26 and meet the NFPA No. 70 NEC requirements for power including phase, grounded, and grounding conductors.
- H. Arrange wiring neatly, cut to proper length, and remove surplus wire.
- I. No more than two connections made to one terminal.
- J. Wiring shall be supported independently of terminations by lacing to panel support structure or by slotted flame-retardant plastic wiring channels.
- K. Power and control wiring carried in covered channels separate from low voltage signal circuits.
 - 1. Wiring channel fill not to exceed 40 percent per NFPA 70.
- L. Restrain by plastic ties or ducts or metal raceways.
- M. Provide abrasion protection for wire bundles that pass-through holes or across edges of sheet metal.
- N. Hinge Wiring: Secure at each end so bending or twisting will be around longitudinal axis of wire. Protect bend area with sleeve.
- O. Connections to Screw Type Terminals:
 - 1. Use manufacturer's recommended tool with required sized anvil to make crimp lug terminations.
 - 2. Splicing and tapping of wires, allowed only at device terminals or terminal blocks.
 - 3. Wires terminated in a crimp lug, maximum of one.
 - 4. Lugs installed on a screw terminal, maximum of two.
- P. Plastic Wire Ducts Color:
 - 1. 120V ac: White.
 - 2. 24V dc: Gray.
- Q. Provide a minimum of 1-1/2 inches between plastic wire ducts and terminal blocks.

- R. Control Relay Arrangement: See contract drawings for layout.
- S. CONDUCTOR IDENTIFICATION:
 - 1. Wiring colors as listed above.
 - 2. Wire tag numbers shall be as shown on the contract drawings to the greatest extent possible. Additional wiring, if not shown with an identifier, shall use a short identifier with descriptive labeling similar to that shown on the contract drawings.
 - 3. Wire tag numbers to be machine printed on white sleeves with text 1/8 inches high minimum in permanent black machine printed ink.
- T. FIELD WIRING:
 - 1. Field wiring shall be connected to separate dedicated terminal blocks in a dedicated part of the panel where the field cables enter the panel as shown on the contract drawings.
- U. PANEL GROUNDING
 - 1. Provide each control panel with copper ground bar or grounding terminal blocks as shown on the contract drawings.
 - 2. Provide grounding terminal for instrumentation shielding ground. All shielding for analog circuiting to be terminated at the pump control panel end.

3.2 TESTING

- A. FACTORY TESTING:
 - 1. Prior to shipment, the manufacturer tests the functional operation of the control panels as described in Section 40 61 13.
 - 2. Complete point to point testing and verification of each wire.
 - 3. The Owner requires the factory test to be a witnessed test. The Contractor shall coordinate with the Owner to witness the factory test at the manufacturer's facility. If test results require the testing to be redone, the additional costs for additional testing shall be borne by the Contractor.

END OF SECTION

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SECTION 40 72 13 – ULTRASONIC LEVEL METERS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Scope
2. Reference Standards
3. Quality Assurance
4. Submittals
5. Product Requirements
6. Installation
7. Testing

1.2 SCOPE

- A. This Section specifies requirements for supply and installation of the Ultrasonic level measuring system(s). This includes testing, documenting, and start up.
- B. Contractor shall provide all components, piping, wiring, accessories and labor required for a complete, workable and integrated system.
- C. Instruments shall be mounted as shown on the plans. All metal mounting hardware shall be stainless steel.

1.3 REFERENCE STANDARDS

- A. UL – Underwriters Laboratory approved
- B. ASTM – American Society for Testing and Materials
- C. NEMA – National Electrical Manufacturer’s Association
- D. NEC – National Electrical Code
- E. NFPA No. 70, NEC - National Electrical Code
- F. NFPA No. 79, Electrical Standard for Industrial Machinery.
- G. ISA – Instrumentation, Systems, and Automation Society.
- H. ICS-1 – General Standards for Industrial Control and System
- I. ICS-2 – Standards for Industrial Control Devices, Controllers and
- J. ICS-3 – Industrial Systems.

1.4 QUALITY ASSURANCE

- A. REQUIREMENTS: Section 40 61 13 Process Control System General Provisions.
- B. The manufacturer shall warranty the above specified equipment for twelve months from equipment start-up or eighteen months from date of shipment, whichever occurs first, to be free from defects in design workmanship or materials.

1.5 SUBMITTALS

- A. PROCEDURES: Section 40 61 13 and Submittals to comply with requirements of the City of Lacey Section D: Special Provisions
- B. SUBMITTAL ITEMS FOR THIS SECTION:
 - 1. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the noting of some errors, but the overlooking of others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.
 - 2. Where submitted items deviate from specification requirements, a list of any specification sections that are not being met by the submitted item must be provided. The list is to be organized by specification section and paragraph and shall list the product requirement and in what way submitted item does not comply with the requirement. A detailed written explanation of the reasons for requesting the deviation must also be included.
 - a. The Owner shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance with the specifications.
 - b. Failure to include a list of the specification section deviations along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration
- C. Product Data: For each type of device and system:
 - 1. Include product data sheets and equipment brochures showing standard products and specified accessories.
 - a. Mark data sheets to clearly show exact product and options being provided
- D. Manufacturer's installation instructions, including mounting requirements.
- E. Operation and maintenance information.
- F. Warranty information.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. To maintain existing City's standards and for existing equipment compatibility, the Ultrasonic Level Measurement transducer shall be a Siemens Echomax XPS-15 (6° beam angle) sensor.

2.2 GENERAL

- A. The level transducer shall be provided for direct replacement of the existing units being removed for connection to existing Siemens Milltronics Hydorranger Level Transmitters.
- B. Transducer to be provided with enough cabling to be routed continuously from transducer to existing transmitter inside Main control cabinet via Isolation pedestal.

2.3 FEATURES

- A. The transducer operating principle shall be based on acoustic impulses emitted from an Ultrasonic transducer reflecting back from the material surface. The transit time of pulse travel from generation to echo is measured. The elapsed time is proportional to the distance between the transducer face and material surface.

The primary sensor shall be an acoustic transducer containing a polarized Zirconium crystal with acoustic impedance matching face and transformer and shall meet the following requirements:

- 1. The transducer housings shall be Kynar.
- 2. The Accuracy shall be +/- 0.25% of range or 6mm; whichever is greater.

2.4 ELECTRICAL REQUIREMENTS

- A. Transducer shall be compatible with Siemens Miltronics Hydorranger Level Transmitter:
 - 1. Transducer to be provided with enough cabling to be routed continuously from transducer to existing transmitter inside Main control cabinet via Isolation pedestal.
 - 2. Transducer shall have a 6° beam angle.

PART 3 EXECUTION

3.1 INSTALLATION

- A. REQUIREMENTS: Section 40 61 13.
- B. Install the transducer in accordance with manufacturer's specifications and instructions.
- C. Ensure proper installation of the transducer so as to not result in false reading due to obstructions in the wet well.

- D. Mount sensor inside of wet well as shown on the drawings.
- E. Re-calibrate transmitter for new transducer and adjust setpoints as required.

3.2 TESTING

- A. Ensure proper operation of the level transducer by comparing physical measurement to level readout on the transmitter.
- B. Verify proper system operation for the following setpoints:
 - 1. Pump 1 Call
 - 2. Pump 2 Call
 - 3. Lag Counter
 - 4. Low Level
 - 5. High Level
- C. Coordinate with the City for verifying level measurement reading with the existing City SCADA.

END OF SECTION

SECTION 40 72 76 – LEVEL SWITCHES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Scope
2. Reference Standards
3. Quality Assurance
4. Submittals
5. Product Requirements
6. Installation
7. Testing

1.2 SCOPE

- A. This Section specifies requirements for supply and installation of wetwell high level sensing device as shown on the contract drawings.

1.3 REFERENCE STANDARDS

- A. ASTM – American Society for Testing and Materials
B. NEMA – National Electrical Manufacturer's Association
C. NEC – National Electrical Code

1.4 QUALITY ASSURANCE

- A. REQUIREMENTS: Section 40 61 13 Process Control System General Provisions
- B. The manufacturer shall warranty the above specified equipment for twelve months from equipment start-up or eighteen months from date of shipment, whichever occurs first, to be free from defects in design workmanship or materials.

1.5 SUBMITTALS

- A. PROCEDURES: Section 40 61 13 and Submittals to comply with requirements of the City of Lacey Section D: Special Provisions
- B. SUBMITTAL ITEMS FOR THIS SECTION:
1. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the noting of some errors, but the overlooking of others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures, the

requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.

2. Where submitted items deviate from specification requirements, a list of any specification sections that are not being met by the submitted item must be provided. The list is to be organized by specification section and paragraph and shall list the product requirement and in what way submitted item does not comply with the requirement. A detailed written explanation of the reasons for requesting the deviation must also be included.
 - a. The Owner shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance with the specifications.
 - b. Failure to include a list of the specification section deviations along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration
 3. Include product data sheets of equipment, devices, and materials requested by the individual specification sections.
 - a. Catalog information shall include technical specifications and application information, including ratings, range, weight, accuracy, etc.
 - b. Catalog cuts shall be edited to show only the items, model numbers, and information which are applicable and crossing out all inapplicable information.
 - c. Submittals are to be made electronically in PDF format, the PDF shall be organized by specification section and linked to an index. The PDF shall be searchable. Submittals that are not submitted in the format outlined may be rejected outright and the Contractor is required to resubmit in the correct format.
- C. Manufacturer's installation instructions.
- D. Operation and Maintenance Manual if applicable.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Level Switches (See drawings for specific model)
 1. Roto-Float
- B. Mounting Bracket (See drawings for specific model)
 1. Anchor Scientific

2.2 GENERAL

- A. Float switches shall be provided where indicated, specified, or required to meet the functional requirements of the System, as specified.
- B. Unit shall be suspended type, and provided with length of cable required to reach Isolation pedestal panel without splicing. Contractor to verify length of cable required for float switch before ordering.
- C. Float switches shall be provided with necessary brackets and clamps to suspend the unit as shown on the contract drawings. The suspended type shall include an integral weight assembly for stabilization and positive operation of the unit.

2.3 FEATURES

- A. Direct-acting float type consisting of a mechanically activated (mercury) SPST switch enclosed in a float and connected to a multi-conductor combination support and signal cable. The entire assembly shall form a completely watertight and impact-resistant unit.
- B. Chemical-resistant polypropylene or other corrosion-resistant float material suitable for use in water and wastewater applications.
- C. Cable shall be rugged and flexible with heavy neoprene or PVC jacket.
- D. The suspended type shall include an integral weight assembly for stabilization and positive operation of the unit.
- E. Actuation/deactivation differential shall be 1 inch minimum.

2.4 ELECTRICAL REQUIREMENTS

- A. Switch shall be SPST, Normally Open, rated at 4.5 amps (minimum) at 120 VAC.
- B. The cable shall be UL listed PVC Type STO with 18 AWG, 600V rated conductors.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install all components in accordance with manufactures specifications and instructions.
- B. Install float switch as shown on the contract drawings.

3.2 TESTING

- A. Ensure proper actuation of the level switch by tilting of the float between its activation and de-activation points.
- B. Verify control circuit engages upon float actuation and system operates appropriately.

- C. Testing for level switch shall also comply with the City's Lift Station Pump Startup Check List.

END OF SECTION

SECTION 40 78 53 – RELAYS AND TERMINAL BLOCKS

PART 1 GENERAL

1.1 SUMMARY

- A. Section includes:
 - 1. Scope
 - 2. Quality Assurance.
 - 3. Reference Standards
 - 4. Submittals.
 - 5. Performance Requirements.
 - 6. Products.
 - 7. Installation.
 - 8. Testing.

1.2 SCOPE

- A. This section specifies requirements for Auxiliary Relays used for control signal isolation and Terminal Blocks used for control conductor termination installed in control panels.

1.3 REFERENCE STANDARDS

- A. ASTM – American Society for Testing and Materials
- B. NEMA – National Electrical Manufacturer’s Association
- C. NEC – National Electrical Code
- D. NFPA No. 70, NEC - National Electrical Code
- E. NFPA No. 79, Electrical Standard for Industrial Machinery.
- F. ICS-1 – General Standards for Industrial Control and System
- G. ICS-2 – Standards for Industrial Control Devices, Controllers and
- H. ICS-3 – Industrial Systems.
- I. UL – Underwriter’s Laboratory UL (Note: Other Nationally Recognized Testing Laboratories [NRTL], such as ETL, may be used in lieu of UL.)
 - 1. Standard 508 (Industrial Control Panels for General Use).
 - 2. Standard 698 (Industrial Control Panels Relating to Hazardous (Classified) Locations)
 - 3. Standard 913 (Intrinsically Safe Apparatus and Associated Apparatus for Use in Class I, II, and III, Division 1, Hazardous (Classified) Locations)

- J. NETA – National Electrical Testing Association.

1.4 QUALITY ASSURANCE

- A. REQUIREMENTS: Section 40 61 13 Process Control System General Provisions.
- B. The manufacturer shall warranty the above specified equipment for twelve months from equipment start-up or eighteen months from date of shipment, whichever occurs first, to be free from defects in design workmanship or materials.

1.5 SUBMITTALS

- A. PROCEDURES: Submittals to comply with requirements of the City of Lacey Section D: Special Provisions
- B. SUBMITTAL ITEMS FOR THIS SECTION:
 - 1. Review of Shop Drawings and Brochures shall not relieve the Contractor of responsibility for dimensions and/or errors that may be contained therein, or deviations from Contract Document requirements. It shall be clearly understood that the noting of some errors, but the overlooking of others does not grant the Contractor permission to proceed in error. Regardless of any information contained in the Shop Drawings and Brochures, the requirements of the Contract Documents shall govern and are not waived or superseded in any way by the review of the Shop Drawings and Brochures.
 - 2. Where submitted items deviate from specification requirements, a list of any specification sections that are not being met by the submitted item must be provided. The list is to be organized by specification section and paragraph and shall list the product requirement and in what way submitted item does not comply with the requirement. A detailed written explanation of the reasons for requesting the deviation must also be included.
 - a. The Owner shall be the final authority for determining acceptability of requested deviations. The remaining portions of the paragraph not underlined will signify compliance with the specifications.
 - b. Failure to include a list of the specification section deviations along with justification(s) for any requested deviations to the specification requirements, with the submittal shall be sufficient cause for rejection of the entire submittal with no further consideration
 - 3. Include product data sheets of equipment, devices, and materials requested by the individual specification sections.
 - a. Catalog information shall include technical specifications and application information, including ratings, range, weight, accuracy, etc.
 - b. Catalog cuts shall be edited to show only the items, model numbers, and information which are applicable and crossing out all inapplicable information.

- c. Submittals are to be made electronically in PDF format, the PDF shall be organized by specification section and linked to an index. The PDF shall be searchable. Submittals that are not submitted in the format outlined may be rejected outright and the Contractor is required to resubmit in the correct format.

- 4. Manufacturer's installation instructions, including mounting requirements.
- 5. Operation and maintenance information.
- 6. Warranty information.

1.6 PERFORMANCE REQUIREMENTS

A. RELAYS:

- 1. Relays provided shall be compatible with pump manufacturer's moisture and thermal sensors. They shall include moisture and thermal fault indication, reset function, and have form 'C' or similar contacts for control wiring.
- 2. All relays are to be provided with Din-rail mountable bases.

B. TERMINAL BLOCKS:

- 1. Terminal block shall be rated for the voltage, amperage, and conductor size for the application requirements.
- 2. Terminal blocks shall be Din-rail mountable.

PART 2 PRODUCTS

2.1 RELAY CANDIDATE MANUFACTURERS

A. Submersible Pump Seal Fail/Overtemp Relay

- 1. Flygt Din-Rail mountable MiniCAS II

2.2 TERMINAL BLOCKS

A. GENERAL:

- 1. Terminal Blocks for all contractor supplied equipment and devices shall be manufactured by Sprecher Schuh, Allen Bradley, Phoenix Contact.
 - a. Sprecher Schuh V7-W series preferable.
- 2. Unless otherwise specified, terminal blocks shall be screw type. Terminals shall be provided with integral marking strips which shall be permanently identified with the connecting wire numbers as shown on the drawings. Terminal blocks for P-circuits (power 120-600 volts) shall be rated not less than the conductor current rating and shall not be rated less than

600 volts AC. Terminal blocks for C-circuits (control and/or control power 120 volts or less) and S-circuits (signal) shall be rated not less than 20 amperes and shall not be rated less than 600 volts AC. Terminals shall be tin-plated. Insulating material shall be nylon.

3. Provide terminals for all wire connections to field wiring and internal power distribution.
4. Connections shall have screw terminals capable of terminating 2 #10 AWG stranded wires. Terminals shall be DIN rail strip mounted. Provide number strips for terminal blocks that are referenced by the wire marker. Provide bridge bars for jumpering between terminal blocks. Provide end clamps to separate and terminate terminal block groups. Provide end covers for groups of terminal blocks in sets to match the number points associated with individual I/O cards in the PLC block.
5. Provide Separation Plates on each side of terminals that are at a different potential or polarity than surrounding terminals.
6. Terminals shall be mounted such that there is a minimum of 1.5 inches of clear space on both sides of the terminal; for ease of wiring.
7. Provide 10 spare terminals or 5% whichever is the greater amount, spare (non-installed) replacement terminals for each type used.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install in accordance with manufacturer's instructions for the specified functional requirements.

3.2 TESTING

- A. Relays shall be tested in accordance with the requirements of the manufacturer's recommendations. Field calibration shall be conducted by the Facilities Integrator.
- B. In addition, the units shall be operationally tested in conjunction with the Site Acceptance Test of the complete system of Instrumentation and Controls for the completed system.

END OF SECTION

SECTION 43 21 00 - PUMPS, GENERAL

PART 1 GENERAL

1.1 SUMMARY

- A. The provisions of this Section shall apply to all pumps and pumping equipment except where otherwise indicated.
- B. Where two or more pump systems of the same type or size are required, the pumps shall all be produced by the same manufacturer.
- C. Contractor shall provide all labor, equipment and materials and perform all operations in connection with the installation and testing of pumps. This work shall also include all assistance for installation, start-up and testing services to be provided by the Pump Supplier.
- D. All work performed under this section shall be in accordance with all approved trade practices and manufacturer's recommendations.
- E. Related Specification Sections include, but are not necessarily limited to:
 - 1. Section D – Special Provisions
 - 2. Section 43 21 39 – Submersible Sewage Pumps

1.2 SUBMITTALS

- A. Submittals shall be furnished in accordance with Section D 1-06.
- B. Shop Drawings shall contain the following information:
 - 1. Pump name, identification number and specification Section number.
 - 2. Performance data curves showing head, capacity, horsepower demand, NPSH required and pump efficiency over the entire operating range of the pump. The pump manufacturer shall indicate separately the head, capacity, horsepower demand, overall efficiency and minimum submergence required at the design flow conditions and the maximum and minimum flow conditions.
 - 3. The limits on the performance curves recommended for stable operation without surge, cavitation or excessive vibration.
 - 4. Assembly and installation drawings including shaft size, seal, coupling, bearings, anchor bolt plan, part nomenclature, material list, outline dimensions, and shipping weights.
- C. Complete motor nameplate data as defined by NEMA, motor manufacturer and any motor modifications.
- D. Operation and Maintenance Manual containing the required information for each pump section.
- E. A spare parts list containing the required information for each pump section.

- F. Signed, dated and certified factory test data for each pump system which requires factory testing submitted before shipment of equipment.
- G. Certifications
 - 1. Manufacturer's written certification of proper installation
 - 2. Contractor's written certification of satisfactory field testing

PART 2 PRODUCTS

2.1 GENERAL

- A. Materials and equipment shall be standard products of a manufacturer and distributor regularly engaged in the manufacture and distribution of such products for at least two (2) years and shall be suitable for the service intended (pumping of unscreened, raw sewage). All materials and equipment shall be new and unused except for the testing specified herein.
- B. Compliance with the requirements of the individual pump sections may necessitate modifications to the manufacturer's standard equipment.
- C. All centrifugal pumps shall have a continuously rising performance curve. In no case shall the required horsepower at any point on the performance curve exceed the rated horsepower of the motor or encroach on the service factor.
- D. All components of each pump system provided under the pump sections shall be entirely compatible. Each unit of pumping equipment shall incorporate all basic mechanisms, couplings, electric motors or engine drives, variable speed controls, necessary mountings and appurtenances.
- E. The pumps shall be supplied by a distributor authorized to service them throughout the warranty period and beyond. The distributor shall be located within a 100-mile radius of the site.
- F. The pumps shall be warranted by the manufacturer for a minimum of two (2) years from the date of final acceptance.

2.2 MATERIALS

- A. All materials shall be suitable for the intended application; materials not specified shall be high-grade, standard commercial quality, free from all defects and imperfection that might affect the serviceability of the product for the purpose for which it is intended, and shall conform to the following requirements:
 - 1. Cast iron pump casings and bowls shall be of close-grained gray cast iron, conforming to ASTM A48 - Gray Iron Casings, Class 30, or equal.
 - 2. Stainless steel pump shafts shall be Type 416 or 316. Miscellaneous stainless steel shall be of Type 316, except in a septic environment.
 - 3. All anchor bolts, washers, and nuts shall be Type 316 stainless steel.

2.3 PUMP COMPONENTS, GENERAL

- A. Flanges -- Suction and discharge flanges shall conform to ANSI/ASME B16.1 - Cast Iron Pipe Flanges and Flanged Fittings, Class 12, 125, 250, and 800 or B16.5 - Flanges and Flanged Fittings dimensions.

2.4 PUMP APPURTENANCES

- A. Nameplates -- Each pump shall be equipped with a stainless steel nameplate indicating serial numbers, rated head and flow, impeller size, pump speed and Manufacturer's name and model number.

2.5 FACTORY TESTING

The following tests shall be conducted on each indicated pump system:

- A. Pump Systems -- All submersible pump systems shall be tested at the pump factory in accordance with the American National Standard for Rotodynamic Pump Tests (ANSI/HI 14.6) or the American National Standard for Rotodynamic Submersible Pumps for Mechanical and Electrical Tests (ANSI/HI 11.6) as approved by ANSI and published by the Hydraulic Institute. Tests shall be performed using the complete pump system to be furnished, including the motor. The following minimum test data shall be submitted:
 - 1. Hydrostatic test data.
 - 2. Performance test data, including a minimum of five hydraulic test readings between shutoff head and 25 percent beyond the maximum indicated capacity, recorded on data sheets as defined by the Hydraulic Institute.
 - 3. Pump test curves showing head, flowrate, bhp, and efficiency. Acceptance level shall be Grade 1B as defined by HI. Pump test curves not meeting HI Grade 1B standards may be considered, provided that sufficient justification for the deviation (ie. low tolerances incurred by low flow and/or head conditions) and the actual HI Acceptance Grade is demonstrated to the Engineer.
 - 4. Leakage test results.
 - 5. Certification that the pump horsepower demand did not exceed the rated motor hp beyond the 1.0 service rating at any point on the curve.
 - 6. Certification statement that no critical speeds occur within the operational range of the pump.
- B. Acceptance -- In the event of failure of any pump to meet any of the requirements, the pump manufacturer shall make all necessary modifications, repairs or replacements to conform to the requirements of the Contract Documents and the pump shall be retested at no additional cost to the Owner until found satisfactory.

PART 3 EXECUTION

3.1 SERVICES OF MANUFACTURER

- A. 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:
 - 1. Installation of the equipment
 - 2. Inspection, checking and adjusting the equipment
 - 3. Startup and field testing for proper operation
 - 4. Performing field adjustments to ensure that the equipment installation and operation comply with requirements

3.2 INSTALLATION

- A. General -- Install and align pumps and fittings in accordance with the manufacturer's printed specifications and at the locations as shown on the Plans. Furnish and install anchor bolts recommended by the manufacturer. Place the pumps using equipment templates.
- B. Anchors for the unit shall be set in concrete, and the unit shall be mounted as instructed by the manufacturer. Anchors shall be drilled and set with epoxy. Contractor shall provide Engineer notice 24 hours in advance of installing base elbows, to allow for anchor bolt inspection. The manufacturer shall supervise installation to ensure that the unit is properly aligned and leveled, that all electrical and piping connections are properly made and that lubricants have been provided and installed.
- C. Alignment -- All equipment shall be field tested to verify proper alignment, operation as specified and freedom from binding, scraping, vibration, shaft runout or other defects. Pump drive shafts shall be measured just prior to assembly to ensure correct alignment without forcing. Equipment shall be secure in position and neat in appearance.
- D. Lubricants -- The Contractor shall provide the necessary oil and grease for initial operation.

3.3 FIELD TESTS

- A. Each pump system shall be field tested after installation to demonstrate satisfactory operation without excessive noise, vibration, and cavitation or overheating of bearings.
- B. The following field testing shall be conducted:
 - 1. Startup, check and operate the pump system over its entire speed range. Where vibration analysis and measurement is required, it shall be within the amplitude limits specified and recommended by the Hydraulic Institute Standards at a minimum of four pumping conditions defined by the Engineer.
 - 2. Obtain concurrent readings of motor voltage, amperage, pump suction head and pump discharge head for at least four pumping conditions at each pump rotational speed, including shut-off head. Check each power lead to the motor for proper current balance.

Obtain discharge pressure gauge readings and flow meter readings for each pumping condition. Record field test readings on City-approved form furnished by the Engineer. Acceptance testing shall include a comparison of measured installed flow and head, including shutoff head, with the manufacturer's curve value. Any discrepancy shall be resolved prior to acceptance by the Owner.

3. Submersible Pump Lift Test - Lift each submersible pump above the access hatch and then lower the pump back down onto the discharge elbow to demonstrate adequate clearances, smooth operation of the guide rail system, and proper re-seating of the pump on the discharge elbow.
 4. Electrical and instrumentation tests shall conform to the requirements of the Section under which that equipment is specified.
- C. Field testing will be witnessed by the Engineer. The Contractor shall furnish three days' advance notice of field testing.
- D. In the event any pumping system fails to meet the test requirements, it shall be modified and retested as above until it satisfies the requirements.
- E. After each pumping system has satisfied the requirements, the Contractor shall certify in writing that it has been satisfactorily tested and that all final adjustments have been made. Certification shall include the date of the field tests, a listing of all persons present during the tests and the test data.
- F. The Contractor shall bear all costs of field tests, including related services of the manufacturer's representative. If available, the Owner's operating personnel will provide assistance in field testing.

END OF SECTION

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SECTION 43 21 39 - SUBMERSIBLE SEWAGE PUMPS

PART 1 GENERAL

1.1 DESCRIPTION

Work covered in this Section includes furnishing, start-up, testing, and operation training for submersible sewage pumps as required for this project. Specified appurtenances, such as rails, brackets, discharge elbows, and control/power cables shall also be included. Like items of equipment specified herein shall be the end product of one manufacturer. Electrical controls and motor design requirements are specified in this section and the electrical section of these specifications. The Contractor shall be responsible for coordinating the pump requirements with the pump drive manufacturer and shall be responsible for the overall pump and drive performance.

1.2 SUBMITTALS

- A. Submittals during construction shall be made in accordance with Section D 1-06, and Section 43 21 00 Pumps, General.
- B. Submittals for Record - The pump supplier shall submit a manufacturer's installation and operation certificate and a statement that the equipment is suitable for the intended use.

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

Pumps shall meet the requirements of Section 43 21 00, Pumps, General and the latest version of the Hydraulic Institute Standards for Submersible Pumps, except where modified herein.

1.4 FACTORY TESTING

Pump manufacturer shall provide factory tests in accordance with Section 43 21 00 Pumps, General. All test results shall be certified to be acceptable per the testing standards, and shall be submitted to and approved by Engineer prior to shipment of equipment.

PART 2 PRODUCTS

2.1 DESCRIPTION

A. Identification:

Location	Lift Station 34	Lift Station 37
Pump Label(s)	Pump 1, Pump 2	Pump 1, Pump 2
Quantity	2	2

B. Power and Motor Requirements:

	Lift Station 34	Lift Station 37
Voltage	208 V	460 V
Phase	3	3
Frequency	60 Hz	60 Hz
Motor Speed	3500 rpm	1755 rpm

	Lift Station 34	Lift Station 37
Motor Horsepower	17 HP	34 HP
Efficiency Class	Premium Efficiency	Premium Efficiency

C. Lift Station 34 Performance Requirements, One Pump Running:

	Primary Duty Point	Secondary Duty Point
Duty Point Minimum Flow Capacity	220 gpm	330 gpm
Duty Point Total Dynamic Head	116 feet	93 feet
Static Head	93 feet	45 feet
Shut-off Head Minimum	171 feet	
Duty Point Minimum Pump Efficiency	46%	56%
Maximum NPSH required at Duty Point	14 feet	15 feet

D. Lift Station 37 Performance Requirements, One Pump Running:

Duty Point Minimum Flow Capacity	950 gpm
Duty Point Total Dynamic Head	81 feet
Static Head	39 feet
Shut-off Head Minimum	139 feet
Duty Point Minimum Pump Efficiency	75%
Maximum NPSH required at Duty Point	18 feet

E. Operating Conditions:

Duty	Continuous
Starter – LS34	Across-the-Line Contactor
Starter – LS37	Soft Start
Ambient Environment	Wet Well - Corrosive
Ambient Temperature	33° - 104° F
Fluid Service	Municipal wastewater, raw and unscreened, containing rags, grit, fats, oil, and debris.
Fluid Temperature	50° - 90° F
Fluid pH Range	6.0 to 8.0
Fluid Specific Gravity	1.0
Net Positive Suction Head Available	33 feet

F. Solids Passing: Pumps shall all be capable of passing solids and fibrous material commonly found in raw wastewater. 3-inch solids passing is desired. However, if 3-inch solids passing is not available, manufacturer may alternatively offer a minimum 1-year no-clog guarantee that offers clear reimbursement for all costs associated with unclogging the pump, including staff time, as well as costs associated with damages resulting from a spill, if applicable.

G. Pumping System Dimensions:

Discharge Flange Rating (ANSI)	Class 125
Minimum Submersible Cable Length	As Required

H. Other Requirements

1. The head-capacity curve shall exhibit a uniformly rising characteristic from free discharge to shutoff. The pump motor shall be non-overloading throughout the entire pump curve.
2. The entire pump assembly shall be U.L. approved as Explosion Proof for operation in a Class 1, Division 1, Group D hazardous location.

2.2 PUMP CONSTRUCTION

- A. General - The pump shall be heavy-duty vertical, submersible with integral drive motor, single suction, centrifugal, sewage type, suitable for a permanent-type wet well installation.
- B. Pump – The pump shall be supplied with a mating cast iron discharge connection. The pumps shall be automatically and firmly connected to the discharge connection, guided by no less than two guide rails extending from the top of the station to the discharge connection. There shall be no need for personnel to enter the wet well. Sealing of the pumping unit to the discharge connection shall be accomplished by a machined metal to metal watertight contact. Sealing of the discharge interface with a diaphragm, O-ring or profile gasket will not be acceptable. Rectangular cross sectioned gaskets requiring specific torque limits to achieve compression shall not be considered as adequate or equal. No secondary sealing compounds, elliptical O-rings, grease or other devices shall be used. No portion of the pump shall bear directly on the sump floor. All exposed nuts or bolts shall be AISI type 316 stainless steel construction.
- C. Impeller - The impeller shall meet ASTM A-532 (Alloy III A) 25% chrome cast iron, dynamically balanced, semi-open, multi-vane, back swept, screw-shaped, non-clog design. The impeller leading edges shall be mechanically self-cleaned automatically upon each rotation as they pass across a spiral groove located on the volute suction. The leading edges of the impeller shall be hardened to Rc 60 and shall be capable of handling solids, fibrous materials, heavy sludge and other matter normally found in wastewater. The screw shape of the impeller inlet shall provide an inducing effect for the handling of up to 5% sludge and rag-laden wastewater. The impeller to volute clearance shall be readily adjustable by the means of a single trim screw. The impeller shall be locked to the shaft, held by an impeller bolt and shall be coated with alkyl resin primer.
- D. Volute - The pump volute shall be a single piece grey cast iron, ASTM A-48, Class 35B, non-concentric design with smooth passages of sufficient size to pass any solids that may enter the impeller. Minimum inlet and discharge size shall be as specified. The volute shall have a replaceable suction cover insert ring in which are cast spiral-shaped, sharp-edged groove(s). The spiral groove(s) shall provide trash release pathways and sharp edge(s) across which each impeller vane leading edge shall cross during rotation so to remain unobstructed. The insert ring shall be cast of Hard-Iron™ (ASTM A-532 (Alloy III A) 25% chrome cast iron) and provide effective sealing between the multi-vane semi-open impeller and the volute housing. The pump volute shall be coated with Metalclad Ceramalloy CP+AC manufactured by ENECON Corporation.

- E. Shaft - Pump and motor shaft shall be the same unit. The pump shaft is an extension of the motor shaft. Couplings shall not be acceptable. The shaft shall be stainless steel – ASTM A479 S43100-T. If a shaft material of lower quality than stainless steel – ASTM A479 S43100-T is used, a shaft sleeve of stainless steel – ASTM A479 S43100-T is used to protect the shaft material. However, shaft sleeves only protect the shaft around the lower mechanical seal. No protection is provided in the oil housing and above. Therefore, the use of stainless steel sleeves will not be considered equal to stainless steel shafts.
- F. Bearings -The pump shaft shall rotate on two bearings. Motor bearings shall be permanently grease lubricated. The upper bearing shall be a single deep groove ball bearing. The lower bearing shall be a two row angular contact bearing to compensate for axial thrust and radial forces. Single row lower bearings are not acceptable. The minimum L10 bearing life shall be 50,000 hours at any usable portion of the pump curve.
- G. Mechanical Seal - Each pump shall be provided with a tandem mechanical shaft seal system consisting of two totally independent seal assemblies. The seals shall operate in a lubricant reservoir that hydro-dynamically lubricates the lapped seal faces at a constant rate. The lower, primary seal unit, located between the pump and the lubricant chamber, shall contain one stationary and one positively driven rotating, corrosion and abrasion resistant tungsten-carbide ring. The upper, secondary seal unit, located between the lubricant chamber and the motor housing, shall contain one stationary and one positively driven rotating, corrosion and abrasion resistant tungsten-carbide seal ring.

Each seal interface shall be held in contact by its own spring system. The seals shall require neither maintenance nor adjustment nor depend on direction of rotation for sealing. The position of both mechanical seals shall depend on the shaft. Mounting of the lower mechanical seal on the impeller hub will not be acceptable. For special applications, other seal face materials shall be available.

The following seal types shall not be considered acceptable or equal to the dual independent seal specified: shaft seals without positively driven rotating members, or conventional double mechanical seals containing either a common single or double spring acting between the upper and lower seal faces. No system requiring a pressure differential to offset pressure and to effect sealing shall be used.

Each pump shall be provided with a lubricant chamber for the shaft sealing system. The lubricant chamber shall be designed to prevent overfilling and to provide lubricant expansion capacity. The drain and inspection plug, with positive anti-leak seal shall be easily accessible from the outside. The seal system shall not rely upon the pumped media for lubrication. The motor shall be able to operate dry without damage while pumping under load.

Where a seal cavity is present in the seal chamber, the area about the exterior of the lower mechanical seal in the cast iron housing shall have cast in an integral concentric spiral groove. This groove shall protect the seals by causing abrasive particulate entering the seal cavity to be forced out away from the seal due to centrifugal action.

- H. Seal lubricant shall be FDA Approved, nontoxic. The motor shall be able to operate continuously while non-submerged without damage while pumping under load. Seal lubricant shall be FDA approved and nontoxic.

- I. Cooling System-Motors shall be sufficiently cooled by the surrounding environment or pumped media without the need for a water jacket.
- J. Pump Discharge Elbow - The pump discharge connection shall be the elbow type. The discharge connection shall be bolted to the structure as recommended by the manufacturer and shall serve as a lower attachment for the guide rails, and as anchorage for the pump. The anchorage system shall be designed to transmit all forces safely to the structure, and may incorporate intermediate supports as required. Calculations and supporting documentation justifying the support design may be requested, and shall be provided with the submittals. The design shall be non-sparking and shall conform to UL requirements for installation in a Class 1, Division 1, Group D hazardous location. When in place, the discharge connection shall cause a watertight seal between the pump and the discharge elbow, accomplished by a machined metal to metal contact only, using simple linear downward motion of the pump with the entire weight of the pumping unit guided to and pressing tightly against the discharge connections. Sealing of the discharge interface with a diaphragm, O-ring, or profile gasket shall not be acceptable. No portion of the pump shall bear directly on the floor of the wet well and no rotary motion of the pump shall be required for sealing.
- K. Dual Rail Guide System - The pump shall be provided with a dual rail guide system to automatically and firmly connect the pump to the discharge piping when lowered into place on the discharge elbow. Once the pump has been positioned on its support fitting at the discharge elbow, the guide rail system shall not be required for pump support. The guide rail system shall allow easy removal of the pump without entering the wet well or disturbing the discharge piping. Single rail systems are not acceptable. All components of the guide system and pump anchorage shall be of stainless steel 316. Rails shall each be 2-inch diameter.
- L. Lifting Device – Pump shall not have a lifting cable or chain. Manufacturer shall replace the standard metal lifting strap with a 316 stainless steel strap secured with 316 stainless steel hardware that extends at least 12 inches from the top of the pump and sized/anchored to support the entire weight of the pump when lifted/lowered by the stainless steel strap.

2.3 MOTORS

- A. General - Each pump shall be provided with a vertically mounted standard efficient electric motor that conforms to the following requirements. Motors shall be designed to accept the total, unbalanced thrusts imposed by the pump. Motor horsepower shall be sufficient so that the pump is non-overloading throughout its entire performance curve, from shut-off to run-out. The motor and the pump shall be produced by the same manufacturer. The motor shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.
- B. The pump motor shall be a NEMA B design, induction type with a squirrel cage rotor, shell type design, housed in an air filled, watertight chamber. The stator windings shall be insulated with moisture resistant Class H insulation rated for 180°C (356°F). The stator shall be insulated by the trickle impregnation method using Class H monomer-free polyester resin resulting in a winding fill factor of at least 95%. The motor shall be inverter duty rated in accordance with NEMA MG1, Part 31. The stator shall be heat-shrink fitted into the cast iron stator housing. The use of multiple step dip and bake-type stator insulation process is not acceptable. The use of bolts, pins or other fastening devices requiring penetration of the stator housing is not

acceptable. The motor shall be designed for continuous duty handling pumped media of 40°C (104°F) and capable of no less than 30 evenly spaced starts per hour. The rotor bars and short circuit rings shall be made of cast aluminum. Thermal switches set to open at 125°C (260°F) shall be embedded in the stator end coils to monitor the temperature of each phase winding. These thermal switches shall be used in conjunction with and supplemental to external motor overload protection and shall be connected to the control panel. The junction chamber containing the terminal board, shall be hermetically sealed from the motor by an elastomer compression seal. Connection between the cable conductors and stator leads shall be made with threaded compression type binding posts permanently affixed to a terminal board. The motor and the pump shall be produced by the same manufacturer.

- C. Service Factors - The motor service factor (combined effect of voltage, frequency and specific gravity) shall be 1.15. The motor shall have a voltage tolerance of +/- 10%. The motor shall be designed for continuous operation in up to a 40°C ambient and shall have a NEMA Class B maximum operating temperature rise of 80°C. A motor performance chart shall be provided upon request exhibiting curves for motor torque, current, power factor, input/output kW and efficiency. The chart shall also include data on motor starting and no-load characteristics.
- D. Power Cable- The power cable shall be sized according to the NEC and ICEA standards and shall be of sufficient length to reach the junction box without the need of any splices. The power cable shall be of a shielded design in which an overall tinned copper shield is included and each individual phase conductor is shielded with an aluminum coated foil wrap. The outer jacket of the cable shall be oil resistant chlorinated polyethylene rubber. The cable shall be capable of continuous submergence underwater without loss of watertight integrity to a depth of 65 feet or greater.
- E. Cable Entry Seal - The cable entry seal design shall preclude specific torque requirements to insure a watertight and submersible seal. The cable entry shall consist of dual cylindrical elastomer grommets, flanked by washers, all having a close tolerance fit against the cable outside diameter and the entry inside diameter. The grommets shall be compressed by the cable entry unit, thus providing a strain relief function. The assembly shall provide ease of changing the cable when necessary using the same entry seal. The cable entry junction chamber and motor shall be sealed from each other, which shall isolate the stator housing from foreign material gaining access through the pump top. Epoxies, silicones, or other secondary sealing systems shall not be considered equal.

2.4 PROTECTION

- A. Each motor stator shall incorporate three thermal switches, one per stator phases winding and be connected in series, to monitor the temperature of the motor. Should the thermal switches open, the motor shall stop and activate an alarm.
- B. A float switch shall be installed in the seal leakage chamber and will activate if leakage into the chamber reaches 50% chamber capacity, signaling the need to schedule an inspection.
- C. The thermal switches and float switch shall be connected to a monitoring system that shall be designed to be mounted in any control panel.
- D. Mini-CAS Relays: Each pump shall be protected by a solid-state relay to monitor motor winding temperature and seal leakage. The relays shall be wired to prevent motor operation when an

alarm condition is present. The relays shall have and 11 pin octal base and shall be flanged for mounting on the inner door. The relay shall be powered by 24VAC, 28VDC or 120VAC supply. LED indicators shall be provided on the relay for power on, overtemp and seal fail conditions. An overtemp reset push button shall be mounted on the relay. The sensor input circuitry shall contain both hardware and software filters to provide noise immunity, as well as sensor input short circuit protection. The relay shall be Mini-CAS. Pump shall be shut down and alarm upon overtemp indication. Pump shall only alarm upon moisture indication.

2.5 SPARE PARTS

The following spare parts shall be provided:

One re-build kit including: one spare insert ring, one spare impeller coated with Metalclad Ceramalloy CP+AC manufactured by ENECON Corporation, impeller bolt, one set of mechanical seals, one set of O-rings.

2.6 NOT USED

2.7 PUMP MANUFACTURER

Acceptable submersible sewage pump and fabricated pump basin insert manufacturer shall be Xylem Water Solutions. Acceptable model for Lift Station 34 shall be Flygt NP-3153 SH 3 ~276 158mm impeller with premium efficiency motor. Acceptable model for Lift Station 37 shall be Flygt NP-3171 HT 3 ~454 270mm impeller with premium efficiency motor.

PART 3 EXECUTION

3.1 INSPECTION

Inspect pumps and fittings before installation to verify quality of material.

3.2 INSTALLATION

- A. Install and align pumps and fittings in accordance with the manufacturer's printed specifications and at the locations shown on the Plans. Use anchor bolts furnished or recommended by the manufacturer. Place the pumps using equipment templates.
- B. Anchors for the unit shall be set in the concrete, and the unit shall be mounted as instructed by the manufacturer. Anchors shall be drilled and set with epoxy. Contractor shall provide Engineer 24 hours notice prior to installing base elbows, to allow for anchor bolt inspection. The manufacturer shall supervise installation to ensure that the unit is properly aligned and leveled; that all electrical and piping connections are properly made; and that lubricants have been provided and installed.

3.3 INSPECTION AND START-UP

- A. The Contractor shall furnish a representative of the manufacturer to perform inspection, start-up and training services. The manufacturer's representative shall be experienced in the operation and maintenance of the equipment and shall instruct the Owner's personnel in the operation and maintenance of the equipment, including step-by-step troubleshooting with

necessary test equipment. The representative shall check the installation and supervise initial start-up of the equipment, and shall perform, at a minimum, the following tests on each pump:

1. Measure and record shutoff head and power draw at shutoff head.
 2. Measure and record actual operating head and power draw at actual operating head.
 3. Measure and record operating head and power draw at two separate partially throttled flow rates.
 4. Measure and record static head.
 5. Duplicate all normal operating modes and all failure modes, including the removal and installation of pumps from the wet well using the guide rail system.
- B. The Contractor shall furnish a representative of the manufacturer to perform inspection, start-up and training services for the pump control system. The manufacturer's representative shall be experienced in the operation and maintenance of the equipment and shall instruct the Owner's personnel in the operation and maintenance of the equipment, including step-by-step troubleshooting with necessary test equipment. The representative shall check the installation and supervise initial start-up of the equipment.
- C. Contractor shall verify that the pumps are operating at the design duty condition, and shall remove and replace units that do not meet the design operating criteria.
- D. For all pump tests, ensure that the force main is full of liquid during the testing. The Contractor shall provide the necessary water and other materials required for the testing as defined herein and recommended by the manufacturer.
- E. The manufacturer's representative shall provide written certification that the installation is correct and that the equipment has operated satisfactorily, verifying the complete assembly for proper alignment and connection, and quiet operation. This service shall be provided for a minimum period of one trip and one day. After the installation and operation of the equipment has been certified, the manufacturer's representative shall train the Owner's personnel in the proper operation and maintenance of the equipment. The Owner may videotape the training.
- F. A start-up report, acceptable to and approved by the Engineer, shall be completed by the manufacturer's representative before final acceptance of the pumps.

3.4 FIELD QUALITY CONTROL

- A. Provide manufacturer's certifications verifying proper installation and operation of the pumps and pump assemblies.
- B. Replace pumps and assemblies that fail testing or are otherwise damaged at no additional cost to the Owner.
- C. The Contractor shall bear all costs of field tests, including related services of the manufacturer's representative.

END OF SECTION

F PREVAILING WAGES

PREVAILING WAGE RATES

The following wage rates are in effect for this project.

**State of Washington
Department of Labor and Industries
Washington State Prevailing Wage Rates For Public Works Contracts**

Thurston County Rates For All Trades

**Effective: June 8, 2023 including any correction notices issued
by Labor and Industries prior to bid.**

Wage Rates and the Benefit Code Key may be found at:
<https://secure.lni.wa.gov/wagelookup/>

Supplemental to State Wage Rates may be found at:
<http://www.wsdot.wa.gov/Design/ProjectDev/WageRates/default.htm>


A copy is also available for viewing at the City of Lacey Public Works Engineering office located at 420 College St SE, Lacey, WA 98503. If requested, a hard copy will be mailed to you.

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APPENDIX A


COL RAM FORMS

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PROJECT:		SUBMITTAL No.		
LACEY CONTRACT NO. PW____-20____		Date sent to City:		
Request for Approval of Material, Product or Shop Drawing				
Contractor:		Subcontractor:		
No. of Pages	Item: Material, Product or Shop Drawing		Specification Reference	
<input type="checkbox"/> This item is as specified		OR <input type="checkbox"/> This item is a substitution/or equal Material/Product Substitution Request shall be submitted		
<input type="checkbox"/> Supplier/Subcontractor certifies material/product conforms to contract.				
Review Priority: <input type="checkbox"/> 1 <input type="checkbox"/> 2 <input type="checkbox"/> 3 Requested Due Date:				
Notes to Engineer:				

City of Lacey Engineer:		Date Approved by City:	
<input type="checkbox"/> Rejected	New Submittal Required.		
<input type="checkbox"/> Revise and Resubmit	See Engineer's comments.		
<input type="checkbox"/> Conditionally Approved	See items included in Engineer's comments.		
<input type="checkbox"/> Conditionally Approved	No exceptions noted.		
Review of the materials, products or plans do not relieve the contractor from compliance with requirements of the contract documents and does not necessarily constitute acceptance for materials, products or plans to be incorporated in the work. This review is for general conformance of the project's conceptual design and general compliance with the project's plans and specifications.			
Date City Transmitted to Contractor:		Date Contractor Transmitted to Subcontractor/Supplier:	

Date Received by City of Lacey:	Reviewed by: (Name/Company)
<u>Engineer's Comments:</u> 1.	

PROJECT: <i>A</i>		SUBMITTAL No. <i>C</i>	 CITY OF LACEY
LACEY CONTRACT No. PW___-20___ <i>B</i>			
Request for Approval of Material, Product or Shop Drawing			
Contractor: <i>D</i>		Subcontractor: <i>E</i>	
No. of Pages	Item: Material, Product or Shop Drawing	Specification Reference	
<i>F</i>	<i>G</i>	<i>H</i>	
<input type="checkbox"/> This item is as specified <i>I1</i> OR <input type="checkbox"/> This item is a substitution/or equal Material/Product Substitution Request shall be submitted <i>I2</i>			
<input type="checkbox"/> Supplier/Subcontractor certifies material/product conforms to contract.			
Review Priority: <input type="checkbox"/> 1 <i>K</i> <input type="checkbox"/> 2 <input type="checkbox"/> 3 Requested Due Date: <i>L</i>			
Notes to Engineer: <i>M</i>			

Section 1

City of Lacey Engineer: <i>R</i>		Date City Transmitted to Contractor: <i>S</i>
<input type="checkbox"/> Rejected	New Submittal Required.	
<input type="checkbox"/> Revise and Resubmit	See Engineer's comments.	
<input type="checkbox"/> Conditionally Approved	See items included in Engineer's comments.	
<input type="checkbox"/> Conditionally Approved	No exceptions noted.	
Review of the materials, products or plans do not relieve the contractor from compliance with requirements of the contract documents and does not necessarily constitute acceptance for materials, products or plans to be incorporated in the work. This review is for general conformance of the project's conceptual design and general compliance with the project's plans and specifications.		
Date Received by Contractor: <i>T</i>		Date Returned to Subcontractor/Supplier: <i>U</i>

Section 3

Date Received by City of Lacey:	<i>N</i>	Reviewed by: (Name/Company)	<i>@</i>
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Engineer's Comments:

1. *P*

Section 2

Section 1

The **Project Manager** shall fill in items **A** and **B**. The “Request for Approval of Material, Products or Shop Drawing” form shall be included in the specifications.

A Project Manager enters in the project title that matches the plans and specifications.

B Project Manager enters in PW project number that matches the plans and specifications.

The **Contractor** shall fill out the “Request for Approval of Material, Product or Shop Drawing” form for all materials or products that will be installed and Shop Drawing that will be used in the project. The form and the submittal shall be sent in the same e-mail. Submittals that exceed 10 MB shall either be provided on a CD, a flash drive or an internet link.

The products and materials that are specific to the project shall be circled or highlighted. If a submittal includes products or materials that are not project specific then these items shall be crossed out. Project Submittals that exceed 10 pages shall be submitted in Adobe Acrobat format and include a table of contents. Submittals that are not submitted in this format may be rejected outright and the contractor will be required to resubmit in the correct format.

The contractor shall enter in items **C, D, E, F, G, H, I, J, K, L**, and **M**.

C Contractor enters in the submittal number. The first “Request for Approval of Material, Product or Shop Drawing” submittal number shall be 1.0, the second shall be 2.0, the third shall be 3.0, etc.

When a “Request for Approval of Material, Product or Shop Drawing” requires resubmitting, the next submittal shall be the first part of the submittal number and then 0.1. Example: If submittal 9.0 requires resubmitting, then the resubmittal shall be 9.1. If a second resubmittal is required, then the next resubmittal shall be 9.2.

D Contractor shall fill in their name.

E Contractor shall fill in the subcontractor that is requesting approval. If only the General Contractor is requesting approval, then NA (not applicable) shall be entered.

F The number of pages for each specific material, product or shop drawing shall be entered.

G The specific material, product or shop drawing shall be entered. Material or product will be the trade name of the product or the name it is most easily recognized by. Materials or products that are similar (i.e. pipe fittings) can be bundled into one submittal.

H The specification that pertains to the specific material, product or shop drawing shall be entered. This information is critical in comparing the material, product or shop drawing to the specifications. You may also list Plan Sheet number or Special Provision page in this area.

I The Contractor shall check if the items submitted are either specified (I1) or that the submitted item is a substitution or equal (I2). If the product is a substitute or equal, then a Material/Product Substitution Request shall be submitted.

J The Contractor shall check that supplier and/or subcontractor certifies the bid item.

K The Contractor shall check if the submittal for approval is a high (1), average (2) or low (3) priority. The City of Lacey will review priority submittals as quickly as possible. Note: The majority of the submittals shall be checked as priority 2 or 3. Priority 1 submittals shall be critical or long lead items.

L A due date can be entered by the contractor. The City of Lacey will endeavor to review and return the request for approval by the requested due date.

M Any additional notes that the Contractor finds would assist the City of Lacey in reviewing the submittal can be entered in here.

Section 2

The **City of Lacey Engineer** shall fill in items **N**, **O** and **P**.

N Enter the date that the City of Lacey received the “Request for Approval of Material, Product or Shop Drawing” from the Contractor.

O Enter the name and company of the person that reviewed the submittal.

P Any comments regarding changes needed, resubmittals requirements, conditional approval, etc. shall be entered.

Section 3

The **City of Lacey Engineer** shall fill in items **Q**, **R**, and **S**.

Q Either “Rejected: New Submittal Required.”, “Review and Resubmit: See Engineer’s comments.”, “Conditionally Approved: See items included in Engineer’s comments.”, or “Conditionally Approved: No exceptions noted” shall be checked”.

R Enter the name of the Engineer sending the submittal back to the Contractor. The Engineering sending the form back may not necessarily be the Engineer completing the review.

S Enter the date that the City of Lacey transmits the “Request for Approval of Material, Product or Shop Drawing” to the Contractor.

The **Contractor** shall enter in items **T** and **U** for their own records. If there is a discrepancy between the **S** “Date City Transmitted to Contractor” and **T**, the Contractor shall notify the City of Lacey within 3 working days.

T Contractor enters the date that they received the completed “Request for Approval of Material or Shop Drawing”.

U Contractor enters the date that that they return the completed “Request for Approval of Material or Shop Drawing” to the Subcontractor/Supplier.