Cowlitz County
Department of Public Works

CONTRACT DOCUMENTS
FOR

COWLITZ COUNTY HEADQUARTERS LANDFILL
2025 GAS COLLECTION AND CONTROL SYSTEM EXPANSION PROJECT

SW ¼ SEC. 23, T9N, R1W

Cowlitz County Project No. 8467

JULY 2025

COWLITZ COUNTY
Department of Public Works
1600-13th Avenue South
Kelso, Washington 98626
Phone (360) 577-3030

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Responsible for all portions of the Contract Documents

COWLITZ COUNTY
Department of Public Works
1600-13th Avenue South
Kelso, Washington 98626
Phone (360) 577-3030

Approved by:

Susan Eugenis 8/4/25

Susan Eugenis, P.E. Date
County Engineer

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COWLITZ COUNTY HEADQUARTERS LANDFILL
2025 GAS COLLECTION AND CONTROL SYSTEM EXPANSION PROJECT

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***Included as indicated but numbered independently.

CALL FOR BIDS

The Board of County Commissioners of Cowlitz County, Washington will receive sealed bids until August 26, 2025, **prior to 1:30 p.m.**, for the following work: **COWLITZ COUNTY HEADQUARTERS LANDFILL 2025 GAS COLLECTION AND CONTROL SYSTEM (GCCS) EXPANSION PROJECT.**

Work performed under this contract consists of the following:

Expansion of a landfill gas collection and control system including the installation of landfill gas (LFG) extraction wells, associated piping, fittings, valves, headers, laterals, air supply line, condensate forcemain, and associated cleanouts.

At that time all bids will be publicly opened and read in the Public Works Administration Building Training Room. Bids must be addressed to:

Cowlitz County Department of Public Works
Attn: County Engineer
1600 13th Avenue South
Kelso WA 98626

Project bid documents (Plans, specifications, addenda, bid documents, bidders list and plan holders list) for this project are available online for inspection during the bidding period through the Builders Exchange of Washington (BXWA) website at www.bxwa.com. Click on Posted Projects, then Public Works, then Cowlitz County and then Projects Bidding. These documents are available for viewing, downloading and printing on your own equipment free of charge. This service is provided to Prime Bidders, Subcontractors, and Vendors bidding on this project. Bidders will need to "Register as a Bidder" through the BXWA in order to receive automatic e-mail notification of future addenda and to be placed on the Bidders List. Bidders should contact Builder's Exchange of Washington at (425) 258-1303 for questions regarding access or registration.

It is the sole responsibility of the Bidder to obtain Addenda, if any. Addenda information will be available on the BXWA web site at www.bxwa.com. Cowlitz County accepts no responsibility or liability and will provide no accommodation to bidders who fail to check for addenda and thereby submit inadequate or incomplete responses.

Cowlitz County will not provide paper copies of the Project bid documents for this project for bidding purposes. A copy of the plans and specifications may be reviewed at the office of the Clerk of the Board of County Commissioners.

All bid proposals shall be accompanied by a bid proposal deposit in cash, certified check, cashier's check, or surety bond in an amount equal to five percent (5%) of the amount of such bid proposal. Should the successful bidder fail to enter into such contract and furnish

satisfactory performance bond within the time stated in the specifications, the bid proposal deposit shall be forfeited to Cowlitz County.

All documents received in response to this invitation to bid will become a matter of public record and subject to the Washington public disclosure act under chapter 42.56 RCW.

Cowlitz County, in accordance with the provisions of Title VI of the Civil Rights Act of 1964 (78 Stat. 252, 42 U.S.C. 2000d to 2000d-4) and the Regulations, hereby notifies all bidders that it will affirmatively ensure that in any contract entered into pursuant to this advertisement, disadvantaged business enterprises will be afforded full and fair opportunity to submit bids in response to this invitation and will not be discriminated against on the grounds of race, color, or national origin in consideration for an award.

The Board reserves the right to reject any and all bids and to waive any immaterial irregularities or informalities in any bid or in the bidding.

DATED this _____ day of _____, 2025.

BOARD OF COUNTY COMMISSIONERS
OF COWLITZ COUNTY, WASHINGTON

_____
Richard R. Dahl, Chairman

_____
Steve Rader, Commissioner

_____
Steven L. Ferrell, Commissioner

ATTEST:

_____
Kelly Grayson, Clerk of the Board

BIDDER'S CHECKLIST

(Informational only – not required to be submitted with the BID)

COWLITZ COUNTY HEADQUARTERS LANDFILL 2025 GCCS EXPANSION PROJECT

Name of Project

ITEMS TO BE INCLUDED WITH BID

The following checked items are required to be completed and submitted with the BID, except as noted otherwise:

Required if Checked:

☒ 1. PROPOSAL FORM – To be completed and signed by bidder. Provide all information pertaining to BIDDER'S organization on the first page. Fill in all unit prices and amounts for each bid item. Fill in all subtotals, sales tax and the total bid amount in the spaces provided. List the addenda in the spaces provided to indicate acknowledgement. Sign, date, and provide requested information in the spaces provided on the last page.

☐ 2. APPRENTICE UTILIZATION PLAN – In accordance with Special Provisions Section 1-07.9, this form shall be submitted within 30 calendar days of execution, however no later than the preconstruction meeting.

☒ 3. NON-COLLUSION DECLARATION – required on all projects.

☐ 4. PROPOSAL FOR INCORPORATING RECYCLED MATERIALS INTO THE PROJECT – required on all road construction projects.

☐ 5. CERTIFICATION FOR FEDERAL AID CONTRACTS – required on FHWA-funded projects.

☐ 6. DISADVANTAGED BUSINESS ENTERPRISE UTILIZATION CERTIFICATION – required on FHWA-funded projects with a goal of greater than 0%.

☐ 7. DISADVANTAGED BUSINESS ENTERPRISE (DBE) WRITTEN CONFIRMATION DOCUMENT – required on FHWA-funded projects with a goal of greater than 0%. This form is required to be submitted within 48 hours after the time for delivery of the bid proposal.

☐ 8. DISADVANTAGED BUSINESS ENTERPRISE (DBE) BID ITEM BREAKDOWN – required on FHWA-funded projects with a goal of greater than 0%. This form is required to be submitted within 48 hours after the time for delivery of the bid proposal.

☐ 9. DISADVANTAGED BUSINESS ENTERPRISE (DBE) TRUCKING CREDIT FORM – required on FHWA-funded projects with a goal of greater than 0%. This form is required to be submitted within 48 hours after the time for delivery of the bid proposal.

☐ 10. LOCAL AGENCY SUBCONTRACTOR LISTS – To be filled in and signed by BIDDER.

☐ 11. CONTRACTOR'S PROJECT INFORMATION STANDARD QUESTIONNAIRE - The BIDDER shall complete this form.

☒ 12. BID DEPOSIT FORM - This form is to be executed by the BIDDER and the Surety Company unless bid is accompanied by cash, cashier's check, or a certified check. The amount of the deposit or bid bond shall be not less than 5% of the total amount of the bid and may be shown in dollars or on a percentage basis. Bid Bond forms other than the enclosed form may be accepted providing it has been approved by the OWNER prior to bid submittal.

☒ 13. E-VERIFY DECLARATION – The BIDDER shall complete and sign this form.

☒ 14. CERTIFICATION OF COMPLIANCE WITH WAGE PAYMENT STATUTES – The BIDDER shall complete and sign this form. This form is required to be submitted within 24 hours after the time for delivery of the bid proposal.

☐ 15. BIDDER QUESTIONNAIRE – To be filled in and signed by BIDDER.

PROPOSAL FORM

TO: Board of County Commissioners
County Administration Building
207 Fourth Avenue North, 3rd Floor
Kelso, WA 98626

FOR: **COWLITZ COUNTY HEADQUARTERS LANDFILL 2025 GCCS EXPANSION PROJECT**
Name of Project

FROM:

Bidder's Business Name	Mailing Address
Email Address	City, State and Zip
Name of Bidder's Representative for Bid	Telephone
Washington Registration No.	Tax I.D. No.
Employment Security Department No.	State Excise Tax Registration No.
Industrial Insurance Coverage Account No.	UBI No.

INSTRUCTIONS TO BIDDERS

1. Contract Documents. See Section 1-04.2 of the Special Provisions for a list of the "contract documents" that make up the contract. Be sure that you have a copy of the **2025** Standard Specifications for Road, Bridge, and Municipal Construction, by the Washington State Department of Transportation and the American Public Works Association, Washington State Chapter. Such specifications are sometimes referred to as the "Standard Specifications."

2. Submission of Bid. Fill out this Proposal Form completely, in accordance with Section 1-02.6 of the Standard Specifications. Enclose your Proposal Form and bid deposit in an opaque sealed envelope addressed to:

Cowlitz County Department of Public Works
Attn: County Engineer
1600 13th Avenue South
Kelso, WA 98626

Mark the outside of the envelope with the name of the bidder, the name of the project, and the date and time of the bid opening. It is your responsibility to make sure that your bid is physically received by the Clerk of the Board by the time set for the bid opening. Bids not so received will not be considered. Bids may not be submitted by facsimile machine.

The County's determination of when a bid was received shall be final and non-appealable.

3. Bidder Responsibility Standards. It is the intent of the Owner to award a contract to the lowest, responsible and responsive bidder for all described Work. Before award, the bidder must meet all criteria and satisfy all requirements of the following bidder-responsibility standards to be considered a responsible and a responsive bidder. The bidder may be required by the Owner to submit documentation demonstrating compliance with these standards to be qualified to be awarded a contract. The bidder must:

a. Have a current certificate of registration as a contractor in compliance with chapter 18.27 RCW, which must have been in effect at the time of bid submittal;

b. Have a current Washington Unified Business Identifier (UBI) number;

c. If applicable:

   i. Have Industrial Insurance (workers' compensation) coverage for the bidder's employees working in Washington, as required in Title 51 RCW;

   ii. Have a Washington Employment Security Department number, as required in Title 50 RCW;

   iii. Have a Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;

d. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3).

4. Execution of Contract. The successful bidder must use the performance bond form and other forms provided by Cowlitz County to be considered both a responsible and responsive bidder.

5. Sales Tax Code. In computing and reporting sales taxes payable to the Washington State Department of Revenue on this project, the following code number shall be used: **0800**.

PROPOSAL

The undersigned bidder proposes to perform the project named above in strict compliance with the contract documents, for the following amounts:

Item No.	Approximate Quantity	ITEM	UNIT PRICE $	AMOUNT $
1	Force Account	Miscellaneous Construction	$100,000.00	$100,000.00
2	Lump Sum	Mobilization		
3	1,200 L.F.	12-inch HDPE SDR 11 Header		
4	3,570 L.F.	6-inch HDPE SDR 11 Lateral		
5	2,210 L.F.	Vertical LFG Extraction Well (8-inch PVC SCH 80)		
6	20 Each	2-inch Flow Wing Style Wellhead		
7	13 Each	QED AP4+ Ultra Vertical Well Pump		
8	20 Each	8-inch QED Model GWC82 Well Cap		
9	1 Each	Liquid Discharge Sump Tie-In		
10	2 Each	12-inch Header Isolation Valve (Gear Operated, Below-Grade) Installation		
11	10 Each	6-inch Header Isolation Valve (Gear Operated, Below-Grade) Installation		
12	10 Each	6-Inch Lateral Tie-In to 12-Inch Header		
13	1 Each	12-Inch Header Tie-In to 18-Inch Header		
14	20 Each	6-Inch LFG Stub-Up		
15	4,300 L.F.	3-inch HDPE SDR 18 Condensate Forcemain		

Item No.	Approximate Quantity	ITEM	UNIT PRICE $	AMOUNT $
16	5 Each	Liquid Conveyance Cleanout Installation		
17	4 Each	3-Inch Liquid Conveyance Line Isolation Valve Installation		
18	5,485 L.F.	2-inch HDPE SDR 9 Air Supply Line		
19	3 Each	2-Inch Air Line Isolation and Blowoff Valve Installation		
20	76 L.F.	12-inch Header Road Crossing		
21	40 L.F.	2-inch Air Line Road Crossing		
22	1 Each	12-Inch Flanged Termination		
23	20 Each	Wellhead Centralizer (WC-020)		
24	415 C.Y.	Non-Calcareous Stone Backfill		
25	75 L.F.	1-Inch Electrical Conduit		
26	1 Each	Air Conveyance Compressor, Electric Reciprocating Air Compressor		
27	Lump Sum	Air Compressor Electrical Components		

SUBTOTAL .....$_____

WASHINGTON SALES TAX (7.7%) .....$_____

TOTAL COST TO COWLITZ COUNTY.....$_____

Addenda. The bidder acknowledges receipt of the following addenda: _____, _____, _____, _____, and _____. (Insert numbers of any addenda received.)

Non-Collusion. Each bidder must submit a declaration of non-collusion completely executed with their bid. Reasonable grounds for believing that any bidder(s) have engaged, either directly or indirectly, into any agreement, participated in any collusion, or otherwise taken any action, in restraint of free competitive bidding in connection with this bid will cause rejection of all proposals which said bidder(s) has shown interest, and none of the participants to such direct or indirect actions will be considered.

The person(s) signing this bid on behalf of the bidder declare(s) under penalty of perjury under the laws of the United States and the State of Washington that this bidder 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 connection with this bid.

_____	_____
Date	Signature of Person Authorized to Bind Bidder
_____	_____
Bidder's Business Name	Title of Person Signing Bid

Signed in _____, Washington

BID DEPOSIT FORM

COWLITZ COUNTY HEADQUARTERS LANDFILL 2025 GCCS EXPANSION PROJECT

Name of Project

_____

Name of Bidder

The bidder named above hereby submits its bid deposit in the form of a certified check, cashier's check, cash or bid bond in the amount of $_____, which amount is not less than five (5) percent of the total bid.

PROPOSAL BOND

KNOW ALL MEN BY THESE PRESENTS, That we, _____, as Principal and _____, a corporation duly organized under the laws of the state of _____, and authorized to do business in the State of Washington, as Surety, are held and firmly bound unto Cowlitz County as Obligee, in the full and penal sum of five (5) percent of the total amount of the bid proposal of said Principal for the work hereinafter described, for the payment of which the Principal and the Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, by these presents.

The condition of this bond is such, that whereas the Principal herein is herewith submitting his or its sealed proposal for the following public works project, to wit:

Said bid and proposal, by reference thereto, being made a part hereof.

NOW, THEREFORE, If the said proposal bid by said Principal be accepted, and the contract be awarded to said Principal, and if the said Principal shall duly make and enter into and execute said contract and shall furnish bond as required by the contract documents within a period of ten (10) days from and after said award, exclusive of the day of such award, then this obligation shall be null and void, otherwise it shall be and remain in full force and effect.

SIGNED AND SEALED this _____ day of _____, 2025.

_____	_____
Name of Bidder	Name of Surety
_____	_____
Authorized Signature	Authorized Signature*
_____	_____
Title	Title
_____	
Date	*Attach Power of Attorney

E-VERIFY DECLARATION

COWLITZ COUNTY HEADQUARTERS LANDFILL 2025 GCCS EXPANSION PROJECT

Cowlitz County Project No. 8467

Firm Name: _____

The undersigned declares, under **penalty of perjury** under the laws of Washington that:

1. That the above-named firm is currently enrolled in and using the E-Verify system implemented on October 25, 2011 as outlined in Resolution No. 11-118 and will continue to use the E-Verify system for so long as work is being performed on the above named project.

2. I certify that I am duly authorized to sign this declaration on behalf of the above-named bidder/proposer.

3. I acknowledge that Cowlitz County reserves the right to require a copy of the Memorandum of Understanding between the contractor listed above and the Department of Homeland Security certifying enrollment in the E-Verify program at any time. Failure to provide the required Memorandum of Understanding within 10 days of request could lead to suspension of this contract.

Dated at _____ , State of _____ on this _____ day of _____, 2025.

Signature _____

Printed Name _____

THIS PAGE MUST BE RETURNED WITH THE BID DOCUMENTS

COMPLIANCE WITH WAGE PAYMENT LAWS DECLARATION

COWLITZ COUNTY HEADQUARTERS LANDFILL 2025 GCCS EXPANSION PROJECT

Cowlitz County Project No. 8467

Firm Name: _____

1. The bidder hereby certifies that, within the three-year period immediately preceding the bid solicitation date of August 5, 2025, 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.

2. I certify that I am duly authorized to sign this declaration on behalf of the above-named bidder/proposer.

3. I acknowledge that Cowlitz County is required to receive this declaration as a condition to awarding the public works contract pursuant to RCW 39.04.350.

The undersigned declares, under penalty of perjury under the laws of Washington that the foregoing is true and correct.

Signed and dated at_____, in State of____, on this_____day of _____2025.

Signature _____

Printed Name _____

THIS PAGE MUST BE RETURNED BEFORE THE PUBLIC WORKS CONTRACT CAN BE AWARDED

AGREEMENT

THIS AGREEMENT is entered into between **COWLITZ COUNTY** and _____ _____ ("Contractor") for the following project: **COWLITZ COUNTY HEADQUARTERS LANDFILL 2025 GCCS EXPANSION PROJECT** ("the Project").

The Parties Agree as Follows:

1. Acceptance of Bid Proposal. Cowlitz County accepts Contractor's bid proposal for the Project. Such acceptance is limited to the following items of the bid proposal: **1-27**.

2. Contractor to Accomplish Project. Contractor shall do all work and furnish all labor, materials, equipment, tools, services, and incidentals necessary to accomplish the Project in strict compliance with the contract documents.

3. Contract Amount. Cowlitz County shall pay Contractor in accordance with the contract documents, based on the unit prices and lump sums stated in the Proposal Form. The total contract amount for the Project shall not exceed **$**_____, including sales taxes.

4. Contract Documents. (a) This Agreement shall be governed by and incorporates by reference the **2025** Standard Specifications for Road, Bridge, and Municipal Construction, by the Washington State Department of Transportation and the American Public Works Association, Washington State Chapter (the "Standard Specifications"). All provisions of the Standard Specifications apply unless specifically modified herein. (b) The contract documents constitute the parties' entire and integrated agreement concerning the Project, and supersede all prior and contemporaneous negotiations, representations, or agreements, both written and oral.

5. Contractor Registration. By submitting a bid, each bidder warrants that it is currently a registered contractor in accordance with RCW 18.27. Continuous registration throughout the performance of the project is a requirement of the contract. The bidder shall promptly furnish proof of registration whenever requested.

6. Performance of Work. (a) The Contractor warrants that all work performed shall be free from defects in material and workmanship, shall conform to the contract documents, and shall be fit for Cowlitz County's intended purposes. If the Engineer determines that the work or any portion thereof fails to conform to the foregoing warranty, the Engineer shall give the Contractor written notice thereof and the Contractor shall then take corrective action as directed by the Engineer. The purpose of the corrective action will be to remedy all nonconforming work and any damage caused by the nonconforming work. The Contractor shall begin the repair or replacement within 10 days after

receiving the notice, and shall complete the work within such reasonable time as determined by the Engineer. If the Contractor fails to carry out the corrective action as required by this section, Cowlitz County may perform the corrective action with its own resources or by contract, and the Contractor shall pay all the costs thereof.

(b) If other provisions of the contract documents contain different performance requirements, the more stringent requirements shall apply.

(c) No inspection, acceptance, use, or occupancy of the work, or payment for the work, shall relieve the Contractor from its responsibilities.

(d) The Contractor warrants good title to all materials, supplies, and equipment incorporated into the work.

7. Uniformity of Equipment and Materials. Like items of equipment and materials to be incorporated into the work shall be products of one manufacturer.

8. Substitution of "Equal" Products. Unless otherwise provided, any reference in the contract documents to any product by a brand name, model, or catalog number shall be understood as establishing a standard of quality, and products equal in quality may be substituted if approved in advance by the Engineer. If the Contractor wishes to propose a substitution, it shall submit a written proposal in a form approved by the County, warranting and guarantying the substitute product will be, including but not limited to, at least equal to or better than the specified product in terms of quality, function, performance, compatibility and reliability, to the Engineer, whose decision shall be final. The proposal shall identify the proposed substitute product, and the Contractor shall upon request and at its expense furnish the Engineer with such detailed specifications, test results, and other data as are helpful to the Engineer. The Engineer will not consider any proposed substitution if there is inadequate time available to fully evaluate the proposal. If the Engineer approves a substitution proposed by the Contractor, it is understood that such approval is in reliance upon the Contractor's written warranty and guaranty the substitute product to be, including but not limited to, at least equal to or better than the specified product in terms of quality, function, performance, compatibility and reliability. There will be no additional compensation or extensions to the time for completion. If the installation, application or performance of the substitute product is not equal to the specified product, the Engineer may direct the Contractor to remove the substitute product and replace it with the specified product, and to remedy any damage and delay caused by the use of the substitute product, all at the Contractor's expense. The County has a right to a deductive Change Order if the substituted product proves less costly than the contractually required product.

9. Utilities. The Contractor shall comply with the provisions of RCW 19.122, Standard Specification 1-07.17, and this paragraph. The telephone number of the Cowlitz County Utilities Coordinating Council is (800) 424-5555. The Special Provisions and/or contract plans identify all underground facilities known by Cowlitz County to be located within the area of excavation required as part of the work. Locations and dimensions shown in the Special Provisions or on the plans are in

accordance with available information without uncovering, measuring, or other verification. If a utility is known or suspected of having underground facilities within the area of the excavation, and that utility is not a subscriber to the Cowlitz County Utilities Coordinating Council, the Contractor shall give individual notice to that utility.

10. Prevailing Wages and E-Verify. The Contractor shall pay all fees required by the Department of Labor and Industries in connection with the administration of the prevailing wage requirements. No increase in prevailing wage rates or fringe benefits shall be grounds for any additional compensation to the Contractor.

Cowlitz County requires that all businesses which contract with the County for contracts awarded by formal competitive procedures be enrolled in the Federal E-Verify Program. The requirement extends to every subcontractor meeting the same criteria. The Prime Contractor must provide certification of enrollment with bid submittal. The Prime Contractor is responsible for verification of every applicable subcontractor. Cowlitz County reserves the right to require a copy of a Memorandum of Understanding between the Prime or any Subcontractor and Department of Homeland Security upon request at any time during the project verifying the contractor's enrollment. Failure to provide this document could result in suspension of the project.

A copy of Resolution No. 11-118 is available at the Offices of the Board of County Commissioners. Federal E-Verify Program is a web-based application that can be accessed at www.dhs.gov/everify.

11. Air Pollution Regulations. The Southwest Washington Air Pollution Control Authority has adopted regulations to control the emission of contaminants into the air by sources within the Authority's jurisdiction, which includes Cowlitz County. The Contractor shall comply with all regulations and orders of such Authority.

12. Shoring. If in the performance of this contract, the Contractor or any subcontractor excavates any trench to a depth in excess of four feet, the Contractor shall provide adequate safety systems for the trench excavation that comply with the requirements of the Washington Industrial Safety and Health Act, RCW 39.04.180, and with all regulations thereunder. It is not anticipated that any excavation 4-feet or more in depth will be required for completion of the Work under this contract. Therefore, no bid item for trench safety systems is included in the bidder's proposal. In the event in the performance of the contract the Engineer directs excavation such that shoring or extra excavation is required as determined by the Engineer, payment to the Contractor for such work will be made in accordance with Standard Specifications Section 1-04.4.

13. Worker's Benefits. The following is added at the end of Standard Specification 1-07.10: Notwithstanding the provisions of the preceding paragraphs, Contractor shall remain at all times liable for payment of any and all premiums due under Title 50 or Title 51 RCW, or any other employee benefit

act, with respect to all work performed by Contractor or any subcontractor pursuant to this contract. Contractor shall indemnify, defend and hold Cowlitz County harmless from and against any claim or demand for payment of such premiums. The Contractor's responsibilities under this section shall survive the termination or completion of the contract and/or any release of retainage with respect to the contract. These waivers by the Contractor are a material inducement to County to enter into this contract, are reflected in Contractor's compensation, and have been mutually negotiated by the parties.

BOARD OF COUNTY COMMISSIONERS
OF COWLITZ COUNTY, WASHINGTON

Richard R. Dahl, Chairman	Name of Contractor
Steve Rader, Commissioner	Signatory Authorized by Firm Bylaws to Bind Contractor
Steven L. Ferrell, Commissioner	Title
ATTEST:	
Kelly Grayson, Clerk of the Board	Date
Date	Washington Contractor's Registration Number
APPROVED AS TO FORM:	
Civil Deputy Prosecuting Attorney	

[Executed copies shall be delivered each to County, Contractor, Surety and Insurance Company]

PERFORMANCE BOND

KNOW ALL MEN BY THESE PRESENTS, that the undersigned Contractor and Surety, a corporation, organized and existing under and by virtue of the laws of the State of Washington, are jointly and severally obligated to Cowlitz County, State of Washington, in the penal sum of $_____, for the payment of which sum we jointly and severally bind ourselves and our heirs, executors, administrators, and assigns, and successors and assigns, firmly in accordance with the following provisions:

The Contractor has entered into or is about to enter into a contract with Cowlitz County for the following project: **COWLITZ COUNTY HEADQUARTERS LANDFILL 2025 GCCS EXPANSION PROJECT.**

Now, if the Contractor fully and timely performs all terms, conditions and requirements of the contract in all respects, including all warranty provisions; and pays all laborers, mechanics, subcontractors, and materialmen, and all persons who supply such person or persons, or subcontractors, with provisions and supplies for the above project; and defends and indemnifies Cowlitz County against any direct or indirect loss, damage, liability, judgments, and costs, to the extent required by the contract; then this obligation shall be void; otherwise it shall remain in full force and effect.

Provided, however, the conditions of this obligation shall not apply to any money loaned or advanced to the Contractor or to any subcontractor or other person in the performance of any such work.

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 Contractor shall automatically increase the obligation of the Surety on this bond and notice to Surety is not required for such increased obligation.

Any judgment against Cowlitz County that relates to or is covered by the contract or this bond shall be conclusive against the Contractor and the Surety, not only as to the amount of damages but also as to their liability if reasonable notice of the pendency of the suit has been given.

_____	_____
Name of Contractor	Name of Surety
_____	_____
Authorized Signature	Authorized Signature*
_____	_____
Title	Title
_____	_____
Date	Date

*Attach Power of Attorney

SPECIAL PROVISIONS

INTRODUCTION TO THE SPECIAL PROVISIONS

(January 4, 2024 APWA GSP, Option A)

The work on this project shall be accomplished in accordance with the *Standard Specifications for Road, Bridge and Municipal Construction*, 2025 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 GSPs are labeled under the headers of each GSP, with the effective date of the GSP and its source. For example:

(March 8, 2013 APWA GSP)
(April 1, 2013 WSDOT GSP)

Project specific special provisions are labeled without a date as such:
(*****)

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 Manual M21-01, current edition

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

- DIVISION 1 -
GENERAL REQUIREMENTS

DESCRIPTION OF WORK
(March 13, 1995)

This contract provides for the improvement of *** Expansion of a landfill gas collection and control system including the installation of landfill gas (LFG) extraction wells, associated piping, fittings, valves, headers, laterals, air supply line, condensate forcemain, and associated cleanouts *** and other work, all in accordance with the attached Contract Plans, these Contract Provisions, and the Standard Specifications.

(******)
Appendices. The following appendices are hereby provided for the Contractor's information:

Appendix A – Plans

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.

(******)
"Contracting Agency" means Cowlitz County.

"Engineer" or "Project Engineer" means the Cowlitz County Engineer.

"Secretary" or "Secretary of Transportation" means the Board of County Commissioners of Cowlitz County.

"State" or "State of Washington" means Cowlitz County, except when referring to state departments other than the department of transportation, and except when referring to state publications, laws, etc.

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.

1-02.2 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 can 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")	2	Furnished automatically upon award.
Contract Provisions	2	Furnished automatically upon award.
Large plans (e.g., 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(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 Bidders 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
(November 25, 2024 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 DBE commitment, if applicable; a State of Washington Contractor's Registration Number; and a Business License Number, if applicable. Bids shall be in legible figures (not words) written in ink or typed and expressed in U.S. dollars. 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
Section 1-02.6 is supplemented with the following:

Subcontractor's List
(November 25, 2024 APWA GSP 1-02.6, Option C)

The fourth paragraph of Section 1-02.6 is revised to read:

The Bidder shall submit with the Bid the completed Subcontractor List included in the Contracting Agency Proposal Package. If a Subcontractor List Form is not included in the package, use DOT Form 271-015LP. The Form shall contain the following:

1. Subcontractors who will perform the work of structural steel installation, rebar installation, heating, ventilation, air conditioning, and plumbing as described in RCW 18.106 and electrical as described in RCW 19.28,
2. The Work those subcontractors will perform on the Contract as described in RCW 39.30.060; and
3. No more than one subcontractor for each category of work identified, except, when subcontractors vary with Bid alternates, in which case the Bidder shall identify which subcontractor will be used for which alternate.

Preparation of Proposal
November 25, 2024 APWA Option B

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.

Delete the last two paragraphs, and replace them with the following:

The Bidder shall submit with their Bid a completed Contractor Certification Wage Law Compliance form, provided by the Contracting Agency. Failure to return this certification as part of the Bid Proposal package will make this Bid Nonresponsive and ineligible for Award. A Contractor Certification of Wage Law Compliance form is included in the Proposal Forms.

The Bidder shall make no stipulation on the Bid Form, nor qualify the bid in any manner.

A bid by a corporation shall be executed in the corporate name, by the president or a vice president (or other corporate officer accompanied by evidence of authority to sign).

A bid by a partnership shall be executed in the partnership name and signed by a partner.

A bid by a joint venture shall be executed in the joint venture name and signed by a member of the joint venture.

1-02.9 Delivery of Proposal
(*******)

Delete this section and replace it with the following:

PROPOSAL SUBMITTAL REQUIREMENTS

General
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.

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.

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, 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 Proposal

Section 1-02.12 is supplemented with the following:

Date Of Opening Bids

Sealed bids are to be received at the following location prior to the time specified in the CALL FOR BIDS:

Cowlitz County Department of Public Works
Attn: County Engineer
1600 13th Avenue South
Kelso WA 98626

1-02.13 Irregular Proposals

(*******)

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 Bidder adds provisions reserving the right to reject or accept the Award, or enter into the Contract;
    c. A price per unit cannot be determined from the Bid Proposal;
    d. The Proposal form is not properly executed;
    e. The Bidder fails to submit or properly complete a subcontractor list (WSDOT Form 271-015), if applicable, as required in Section 1-02.6;
    f. The Bid Proposal does not constitute a definite and unqualified offer to meet the material terms of the Bid invitation.

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. The authorized Proposal Form furnished by the Contracting Agency is not used or is altered;
    d. The completed Proposal form contains unauthorized additions, deletions, alternate Bids, or conditions;
    e. Receipt of Addenda is not acknowledged;
    f. 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
    g. If Proposal form entries are not made in ink.

1-02.14 Disqualification of Bidders
(May 17, 2018 APWA GSP, Option A)

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.

The Contracting Agency will verify that the Bidder meets the mandatory bidder responsibility criteria in RCW 39.04.350(1). To assess bidder responsibility, the Contracting Agency reserves the right to request documentation as needed from the Bidder and third parties concerning the Bidder's compliance with the mandatory bidder responsibility criteria.

If the Contracting Agency determines the Bidder does not meet the mandatory bidder responsibility criteria in RCW 39.04.350(1) 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.

1-02.15 Pre-Award Information
(December 30, 2022 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

1-03.1 Consideration of Bids

(December 30, 2022 APWA GSP)

Revise the first paragraph to read:

After opening and reading proposals, the Contracting Agency will check them for correctness of extensions of the prices per unit and the total price. If a discrepancy exists between the price per unit and the extended amount of any bid item, the price per unit will control. If a minimum bid amount has been established for any item and the bidder's unit or lump sum price is less than the minimum specified amount, the Contracting Agency will unilaterally revise the unit or lump sum price, to the minimum specified amount and recalculate the extension. The total of extensions, corrected where necessary, including sales taxes where applicable and such additives and/or alternates as selected by the Contracting Agency, will be used by the Contracting Agency for award purposes and to fix the Awarded Contract Price amount and the amount of the contract bond.

1-03.1(1) Identical Bid Totals

(December 30, 2022 APWA GSP)

Revise this section to read:

After opening Bids, if two or more lowest responsive Bid totals are exactly equal, then the tie-breaker will be the Bidder with an equal lowest bid, that proposed to use the highest percentage of recycled materials in the Project, per the form submitted with the Bid Proposal. If those percentages are also exactly equal, then the tie-breaker will be determined by drawing as follows: Two or more slips of paper will be marked as follows: one marked "Winner" and the other(s) marked "unsuccessful". The slips will be folded to make the marking unseen. The slips will be placed inside a box. One authorized representative of each Bidder shall draw a slip from the box. Bidders shall draw in alphabetic order by the name of the firm as registered with the Washington State Department of Licensing. The slips shall be unfolded and the firm with the slip marked "Winner" will be determined to be the successful Bidder and eligible for Award of the Contract. Only those Bidders who submitted a Bid total that is exactly equal to the lowest responsive Bid, and with a proposed recycled materials percentage that is exactly equal to the highest proposed recycled materials amount, are eligible to draw.

1-03.3 Execution of Contract

(January 4, 2024 APWA GSP Option B)

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, 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
(December 30, 2022 APWA 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 over 3, 3 over 4, and so forth):

1. Addenda,
2. Proposal Form,
3. Special Provisions,
4. Contract Plans,
5. Standard Specifications,
6. Contracting Agency's Standard Plans or Details (if any), and
7. WSDOT Standard Plans for Road, Bridge, and Municipal Construction.

(*******)
Interpretation of Contract Documents. The Contractor shall provide any work or materials clearly implied in the contract even if the contract documents do not mention it specifically. If the contract documents use words that are not defined therein but have a commonly accepted technical or trade

meaning, the words shall be understood in accordance with that meaning.

1-04.4 Changes
(January 19, 2022 APWA GSP)

The first two sentences of the last paragraph of Section 1-04.4 are deleted.

1-05 CONTROL OF WORK
1-05.1 Authority of The Engineer
Section 1-05.1 is supplemented with the following:

(*******)
Additional Directions from Engineer. If the Engineer determines that the provisions in the contract documents are not sufficiently clear to permit the Contractor to proceed with the work, the Engineer shall, either on his own or upon written request from the Contractor, furnish such additional written directions as he deems appropriate. When the Contractor makes such a request, it must do so in writing and must allow ample time to permit the Engineer to review the request and prepare any additional directions before the Contractor begins any work affected by the request. Any additional directions issued by the Engineer shall not be inconsistent with the contract documents and shall have the same force and effect as if contained in the contract documents.

1-05.3 Plans and Working Drawings
Section 1-05.3 is supplemented with the following:

Shop Drawings. The Contractor shall submit five copies of all shop drawings and samples to the Engineer for review and approval in accordance with the schedule of shop drawing submissions approved at the Pre-Construction Conference. Contractor shall check and verify all field measurements prior to submitting shop drawings to Engineer for review and approval, shop drawings shall have been checked by and stamped with the approval of the Contractor and identified as the Engineer may require. The data shown on the Shop Drawings will be complete with respect to dimensions, design criteria, material or construction and like information to enable the Engineer to review the information as required.

At the time of each submission, the Contractor shall, in writing, call the Engineer's attention to any deviations that the Shop Drawings or Samples may have from the requirements of the Contract Documents.

The Engineer will review and approve with reasonable promptness shop drawings and samples, but the Engineer's review and approval shall be only for conformance with the design concept of the Project and for compliance with the information given in the Contact Documents and shall not extend to means, methods, sequences, techniques or procedures of construction or to safety precautions or programs incident thereto. The review and approval of a separate item as such will not indicate approval of the assembly in which the item functions. The Contractor shall make any corrections required by the Engineer and shall return the required number of corrected copies of shop drawing and resubmit new samples for review and approval. The Contractor shall direct specific attention, in writing, to revisions other than the corrections called for by the Engineer on previous submittals. The Contractor's stamp of

approval on any shop drawings or samples shall constitute a representation to Owner and Engineer that Contractor has either determined and verified all quantities, dimensions, field construction criteria, materials, catalog numbers, and similar data or assumes full responsibility for doing so, and that the Contractor has reviewed or coordinated each shop drawing or sample with the requirements of the work and the Contract Documents.

Where a shop drawing or sample is required by the Specifications, no related work shall be commenced until the submittal has been reviewed and approved by the Engineer.

The Engineer's review and approval of shop drawings or samples shall not relieve the Contractor from responsibility for any deviations from the Contract Documents unless the Contractor has, in writing, called the Engineer's attention to such deviation at the time of submission and the Engineer has given written concurrence and approval to the specific deviation, nor shall any concurrence or approval by the Engineer relieve the Contractor from responsibility for errors or omissions in the shop drawings.

1-05.7 Removal of Defective and Unauthorized Work
(October 1, 2005 APWA GSP)

Supplement this section with the following:

If the Contractor fails to remedy defective or unauthorized work within the time specified in a written notice from the Engineer or fails to perform any part of the work required by the Contract Documents, the Engineer may correct and remedy such work as may be identified in the written notice, with Contracting Agency forces or by such other means as the Contracting Agency may deem necessary.

If the Contractor fails to comply with a written order to remedy what the Engineer determines to be an emergency situation, the Engineer may have the defective and unauthorized work corrected immediately, have the rejected work removed and replaced, or have work the Contractor refuses to perform completed by using Contracting Agency or other forces. An emergency situation is any situation when, in the opinion of the Engineer, a delay in its remedy could be potentially unsafe, or might cause serious risk of loss or damage to the public.

Direct or indirect costs incurred by the Contracting Agency attributable to correcting and remedying defective or unauthorized work, or work the Contractor failed or refused to perform, shall be paid by the Contractor. Payment will be deducted by the Engineer from monies due, or to become due, the Contractor. Such direct and indirect costs shall include in particular, but without limitation, compensation for additional professional services required, and costs for repair and replacement of work of others destroyed or damaged by correction, removal, or replacement of the Contractor's unauthorized work.

No adjustment in contract time or compensation will be allowed because of the delay in the performance of the work attributable to the exercise of the Contracting Agency's rights provided by this Section.

The rights exercised under the provisions of this section shall not diminish the Contracting Agency's right to pursue any other avenue for additional remedy or damages with respect to the Contractor's failure

to perform the work as required.

1-05.11 Final Inspection
Delete this section and replace it with the following:

1-05.11 Final Inspections and Operational Testing
(October 1, 2005 APWA GSP)

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.

1-05.13 Superintendents, Labor and Equipment of Contractor
(August 14, 2013 APWA GSP)

Delete the sixth and seventh paragraphs of this section.

1-05.14 Cooperation With Other Contractors
Section 1-05.14 is supplemented with the following:

(*******)
The following additional activities and contracts will likely be occurring at the site simultaneously with the Contractor's Work:

- Landfill operations
- Landfill gas piping and hookups
- Weyerhaeuser logging traffic on 1600 Road.

The Contractor shall assume that these other projects shall have the preferred right of way, and shall cooperate with all traffic control required by those other projects.

Add the following new section:

1-05.16 Water and Power
(October 1, 2005 APWA GSP)

The Contractor shall make necessary arrangements and shall bear the costs for power and water necessary for the performance of the work, unless the contract includes power and water as a pay item.

1-07 LEGAL RELATIONS AND RESPONSIBILITIES TO THE PUBLIC

1-07.1 Laws To Be Observed

Section 1-07.1 is supplemented with the following:

(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.

(April 3, 2006)
Confined Space
Confined spaces are known to exist at the following locations:

*** Leachate Sump ***

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 Contractors Confined Space program shall be sent to the contracting agency at least **7** 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 Project 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
Delete this section, including its sub-sections, in its entirety and replace it with the following:

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

The Washington State Department of Revenue has issued special rules on the State sales tax. Sections 1-07.2(1) through 1-07.2(3) are meant to clarify those rules. The Contractor should contact the Washington State Department of Revenue for answers to questions in this area. The Contracting Agency will not adjust its payment if the Contractor bases a bid on a misunderstood tax liability.

The Contractor shall include all Contractor-paid taxes in the unit bid prices or other contract amounts. In some cases, however, state retail sales tax will not be included. Section 1-07.2(2) describes this exception.

The Contracting Agency will pay the retained percentage (or release the Contract Bond if a FHWA-funded Project) only if the Contractor has obtained from the Washington State Department of Revenue a certificate showing that all contract-related taxes have been paid (RCW 60.28.051). The Contracting Agency may deduct from its payments to the Contractor any amount the Contractor may owe the Washington State Department of Revenue, whether the amount owed relates to this contract or not. Any amount so deducted will be paid into the proper State fund.

1-07.2(1) State Sales Tax — Rule 171

WAC 458-20-171, and its related rules, apply to building, repairing, or improving streets, roads, etc., which are owned by a municipal corporation, or political subdivision of the state, or by the United States,

and which are used primarily for foot or vehicular traffic. This includes storm or combined sewer systems within and included as a part of the street or road drainage system and power lines when such are part of the roadway lighting system. For work performed in such cases, the Contractor shall include Washington State Retail Sales Taxes in the various unit bid item prices, or other contract amounts, including those that the Contractor pays on the purchase of the materials, equipment, or supplies used or consumed in doing the work.

1-07.2(2) State Sales Tax — Rule 170

WAC 458-20-170, and its related rules, apply to the constructing and repairing of new or existing buildings, or other structures, upon real property. This includes, but is not limited to, the construction of streets, roads, highways, etc., owned by the state of Washington; water mains and their appurtenances; sanitary sewers and sewage disposal systems unless such sewers and disposal systems are within, and a part of, a street or road drainage system; telephone, telegraph, electrical power distribution lines, or other conduits or lines in or above streets or roads, unless such power lines become a part of a street or road lighting system; and installing or attaching of any article of tangible personal property in or to real property, whether or not such personal property becomes a part of the realty by virtue of installation.

For work performed in such cases, the Contractor shall collect from the Contracting Agency, retail sales tax on the full contract price. The Contracting Agency will automatically add this sales tax to each payment to the Contractor. For this reason, the Contractor shall not include the retail sales tax in the unit bid item prices, or in any other contract amount subject to Rule 170, with the following exception.

Exception: The Contracting Agency will not add in sales tax for a payment the Contractor or a subcontractor makes on the purchase or rental of tools, machinery, equipment, or consumable supplies not integrated into the project. Such sales taxes shall be included in the unit bid item prices or in any other contract amount.

1-07.2(3) Services

The Contractor shall not collect retail sales tax from the Contracting Agency on any contract wholly for professional or other services (as defined in Washington State Department of Revenue Rules 138 and 244).

1-07.7 Load Limits

Section 1-07.7 is supplemented with the following:

(March 13, 1995)

If the sources of materials provided by the Contractor necessitates hauling over roads other than State Highways, the Contractor shall, at the Contractor's expense, make all arrangements for the use of the haul routes.

1-07.8 High-Visibility Apparel
The third and fourth paragraphs of Section 1-07.8 are revised to read:

(November 4, 2024)
High-visibility garments shall always be the outermost garments worn in a manner to ensure 360 degrees of uninterrupted background and retroreflective material encircling the torso.

High-visibility garments shall be labeled as, and in a condition compliant with the ANSI/ISEA 107-2015 publication entitled "American National Standard for High-Visibility Safety Apparel and Accessories," or equivalent revisions.

1-07.13 Contractor's Responsibility for Work

(*******)
1-07.13(4) Repair of Damage
Section 1-07.13(4) is revised to read:

The Contractor shall promptly repair all damage to either temporary or permanent work as directed by the Engineer. For damage qualifying for relief under Sections 1-07.13(1), 1-07.13(2) or 1-07.13(3), payment will be made in accordance with Section 1-04.4. Payment will be limited to repair of damaged work only. No payment will be made for delay or disruption of work.

(*******)
1-07.14 Responsibility for Damage
Section 1-07.14 is supplemented with the following:

Indemnification. References in Standard Specification 1-07.14 to the Contractor's "agents" shall be understood to include the Contractor's subcontractors. The Contractor's responsibilities under Standard Specification 1-07.14 shall survive the termination or completion of the contract.

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
(January 4, 2024 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.

I. Under no circumstances shall a wrap-up policy be obtained, for either initiating or maintaining coverage, to satisfy insurance requirements for any policy required under this Section. A **"**wrap up policy**"** is defined as an insurance agreement or arrangement under which all the parties working on a specified or designated project are insured under one policy for liability arising out of that specified or designated project**.**

1-07.18(2) Additional Insured

All insurance policies, with the exception of Workers Compensation, and of Professional Liability and Builder's Risk (if required by this Contract) shall name the following listed entities as additional insured(s) using the forms or endorsements required herein:

- the Contracting Agency and its officers, elected officials, employees, agents, and volunteers

The above-listed entities shall be additional insured(s) for the full available limits of liability maintained by the Contractor, irrespective of whether such limits maintained by the Contractor are greater than those required by this Contract, and irrespective of whether the Certificate of Insurance provided by the Contractor pursuant to 1-07.18(4) describes limits lower than those maintained by the Contractor.

For Commercial General Liability insurance coverage, the required additional insured endorsements shall be at least as broad as ISO forms CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

1-07.18(3) Subcontractors

The Contractor shall cause each subcontractor of every tier to provide insurance coverage that complies with all applicable requirements of the Contractor-provided insurance as set forth herein, except the Contractor shall have sole responsibility for determining the limits of coverage required to be obtained by subcontractors.

The Contractor shall ensure that all subcontractors of every tier add all entities listed in 1-07.18(2) as additional insureds, and provide proof of such on the policies as required by that section as detailed in 1-07.18(2) using an endorsement as least as broad as ISO CG 20 10 10 01 for ongoing operations and CG 20 37 10 01 for completed operations.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency evidence of insurance and copies of the additional insured endorsements of each subcontractor of every tier as required in 1-07.18(4) Verification of Coverage.

1-07.18(4) Verification of Coverage

The Contractor shall deliver to the Contracting Agency a Certificate(s) of Insurance and endorsements for each policy of insurance meeting the requirements set forth herein when the Contractor delivers the signed Contract for the work. Failure of Contracting Agency to demand such verification of coverage with these insurance requirements or failure of Contracting Agency to identify a deficiency from the insurance documentation provided shall not be construed as a waiver of Contractor's obligation to maintain such insurance.

Verification of coverage shall include:

1. An ACORD certificate or a form determined by the Contracting Agency to be equivalent.
2. Copies of all endorsements naming Contracting Agency and all other entities listed in 1-07.18(2) as additional insured(s), showing the policy number. The Contractor may submit a copy of any blanket additional insured clause from its policies instead of a separate endorsement.
3. Any other amendatory endorsements to show the coverage required herein.
4. A notation of coverage enhancements on the Certificate of Insurance shall <u>not</u> satisfy these requirements – actual endorsements must be submitted.

Upon request by the Contracting Agency, the Contractor shall forward to the Contracting Agency a full and certified copy of the insurance policy(s). If Builders Risk insurance is required on this Project, a full and certified copy of that policy is required when the Contractor delivers the signed Contract for the

work.

1-07.18(5) Coverages and Limits

The insurance shall provide the minimum coverages and limits set forth below. Contractor's maintenance of insurance, its scope of coverage, and limits as required herein shall not be construed to limit the liability of the Contractor to the coverage provided by such insurance, or otherwise limit the Contracting Agency's recourse to any remedy available at law or in equity.

All deductibles and self-insured retentions must be disclosed and are subject to approval by the Contracting Agency. The cost of any claim payments falling within the deductible or self-insured retention shall be the responsibility of the Contractor. In the event an additional insured incurs a liability subject to any policy's deductibles or self-insured retention, said deductibles or self-insured retention shall be the responsibility of the Contractor.

1-07.18(5)A Commercial General Liability

Commercial General Liability insurance shall be written on coverage forms at least as broad as ISO occurrence form CG 00 01, including but not limited to liability arising from premises, operations, stop gap liability, independent contractors, products-completed operations, personal and advertising injury, and liability assumed under an insured contract. There shall be no exclusion for liability arising from explosion, collapse or underground property damage.

The Commercial General Liability insurance shall be endorsed to provide a per project general aggregate limit, using ISO form CG 25 03 05 09 or an equivalent endorsement.

Contractor shall maintain Commercial General Liability Insurance arising out of the Contractor's completed operations for at least three years following Substantial Completion of the Work.

Such policy must provide the following minimum limits:

$2,000,000	Each Occurrence
$3,000,000	General Aggregate
$3,000,000	Products & Completed Operations Aggregate
$2,000,000	Personal & Advertising Injury each offence
$2,000,000	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

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.

1-07.18(5)D Excess or Umbrella Liability
(January 4, 2016 APWA GSP)

The Contractor shall provide Excess or Umbrella Liability insurance with limits of not less than $5 million each occurrence and annual aggregate. This excess or umbrella liability coverage shall be excess over and as least as broad in coverage as the Contractor's Commercial General and Auto Liability insurance.

All entities listed under 1-07.18(2) of these Special Provisions shall be named as additional insureds on the Contractor's Excess or Umbrella Liability insurance policy.

This requirement may be satisfied instead through the Contractor's primary Commercial General and Automobile Liability coverages, or any combination thereof that achieves the overall required limits of insurance.

1-08 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

(July 8, 2024 APWA GSP)

Prior to the Contractor beginning the work, a preconstruction conference will be held between the Contractor, the Engineer and such other interested parties as may be invited. The purpose of the preconstruction conference will be:

1. To review the initial progress schedule;
2. To establish a working understanding among the various parties associated or affected by the work;
3. To establish and review procedures for progress payment, notifications, approvals, submittals, etc.;
4. To review DBE Requirements, Training Plans, and Apprenticeship Plans, when applicable.
5. To establish normal working hours for the work;
6. To review safety standards and traffic control; and
7. To discuss such other related items as may be pertinent to the work.

The Contractor shall prepare and submit at the preconstruction conference the following:

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

Add the following new section:

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 10 am 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(3) Reimbursement for Overtime Work of Contracting Agency Employees
(*******)

Where the Contractor elects to work on a Saturday, Sunday, or holiday, or longer than an 8-hour work

shift on a regular working day, as defined in the Standard Specifications, such work shall be considered as overtime work. On all such overtime work an inspector will be present, and a survey crew may be required at the discretion of the Engineer. In such case, the Contracting Agency may deduct from amounts due or to become due to the Contractor for the costs in excess of the straight-time costs for employees of the Contracting Agency required to work overtime hours.

The Contractor by these specifications does hereby authorize the Engineer to deduct such costs from the amount due or to become due to the Contractor.

1-08.1 Subcontracting

Section 1-08.1 is supplemented with the following:

(******)

The Contractor shall ensure that each subcontractor (in any tier) agrees in writing to: (a) perform its work in strict compliance with these contract documents; and (b) defend, indemnify, and hold harmless Cowlitz County (and its officials, employees, and agents) from claims and liabilities arising from the subcontractor's acts and omissions, to the same extent provided in Standard Specification 1-07.14 for the Contractor. Upon request, the Contractor will promptly provide the Engineer with a copy of any subcontract.

The Contractor shall include the language of this section in each of its first tier subcontracts, and shall require each of its subcontractors to include the same language of this section in each of their subcontracts, adjusting only as necessary the terms used for the contracting parties. Upon request of the Owner, the Contractor shall promptly provide documentation to the Owner demonstrating that the subcontractor meets the subcontractor responsibility criteria below. The requirements of this section apply to all subcontractors regardless of tier.

At the time of subcontract execution, the Contractor shall verify that each of its first tier subcontractors meets the following bidder responsibility criteria:

1. Have a current certificate of registration in compliance with chapter 18.27 RCW, which must have been in effect at the time of subcontract bid submittal;

2. Have a current Washington Unified Business Identifier (UBI) number;

3. If applicable, have:

    a. Have Industrial Insurance (workers' compensation) coverage for the subcontractor's employees working in Washington, as required in Title 51 RCW;

    b. A Washington Employment Security Department number, as required in Title 50 RCW;

    c. A Washington Department of Revenue state excise tax registration number, as required in Title 82 RCW;

    d. An electrical contractor license, if required by Chapter 19.28 RCW;

e. An elevator contractor license, if required by Chapter 70.87 RCW.

4. Not be disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065 (3).

1-08.3 Progress Schedule.
Add the following to Section 1-08.3:

(*******)
A critical path schedule shall be submitted by the Contractor for review and approval by the Engineer prior to the preconstruction meeting. Work shall not begin until the critical path schedule is approved. Any deviation from the approved critical path must be submitted to the Engineer with a modified critical path schedule two (2) working days prior to the proposed deviation. Approval must be received from the Engineer prior to proceeding with the deviation. Costs for the critical path schedule shall be included in the bid items of this contract and will not be paid for individually.

1-08.5 Time for Completion
Section 1-08.5 is supplemented with the following:

(March 13, 1995)
This project shall be physically completed within *** **30** *** working days.

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

1-09.6 Force Account

(December 30, 2022 APWA GSP)

Supplement this section with the following:

The Contracting Agency has estimated and included in the Proposal, dollar amounts for all items to be paid per force account, only to provide a common proposal for Bidders. All such dollar amounts are to become a part of Contractor's total bid. However, the Contracting Agency does not warrant expressly or by implication, that the actual amount of work will correspond with those estimates. Payment will be made on the basis of the amount of work actually authorized by the Engineer.

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 typically occurring 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. Portions 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. Costs incurred for 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

(July 8, 2024, APWA GSP, Option B)

Delete the fourth paragraph and replace it with the following:

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 payment. 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.

(July 8, 2024 APWA GSP, Option A)

Supplement this section with the following:

Lump sum item breakdowns are not required when the bid price for the lump sum item is less than $20,000.

Section 1-09.9 is supplemented with the following:

(*******)
Partial Payments. Partial payments shall be made once each month, based on estimates prepared by the Engineer. The Contractor shall prepare a document detailing work and labor performed and material furnished during each calendar month, and shall deliver the document to the Engineer by the fifth day of the following month. The documentation shall be in a format prescribed by the Engineer. If the Contractor's documentation is timely submitted, the County Auditor will issue a warrant payable to the Contractor on the last working day of the month, based on the estimate prepared by the Engineer.

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(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.

BID ITEMS

BID ITEM 1: MISCELLANEOUS CONSTRUCTION
This bid item shall be accomplished in accordance with the Plans and Standard Specification Section 1-09.6, except as modified below.

1-09.6 Force Account
Insert the following paragraph before the first paragraph of Section 1-09.6, which begins "The terms of the contract or of a change order may call...":

The Miscellaneous Construction bid item has been included for any additional work directed by the Engineer that is not required by the original contract. The amount indicated in the proposal for this bid item is to provide a common bid amount. The actual amount paid under this bid item may vary from no payment to the full amount of the bid item.

Add the following to Section 1-09.6:

In lieu of the preceding prescribed method of determining payment for force account work, payment may be made at unit prices or lump sum prices agreed to by the Engineer and the Contractor, prior to beginning the Miscellaneous Construction work.

BID ITEM 2: MOBILIZATION
This bid item shall be accomplished in accordance with the Plans and Standard Specification Section 1-09.7.

BID ITEM 3: 12-INCH HDPE SDR 11 HEADER
BID ITEM 4: 6-INCH HDPE SDR 11 LATERAL
BID ITEM 5: VERTICAL LFG EXTRACTION WELL (8-INCH PVC SCH 80)
BID ITEM 6: 2-INCH FLOW WING STYLE WELLHEAD
BID ITEM 7: QED AP 42+ ULTRA VERTICAL WELL PUMP
BID ITEM 8: 8-INCH QED MODEL GWC82 WELL CAP
BID ITEM 9: LIQUID DISCHARGE SUMP TIE-IN
BID ITEM 10: 12-INCH HEADER ISOLATION VALVE (GEAR OPERATED, BELOW-GRADE) INSTALLATION
BID ITEM 11: 6-INCH HEADER ISOLATION VALVE (GEAR OPERATED, BELOW-GRADE) INSTALLATION
BID ITEM 12: 6-INCH LATERAL TIE-IN TO 12-INCH HEADER
BID ITEM 13: 12-INCH HEADER TIE-IN TO 18-INCH HEADER
BID ITEM 14: 6-INCH LFG STUB UP
BID ITEM 15: 3-INCH HDPE SDR 18 CONDENSATE FORCEMAIN
BID ITEM 16: LIQUID CONVEYNACE CLEANOUT INSTALLATION
BID ITEM 17: 3-INCH LIQUID CONVEYANCE LINE ISOLATION VALVE INSTALLATION
BID ITEM 18: 2-INCH HDPE SDR 9 AIR SUPPLY LINE
BID ITEM 19: 2-INCH AIR LINE ISOLATION AND BLOWOFF VALVE INSTALLATION
BID ITEM 20: 12-INCH HEADER ROAD CROSSING
BID ITEM 21: 2-INCH AIR LINE ROAD CROSSING
BID ITEM 22: 12-INCH FLANGED TERMINATION
BID ITEM 23: WELLHEAD CENTRALIZER (WC-020)
BID ITEM 24: NON-CALCAREOUS STONE BACKFILL
BID ITEM 25: 1-INCH ELECTRICAL CONDUIT
BID ITEM 26: AIR CONVEYANCE COMPRESSOR, ELECTRIC RECIPROCATING AIR COMPRESSOR
BID ITEM 27: AIR COMPRESSOR ELECTRICAL COMPONENTS

These bid items shall be accomplished in accordance with the Plans and the following Special Provisions:

SCOPE OF WORK

1.1 LOCATION OF WORK

The Headquarters' Landfill is located approximately 14.5 miles northeast of Longview, Washington. The address of the Headquarters Landfill is 3434 S Silver Lake Rd, Caste Rock, WA 98611.

1.2 INTENT OF THE CONTRACT

The intent of this Contract is to provide for construction and completion of the Work in accordance with the Construction Plans using a standard of care consistent within the solid waste construction management industry and in accordance with the Standard Specifications and these Special Provisions. Unless otherwise specified, the CONTRACTOR shall furnish all labor, materials, tools, equipment and incidentals that are necessary to complete the work in a proper, complete and acceptable manner in accordance with the Construction Plans.

1.3 DESCRIPTION OF WORK

This project consists of a GCCS construction for Headquarters Landfill. The work includes the installation of twenty (20) landfill gas (LFG) extraction wells, installation of associated piping, fittings, and valves (headers/laterals, air supply line, and condensate forcemain and associated cleanouts). The end product shall be a fully functional GCCS expansion.

1.4 MATERIALS

For the purpose of this Contract, no materials will be supplied by the OWNER.

1.4A HIGH-DENSITY POLYETHYLENE (HDPE) PIPING

1.4A.1 Description

The work described consists of furnishing all labor, materials, equipment, and incidentals necessary to install and test high density polyethylene (HDPE) piping and pipe fittings for LFG, compressed air, and liquids transmission, complete in place and ready for operation as shown on the Contract Drawings and as specified herein.

1.4A.2 Materials

The piping and pipe fittings shall be comprised of new, first quality HDPE material.

1.4A.2(1) Piping

The polyethylene pipe shall be high performance, HDPE pipe, conforming to ASTM D-1248 (Type III, Class C). Minimum cell classification values shall be PE345464C, as referenced in ASTM D-3350. The SDR for each type of pipe shall be as shown on the Contract Drawings. The pipe shall contain a minimum of 2 percent carbon black. HDPE piping will also meet all requirements from WSDOT Standard Specifications Section 9-05.23.

Each standard length of pipe in compliance with this specification shall be clearly marked at a minimum: (1) pipe size, (2) SDR number, and (3) class and profile numbers.

1.4A.2(2) Fittings

Fittings shall be butt fusion, meeting the requirements of ASTM D-3261, with the exception of custom fittings and assemblies. All fittings shall be rated to match the system piping to which they are fused. At the point of fusion, the outside diameter and minimum wall thickness shall meet the outside diameter and minimum wall thickness specifications of ASTM F-714 for the same size of pipe. Pipe connections between dissimilar materials shall be joined by stub end and backing flange.

Thermal butt-fusion of the pipe shall be performed by an experienced technician, certified by the pipe manufacturer in the joining of high-density polyethylene pipe, in accordance with Title 49 CFR 192-285. The pipe manufacturer, or authorized representative, shall submit descriptive information about the fusion equipment to be used, and the qualifications of the joining technician. Written certification of the individual welders shall be required prior to the performance of any welding.

Flanges, when required, shall be of plate type ANSI B16.5-B1, Class 150 lb.

All bolts and nuts for the flanges shall be stainless or galvanized carbon steel.

All flanges shall have gaskets. The gaskets shall be full-face Viton or other approved rubber, 1/16 inch to 1/8 inch in thickness, and shall meet the requirements of ANSI Specification A21.11.

1.4A.2(2)A Custom Fittings and Assemblies

When butt fusion is not possible, custom fittings and assemblies shall be extrusion welded following techniques commonly accepted in the industry. The strength of the weld, based on ASTM C1147, shall meet the standard listed in ASTM C1147. Extrusion welding of the custom High Density Polyethylene fittings shall be performed by an experienced technician and authorized representative of the pipe manufacturer, certified by the pipe manufacturer in the extrusion welding of high-density polyethylene pipe. The pipe manufacturer, or authorized representative, shall submit descriptive information about the equipment to be used, and the qualifications of the joining technician. Written certification of the individual welders shall be required prior to the performance of any welding.

1.4A.2(3) Valves
1.4A.2(3)A Butterfly Valves

All valve shafts shall be connected to operators by use of keys and keyways. The use of compression or friction connectors will not be accepted.

The butterfly valves, for low-pressure/vacuum landfill gas services, shall have ductile-iron full lug body with contoured 316 stainless steel disc and stem, acetal stem bushing, and replaceable seat. Valve seats shall be Viton or approved equal. Valves shall be bubble-tight at 150 psi and shall be suitable for installation between ANSI 125-pound flanges.

All butterfly valves shall open left of counterclockwise when viewed from the stem. Manual valve operators, for valves 3” or larger, shall be worm gear type. Valves installed greater than 5 feet in elevation above the skid platform or the ground shall include chain wheel operators. All operators shall have adjustable mechanical stop limiting devices to prevent over-travel of disc. Should an adjustment of the disc be required to maintain seal, this adjustment shall be made externally without removing the operator housing cover. The operator shall be designed such that adjustments can be made under pressure and without the possibility of dirt getting into the operator lubricant. Adjustments through the lower shaft will not be acceptable. Operator components shall, at the extreme operator positions, withstand without damage a pull of 200 lb for hand-wheel or a torque of 300 ft-lb for operating nuts.

Interior of valve body (except for valve disc, valve seat and stainless steel valve seat rings) shall be coated with a fusion bonded, thermosetting epoxy coating in accordance with the latest version of AWWA C550. Coatings shall be free of imperfections with a minimum thickness of 12 mils. Surface shall be clean, dry, and free from rust and grease before coating.

All butterfly valves shall be manufactured by ABZ or approved equal. Replacement valves and parts shall be commonly available.

1.4A.2(4) Vaults

A vault shall be placed over all below grade valves before backfilling. Appropriately traffic rated vault box and cover are to be installed based on the Contract Drawings.

1.4A.3 Construction Requirements
1.4A.3(1) General
1.4A.3(1)A Submittals

Submittals shall be made in accordance with WSDOT Standard Specifications Section 1-05.3– Plans and Working Drawings. In addition, the following specific information shall be provided.

A statement, in writing, from the pipe manufacturer, stating that he is listed with the Plastic Pipe Institute as a qualified extruder for polyethylene resin being used to manufacture the pipe for this project.

Catalog information confirming the pipes and fittings conform to the requirements of the specifications.

Certification and Test Reports. The CONTRACTOR shall submit to the ENGINEER a manufacturer's certification and test reports as follows: That the HDPE pipe was manufactured from resins in compliance with these Specifications. The certificate shall state the specific resin, its source, and the specific information required by ASTM D-1248. The pipe shall not contain recycled compound except that generated in the manufacturer's own plant from resin of the same specification from the raw material. The pipe shall be homogenous throughout and free of visible cracks, holes, foreign inclusions, or other deleterious defects and shall be identical in color, density, melt index, and other physical properties.

The HDPE pipe manufacturer shall provide certification that stress regression testing has been performed on the specific product. This stress regression testing shall have been done in accordance with ASTM D-2837, and the manufacturer shall provide a product supplying a minimum hydrostatic design basis (HDB) of 1,600 psi, as determined in accordance with ASTM D-2837. The manufacturer must warrant the pipe to be free from defects in material and workmanship in accordance with ASTM D-3350 and F-714.

1.4A.3(1)B Damage Control
1.4A.3(1)B1 Transportation

Care shall be taken during transportation of the pipe that it is not cut, kinked, or otherwise damaged.

1.4A.3(1)B2 Handling Pipe Lengths

Ropes, fabric, or rubber-protected slings and straps shall be used when handling pipes.

Chains, cables, or hooks inserted into the pipe ends shall not be used. Two slings spread apart shall be used for lifting each length of pipe. Pipe or fittings shall not be dropped onto rocky or unprepared ground.

1.4A.3(1)B3 Storage

Pipes shall be store on level ground, preferably turf or sand, free of sharp objects which could damage the pipe.

Stacking of the pipe shall be limited to a height that will not cause excessive deformation of the bottom layers of pipes under anticipated temperature conditions.

Where necessary due to ground conditions, the pipe shall be stored on wooden sleepers, spaced suitably and of such width as not to allow deformation of the pipe at the point of contact with the sleeper or between supports.

1.4A.3(1)C Excavation and Backfill

All excavation (if required) in the preparation of pipe bedding shall be performed in accordance with the requirements of WSDOT Standard Specifications Section 2-09 (Structure Excavation) and the modifications listed herein.

1.4A.3(2) Execution
1.4A.3(2)A Preparation

CONTRACTOR shall stake out pipe alignment and a site survey of the area shall be completed and approved by the ENGINEER before installation can begin. This will allow the ENGINEER to determine if any change in the collection system design is needed.

The Manufacturer shall furnish complete written instructions for the storage, handling, installation, fusion, and repair of the piping in compliance with this Specification and the conditions of this warranty.

The interior of all pipe shall be thoroughly cleaned of all foreign material before being lowered in the trench and shall be kept clean during laying operations by means of plugs, or other industry-approved methods.

1.4A.3(2)B Installation

Cutting shall be done with approved mechanical cutters in a manner that will not damage the pipe. All pipe cuts shall be square, perpendicular to center line of pipe. Pipe shall be firmly and uniformly supported on the bedding material. Pipe interior shall be kept thoroughly clean as the work progresses. Care shall be taken that pipe is not disturbed until joints are cured. Any adapters for joining shall be in accordance with the pipe manufacturer's printed instructions.

Special Precautions. Pipe connected to heavy fittings, manholes, and rigid structures shall be

supported in such a manner that no subsequent relative movement between the pipe and the joint with the rigid structures is possible.

Joining (HDPE Pipe). Sections of the HDPE pipe (40-foot joints) shall be joined into continuous lengths by the butt fusion method above or beside the trench and shall be performed in strict conformance with the pipe manufacturer's recommendations using approved equipment. All valves and transition piping shall be by flange, butt fusion or mechanical joint connections.

Handling Pipeline. The handling of the pipeline shall be in such a manner that the pipe is not damaged by dragging it over sharp and cutting objects.

All taps in the pipe as shown on the Contract Drawings shall be made and necessary plugs shall be inserted by the CONTRACTOR.

Pipe and fittings shall be selected so that there will be as small a deviation as possible at the joints and so that inverts present a smooth surface. Pipe and fittings which do not fit together to form a tight fitting joint will be rejected.

Damaged pipe that results in reduction of the wall thickness by more than approximately 10 percent should be cut out and discarded. Damaged pipe shall be repaired according to manufacturer's recommendations.

The CONTRACTOR shall protect the pipe and workers from the build-up of static electricity, which can be generated in the pipe by friction from the handling of pipe in storage, shipping, and installation. The CONTRACTOR shall minimize the hazard of discharge by applying a film of water to the work surface, to drain away the static electricity. Other recommendations by the pipe manufacturer will be acceptable.

Vault box and cover are to be installed based on final location. Surrounding grade shall be sloped for drainage away from the sump vault. Backfill shall be carefully tamped around the valve box to a distance of 3 feet on all sides or to the undisturbed face of the trench if it is closer.

1.4A.3(2)B1 Above-Ground Installation

Thermal expansion and contraction plays a critical role in the above-grade installed pipes. Temperature changes both externally and internally will cause the pipe to expand or contract, and limiting these expansions and contractions are very important.

Prior to installation of the pipe, the CONTRACTOR shall prepare grade along the pipe route to lines and grades, as shown on the Contract Drawings. The grade shall be finished relatively smooth to accommodate movements of the pipe in all directions during expansion and contraction.

The CONTRACTOR shall then install the pipe on the prepared surface to lines and grades, and maintain a minimum slope in the direction of the condensate flow as indicated on the Contract Drawings.

The change in direction or change in grade for all HDPE piping shall be achieved by using the proper type of pipe fittings.

The pipe anchors shall be placed along the pipeline at the intervals as shown and specified on the Contract Drawings.

1.4A.3(2)B2 Below-Ground Installation

Trench excavation shall be located as shown on the Contract Drawings, and shall be by open cut from the ground surface. Trenching, backfilling, and compaction shall conform to the requirements of WSDOT Standard Specifications Section 2-09 (Structure Excavation) and the modifications listed above.

Trenches shall be excavated to maintain depths as shown on the Contract Drawings. The CONTRACTOR shall be responsible for maintaining alignment and depth of the pipeline. CONTRACTOR shall survey installed pipe to insure compliance with plans prior to backfilling.

Proper facilities shall be provided for lowering sections of pipe into trenches. Under no circumstances shall pipe be laid in water, and no pipe shall be laid when trench or weather conditions are unsuitable for such work. Diversion of drainage or dewatering of trenches during construction shall be provided as necessary. All pipe in place shall be inspected by the ENGINEER and surveyed before backfilling.

Lowering pipe into trench. Care shall be exercised when lowering pipe into the trench to prevent damage to or twisting of the pipe.

1.4A.3(2)C Testing

The CONTRACTOR shall conduct a pneumatic pressure test on installed HDPE header. CONTRACTOR shall furnish all necessary equipment and materials, and make all taps in the pipe, as required. The ENGINEER shall be notified at least 72 hours in advance of testing. The test shall be witnessed by the ENGINEER or Authorized Representative.

All installed pipes shall be subjected to air test pressure of 1.5 times the operating pressure or 10 psi, whichever is greater, for a period of 4 hours. During this period, no loss of pressure shall be observed.

The piping, except at the joints and flanged connections, shall be backfilled prior to air testing. Upon the approval of the ENGINEER and after passing the air testing program, the joints shall be backfilled.

Any section of pipe, which fails to meet the stipulated pressure test, shall be checked by the CONTRACTOR and corrective measures taken. The test shall then be repeated until test results meet the specified requirements.

No pipe installation will be accepted unless and until it meets the pressure test requirements.

Equipment. The CONTRACTOR shall provide the following equipment for the pressure test:

1. Pneumatic compressor separator-dryer system capable of providing oil-free dry air and equipped with one or more full capacity safety relief valves set at a pressure of not more than 105 percent of the required test pressure.
2. Pressure gauges of suitable ranges.

1.4A.3(2)C1 Testing Procedure

Pneumatic testing shall be performed using accurately calibrated instruments and oil-free, dry air. Tests shall be performed on piping after the piping has been completely installed. All parts of the piping system shall be subjected to the test pressure and test duration. During this period, no loss of pressure shall be observed. The CONTRACTOR shall recognize the hazards associated with air testing and shall take all necessary precautions to protect test personnel. All piping to be tested shall be secured to prevent damage to adjacent piping and equipment in the event of a joint failure. Any appurtenant instruments or devices that could be damaged by the test shall be removed from the piping or suitably isolated prior to applying the test.

Test Records: Records shall be made of each piping system installation during the test. These records shall include:

1. Date of test.
2. Description and identification of piping tested.
3. Test pressure.
4. Remarks, to include such items as:
    a. Leaks (type, location).
    b. Repairs made on leaks.
5. Certification by CONTRACTOR and signed acknowledgment by the ENGINEER.

1.4B ELECTRICAL

1.4B.1 Description

This Work consists of all purchase and installation for installation of new electrical power or telemetry systems in accordance with these Specifications and as shown in the Plans or designated by the Engineer.

Table of Contents:

1.4B.2 Materials

1.4B.2(1) Raceways, Boxes, and Cabinets

1.4B.2(1)A Metal Conduit and Tubing

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) AFC Cable Systems, Inc.
    2) Alflex Inc.
    3) Allied Tube & Conduit; a Tyco International Ltd. Co.
    4) Anamet Electrical, Inc.; Anaconda Metal Hose.
    5) Electri-Flex Co.
    6) Manhattan/CDT/Cole-Flex.
    7) Maverick Tube Corporation.
    8) O-Z Gedney; a unit of General Signal.
    9) Wheatland Tube Company.
b. Rigid Steel Conduit: ANSI C80.1.
c. EMT: ANSI C80.3.
d. FMC: Zinc-coated steel
e. LFMC: Flexible steel conduit with PVC jacket.
f. Fittings for Conduit (Including all Types and Flexible and Liquidtight), EMT, and Cable: NEMA FB 1; listed for type and size raceway with which used, and for application and environment in which installed.
    1) Conduit Fittings for Hazardous (Classified) Locations: Comply with UL 886.
    2) Fittings for EMT: Steel or die-cast, compression type.
    3) Joint Compound for Rigid Steel Conduit: Explosion-proof compound listed for use in conduit connector assemblies, and compounded for use to form an explosion-proof seal around each conductor. Compound shall be designed to restrict the passage of gases, vapors and flames through the sealing fitting. Compound shall be Crouse-Hinds CHICO X sealing compound.

1.4B.2(1)B Nonmetallic Conduit and Tubing

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) AFC Cable Systems, Inc.
    2) Anamet Electrical, Inc.; Anaconda Metal Hose.
    3) Arnco Corporation.
    4) CANTEX Inc.
    5) CertainTeed Corp.; Pipe & Plastics Group.
    6) Condux International, Inc.
    7) ElecSYS, Inc.
    8) Electri-Flex Co.
    9) Lamson & Sessions; Carlon Electrical Products.
    10) Manhattan/CDT/Cole-Flex.
    11) RACO; a Hubbell Company.

12) Thomas & Betts Corporation.
13) Carlon

b. RNC: Schedule 80 PVC, unless otherwise indicated.
c. Fittings for ENT and RNC: NEMA TC 3; match to conduit or tubing type and material.

1.4B.2(1)C Surface Raceways

a. Surface Metal Raceways: Galvanized steel with snap on covers.
    1) Manufacturers: Subject to compliance with requirements, provide products by one of the following:
        A. Thomas & Betts Corporation.
        B. Walker Systems, Inc.; Wiremold Company (The).
        C. Wiremold Company (The); Electrical Sales Division.

1.4B.2(1)D Boxes, Enclosures, and Cabinets

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Cooper Crouse-Hinds; Div. of Cooper Industries, Inc.
    2) EGS/Appleton Electric.
    3) Erickson Electrical Equipment Company.
    4) Hoffman.
    5) Hubbell Incorporated; Killark Electric Manufacturing Co. Division.
    6) O-Z/Gedney; a unit of General Signal.
    7) RACO; a Hubbell Company.
    8) Robroy Industries, Inc.; Enclosure Division.
    9) Scott Fetzer Co.; Adalet Division.
    10) Spring City Electrical Manufacturing Company.
    11) Thomas & Betts Corporation.
    12) Walker Systems, Inc.; Wiremold Company (The).
    13) Woodhead, Daniel Company; Woodhead Industries, Inc. Subsidiary.
b. Sheet Metal Outlet and Device Boxes: NEMA OS 1.
c. Cast-Metal Outlet and Device Boxes: NEMA FB 1, aluminum, Type FD, with gasketed cover.
d. Small Sheet Metal Pull and Junction Boxes: NEMA OS 1.
e. Cabinets:
    1) NEMA 250, Type 1, galvanized-steel box with removable interior panel and removable front, finished inside and out with manufacturer's standard enamel.
    2) Hinged door in front cover with flush latch and concealed hinge.
    3) Key latch to match panelboards.
    4) Metal barriers to separate wiring of different systems and voltage.
    5) Accessory feet where required for freestanding equipment.

1.4B.2(2) Underground Ducts and Utility Structures
1.4B.2(2)A Conduit

a. Rigid Steel Conduit: Galvanized. Comply with ANSI C80.1.
b. RNC: NEMA TC 2, Type EPC-80-PVC, UL 651, with matching fittings by same manufacturer as the conduit, complying with NEMA TC 3 and UL 514B.

1.4B.2(2)B Nonmetallic Ducts and Duct Accessories

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) ARNCO Corp.
    2) Carlon Electrical Products; Lamson & Sessions Company.
    3) CertainTeed Products Corp.; Pipe & Plastic Group
b. Underground Plastic Utilities Duct: NEMA TC 6 & 8, Type EB-20-PVC, ASTM F 512, UL 651A, with matching fittings by the same manufacturer as the duct, complying with NEMA TC 9.
c. Duct Accessories:
    1) Duct Separators: Factory-fabricated rigid PVC interlocking spacers, sized for type and sizes of ducts with which used, and selected to provide minimum duct spacing indicated while supporting ducts during concreting or backfilling.
    2) Warning Tape: Underground-line warning tape specified in Division 16 Section "Electrical Identification."

1.4B.2(2)C Handholes

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Quazite, Carson, ArmorCast or equivalent.
b. Polymer-Concrete Handholes and Boxes with Polymer-Concrete Cover: Molded of sand and aggregate, bound together with polymer resin, and reinforced with steel or fiberglass or a combination of the two.
c. The enclosures shall be designed to be installed flush to grade with the cover fitting flush to the box.
d. The enclosures shall be of a stackable design for greater installation flexibility.
e. All covers shall be equipped with a minimum of two stainless steel lockdown mechanisms.
f. All enclosure covers will have some type of recessed access point to allow removal of the cover with a hook. The access points will be placed in such a location to allow for the greatest amount of leverage and safety possible.
g. Enclosures shall be designed and suitable for installation and use through a temperature range of -40 deg F to 140 deg F.
h. A certified copy of all test reports must be signed and stamped by a registered professional Engineer and submitted prior to shipment of products.
i. All enclosures and covers shall be rated based on tier H-20 loading for roadways and other areas subject to deliberate vehicular traffic. Designed to AASHTO H-20 and ASTM

C857 A16 certified proof of compliance from foundries in lieu of testing. A description of the testing methods shall be included with the test reports and must match the descriptions in this specification. The three position tests required by this document are the minimum for the product evaluation.

1.4B.2(2)D Utility Structure Accessories

a. Duct Supports: Rigid PVC spacers selected to provide minimum duct spacing and concrete cover depths required, while supporting ducts during concreting.
b. Cable Rack Assembly: Steel, hot-dip galvanized, except insulators.
    1) Stanchions: T-section or channel; 2-1/4-inch nominal size; punched with 14 holes on 1-1/2-inch centers for cable-arm attachment.
    2) Arms: 1-1/2 inches wide, lengths ranging from 3 inches with 450-lb minimum capacity to 18 inches with 250-lb minimum capacity. Arms shall have slots along full length for cable ties and be arranged for secure mounting in horizontal position at any vertical location on stanchions.
    3) Insulators: High-glaze, wet-process porcelain arranged for mounting on cable arms.
c. Duct-Sealing Compound: Non-hardening, safe for contact with human skin, not deleterious to cable insulation, and workable at temperatures as low as 35 deg F. Capable of withstanding temperature of 300 deg F without slump and adhering to clean surfaces of plastic ducts, metallic conduits, conduit coatings, concrete, masonry, lead, cable sheaths, cable jackets, insulation materials, and common metals.
d. Cover Hooks: As required to lift covers provided on project. Two required.
e. Provide 3” wide, 4 mil thickness, insert polyethylene plastic, and marker tapes impervious to Alkalis, acids, chemical reagents and solvents normally encountered in soil. Tape to be red for power, continuously imprinted along entire length in permanent black letters with word “ELECTRIC”. Tape to be placed along entire length of underground runs at minimum of 24” above ducts and 6” to 24” below grade. Brady, Allen, Seton or equal.

1.4B.2(2)E Source Quality Control

a. Test and inspect precast concrete utility structures according to ASTM C 1037.
b. Nonconcrete Handhole and Pull-Box Prototype Test: Test prototypes of manholes and boxes for compliance with SCTE 77. Strength tests shall be for specified tier ratings of products supplied.
    1) Strength tests of complete boxes and covers shall be by either an independent testing agency or the manufacturer. A qualified registered professional Engineer shall certify tests by manufacturer.
    2) Testing machine pressure gages shall have current calibration certification complying with ISO 9000 and ISO 10012, and traceable to NIST standards.

1.4B.2(2)F Construction Materials

a. Mortar: Conform to ASTM C 270, type M, except for quantities less than 2.0 cu.ft., where packaged mix complying with ASTM C 387, type M may be used.
b. Concrete:

1) Strength: 3000 psi minimum 28_day compressive strength.
2) Aggregate for duct encasement: 3/8_inch maximum size.

1.4B.2(3) Wiring Devices

1.4B.2(3)A Manufacturers

a. Manufacturers' Names: Shortened versions (shown in parentheses) of the following manufacturers' names are used in other Part 2 articles:
   1) Manufacturers listed below produce an extensive line of nationally distributed wiring devices.
      a) Cooper Wiring Devices; a division of Cooper Industries, Inc. (Cooper).
      b) Hubbell Incorporated; Wiring Device-Kellems (Hubbell).
      c) Leviton Mfg. Company Inc. (Leviton).
      d) Pass & Seymour/Legrand; Wiring Devices & Accessories (Pass & Seymour).

1.4B.2(3)B Straight Blade Receptacles

a. General Description: Industrial grade straight blade. Comply with NEMA WD 1, NEMA WD 6 configuration 5-20R, and UL 498.
b. Grounding Convenience Receptacle, 125 V, 20 A
   1) Products: Subject to compliance with requirements, provide one of the following:
      a) Cooper; 5351 (single), 5352 (duplex).
      b) Hubbell; HBL5351 (single), CR5352 (duplex).
      c) Leviton; 5891 (single), 5352 (duplex).
      d) Pass & Seymour; 5381 (single), 5352 (duplex).

1.4B.2(3)C GFCI Receptacles

a. General Description: Industrial grade straight blade, non-feed-through type. Comply with NEMA WD 1, NEMA WD 6, UL 498, and UL 943, Class A, and include indicator light that is lighted when device is tripped.
b. Duplex GFCI Convenience Receptacles, 125 V, 20 A:
   1) Products: Subject to compliance with requirements, provide one of the following:
      a) Cooper; GF20.
      b) Pass & Seymour; 2084.

1.4B.2(3)D Cord and Plug Sets

a. General description: Match voltage and current ratings and number of conductors to requirements of equipment being connected.
   1) Cord: Rubber-insulated, stranded-copper conductors, with Type SOW-A jacket; with green-insulated grounding conductor and equipment-rating ampacity plus a minimum of 30 percent.
   2) Plug: Nylon body and integral cable-clamping jaws. Match cord and receptacle type for connection.

1.4B.2(3)E Snap Switches

a. General Description: Industrial grade, grounding yoke, toggle switch. Comply with NEMA WD 1 and UL 20.
b. Switches, 120/277 V, 20 A:
    1) Products: Subject to compliance with requirements, provide one of the following:
        a) Cooper; 2221 (single pole), 2222 (two pole), 2223 (three way), 2224 (four way).
        b) Hubbell; CS1221 (single pole), CS1222 (two pole), CS1223 (three way), CS1224 (four way).
        c) Leviton; 1221-2 (single pole), 1222-2 (two pole), 1223-2 (three way), 1224-2 (four way).
        d) Pass & Seymour; 20AC1 (single pole), 20AC2 (two pole), 20AC3 (three way), 20AC4 (four way).
c. Pilot Light Switches, 20 A:
    1) Products: Subject to compliance with requirements, provide one of the following:
        a) Cooper; 2221PL for 120 V and 277 V.
        b) Hubbell; HPL1221PL for 120 V and 277 V.
        c) Leviton; 1221-PLR for 120 V, 1221-7PLR for 277 V.
        d) Pass & Seymour; PS20AC1-PLR for 120 V.
    2) General Description: Single pole, with neon-lighted handle, illuminated when switch is "ON."
d. Single-Pole, Double-Throw, Momentary Contact, Center-Off Switches, 120/277 V, 20 A; for use with mechanically held lighting contactors.
    1) Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:
    2) Products: Subject to compliance with requirements, provide one of the following:
        a) Cooper; 1995.
        b) Hubbell; HBL1557.
        c) Leviton; 1257.
        d) Pass & Seymour; 1251.

1.4B.2(3)F Wall Plates

a. Single and combination types to match corresponding wiring devices.
    1) Plate-Securing Screws: Metal with head color to match plate finish.
    2) Material for Finished Spaces 0.035-inch-thick, satin-finished stainless steel.
    3) Material for Unfinished Spaces: Galvanized steel.
    4) Material for Damp Locations: Cast aluminum with spring-loaded lift cover, and listed and labeled for use in "wet locations."
b. Wet-Location, Weatherproof Cover Plates: NEMA 250, complying with type 3R weather-resistant, die-cast aluminum with lockable cover.

1.4B.2(3)G Outlet Boxes and Caddy Supports

a. Manufacturer: Steel City, Raco or Appleton

1) Standards: NEC Article 370.
    a) Material: Pressed steel, zinc coated.
    b) Minimum size: 4-inch square or octagon, gangable 2”x3” where used with cable, depth as required for project.
    c) Extension rings: To suit various conditions.
    d) Hardware: Grounding screw and cable wiring connectors as required by wiring method.
    e) Caddy box supports must be provided and installed on project Series type H, HS3 and series type 766.
    f) Other types: As required by job conditions.

1.4B.2(3)H Finishes

a. Color: Wiring device catalog numbers in Section Text do not designate device color.
    1) Wiring Devices Connected to Normal Power System: Black or as selected by Owner, unless otherwise indicated or required by NFPA 70 or device listing.
    2) Wiring Devices Connected to Stand-by Power System: Yellow-Red or as selected by Owner, unless otherwise indicated or required by NFPA 70 or device listing.

1.4B.2(4) Electrical Identification

1.4B.2(4)A Conductor and Communication – and Control – Cable Identification Materials

a. Color-Coding Conductor Tape: Colored, self-adhesive vinyl tape not less than 3 mils thick by 1 to 2 inches wide.
b. Marker Tapes: Vinyl or vinyl-cloth, self-adhesive wraparound type, with circuit identification legend machine printed by thermal transfer or equivalent process.

1.4B.2(4)B Underground Warning Tape

a. General Description: Permanent, bright-colored, continuous-printed, polyethylene tape.
    1) Not less than 6 inches wide by 4 mils thick.
    2) Compounded for permanent direct-burial service.
    3) Embedded continuous metallic strip or core.
    4) Printed legend shall indicate type of underground line.

1.4B.2(4)C Warning Labels and Signs

a. Comply with NFPA 70 and 29 CFR 1910.145.
b. Self-Adhesive Warning Labels: Factory printed, multicolor, pressure-sensitive adhesive labels, configured for display on front cover, door, or other access to equipment, unless otherwise indicated.
c. Baked-Enamel Warning Signs: Preprinted aluminum signs, punched or drilled for fasteners, with colors, legend, and size required for application.
d. Metal-Backed, Butyrate Warning Signs: 1/4-inch grommets in corners for mounting. Nominal size, 7 by 10 inches. Weather-resistant, nonfading, preprinted, cellulose-acetate butyrate signs with 0.0396-inch galvanized-steel backing; and with colors, legend, and size required for application. 1/4-inch grommets in corners for mounting. Nominal size,

10 by 14 inches.

e. Warning label and sign shall include, but are not limited to, the following legends:
    3) Multiple Power Source Warning: "DANGER - ELECTRICAL SHOCK HAZARD - EQUIPMENT HAS MULTIPLE POWER SOURCES."

1.4B.2(4)D Equipment Identification Labels

a. Engraved, Laminated Acrylic or Melamine Label: Punched or drilled for screw mounting. White letters on a dark-gray background. Minimum letter height shall be 3/8 inch.
b. Stenciled Legend: In nonfading, waterproof, black ink or paint. Minimum letter height shall be 1 inch.

1.4B.2(4)E Miscellaneous Identification Products

a. Cable Ties: Fungus-inert, self-extinguishing, 1-piece, self-locking, Type 6/6 nylon cable ties.
    1) Minimum Width: 3/16 inch.
    2) Tensile Strength: 50 lb, minimum.
    3) Temperature Range: Minus 40 to plus 185 deg F.
    4) Color: Black, except where used for color-coding.
b. Fasteners for Labels and Signs: Self-tapping, stainless-steel screws or stainless-steel machine screws with nuts and flat and lock washers.

1.4B.2(5) Enclosed Switches and Circuit Breakers
1.4B.2(5)A Manufacturers

a. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
    1) Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

1.4B.2(5)B Fusible and Non-fusible switches

a. Manufacturers:
    1) Eaton Corporation; Cutler-Hammer Products.
    2) General Electric Co.; Electrical Distribution & Control Division.
    3) Siemens Energy & Automation, Inc.
    4) Square D/Group Schneider.
b. Fusible Switch, 800A and Smaller: NEMA KS 1, Type HD, with clips or bolt pads to accommodate specified fuses, lockable handle with capability to accept two padlocks, and interlocked with cover in CLOSED position.
c. Non-fusible Switch, 800A and Smaller: NEMA KS 1, Type HD, lockable handle with capability to accept two padlocks, and interlocked with cover in closed position.
d. Accessories:
    1) Equipment Ground Kit: Internally mounted and labeled for copper ground conductors.

2) Auxiliary Contact Kit: Auxiliary set of contacts arranged to open before switch blades open.

1.4B.2(5)C Molded-case Circuit Breakers and Switches

a. Manufacturers:
   1) Eaton Corporation; Cutler-Hammer Products.
   2) General Electric Co.; Electrical Distribution & Control Division.
   3) Siemens Energy & Automation, Inc.
   4) Square D/Group Schneider.
b. Molded-Case Circuit Breaker: NEMA AB 1, with interrupting capacity to meet available fault currents, 22kAIC minimum.
   1) Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads and instantaneous magnetic trip element for short circuits. Adjustable magnetic trip setting for circuit-breaker frame sizes 250 A and larger.
   2) Adjustable Instantaneous-Trip Circuit Breakers: Magnetic trip element with front-mounted, field-adjustable trip setting.
   3) Electronic Trip-Unit Circuit Breakers: RMS sensing; field-replaceable rating plug; with the following field-adjustable settings:
      a) Instantaneous trip.
      b) Long- and short-time pickup levels.
      c) Long- and short-time time adjustments.
      d) Ground-fault pickup level, time delay, and I2t response.
   4) (Personnel) GFCI Circuit Breakers: Single- and two-pole configurations with 5-mA trip sensitivity.
   5) (Equipment) GFEP Circuit Breakers: Single- and two-pole configurations with 30-mA trip sensitivity.
c. Molded-Case Circuit-Breaker Features and Accessories:
   1) Verify that accessories retained below are available and appropriate for circuit-breaker types and ratings specified.
   2) Standard frame sizes, trip ratings, and number of poles.
   3) Lugs: Mechanical style with compression lug kits suitable for number, size, trip ratings, and conductor material.
   4) Application Listing: Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.
   5) Ground-Fault Protection: Integrally mounted relay and trip unit with adjustable pickup and time-delay settings, push-to-test feature, and ground-fault indicator.
d. Molded-Case Switches: Molded-case circuit breaker with fixed, high-set instantaneous trip only, and short-circuit withstand rating equal to equivalent breaker frame size interrupting rating.
e. Molded-Case Switch Accessories:
   1) Lugs: Mechanical style with compression lug kits suitable for number, size, trip ratings, and material of conductors.
   2) Application Listing: Type HACR for heating, air-conditioning, and refrigerating equipment.
   3) ENCLOSURES

f. NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location.
    1) Outdoor Locations: NEMA 250, Type 3R.
    2) Other Wet or Damp Indoor Locations: NEMA 250, Type 4.
    3) Enclosures in hazardous locations must be carefully selected to meet the division and group listing of the environment.
    4) Hazardous Areas Indicated on Drawings: NEMA 250, Type 7C.

1.4B.2(6) Miscellaneous Equipment

1.4B.2(7) Panelboards

1.4B.2(7)A Manufacturers

a. Subject to compliance with requirements, provide products for Panelboards, Overcurrent Protective Devices, Controllers, Contactors, and Accessories, by one of the following:
    1) Eaton Corporation; Cutler-Hammer Products.
    2) Siemens Energy & Automation, Inc.
    3) Square D.
    4) GE Industrial Systems.

1.4B.2(7)B Manufactured Units

a. Enclosures: Surface-mounted cabinets. NEMA PB 1, Type 1.
b. Rated for environmental conditions at installed location.
c. Front: Secured to box with concealed trim clamps. For surface-mounted fronts, match box dimensions; for flush-mounted fronts, overlap box.
d. Hinged Front Cover: Entire front trim hinged to box and with standard door within hinged trim cover.
e. Gutter Extension and Barrier: Same gage and finish as panelboard enclosure; integral with enclosure body. Arrange to isolate individual panel sections.
f. Finish: Manufacturer's standard enamel finish over corrosion-resistant treatment or primer coat.
g. Directory Card: With transparent protective cover, mounted in metal frame, inside panelboard door.
h. Phase and Ground Buses:
    1) Material: Hard-drawn copper, 98 percent conductivity.
    2) Equipment Ground Bus: Adequate for feeder and branch-circuit equipment ground conductors; bonded to box.
i. Conductor Connectors: Suitable for use with conductor material.
j. Main and Neutral Lugs: Compression type.
k. Ground Lugs and Bus Configured Terminators: Compression type.
l. Feed-Through Lugs: Mechanical type suitable for use with conductor material. Locate at opposite end of bus from incoming lugs or main device.
m. Service Equipment Label: UL labeled for use as service equipment for panelboards with main service disconnect switches.
n. Future Devices: Mounting brackets, bus connections, and necessary appurtenances required for future installation of devices.

1.4B.2(7)C Panelboard Short-Circuit Rating

a. Fully rated to interrupt symmetrical short-circuit current available at terminals. Unless otherwise noted on drawings the following ratings shall be used.
b. Minimum 35kAIC for 480V for Distribution and Appliance Panelboards, or as indicated on drawings.
c. Minimum 10kAIC for 208V for Distribution and Appliance Panelboards, or as indicated on drawings.

1.4B.2(7)D Distribution Panelboards

a. Doors: Secured with vault-type latch with tumbler lock; keyed alike.
b. Main Overcurrent Protective Devices: Circuit breaker.
c. Branch Overcurrent Protective Devices:
    1) For Circuit-Breaker Frame Sizes 125 A and Smaller: Bolt-on circuit breakers.
    2) For Circuit-Breaker Frame Sizes Larger Than 125 A: Bolt-on circuit breakers; plug-in circuit breakers where individual positive-locking device requires mechanical release for removal.

1.4B.2(7)E Overcurrent Protective Devices

a. Molded-Case Circuit Breaker: UL 489, with interrupting capacity to meet available fault currents.
b. Thermal-Magnetic Circuit Breakers: Inverse time-current element for low-level overloads, and instantaneous magnetic trip element for short circuits; Electronic trip setting for circuit-breaker frame sizes 250 A and larger.
c. Electronic trip-unit circuit breakers shall have RMS sensing; field-replaceable rating plug; and with the following field-adjustable settings:
    1) Instantaneous trip.
    2) Long- and short-time pickup levels.
    3) Long- and short-time time adjustments.
    4) Ground Fault
d. Molded-Case Circuit-Breaker Features and Accessories: Standard frame sizes, trip ratings, and number of poles.

1.4B.2(7)F Mechanical Lugs

a. Mechanical style, suitable for number, size, trip ratings, and conductor materials.
b. Application Listing: Appropriate for application; Type SWD for switching fluorescent lighting loads; Type HACR for heating, air-conditioning, and refrigerating equipment.

1.4B.2(8) Automatic Transfer Switch (ATS)
1.4B.2(8)A General Requirements

a. The ATS shall be open transition type.

b. The ATS shall be electrically operated and mechanically held. The electrical operator shall be a momentarily energized, solenoid mechanism. Main operators that include over-current disconnect devices; linear motors or gears shall not be acceptable.
c. The switch shall be positively locked and unaffected by momentary outages, so that contact pressure is maintained at a constant value and contact temperature rise is minimized for maximum reliability and operating life.
d. All main contacts shall be silver composition. Switches rated 600 amperes and above shall have segmented, blow-on construction for high withstand and close-on capability and be protected by separate arcing contacts.
e. Inspection of all contacts shall be possible from the front of the switch without disassembly of operating linkages and without disconnection of power conductors. Switches rated 600 amps and higher shall have front removable and replaceable contacts. All stationary and moveable contacts shall be replaceable without removing power conductors and/or bus bars.
f. Designs utilizing components of molded-case circuit breakers, contactors, or parts thereof, which are not intended for continuous duty, repetitive switching or transfer between two active power sources, are not acceptable.
g. Where neutral conductors are to be solidly connected as shown on the plans, a neutral conductor plate with fully rated AL-CU pressure connectors shall be provided.

1.4B.2(8)B Microprocessor Controller

a. The transfer switch controller's sensing and logic shall be provided by a single built-in microprocessor for maximum reliability, minimum maintenance, and the ability to communicate serially with the soft load controller.
b. A single controller shall provide selectable nominal voltages for maximum application flexibility and minimal spare part requirements. Voltage sensing shall be true RMS type and shall be accurate to $\pm$ 1% of nominal voltage. Frequency sensing shall be accurate to $\pm$ 0.2%. The controller shall be capable of operating over a temperature range of -20 to +60 degrees C and storage from -55 to +85 degrees C.
c. The controller shall be connected to the transfer switch by an interconnecting wiring harness. The harness shall include a keyed disconnect plug to enable the controller to be disconnected from the transfer switch for routine maintenance. Sensing and control logic shall be provided on multi-layer printed circuit boards. Interfacing relays shall be industrial grade plug-in type with dust covers. The controller shall be enclosed with a protective cover and be mounted separately from the transfer switch unit for safety and ease of maintenance. The protective cover shall include a built-in pocket for storage of the operator's manuals.
d. All customer connections shall be wired to a common terminal block to simplify field-wiring connections.
e. The controller shall meet or exceed the requirements for Electromagnetic Compatibility (EMC) as follows:
    1) IEEE472 (ANSI C37.90A) Ring Wave Test.
    2) ENC55011 1991 Class A Conducted and Radiated Emission.
    3) EN61000-4-2 Electrostatic Discharge Immunity, Direct Contact & Air Discharge.
    4) EN61000-4-3 Radiated Electromagnetic Field Immunity.

5) EN61000-4-4 Electrical Fast Transient Immunity.
6) EN61000-4-5 Surge Immunity.
7) ENV50141 HF Conducted Disturbances Immunity.

1.4B.2(8)C Controller Display and Keypad

a. An LCD display and keypad shall be an integral part of the controller for viewing all available data and setting desired open transition and closed transition operational parameters.
b. All instructions and controller settings shall be easily accessible, readable and accomplished without the use of codes, calculations, or operator's manual.

1.4B.2(8)D Voltage, Frequency and Phase Rotation Sensing

a. Voltage and frequency on both the normal and emergency sources shall be continuously monitored, with the following pickup, dropout and trip setting capabilities.

Parameter	Sources	Dropout / Trip	Pickup / Reset
Under-voltage	N&E,3ϕ	70 to 98%	85 to 100%
Over-voltage	N&E,3ϕ	102 to 115%	2% below trip
Under-frequency	N&E	85 to 98%	90 to 100%
Over-frequency	N&E	102 to 110%	2% below trip
Voltage unbalance	N&E	5 to 20%	1% below dropout

b. The (TS) Controller and both Power Manager Transducers are all continuously monitoring the normal and emergency sources. The above settings are applicable to emergency standby, open transition transfers only in the event the source connected to load becomes unacceptable. An unacceptable source would be when their measured values are below the dropout or above the trip settings listed above.
c. Repetitive accuracy of all settings shall be within ± 0.5 % over an operating temperature range of -20° C to 60° C.
d. Voltage and frequency settings shall be field adjustable in 1% increments either locally with the display and keypad.
e. The controller shall be capable of sensing the phase rotation of both the normal and emergency sources. The source shall be considered unacceptable if the phase rotation is not the preferred rotation selected (ABC or CBA).
f. Source status screens shall be provided on the LCD display for both normal & emergency to provide digital readout of voltage on all 3 phases, frequency, and phase rotation.

1.4B.2(8)E Time Delays

a. An adjustable time delay of 0 to 6 seconds shall be provided to override momentary normal source outages and delay all transfer and engine starting signals. Capability shall be provided to extend this time delay to 60 minutes.

b. A time delay shall be provided on transfer to emergency, adjustable from 0 to 60 minutes, for controlled timing of transfer of loads to emergency.
c. An adjustable time delay of 0 to 6 seconds to override momentary emergency source outage to delay all retransfer signals during initial loading of engine generator set.
d. Two time delay modes (which are independently adjustable) shall be provided on re-transfer too normal. One time delay shall be for actual normal power failures and the other for the test mode function. The time delays shall be adjustable from 0 to 60 minutes. Time delay shall be automatically bypassed if the emergency source fails and the normal source is acceptable.
e. A time delay shall be provided on shut down of engine generator for cool down, adjustable from 0 to 60 minutes.
f. A time delay activated output signal shall also be provided to drive an external relay(s) for selective load disconnect control. The controller shall have the ability to activate an adjustable 0 to 5-minute time delay in any of the following modes:
    1) Prior to transfer only.
    2) Prior to and after transfer.
    3) Normal to emergency only.
    4) Emergency to normal only.
    5) Normal to emergency and emergency to normal.
    6) All transfer conditions or only when both sources are available.
g. The controller shall also include a built-in 1 to 5 minute time delay on failure to synchronize normal and emergency sources prior to soft load transfer.
h. All TS Controller time delays shall be adjustable in 1-second increments by using the LCD display and keypad located on the enclosure door. The time delay value displayed on the LCD or remote device shall be the remaining time until the next event occurs.

1.4B.2(8)F Additional Protective Functions

a. Negative sequence over current (device 46) for unbalanced current detection.
b. Under/over frequency (device 81) for detecting islanding during parallel operations.
c. Excessive reverse VAR for loss of excitation (device 40)
d. kW overload pre-alarm
e. kW overload alarm

1.4B.2(8)G Additional Features

a. A contact, rated 5 amps at 30 Vdc, shall be provided for a low-voltage engine start signal. The start signal shall prevent dry cranking of the engine by requiring the generator set to reach proper output, and run for the duration of the cool down setting, regardless of whether the normal source restores before the load is transferred.
b. Auxiliary contacts, rated 10 amps, 250 Vac shall be provided consisting of one contact, closed when the transfer switch is connected to the normal source and one contact closed, when the transfer switch is connected to the emergency source.
c. Self Diagnostics - The controller shall contain a diagnostic screen for the purpose of detecting system errors. This screen shall provide information on the status-input signals to the controller, which may be preventing load transfer commands from being

completed.

d. Provide the ability to select “commit/no commit to transfer” to determine whether the load should be transferred to the emergency generator if the normal source restores before the generator is ready to accept the load.
e. Engine Exerciser - The controller shall provide an integral engine exerciser. The engine exerciser shall be programmable.
f. Communications Interface – The controller shall be capable of interfacing, through a communication module. Standard software specific for transfer switch applications shall be available by the transfer switch manufacturer. This software shall allow for the communication, monitoring, control and setup of parameters.
g. Data Logging – The controller shall have the ability to log data and to maintain the last 99 events, even in the event of total power loss. The following events shall be time and date stamped and maintained in a non-volatile memory:
    1) Event Logging
        a) Date and time and reason for transfer normal to emergency.
        b) Date and time and reason for transfer emergency to normal.
        c) Date and time and reason for engine start.
        d) Date and time engine stopped.
        e) Date and time emergency source available.
        f) Date and time emergency source not available.
    2) Statistical Data
        a) Total number of transfers.
        b) Total number of transfers due to source failure.
        c) Total number of days controller is energized.
        d) Total number of hours both normal and emergency sources are available.

1.4B.2(8)H Enclosure

a. The ATS shall be furnished in a Type 3R enclosure.
b. All standard and optional door-mounted switches and pilot lights shall be 16-mm industrial grade type or equivalent for easy viewing & replacement. Door controls shall be provided on a separate removable plate, which can be supplied loose for open type units.

1.4B.2(9) Stand-By Power Generator Set
1.4B.2(9)A Acceptable Manufacturers

a. Caterpillar
b. Cummins
c. Detroit Diesel

1.4B.2(9)B Engine Generator Set

a. Engine Fuel Supply
    1) Fuel type shall be Diesel #2 Fuel
        a) Injection fuel system shall be one (1) injector per cylinder or a combined fuel

injector with overflow return. Provide replaceable fuel filter element(s).

b) Engine driven fuel transfer pump shall have a minimum head of fifteen (15) feet and shall maintain constant pressure on the injection pumps.

b. Lubrication
   1) Provide gear type oil lubrication pump with replaceable oil filter element. Filter equipped with a bypass valve to insure oil flow against clogged filters. Oil cooler and thermostat shall be provided as required. In duplex oil filter systems provide a differential pressure gauge and contact to activate a remote alarm when oil filter should be changed. Lubricating oil to be furnished by manufacturer.
c. Starting System
   1) Starting system shall be direct current two (2) wires, negative ground as per manufacturer's standard.
   2) Starter(s) shall be provided with cranking limiter.
d. Battery Charger Alternator
   1) Provide an engine mounted battery charger alternator capable of full charging the battery in no more than thirty (30) minutes after the engine has started.
e. Air Filters
   1) Provide replaceable dry type air cleaner(s).
f. Engine Heaters
   1) Provide engine jacket water heater, and oil heater with thermostatic control from one hundred twenty (120) degrees F to one hundred thirty (130) degrees F. All heaters shall be pre wired to junction box. Ratings (kW, voltage and phases) shall be as shown on the Drawings or on the data sheet.
g. Engine Instrument and Controls
   1) The following engine instruments and controls shall be provided:
      a) Fuel pressure gage
      b) Lubricating oil pressure gage
      c) Water temperature gage
      d) Battery charge rate ammeter
      e) Pre alarm contacts for jacket water low temperature and low oil pressure
      f) Alarm and shutdown contacts for high water temperature, over speed, low lubricating oil pressure and over cranking
      g) Contacts for remote pre alarms and shutdown as required for the remote annunciator as specified hereinafter
      h) Remote audible alarm with silence switch for any engine malfunction
      i) Selector switch "manual automatic" mounted on the instrument panel
      j) Engine instrument panel light and switch
      k) Manual reset and lamp test switch

1.4B.2(9)C Generator

a. Rotor: Rotor shall have the following characteristics: Revolving field, brushless alternator designed for minimum reactance, low voltage wave form distortion and maximum efficiency. Rotor armortise windings shall improve the alternating current waveform, reduce field heating with single phase or unbalanced loads and act as a stabilizer for paralleling operations. Dynamically balanced rotor permanently aligned to engine by

flexible disc coupling. Three (3) phase stator includes a twelve (12) lead, bus bar load connection system drilled for two (2) hole compression lugs NEMA Standard nine sixteenth inch (9/16") diameter, one and three quarter inches (1 3/4") on center. Number of lugs per phase as shown on the Drawings. Generator shall have minimum class H vacuum pressure impregnated mica-epoxy insulation system with a temperature rise limited to 80 degree over 40 degree C ambient.

b. Exciter: Exciter shall be a 3 phase, full wave rectified, with silicon diodes mounted on common rotor shaft, sized for maximum motor starting. Insulation shall be Class (H) minimum.
c. Excitation System:
    1) Static Excitation-Static Excitation consists of transistors mounted on the stator circuit and battery flashing circuit with cut out relays.
    2) PMG Excitation- Permanent magnet generator, excitation shall be as per manufacturer's specification.
d. Voltage Regulator: Voltage regulator shall be solid state Digital type, silicon-controlled rectifiers with phase controlled sensing circuit. Automatic voltage regulator shall have analog input voltage level control.
e. Bearings: Bearings shall be sealed pre lubricated; Grease Fittings.
f. Cooling Blower: Provide direct driven centrifugal cooling blower designed for minimum noise.
g Electromagnetic Interference Level:
    1) Attenuation shall be such that the generator balanced and residual component TIF shall not exceed the following values:
        a) Generator smaller than 300 KVA TIF=350
        b) Generator greater than 300 KVA but less than 700 KVA TIF = 250
        c) Generator equal or greater than 700 KVA but less than 5000 KVA TIF = 150
h. Voltage Regulation
    1) Require plus or minus one (1) percent, no load to full load with isochronous governing. Provide plus or minus ten (10) percent voltage adjustment, for excitation control.
    2) Steady State Operation: The frequency variation shall not exceed +/ 0.25 percent (+/ 0.15 hertz) and voltage variation +/ 1 percent of their mean value for constant loads from no load to full load.
i. Generator Instruments and Controls
    1) Provide required potential and current transformer for the specified meters, protection & controls. 2. All meters shall be panel board type, linear scale, and minimum accuracy within two percent (2%). 3. Meters shall be flush mounted on front of control cubicle.
j. All wiring to be switchboard type SIS and shall have over current protection, minimum size No. 14 AWG. All wiring terminals on instrument controls and/or terminal blocks shall be numbered. All wiring on doors shall be protected from abrasion.
k. Provide the following meters, a) Multifunction Digital meter is acceptable.b) Amps-read each phase current
    1) Volts- read nominal each phase to phase and phase to neutral voltages
    2) Frequency
    3) Engine running time

4) Kilowatt hour
5) Kilowatt hour reactive
6) Power factor

l. Generator output shall be protected by molded case circuit breaker. Size and ratings as shown on Drawings. Provide auxiliary contact for remote alarm on breaker trip due to overload or short circuit.
m. Generator exciter shall have over current protection size as recommended by manufacturer.
n. Generator protection shall consist of the following elements
   1) Over/Under three-phase voltage sensing on utility, single phase
   2) over/undervoltage sensing on emergency, software adjustable
   3) Frequency sensing on both sources, single phase
   4) Start, transfer, retransfer, and stop time delays, software adjustable
   5) In-phase monitor.
o. All necessary control wiring, wiring harnesses and sockets, illumination, fuses, fuse blocks, terminal blocks, nameplates, fault connections, auxiliary contacts, metering CT's etc. shall be furnished by the vendor. Control wiring shall be easily accessible.
p. Power Network Connection: The generator shall be connected to the power network via automatic transfer switch.
q. Engine Generator Set Mounting: Set to be mounted on welded, self-supporting structural steel frame. Provide appropriate vibration isolators with the proper deflection based on the weight of the set and to prevent the transmission of the vibration to surrounding area.

1.4B.2(9)D Batteries

a. Provide acid type, amp hour rated battery for starting duty at thirty (30) degrees F ambient as recommended by manufacturer, shipped complete. Provide a reinforced fiberglass mounting rack, all required connecting cables and hydrometer. Provide electric heater and thermostatic control for batteries located in an outdoor enclosure. Manufacturer to provide all required electrolyte.

1.4B.2(9)E Battery Charger

a. Automatic float type solid state battery charger sensing device shall include relays and normally open contacts to be wired to remote alarms in case of alternating current power failure, high battery voltage and low battery voltage.
b. Battery charger shall maintain the battery fully charged in twenty four (24) hours after five (5) minute cranking and automatically disconnect the battery from the charger during cranking.
c. When an engine alternator is furnished the charger shall be connected to a normal power source.
d. Provide test switch to verify battery charge condition.
e. Charger shall be provided as part of the transfer switch.

1.4B.2(9)F Muffler and Exhaust Piping

a. Provide sections of seamless, stainless steel flexible exhaust piping between the engine generator set and the muffler(s).
b. Exhaust piping shall be schedule 40 black iron with screw fittings; size to fit muffler outlet. Insulation: Three inches (3") thick minimum hydrous calcium silicate or approved equal. Provide piping exhaust rain cap. Muffler shall be provided with a drain valve. Provide lip ring on metal enclosure roof penetration and rain cover.
c. Muffler sound rating shall be standard industrial.

1.4B.2(9)G Sub-Base Fuel Oil Storage Tank with Leak Detection System

a. Provide a sub-base fuel tank located in engine generator set. Tank capacity for minimum 18 hours of continuous operation at 100% load.
b. Fuel Tank to be supplied with weatherproof rupture basin with two primer coats and epoxy finish. Provide an alarm contact to close when there is fuel in rupture basin. UL listed rupture basin.
c. Fuel tank shall be UL lableled and shall be inspectable on all sides, ends and top.

1.4B.2(9)H Remote Annunciator

a. Manufacturer shall provide software for web based remote annunciation. The remote annunciation capability shall include all engine pre alarm and alarm conditions, alarms alternating current input power failure for the battery charger, for low and high battery conditions, low and high levels in the day tank and low level in the main tank, diesel engines and engine generator main circuit breaker trip due to overload or short circuit.

b. Annunciator shall include provisions for Ethernet communications.
c. Manufacturer shall be the same as the engine generator set or approved equal.

1.4B.2(9)I Operating Requirements

a. Break mean effective pressure (BMEP), brake horse power (BHP), and engine-generator efficiency shall conform with ASME, IEEE and NEMA standards such that electrical energy delivered by the machine is within the minimum certified guaranteed fuel oil consumption rate. Evidence that these parameters have been met shall be furnished.
b. The continuous standby power rating of the engine shall be adequate to drive the generator at rated KW capacity continuously during an interruption of the normal power source or for exercising up to 500 hours annually at full load.
c. The engine must have the ability to recover from transients, load applications, and load removals, such that the frequency change does not exceed 3% for more than six (6) seconds.
d. The engine required auxiliaries, the guarantees of fuel consumption, acceptance tests, governor performance, torsional vibration, materials and workmanship shall be in accordance with DEMA standard practice.

1.4B.2(9)J Engine Governor and Speed Regulation

a. The engine shall be equipped with an electronic governing system capable of maintaining the generator speed within the specified limits from no load to full rated load and of variable adjustment to iso-synchronous operation. The supplier shall include the equipment required (e.g. PT's, CT's actuator, control box) to integrate the governing system into the electrical system.
b. Speed droop shall be externally adjustable from zero to 5% from no load to full rated load. Steady state frequency regulation shall be 2.5% from no load to full rated load. A provision for remote speed adjustment shall be included.
c. The governor shall respond to a speed change of 0.1 of 1% and shall operate without hunting for all values of speed droop and load.
d. The governor shall be capable of maintaining the same speed from no load to full load without manual adjustment.
e. The engine, with the governor provided, shall have maximum instantaneous speed change not to exceed 4% when 25% of the rate load is applied to or removed from the machine instantaneously. The Inertia effect of the fly wheel of the generator and of the flywheel shall be sufficient as to provide this regulation.

1.4B.2(9)K Cooling System

a. The engine cooling system shall consist of a unit-mounted radiator with expansion tank and blower fan sized to adequate cool the engine when the generator set is delivering full rated load.
b. Radiator shall be a tube and fin type sized to continuously maintain safe operation at full load at max outside ambient temp. The fan and all rotating members and drive belts shall be guarded and meet OSHA standards. Proof of ambient temperature capability at the site elevation shall be furnished with calculations by the radiator manufacturer.

c. A radiator mounted coolant level sensor shall be provided to indicate coolant level in radiator and to signal a low coolant condition back to the unit mounted control panel.
d. Fuel oil cooler in the fuel oil return system shall be provided.
e. Cooling system fan shall be 3 phase, 480V with time delay relay switch to interlock the engine when it is not running.
f. Engine shall be interlocked on return oil temperature.
g. Radiator shall be adequate to cool the engine full load plus a minimum of 10% fouling factor.

1.4B.2(9)L Weatherproof Non Walk-In Housing

a. Standby engine generator set shall be factory installed in a factory assembled housing constructed on expandable skid base.
b. Housing dimensions shall be manufacturer's standard and shall have ample air flow openings and accessible doors or removable panels for accessibility to the generator set instruments and replaceable items. All doors and panels shall have lockable handles.
c. Provide fourteen (14) gauge reinforced sheet steel attached to the generating set

standard base and radiator support.

d. Housing shall include the generating set batteries with thermostatically controlled electric heaters pre wired to a junction box.
e. Muffler shall be (internal)(external) to the enclosure. Exhaust shall be installed through enclosure roof. Penetration shall be watertight with clip ring and a flashing cap.
f. Enclosure shall be adequately heated and a motorized louver shall be provided.
g. Enclosure shall have a corrosion resistant treatment; two (2) coats of primer and one (1) coat of standard manufacturer's finish.
h. Manufacturer shall be the same as the generator set.

1.4B.2(10) Conductors and Cables

1.4B.2(10)A Manufacturers

a. Subject to compliance with requirements, provide products by one of the following:
    1) Alcan Products Corporation; Alcan Cable Division.
    2) American Insulated Wire Corp.; a Leviton Company.
    3) General Cable Corporation.
    4) Senator Wire & Cable Company.
    5) Southwire Company.
b. All conductors shall be Copper Conductors: Comply with NEMA WC 70.
c. Conductor Insulation: Comply with NEMA WC 70 for Types THHN-THWN-2.
d. Single phase circuits: All single phase 120V and single phase 277V circuits shall have a dedicated neutral conductor for each phase conductor.
e. Bare stranded copper for grounding equipment and copper bus bars in equipment rooms.

1.4B.2(10)B Connectors And Splices

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) AFC Cable Systems, Inc.
    2) O-Z/Gedney; EGS Electrical Group LLC.
    3) 3M; Electrical Products Division.
    4) Tyco Electronics Corp.
    5) Elastimold
    6) ISLCD
b. Description: Factory-fabricated connectors and splices of size, ampacity rating, material, type, and class for application and service indicated.
    1) All 600V power cables shall utilize long barrel two holes compressions crimp lugs.

1.4B.2(11) Grounding and Bonding

1.4B.1(11)A Manufacturers

a. Subject to compliance with Specifications; provide products by one of the following Manufacturers:
    1) Harger Lightning and Grounding

2) Erico
3) Burndy
4) Ilsco
5) Thomas and Betts
6) Heary Brothers

1.4B.2(11)B Conductors

a. Insulated Conductors: Copper wire or cable insulated for 600 V unless otherwise required by applicable Code or authorities having jurisdiction.
b. Bare Copper Conductors:
    1) Solid Conductors: ASTM B 3.
    2) Stranded Conductors: ASTM B 8.
    3) Tinned Conductors: ASTM B 33.
    4) Bonding Cable: No.6AWG, 14 strands of No. 17 AWG conductor, 1/4 inch (6 mm) in diameter.
    5) Bonding Conductor: No. 4 or No. 6 AWG, stranded conductor.
    6) Bonding Jumper: Copper tape, braided conductors, terminated with copper ferrules; 1-5/8 inches (41 mm) wide and 1/16 inch (1.6 mm) thick.
c. Bare Grounding Conductor and Conductor Protector for Wood Poles:
    1) No. 4 AWG minimum, soft-drawn copper.
    2) Conductor Protector: Half-round PVC or wood molding. If wood, use pressure-treated fir or cypress or cedar.
    3) Conform to owner requirements in addition to listed requirements above.
    4) Grounding Bus: Rectangular bars of annealed copper, 1/4 by 3 inches in cross section, unless otherwise indicated; with standoff insulators.

1.4B.2(11)C Connectors

a. Listed and labeled by a nationally recognized testing laboratory acceptable to authorities having jurisdiction for applications in which used, and for specific types, sizes, and combinations of conductors and other items connected.
b. Above ground bolted Connectors for Conductors and Pipes: Copper or copper alloy, bolted pressure-type, with at least two bolts.
c. Pipe Connectors: Clamp type, sized for pipe.
d. Above Ground Irreversible Compression Connectors: Compression connectors and tool kits used as recommended by the manufacturer for specified wire types/sizes and application.
e. Underground Welded Connectors: Exothermic-welding kits of types recommended by kit manufacturer for materials being joined and installation conditions.
f. Underground Irreversible Compression Connectors: Compression connectors and tool kits used as recommended by the manufacturer for specified wire types/sizes and application.
    1) The use of Underground Irreversible Compression Connectors shall be allowed subject to acceptability of an itemized cost breakdown comparison supporting this option as a cost effective solution.

1.4B.2(11)D Grounding Electrodes

a. Ground Rods: Copper-clad steel, sectional type; 3/4 inch by 10 feet (19 mm by 3 m) in diameter.

1.4B.2(12) Exterior Lighting

1.4B.2(12)A Luminaires, General Requirements

a. Luminaires shall comply with UL 1598 and be listed and labeled for installation in wet locations by an NRTL acceptable to authorities having jurisdiction.
b. Metal Parts: Free of burrs and sharp corners and edges.
c. Sheet Metal Components: Corrosion-resistant aluminum, unless otherwise indicated. Form and support to prevent warping and sagging.
d. Housings: Rigidly formed, weather- and light-tight enclosures that will not warp, sag, or deform in use. Provide filter/breather for enclosed luminaires.
e. Doors, Frames, and Other Internal Access: Smooth operating, free of light leakage under operating conditions, and designed to permit relamping without use of tools. Designed to prevent doors, frames, lenses, diffusers, and other components from falling accidentally during relamping and when secured in operating position. Doors shall be removable for cleaning or replacing lenses. Designed to disconnect ballast when door opens.
f. Exposed Hardware Material: Stainless steel.
g. Plastic Parts: High resistance to yellowing and other changes due to aging, exposure to heat, and UV radiation.
h. Reflecting surfaces shall have minimum reflectance as follows, unless otherwise indicated:
    1) White Surfaces: 85 percent.
    2) Specular Surfaces: 83 percent.
    3) Diffusing Specular Surfaces: 75 percent.
    4) Lenses and Refractors Gaskets: Use heat- and aging-resistant resilient gaskets to seal and cushion lenses and refractors in luminaire doors.
    5) Luminaire Finish: Manufacturer's standard paint applied to factory-assembled and -tested luminaire before shipping.

    6) Factory-Applied Finish for Steel Luminaires: Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.
    7) Surface Preparation: Clean surfaces to comply with SSPC-SP 1, "Solvent Cleaning," to remove dirt, oil, grease, and other contaminants that could impair paint bond. Grind welds and polish surfaces to a smooth, even finish. Remove mill scale and rust, if present, from uncoated steel, complying with SSPC-SP 5/NACE No. 1, "White Metal Blast Cleaning," or SSPC-SP 8, "Pickling."
    8) Exterior Surfaces: Manufacturer's standard finish consisting of one or more coats of polyester powder coat finish.

1.4B.2(12)B Ballasts For Hid Lamps

a. Comply with ANSI C82.4 and UL 1029 and capable of open-circuit operation without reduction of average lamp life. Include the following features, unless otherwise indicated:
    1) Ballast Circuit: Constant-wattage autotransformer or regulating high-power-factor type.
    2) Minimum Starting Temperature: Minus 22 deg F (Minus 30 deg C).
    3) Normal Ambient Operating Temperature: 104 deg F (40 deg C).
    4) Ballast Fuses: One in each ungrounded power supply conductor. Voltage and current ratings as recommended by ballast manufacturer.

1.4B.2(12)C Hid Lamps

a. Metal-Halide Lamps: ANSI C78.1372, with a minimum CRI 65, and color temperature 3500 K.

1.4B.2(12)D Luminaire-Mounted Photoelectric Relays

a. Comply with UL 773 or UL 773A.
b. Contact Relays: Factory mounted, single throw, designed to fail in the on position, and factory set to turn light unit on at 1.5 to 3 fc and off at 4.5 to 10 fc with 15-second minimum time delay.
c. Relay with locking-type receptacle shall comply with NEMA C136.10.
d. Adjustable window slide for adjusting on-off set points.

1.4B.2(13) Pad Mounted Liquid Filled Transformers
1.4B.2(13)A Related Documents

a. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.4B.2(13)A Summary

a. This Section includes the installation of the following types of transformers with medium-voltage primaries:

    1) Pad-mounted, liquid-filled transformers.
    2) This equipment will be furnished by E.C. It is the E.C.'s responsibility to receive, store, protect, rig, set in place, and make all final connections to this equipment prior to start-up.
    3) Refer to Division 26 Section 260000 "Electrical Summary & Scope of Work", Paragraph 1.3.A.3

1.4B.2(13)B Definitions

a. NETA ATS: Acceptance Testing Specification.

1.4B.2(13)C Submittals

a. Product Data: Include rated nameplate data, capacities, weights, dimensions, minimum clearances, installed devices and features, location of each field connection, and performance for each type and size of transformer indicated. Weight and dimension shop drawings showing locations of conduit stub-ups are due two weeks after receiving a P.O.
b. Shop Drawings: Diagram power and control.
c. Coordination Drawings: Floor plans, drawn to scale, on which the following items are shown and coordinated with each other, based on input from installers of the items involved:
    1) Underground primary and secondary conduit stub-up location.
    2) Dimensioned concrete base, outline of transformer, and required clearances.
    3) Ground rod and grounding cable locations.
d. Manufacturer Seismic Qualification Certification: Submit certification that transformer assembly and components will withstand seismic forces defined in Division 26 Section "Electrical Supports and Seismic Restraints." Include the following:
    1) Basis for Certification: Indicate whether withstand certification is based on actual test of assembled components or on calculation. The term "withstand" means "the unit will remain in place without separation of any parts from the device when subjected to the seismic forces specified."
    2) Dimensioned Outline Drawings of Equipment Unit: Identify center of gravity and locate and describe mounting and anchorage provisions.
    3) Detailed description of equipment anchorage devices on which the certification is based and their installation requirements.
e. Qualification Data: For testing agency.
f. Source quality-control test reports.
g. Operation and Maintenance Data: For transformer and accessories to include in emergency, operation, and maintenance manuals.

1.4B.2(13)D Quality Assurance

a. Testing Agency Qualifications: An independent testing agency, with the experience and capability to conduct the testing indicated, that is a member company of the International Electrical Testing Association or is a nationally recognized testing laboratory (NRTL) as defined by OSHA in 29 CFR 1910.7, and that is acceptable to authorities having jurisdiction. Testing Agency's Field Supervisor: Person currently certified by the International Electrical Testing Association or the National Institute for Certification in Engineering Technologies to supervise on-site testing specified in Part 3.
b. Comply with IEEE C2.
c. Comply with ANSI C57.12.10, ANSI C57.12.28, IEEE C57.12.70, and IEEE C57.12.80.
d. Comply with NFPA 70.

1.4B.2(13)E Project Conditions

a. Service Conditions: IEEE C37.121, usual service conditions with the exception of ambient temperatures.
b. Environmental Limitations: Rate equipment for continuous operation at indicated ampere ratings for Temperatures (average low, record low, average high and record high), Altitude above sea level, and Seismic Requirements: specific to project location.

1.4B.2(13)F Coordination

a. Coordinate size and location of concrete bases. Cast anchor-bolt inserts into bases.
b. Coordinate installation of louvers, doors, spill retention areas, and sumps. Coordinate installation so no piping or conduits are installed in space allocated for medium-voltage transformers except those directly associated with transformers.

1.4B.2(13)G Manufacturers

a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    1) Asea Brown Boveri (ABB)
    2) Cooper Industries; Cooper Power Systems Division.
    3) Approved equal.

1.4B.2(13)H Pad-Mounted, Liquid-Filled Transformers

a. Ratings: The ratings of the transformers shall be as follows:
    1) kVA Rating: 300kVA at a 55 deg C rise winding temperature
    2) Impedance: 5.75%
    3) HV: 12470V Delta
    4) HV BIL : 60kV
    5) HV De-energized Taps: +/- 2 - 2-1/2% full capacity
    6) LV: 480Y/277V WYE with X0 bushing
    7) LV BIL: 30kV
    8) Frequency: 60Hz
    9) Windings: Aluminum
    10) Provide with DOE 2010 Efficiency Standards
    11) Unit shall meet 1.0 Power Factor
b. Description: IEEE C57.12.12, pad-mounted, 2-winding transformers. Stainless-steel tank base and cabinet.
c. The unit shall be FM approved, biotemp fluid and shall be in accordance with the latest edition of the NEC.
d. Insulation Temperature Rise: 55 deg C when operated at rated kVA output in a 30 deg C ambient temperature. Transformer shall be rated to operate at rated kilovolt ampere in an average ambient temperature of 30 deg C over 24 hours with a maximum ambient temperature of 40 deg C without loss of service life expectancy.
e. Full-Capacity Voltage Taps: Four 2.5 percent taps, 2 above and 2 below rated high

voltage; with externally operable tap changer for de-energized use and with position indicator and padlock hasp.

f. High-Voltage Terminations and Equipment: Four (4) hole spade terminals. Provide parking stand for each bushing well.
g. Accessories:
    1) Drain Valve: 1 inch (25 mm), with sampling device.
    2) Dial-type thermometer.
    3) Liquid-level gage.
    4) Pressure-vacuum gage.
    5) Pressure Relief Device: Self-sealing with an alarm contact.
    6) Additive Alternate: U.L certified with FM label.
h. Low-Voltage Terminations and Equipment: Provide NEMA spade terminals on secondary side of transformer with enough holes to terminate the required number of parallel conductors per phase as indicated on Electrical Single-Line Diagram.

1.4B.2(13)I Identification Devices

a. Nameplates: Engraved, laminated-plastic or metal nameplate for each transformer, mounted with corrosion-resistant screws. Nameplates and label products are specified in Division 26 Section "Electrical Identification."

1.4B.2(13)J Source Quality Control

a. Factory Tests: Perform design and routine tests according to standards specified for components. Conduct transformer tests according to IEEE C57.12.90.
b. Factory Tests: Perform the following factory-certified tests on each transformer:
    1) Resistance measurements of all windings on rated-voltage connection and on tap extreme connections.
    2) Ratios on rated-voltage connection and on tap extreme connections.
    3) Polarity and phase relation on rated-voltage connection.
    4) No-load loss at rated voltage on rated-voltage connection.
    5) Excitation current at rated voltage on rated-voltage connection.
    6) Applied potential.
    7) Induced potential.
    8) Power Factor Test.

1.4B.2(14) Remote Telemetry Unit (RTU) system

a. The existing Telemetry system will be replaced with a new telemetry system that can record the data on location, send it to a common base station in the office, record the data at the base station, and display the relevant information. Because the remote locations are out of line of sight of the office, a repeater station will be needed to relay the information between the office and the RTUs.

1.4B.2(14)A RTU's

a. Each RTU will include data collection, data storage, and a radio to transmit the data to the office where the main server is located. The communication between devices will be Ethernet.
    1) Modbus I/O modules
        a) The I/O modules will take in the digital and analog signals and convert them to a Modbus format that can be read by the other devices on the Ethernet network.
    2) Modbus data recorder at RTU cabinet
        a) Data recorder in the RTU cabinet will read the Modbus data over the Ethernet network to have a backup data source in case the radio link fails.
    3) Ethernet Switch
    4) 24 VDC Power Supply
    5) Radio (acting as Ethernet Bridge between RTU and repeater)
        a) The radios will be set up to connect the Ethernet network in the RTU cabinet to the Ethernet network in the office. The radios will be invisible to the devices on the network; it will appear to the devices as if everything is on the same network allowing simple communication between the base station and the remote location.

1.4B.2(14)B Repeater

a. The repeater station will be located on the top of the landfill and have line of sight to the office as well as all remote locations. Power for the repeater will run up the side of the landfill from the cell 1 leachate pump location.
    1) Power comes from Cell 1 pump
        a) There is existing power to the cell 1 leachate pump station. The power will run up the side of the landfill up to the location of the repeater.
        b) Radio with omnidirectional antenna (acting as Ethernet Bridge between RTU and office).
        c) This will link all the devices together.

1.4B.2(14)C Base Station (Office)

The data will be collected, recorded, and made available using the base station located in the office. It will consist of a server that is running the SCADA software which is connected to the radio that links it to the RTU devices. It will gather data in real-time from the remote locations, display that on the SCADA screens, and log it at the intervals specified. The data that is logged will be stored in a database and be accessible from any computer that has an Ethernet connection to the SCADA computer.

a. Radio (acting as Ethernet Bridge between office and repeater)
    1) The radio will be mounted on the shop on an antenna to allow for tree clearance. It will be connected through Ethernet to the SCADA server and provide the link to the repeater station.

b. SCADA server
    1) The server will acquire the data from the RTU stations, record it, and present it in an easy to understand graphic format. A user who wants to view SCADA will log into the server and download the program (free to the user) that will allow them to display SCADA on their screen. Multiple users can log in at the same time. Data can be viewed and saved to the local computer. If any control is desired it can be done through the SCADA system as well.
    2) Software: Inductive Automation Ignition
        a) Inductive Automation Ignition runs on the server in the office and allows computers connected to the network to connect and display the SCADA screens. It shows both real time data and logged data in a user-friendly manner.
        b) Monitor remote site status and display on SCADA screens
            1. Pump station
            2. Flare station
        c) Store data in database
            1. The Ignition SCADA software connects to a database (usually MySQL) that is also running on the server. It will store all the data there in the database. The data can also be accessed through the Ignition SCADA software at any time. The data can be downloaded in an Excel format for easy access.
        d) Network access to stored data
            1. Because of the network accessibility of Ignition, any computer that is connected to the same network as the SCADA computer can access the data that has been logged. The data can be downloaded in an Excel format for easy access and integration with other data sources.

1.4B.3 Construction Requirements
1.4B.3(1) Raceways, Boxes, and Cabinets
1.4B.3(1)A Raceway Application

a. Outdoors: Apply raceway products as specified below, unless otherwise indicated:
    1) Exposed Conduit: Rigid steel conduit.
    Concealed Conduit, Aboveground: Rigid steel conduit.
    Underground Conduit: RNC, Type EPC-80-PVC, direct buried.
    Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
    Boxes and Enclosures, Aboveground: NEMA 250, Type 4.
b. Comply with the following indoor applications, unless otherwise indicated:
    1) Exposed, Not Subject to Physical Damage: EMT.
    Exposed, Not Subject to Severe Physical Damage: EMT.
    Exposed, Subject to Physical Damage and Severe Physical Damage: RGS.
    Connection to Vibrating Equipment (Including Transformers and Hydraulic, Pneumatic, Electric Solenoid, or Motor-Driven Equipment): LFMC.
    Damp or Wet Locations: Rigid steel conduit.
    Raceways for Concealed Indoors General Purpose Distribution of Optical Fiber or

Communications Cable: EMT.

Boxes and Enclosures, NEMA AB 1 and NEMA KS 1 to meet environmental conditions of installed location: Indoor NEMA 250, Type 1; Wet or Damp Indoor Locations: NEMA 250, Type 4; Outdoor Locations: NEMA 250, Type 3R; Hazardous Areas Indicated on Drawings: NEMA 250, Type 7C; enclosures in hazardous locations must be carefully selected to meet the division and group listing of the environment.

1. Minimum Raceway Size: 3/4-inch (21-mm) trade size.

Raceway Fittings: Compatible with raceways and suitable for use and location.

2) Rigid and Intermediate Steel Conduit: Use threaded rigid steel conduit fittings, unless otherwise indicated.

1.4B.3(1)B Installation

a. Comply with NECA 1 for installation requirements applicable to products specified in Part 2 except where requirements on Drawings or in this Article are stricter.

Keep raceways at least 6 inches (150 mm) away from parallel runs of flues and steam or hot-water pipes. Install horizontal raceway runs above water and steam piping.

Complete raceway installation before starting conductor installation.

Support raceways as specified in Division 16 Section "Hangers and Supports for Electrical Systems."

Arrange stub-ups so curved portions of bends are not visible above the finished slab.

First paragraph below is more restrictive than NFPA 70, which permits up to four quarter bends in a conduit run. Retain below for more conservative design, with less stress being placed on wire being pulled in.

Install no more than the equivalent of three 90-degree bends in any conduit run except for communications conduits, for which fewer bends are allowed.

Raceways Embedded in Slabs:

1) Run conduit larger than 1-inch (27-mm) trade size, parallel or at right angles to main reinforcement. Where at right angles to reinforcement, place conduit close to slab support.
2) Change from Type EPC-80-PVC to rigid steel conduit before rising from above grade.

b. Retain paragraph below to require application of protective joint compound to threads of rigid steel conduit or IMC, and their fittings, where these raceways are installed outdoors or in wet, damp, or corrosive conditions. This optional requirement exceeds NFPA70 rules. If retaining, coordinate with Part 2 "Joint Compound for Rigid Steel Conduit or IMC" Paragraph and with Drawings indicating wet, damp, or corrosive indoor locations.

Threaded Conduit Joints, Exposed to Wet, Damp, Corrosive, or Outdoor Conditions: Apply listed compound to threads of raceway and fittings before making up joints. Follow compound manufacturer's written instructions.

c. Retain first paragraph below to exceed NFPA 70 requirements. NFPA 70 requires insulated bushings or other smooth rounded entry provisions for conduit terminations at all locations where conductors are No. 4 AWG and larger, regardless of the environment.

   Raceway Terminations at Locations Subject to Moisture or Vibration: Use insulating bushings to protect conductors, including conductors smaller than No. 4 AWG.

   Install pull wires in empty raceways. Use polypropylene or monofilament plastic line with not less than 200-lb (90-kg) tensile strength. Leave at least 12 inches (300 mm) of slack at each end of pull wire.

d. Paragraph below is applicable for EMT, ENT, FMC, IMC, RMC, RNC, and optical fiber/communications cable raceways.

   Raceways for Optical Fiber and Communications Cable: Install raceways, metallic and nonmetallic, rigid and flexible, as follows:
   1) 3/4-Inch (19-mm) Trade Size and Smaller: Install raceways in maximum lengths of 50 feet (15 m).
   2) 1-Inch (25-mm) Trade Size and Larger: Install raceways in maximum lengths of 75 feet (23 m).
   3) Install with a maximum of two 90-degree bends or equivalent for each length of raceway unless Drawings show stricter requirements. Separate lengths with pull or junction boxes or terminations at distribution frames or cabinets where necessary to comply with these requirements.

e. Retain paragraph and subparagraphs below if applicable.

   Install raceway sealing fittings at suitable, approved, and accessible locations and fill them with listed sealing compound. For concealed raceways, install each fitting in a flush steel box with a blank cover plate having a finish similar to that of adjacent plates or surfaces. Install raceway sealing fittings at the following points:
   1) Where conduits pass from warm to cold locations, such as boundaries of refrigerated spaces.
   2) Where otherwise required by NFPA 70.

1.4B.3(1)C Protection

a. Provide final protection and maintain conditions that ensure coatings, finishes, and cabinets are without damage or deterioration at time of Substantial Completion.
   1) Repair damage to galvanized finishes with zinc-rich paint recommended by manufacturer.
   2) Repair damage to PVC or paint finishes with matching touchup coating recommended by manufacturer.

1.4B.3(2) Underground Ducts and Utility Structures
1.4B.3(2)A Examination

a. Examine site to receive ducts for compliance with installation tolerances and other conditions affecting performance of the underground ducts. Do not proceed with installation until unsatisfactory conditions have been corrected.

1.4B.3(2)B Underground Duct Application

a. Ducts for Electrical Cables Over 600 V: RNC, NEMA Type EPC-40-PVC, in concrete-encased duct bank, unless otherwise indicated.
b. Ducts for Electrical Feeders 600 V and Less: RNC, NEMA Type EPC-80-PVC, in direct-buried duct bank, unless otherwise indicated.
c. Underground Ducts for Telephone, Communications, or Data Utility Service Cables: RNC, NEMA Type EPC-80-PVC, installed in direct-buried duct bank, unless otherwise indicated.

1.4B.3(2)C Earthwork

a. Provide all excavation, trenching, backfill, tools, apparatus, shoring and necessary staging.
b. All excavation shall be unclassified and all material encountered, regardless of types of hardness, including rock or old foundations, shall be removed to accommodate the work.
c. Excavation and Backfill: Do not use heavy-duty, hydraulic-operated, compaction equipment where damage could result.
d. Provide pumping equipment to remove all water from trenches and other excavations. Discharge water only at suitable drainage points.
e. All backfill under walks, roads, driveways, pipes, ducts, conduits, handholes, and other specialties shall be compacted to 95 percent AASHO modified density. Test of compaction shall be conducted for each 16 inches of fill or fraction thereof, one test for each 2,000 sq.ft. or less. Copy of test results shall be forwarded to Engineer before surfaces are restored.
f. Restore surface features at areas disturbed by excavation and reestablish original grades, unless otherwise indicated. Replace removed sod immediately after backfilling is completed.
g. Restore areas disturbed by trenching, storing of dirt, cable laying, and other work. Restore vegetation and include necessary topsoiling, fertilizing, liming, seeding, sodding, sprigging, and mulching.
h. Backfill shall be clean earth and shall be free from rocks, frozen earth, debris, and foreign materials. Backfill shall be deposited in uniform layers not over 6 inches thick and each layer shall be mechanically tamped before the next layer is applied up to final 4 inches of top soil.
i. Where existing underground services are involved, excavation shall be performed with hand tools. The Contractor shall be responsible for all damage to existing utilities.

1.4B.3(2)D Duct Installation

a. Feeder raceway banks shall be encased in a concrete envelope not less than 3 inches thick all around the outside limits of the raceway group and shall not be less than 3 inches between any surface of raceway. The top of the enclosing concrete envelope shall not be less than 36 inches below finished grade. Concrete envelopes shall be reinforced at all points by #4 reinforcing rods in each corner of the envelope with vertical cross ties on 3 foot centers.
b. Install nonmetallic conduit and duct as indicated according to manufacturer's written instructions.
c. Slope: Pitch ducts a minimum slope of 1:300 down toward handholes and away from buildings and equipment. Slope ducts from a high point in runs between two handholes to drain in both directions.
d. Curves and Bends: Use 5-degree angle couplings for small changes in direction. Use manufactured long sweep bends with a minimum radius of 48 inches, both horizontally and vertically, at other locations, unless otherwise indicated.
e. Joints: Use solvent-cemented joints in ducts and fittings and make watertight according to manufacturer's written instructions. Stagger couplings so those of adjacent ducts do not lie in same plane.
f. Sleeves and sleeve seals for conduits penetrating building walls below grade are specified in Division 16 Section "Basic Electrical Materials and Methods."
g. Building Entrances: Make a transition from underground duct to rigid steel conduit at least 10 feet (3 m) outside the building wall without reducing duct line slope away from the building, and without forming a trap in the line. Use fittings manufactured for duct-to-conduit transition. Follow appropriate installation instructions below.
h. Concrete Encased Ducts: Install reinforcing in duct banks passing through disturbed earth near buildings and other excavations. Coordinate duct bank with structural design to support duct bank at wall without reducing structural or watertight integrity of building wall.
i. Waterproofed Wall and Floor Entrances: Install a watertight entrance-sealing device with the sealing gland assembly on the inside. Anchor device into masonry construction with 1 or more integral flanges. Secure membrane waterproofing to the device to make permanently watertight.
j. Sealing: Provide temporary closure at terminations of ducts that have cables pulled. Seal spare ducts at terminations. Use sealing compound and plugs to withstand at least 15-psig hydrostatic pressure.
k. Pulling Cord: Install 100-lbf-test nylon cord in ducts, including spares.
l. Concrete-Encased Ducts: Support ducts on duct separators.
m. Separator Installation: Space separators close enough to prevent sagging and deforming of ducts, and secure separators to earth and to ducts to prevent floating during concreting. Stagger separators approximately 6 inches between tiers. Tie entire assembly together using fabric straps; do not use tie wires or reinforcing steel that may form conductive or magnetic loops around ducts or duct groups.
n. Concreting Sequence: Pour each run of envelope between manholes or other terminations in one continuous operation.

1) Start at one end and finish at the other, allowing for expansion and contraction of ducts as their temperature changes during and after the pour. Use expansion fittings installed according to manufacturer's written recommendations, or use other specific measures to prevent expansion-contraction damage.
2) If more than one pour is necessary, terminate each pour in a vertical plane and install 3/4-inch reinforcing rod dowels extending 18 inches into concrete on both sides of joint near corners of envelope.
3) Pouring Concrete: Spade concrete carefully during pours to prevent voids under and between conduits and at exterior surface of envelope. Do not allow a heavy mass of concrete to fall directly onto ducts. Use a plank to direct concrete down sides of bank assembly to trench bottom. Allow concrete to flow to center of bank and rise up in middle, uniformly filling all open spaces. Do not use power-driven agitating equipment unless specifically designed for duct-bank application.
4) Coordinate first subparagraph below with Drawings, and consider showing duct-bank reinforcement requirements on them.
5) Reinforcement: Reinforce concrete-encased duct banks where they cross disturbed earth and where indicated. Arrange reinforcing rods and ties without forming conductive or magnetic loops around ducts or duct groups.

o. Stub-Ups: Use manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
1) Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
2) Stub-Ups to Equipment: For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of base. Install insulated grounding bushings on terminations at equipment.

p. Direct-Buried Duct Banks:
1) Support ducts on duct separators coordinated with duct size, duct spacing, and outdoor temperature.
2) Space separators close enough to prevent sagging and deforming of ducts, with not less than 4 spacers per 20 feet of duct. Secure separators to earth and to ducts to prevent displacement during backfill and yet permit linear duct movement due to expansion and contraction as temperature changes. Stagger spacers approximately 6 inches between tiers.
3) Excavate trench bottom to provide firm and uniform support for duct bank.
4) Install backfill as required.
5) After installing first tier of ducts, backfill and compact. Start at tie-in point and work toward end of duct run, leaving ducts at end of run free to move with expansion and contraction as temperature changes during this process. Repeat procedure after placing each tier. After placing last tier, hand-place backfill to 4 inches over ducts and hand tamp. Firmly tamp backfill around ducts to provide maximum supporting strength. Use hand tamper only. After placing controlled backfill over final tier, make final duct connections at end of run and complete backfilling with normal compaction.
6) Set elevation of bottom of duct bank below the frost line.

q. Install manufactured rigid steel conduit elbows for stub-ups at poles and equipment and at building entrances through the floor.
    1) Couple steel conduits to ducts with adapters designed for this purpose, and encase coupling with 3 inches of concrete.
    2) For equipment mounted on outdoor concrete bases, extend steel conduit horizontally a minimum of 60 inches from edge of equipment pad or foundation. Install insulated grounding bushings on terminations at equipment.

1.4B.3(2)E Installation of Handholes

a. Install handholes and boxes level and plumb and with orientation and depth coordinated with connecting ducts to minimize bends and deflections required for proper entrances. Use box extension if required to match depths of ducts, and seal joint between box and extension as recommended by the manufacturer.
b. Unless otherwise indicated, support units on a level bed of crushed stone or gravel, graded from 1/2-inch sieve to No. 4 sieve and compacted to same density as adjacent undisturbed earth.
c. Elevation: Set so cover surface will be flush with finished grade.
d. Install handholes and boxes with bottom below the frost line.
e. Install removable hardware, including pulling eyes, cable stanchions, cable arms, and insulators, as required for installation and support of cables and conductors and as indicated. Select arm lengths to be long enough to provide spare space for future cables, but short enough to preserve adequate working clearances in the enclosure.
f. Field-cut openings for ducts and conduits according to enclosure manufacturer's written instructions. Cut wall of enclosure with a tool designed for material to be cut. Size holes for terminating fittings to be used, and seal around penetrations after fittings are installed.

1.4B.3(2)F Grounding

a. Ground underground ducts and utility structures according to Division 16 Section "Grounding and Bonding."
b. Grounding Bushings: Provide grounding for bushings on all conduits entering/leaving switchboard/switchgear enclosures and ductbanks. Provide insulated ground wire from grounding bushings to ground bus of switchboard/switchgear.

1.4B.3(2)G Field Quality Control

a. Perform the following tests and inspections and prepare test reports:
    1) Demonstrate capability and compliance with requirements on completion of installation of underground ducts and utility structures.
    2) Pull aluminum or wood test mandrel through duct to prove joint integrity and test for out-of-round duct. Provide mandrel equal to 80 percent fill of duct. If obstructions are indicated, remove obstructions and retest.
    3) Test handhole grounding to ensure electrical continuity of grounding and bonding connections. Measure and report ground resistance as specified in Division 16

Section "Grounding and Bonding."

b. Correct deficiencies and retest as specified above to demonstrate compliance.

1.4B.3(2)H Cleaning

a. Pull leather-washer-type duct cleaner, with graduated washer sizes, through full length of ducts. Follow with rubber duct swab for final cleaning and to assist in spreading lubricant throughout ducts.
b. Clean internal surfaces of manholes, including sump. Remove foreign material.

1.4B.3(3) Wiring Devices

1.4B.3(3)A Installation

a. Comply with NECA 1, including the mounting heights listed in that standard, unless otherwise noted.
b. See Editing Instruction No. 4 in the Evaluations for timing and sequencing of construction to assist in avoiding contamination of devices during construction.
c. Coordination with Other Trades:
    1) Take steps to insure that devices and their boxes are protected. Do not place wall finish materials over device boxes and do not cut holes for boxes with routers that are guided by riding against outside of the boxes.
    2) Keep outlet boxes free of plaster, drywall joint compound, mortar, cement, concrete, dust, paint, and other material that may contaminate the raceway system, conductors, and cables.
    3) Install device boxes in brick or block walls so that the cover plate does not cross a joint unless the joint is troweled flush with the face of the wall.
    4) Install wiring devices after all wall preparation, including painting, is complete.
d. Conductors:
    1) Do not strip insulation from conductors until just before they are spliced or terminated on devices.
    2) Strip insulation evenly around the conductor using tools designed for the purpose. Avoid scoring or nicking of solid wire or cutting strands from stranded wire.
    3) The length of free conductors at outlets for devices shall meet provisions of NFPA 70, Article 300, without pigtails.
e. Device Installation:
    1) Replace all devices that have been in temporary use during construction or that show signs that they were installed before building finishing operations were complete.
    2) Keep each wiring device in its package or otherwise protected until it is time to connect conductors.
    3) Do not remove surface protection, such as plastic film and smudge covers, until the last possible moment.
    4) Connect devices to branch circuits using pigtails that are not less than 6 inches in length.
    5) When there is a choice, use side wiring with binding-head screw terminals. Wrap solid conductor tightly clockwise, 2/3 to 3/4 of the way around terminal screw.

6) Use a torque screwdriver when a torque is recommended or required by the manufacturer.
7) When conductors larger than No. 12 AWG are installed on 15- or 20-A circuits, splice No. 12 AWG pigtails for device connections.
8) Tighten unused terminal screws on the device.
9) When mounting into metal boxes, remove the fiber or plastic washers used to hold device mounting screws in yokes, allowing metal-to-metal contact.

f. Receptacle Orientation:
1) +, and on horizontally mounted receptacles to the right.

g. Device Plates: Do not use oversized or extra-deep plates. Repair wall finishes and remount outlet boxes when standard device plates do not fit flush or do not cover rough wall opening.

h. Coordinate two paragraphs below with Drawings.

i. Arrangement of Devices: Unless otherwise indicated, mount flush, with long dimension vertical. Group adjacent switches under single, multigang wall plates.

1.4B.3(3)B Identification

a. Comply with Division 16 Section "Electrical Identification."
1) Receptacles: Identify panelboard and circuit number from which served. Use hot, stamped or engraved machine printing with black-filled lettering on face of plate, and durable wire markers or tags inside outlet boxes.

1.4B.3(3)C Field Quality Control

a. Perform tests and inspections and prepare test reports.
1) Test Instruments: Use instruments that comply with UL 1436.
2) Test Instrument for Convenience Receptacles: Digital wiring analyzer with digital readout or illuminated LED indicators of measurement.

b. Tests for Convenience Receptacles:
1) Line Voltage: Acceptable range is 105 to 132 V.
2) Percent Voltage Drop under 15-A Load: A value of 6 percent or higher is not acceptable.
3) Ground Impedance: Values of up to 2 ohms are acceptable.
4) GFCI Trip: Test for tripping values specified in UL 1436 and UL 943.
5) Using the test plug, verify that the device and its outlet box are securely mounted.
6) The tests shall be diagnostic, indicating damaged conductors, high resistance at the circuit breaker, poor connections, inadequate fault current path, defective devices, or similar problems. Correct circuit conditions, remove malfunctioning units and replace with new ones, and retest as specified above.

1.4B.3(4) Electrical Identification
1.4B.3(4)A Application

a. Accessible Raceways and Metal-Clad Cables More Than 600 V: Identify with "DANGER-HIGH VOLTAGE" in black letters at least 2 inches high, with snap-around labels. Repeat

legend at 10-foot maximum intervals.

b. Accessible Raceways and Cables of Auxiliary Systems: Identify the following systems with color-coded, snap-around, color-coding bands:
    1) Fire Alarm System: Red.
    2) Fire-Suppression Supervisory and Control System: Red and yellow.
    3) Security System: Blue and yellow.
    4) Mechanical and Electrical Supervisory System: Green and blue.
    5) Telecommunication System: Green and yellow.
    6) Control Wiring: Green and red.
c. Power-Circuit Conductor Identification: For primary and secondary conductors No. 1/0 AWG and larger in pull and junction boxes, manholes, and handholes use color-coding conductor tape. Identify source and circuit number of each set of conductors. For single conductor cables, identify phase in addition to the above.
d. Branch-Circuit Conductor Identification: Where there are conductors for more than three branch circuits in same junction or pull box, use color-coding conductor tape. Identify each ungrounded conductor according to source and circuit number.
e. Auxiliary Electrical Systems Conductor Identification: Identify field-installed alarm, control, signal, sound, intercommunications, voice, and data connections.
    1) Identify conductors, cables, and terminals in enclosures and at junctions, terminals, and pull points. Identify by system and circuit designation.
    2) Use system of marker tape designations that is uniform and consistent with system used by manufacturer for factory-installed connections.
    3) Coordinate identification with Project Drawings, manufacturer's wiring diagrams, and Operation and Maintenance Manual.
f. Locations of Underground Lines: Identify with underground-line warning tape for power, lighting, communication, and control wiring and optical fiber cable. Install underground-line warning tape for both direct-buried cables and cables in raceway.
g. Warning Labels for Indoor Cabinets, Boxes, and Enclosures for Power and Lighting: Comply with 29 CFR 1910.145 and apply self-adhesive warning labels. Identify system voltage with black letters on an orange background. Apply to exterior of door, cover, or other access.
    1) Equipment with Multiple Power or Control Sources: Apply to door or cover of equipment including, but not limited to, the following:
        a) Power transfer switches.
        b) Controls with external control power connections.
    2) Equipment Requiring Workspace Clearance According to NFPA 70: Unless otherwise indicated, apply to door or cover of equipment but not on flush panelboards and similar equipment in finished spaces.
h. Instruction Signs:
    1) Operating Instructions: Install instruction signs to facilitate proper operation and maintenance of electrical systems and items to which they connect. Install instruction signs with approved legend where instructions are needed for system or equipment operation.
    2) Emergency Operating Instructions: Install instruction signs with white legend on a red background with minimum 3/8-inch-high letters for emergency instructions at equipment used for power transfer.

i. Coordinate paragraph and subparagraphs below with electrical Sections in Divisions 2, 13, and 16. Delete items not in Project.

j. Equipment Identification Labels: On each unit of equipment, install unique designation label that is consistent with wiring diagrams, schedules, and Operation and Maintenance Manual. Apply labels to disconnect switches and protection equipment, central or master units, control panels, control stations, terminal cabinets, and racks of each system. Systems include power, lighting, control, communication, signal, monitoring, and alarm systems unless equipment is provided with its own identification.

1) Labeling Instructions:
   a) Indoor Equipment: Engraved, laminated acrylic or melamine label. Unless otherwise indicated, provide a single line of text with 1/2-inch-high letters on 1-1/2-inch-high label; where 2 lines of text are required, use labels 2 inches high.
   b) Outdoor Equipment: Engraved, laminated acrylic or melamine label.
   c) Elevated Components: Increase sizes of labels and letters to those appropriate for viewing from the floor.

2) Equipment to Be Labeled:
   a) Panelboards, electrical cabinets, and enclosures.
   c) Access doors and panels for concealed electrical items.
   d) Electrical switchgear and switchboards.
   e) Transformers.
   f) Electrical substations.
   g) Emergency system boxes and enclosures.
   h) Motor-control centers.
   i) Disconnect switches.
   j) Enclosed circuit breakers.
   k) Motor starters.
   l) Push-button stations.
   m) Power transfer equipment.
   n) Contactors.
   o) Remote-controlled switches, dimmer modules, and control devices.
   p) Battery racks.
   q) Power-generating units.
   r) Voice and data cable terminal equipment.
   s) Security and intrusion-detection control stations, control panels, terminal cabinets, and racks.
   t) Monitoring and control equipment.
   u) Terminals, racks, and patch panels for voice and data communication and for signal and control functions.

1.4B.3(4)B Installation

a. Verify identity of each item before installing identification products.
b. Coordinate first paragraph below with Drawings.
c. Location: Install identification materials and devices at locations for most convenient viewing without interference with operation and maintenance of equipment.

d. Apply identification devices to surfaces that require finish after completing finish work.
e. Retain paragraph below if self-adhesive identification products are specified.
f. Self-Adhesive Identification Products: Clean surfaces before application, using materials and methods recommended by manufacturer of identification device.
g. Retain paragraph below for nonadhesive signs or labels.
h. Attach non-adhesive signs and plastic labels with screws and auxiliary hardware appropriate to the location and substrate.
i. Retain paragraph below if color-coded bands are specified to identify different systems and distinguish one from another.
j. System Identification Color Banding for Raceways and Cables: Each color band shall completely encircle cable or conduit. Place adjacent bands of two-color markings in contact, side by side. Locate bands at changes in direction, at penetrations of walls and floors, at 50-foot maximum intervals in straight runs, and at 25-foot maximum intervals in congested areas.
k. Retain first paragraph and subparagraphs below if color-coding of power and lighting conductors for phase or voltage level identification is required to satisfy the Code, authorities having jurisdiction, or special Project requirements. If retaining, coordinate with Division 16 Section "Conductors and Cables" and edit to indicate extent of color-coding required. For existing buildings, clarify if requirements apply to both old and new wiring or to new wiring only. Below applies only to phase conductors. Color-coding of grounded and grounding conductors is dictated by the Code.
l. Color-Coding for Phase and Voltage Level Identification, 600 V and Less: Use the colors listed below for ungrounded service, feeder, and branch-circuit conductors.
    1) Color shall be factory applied or, for sizes larger than No. 10 AWG if authorities having jurisdiction permit, field applied.
    2) Colors for 208/120-V Circuits:
        a) Phase A: Black.
        b) Phase B: Red.
        c) Phase C: Blue.
    3) Colors for 480/277-V Circuits:
        a) Phase A: Brown.
        b) Phase B: Orange.
        c) Phase C: Yellow.
m. Field-Applied, Color-Coding Conductor Tape: Apply in half-lapped turns for a minimum distance of 6 inches from terminal points and in boxes where splices or taps are made. Apply last two turns of tape with no tension to prevent possible unwinding. Locate bands to avoid obscuring factory cable markings.
n. Aluminum Wraparound Marker Labels and Metal Tags: Secure tight to surface of conductor or cable at a location with high visibility and accessibility.
o. Underground-Line Warning Tape: During backfilling of trenches install continuous underground-line warning tape directly above line at 6 to 8 inches below finished grade. Use multiple tapes where width of multiple lines installed in a common trench or concrete envelope exceeds 16 inches overall.
p. Painted Identification: Prepare surface and apply paint according to Division 9 painting Sections.

1.4B.3(5) Enclosed Switches and Circuit Breakers

1.4B.3(5)A Examination

a. Examine elements and surfaces to receive enclosed switches and circuit breakers for compliance with installation tolerances and other conditions affecting performance.
b. Proceed with installation only after unsatisfactory conditions have been corrected.

1.4B.3(5)B Installation

a. Comply with applicable portions of NECA 1, NEMA PB 1.1, and NEMA PB 2.1 for installation of enclosed switches and circuit breakers.
b. Mount individual wall-mounting switches and circuit breakers with tops at uniform height, unless otherwise indicated.
c. Temporary Lifting Provisions: Remove temporary lifting eyes, channels, and brackets and temporary blocking of moving parts from enclosures and components.

1.4B.3(5)C Identification

a. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 16 Section 16195 "Electrical Identification."
b. Enclosure Nameplates: Label each enclosure with engraved metal or laminated-plastic nameplate as specified in Division 16 Section 16195 "Electrical Identification."

1.4B.3(5)D Field Quality Control

a. Testing Agency: Contractor will engage a qualified testing and inspecting agency to perform the following field tests and inspections and prepare test reports:
    1) Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
    2) Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

1.4B.3(5)E Adjusting

a. Set field-adjustable switches and circuit-breaker trip ranges.

1.4B.3(5)F Cleaning

a. On completion of installation, vacuum dirt and debris from interiors; do not use compressed air to assist in cleaning.
b. Inspect exposed surfaces and repair damaged finishes.

1.4B.3(6) Miscellaneous Equipment

1.4B.3(7) Panelboards
1.4B.3(7)A Installation

a. Install panelboards and accessories according to NEMA PB 1.1.
b. Mount top of trim 74 inches (1880 mm) above finished floor, unless otherwise indicated.
c. Mount plumb and rigid without distortion of box. Mount recessed panelboards with fronts uniformly flush with wall finish.
d. Install overcurrent protective devices and controllers. Set field-adjustable switches and circuit-breaker trip ranges.
e. Install filler plates in unused spaces.
f. Arrange conductors in gutters into groups and bundle and wrap with wire ties.

1.4B.3(7)B Identification

a. Identify field-installed conductors, interconnecting wiring, and components; provide warning signs as specified in Division 26 Section 26 05 53 "Electrical Identification."
b Create a directory to indicate installed circuit loads. Obtain approval before installing. Use a computer to create directory; handwritten directories are not acceptable.
c. Panelboard Nameplates: Label each panelboard with engraved metal or laminated-plastic nameplate mounted with corrosion-resistant screws.

1.4B.3(7)C Connections

a. Ground equipment according to Division 26 Section 26 05 26 "Grounding and Bonding."
b. Connect wiring according to Division 26 Section 26 05 19 "Conductors and Cables."

1.4B.3(7)D Field Quality Control

a. Prepare for acceptance tests as follows:
    1) Test insulation resistance for each panelboard bus, component, connecting supply, feeder, and control circuit.
    2) Test continuity of each circuit.

1.4B.3(7)E Testing Agency

a. Contractor will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
    1) Perform the following field tests and inspections and prepare test reports:
    2) Perform each electrical test and visual and mechanical inspection stated in NETA ATS, Section 7.5 for switches and Section 7.6 for molded-case circuit breakers. Certify compliance with test parameters.
    3) Correct malfunctioning units on-site, where possible, and retest to demonstrate compliance; otherwise, replace with new units and retest.

1.4B.3(7)F Cleaning

a. On completion of installation, inspect interior and exterior of panelboards. 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.

1.4B.3(8) Automatic Transfer Switch

a. Location: Verify location at site before installation.
b. Mounting Height: Six feet (6') to top of cabinet unless otherwise shown on Drawings.
c. Mount cabinet level and flush or surface as scheduled. Support from building members, independent of wall finished surface and conduits. Provide special base as required and as shown on the Drawings.
d. Provide all necessary grounding.
e. Provide all required power and control circuiting to remote components such as generator, battery charger, control circuits for supplied equipment, normal power supply and load power supply, Building Automation System (BAS), etc.
f. Provide required compression lugs long barrel two (2) holes for all power connections where shown on the Drawings.
g. Test the transfer switch in all modes of operation.

1.4B.3(9) Engine Generator Set
1.4B.3(9)A Setting In Place Arrangement

a. Verify location of site before starting work. Install and arrange where shown on the Drawings. Install and arrange engine generator according to manufacturer's instructions.
b. Engage approved rigging contractor to unload, move and set in place engine generator set(s).
c. Provide concrete pad and grounding as shown on the Drawings using three thousand (3,000) psi concrete with forty five (45) degrees one inch (1") beveled edges. Concrete pad shall be of the shape recommended by manufacturer or as shown on the Drawings.
d. Electrical Contractor shall provide all necessary anchor bolts. Use templates if required, for proper setting of engine generator.
e. Refer specifically to drawing details for grounding requirements for this installation.
f. Install, assemble and erect all items of equipment plumb, level and true.

g. Leave maximum space available in front, along sides, etc., all items of equipment, to allow easy access and servicing of all serviceable components.
h. Provide spring vibration isolators on mounting bolts between engine base and floor (pad).

i. When engine generator set is installed within walk in enclosure attached to the skid base, the Electrical Contractor shall provide neoprene vibration pads in lieu of vibration isolators between the base and the concrete pad.

1.4B.3(9)B Wiring

a. All conduit holes shall be made using hydraulic or screw operated punches.
b. Install all power signal and control wiring between engine generator set(s), transfer switch(es), battery charger, batteries, day tank and all other various and related equipment, in strict accordance with the manufacturer's instructions and the Drawings.
c. Use Burndy, long barrel, Hy dent cable lugs for all normal and emergency power cables.
d. All control wires shall be stranded type, no splices are permitted.
e. Color-code and identify all control and power wires and cables.
f. All control wire terminations shall use T&B or approved equal "crimp on" terminals with ring tongue or other locking feature. All wires shall terminate in properly identified terminal blocks.
g. Unless otherwise shown on the Drawings, use seal tight fittings and liquid tight conduits for all engine final connections.
h. Provide circuitry from a normal power source to the water jacket heater. Provide a local disconnect at the engine location. Provide circuitry to auxiliary devices such as battery heaters, battery charger, lights, receptacles solenoids, ventilating equipment and heaters in the set housing, etc.

1.4B.3(9)C Fuel and Water Supply Systems

a. Fuel and water supply systems shall be provided by other Contractors.
b. Coordinate main fuel tank, fuel and water piping, valves, flexible connections, etc. with other Contractors by furnishing required drawings to other Contractors for the complete installation.
c. All fuel system alarm circuits shall be provided by Electrical Contractor.

1.4B.3(9)D Ventilation

a. Ventilation system shall be provided by other Contractors.
b. Coordinate with other Contractors required duct systems, dampers, motor operators, exhaust fans, flexible ducts, etc. to make the system complete and operational.
c. Electrical Contractor shall provide wiring to fans, electric solenoid for pneumatic louvers, or electric motor for electrically operated louvers, including all wiring, auxiliary relays and transformers.

1.4B.3(10) Conductors and Cables
1.4B.3(10)A Conductor Material Applications

a. Feeders: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
b. Branch Circuits: Copper. Solid for No. 10 AWG and smaller; stranded for No. 8 AWG and larger.
c. Control Circuits: Copper. Stranded, unless otherwise noted. Contractor shall refer to equipment shop drawings for specific wiring requirements.

1.4B.3(10)B Conductor Insulation and Multi-conductor Cable Applications And Wiring Methods

a. Exposed Feeders: Type THHN-THWN-2, single conductors in raceway.
b. Feeders Concealed in Ceilings, Walls, Partitions, and Crawlspaces: Type THHN-THWN-2, single conductors in raceway.
c. Feeders Concealed in Concrete, below Slabs-on-Grade, and Underground: Type THHN-THWN-2, single conductors in raceway.
d. Branch Circuits Concealed in Ceilings, Walls, and Partitions: Type THHN-THWN-2, single conductors in raceway.
e. Class 1 Control Circuits: Type THHN-THWN-2, in raceway.
f. Class 2 Control Circuits: Type THHN-THWN-2, in raceway.

1.4B.3(10)C Installation Of Conductors And Cables

a. Conceal cables in finished walls, ceilings, and floors, unless otherwise indicated.
b. Splices shall not be permitted unless cable exceeds roll length in new installation
c. Use manufacturer-approved pulling compound or lubricant where necessary; compound used must not deteriorate conductor or insulation. Do not exceed manufacturer's recommended maximum pulling tensions and sidewall pressure values.
d. Use pulling means, including fish tape, cable, rope, and basket-weave wire/cable grips, that will not damage cables or raceway.
e. Install exposed cables parallel and perpendicular to surfaces of exposed structural members, and follow surface contours where possible.
f. Support cables according to Division 26 Section 260529 "Hangers and Supports for Electrical Systems".
g. Identify and color-code conductors and cables according to Division 26 Section 260553 "Electrical Identification."

1.4B.3(10)D Connections

a. Tighten electrical connectors and terminals according to manufacturer's published torque-tightening values. If manufacturer's torque values are not indicated, use those specified in UL 486A and UL 486B.
b. Make splices and taps that are compatible with conductor material and that possess equivalent or better mechanical strength and insulation ratings than unspliced conductors.
c. Wiring at Outlets: Install conductor at each outlet, with at least 6 inches of slack.

1.4B.3(10)E Motor Terminations

a. All shall be made using bolted type connectors. Terminals shall be insulated with a minimum of three (3) half (1/2) lapped layers of Plymouth “Slip-Knot” rubber tape or equal protected with a minimum of two (2) half (1/2) lapped layers of Scotch No. 33 plastic tape.

1.4B.3(10)F Fire-Stopping

a. Apply fire-stopping to electrical penetrations of fire-rated floor and wall assemblies to restore original fire-resistance rating of assembly according to Division 7 Section "Through-Penetration Fire-stop Systems."

1.4B.3(10)G Quality Control

a. Testing Agency: Contractor will engage a qualified testing agency to perform tests and inspections and prepare test reports.
b. Tests and Inspections:
    1) After installing conductors and cables and before electrical circuitry has been energized, test all feeder and branch conductors for compliance with requirements.
    2) Perform each visual and mechanical inspection and electrical test stated in NETA Acceptance Testing Specification section 7.3.2. Certify compliance with test parameters.
    3) Test Reports: Prepare a written report to record the following:
    4) Test procedures used.
    5) Test results that comply with requirements.
    6) Test results that do not comply with requirements and corrective action taken to achieve compliance with requirements.
    7) Remove and replace malfunctioning units and retest as specified above.

1.4B.3(11) Grounding and Bonding
1.4B.3(11)A Applications

a. Conductors: Install solid conductor for No. 8 AWG and smaller, and stranded conductors for No. 6 AWG and larger, unless otherwise indicated.
b. Underground Grounding Conductors: Install bare copper conductor, No. 4/0 AWG minimum.
    1) Unless otherwise noted on drawings, bury at least 36 inches (600 mm) below grade.
    2) Duct-Bank Grounding Conductor: Bury 12 inches (300 mm) above duct bank when indicated as part of duct-bank installation.
c. Grounding Bus: Install in rooms housing service equipment, and elsewhere as indicated.
    1) Install bus on insulated spacers 1 inch (25 mm), minimum, from wall 6-12 inches (150 mm) above finished floor, unless otherwise indicated.
    2) Where indicated on both sides of doorways, route bus up to top of door frame, across top of doorway, down to specified height above floor, and connect to horizontal bus.
d. Conductor Terminations and Connections:
    1) Pipe and Equipment Grounding Conductor Terminations: Bolted connectors.
    2) Underground Connections: Exothermic Welded connections, except at test wells and as otherwise indicated.
    3) Connections to Ground Rods at Test Wells: Bolted connectors.
    4) Connections to Structural Steel: Welded connectors.

e. Grounding Underground Distribution System Components
    1) Comply with IEEE C2 grounding requirements.
    2) Grounding Handholes: Install a driven ground rod through handhole floor, close to wall, and set rod depth so 4 inches (100 mm) will extend above finished floor. If necessary, install ground rod before manhole is placed and provide No. 1/0 AWG bare, tinned-copper conductor from ground rod into manhole through a waterproof sleeve in manhole wall. Protect ground rods passing through concrete floor with a double wrapping of pressure-sensitive insulating tape or heat-shrunk insulating sleeve from 2 inches (50 mm) above to 6 inches (150 mm) below concrete. Seal floor opening with waterproof, nonshrink grout.

1.4B.3(11)F Equipment Grounding

a. Install insulated equipment grounding conductors with all feeders and branch circuits. Using conduit is not an acceptable method of equipment grounding.
b. Install insulated equipment grounding conductors with the following items, in addition to those required by NFPA 70:
    1) Feeders and branch circuits.
    2) Lighting circuits.
    3) Receptacle circuits.
    4) Single-phase motor and appliance branch circuits.
    5) Three-phase motor and appliance branch circuits.
    6) Flexible raceway runs.
    7) Armored and metal-clad cable runs.
    8) Busway Supply Circuits: Install insulated equipment grounding conductor from grounding bus in the switchgear, switchboard, or distribution panel to equipment grounding bar terminal on busway.
c. Water Heater, Heat-Tracing, and Antifrost Heating Cables: Install a separate insulated equipment grounding conductor to each electric water heater and heat-tracing cable. Bond conductor to heater units, piping, connected equipment, and components.
d. Signal and Communication Equipment: For telephone, alarm, voice and data, and other communication equipment, provide No. 4 AWG minimum insulated grounding conductor in raceway from grounding electrode system to each service location, terminal cabinet, wiring closet, and central equipment location.
    1) Service and Central Equipment Locations and Wiring Closets: Terminate grounding conductor on a 1/4-by-2-by-12-inch (6-by-50-by-300-mm) grounding bus.
    2) Terminal Cabinets: Terminate grounding conductor on cabinet grounding terminal.

1.4B.3(11)I Installation

a. Grounding Conductors: Route along shortest and straightest paths possible, unless otherwise indicated or required by Code. Avoid obstructing access or placing conductors where they may be subjected to strain, impact, or damage.
b. Common Ground Bonding with Lightning Protection System: Comply with NFPA 780 and UL 96 when interconnecting with lightning protection system. Bond electrical power system ground directly to lightning protection system grounding conductor at closest

point to electrical service grounding electrode. Use bonding conductor sized same as system grounding electrode conductor, and install in conduit.

c. Ground Rods: Drive rods until tops are 2 inches (50 mm) below finished floor or final grade, unless otherwise indicated.
    1) Interconnect ground rods with grounding electrode conductor below grade and as otherwise indicated. Make connections without exposing steel or damaging coating, if any.
    2) For grounding electrode system, install at least three rods spaced at least one-rod length from each other and located at least the same distance from other grounding electrodes, and connect to the service grounding electrode conductor.
d. Test Wells: Ground rod driven through drilled hole in bottom of handhole. Handholes are specified in Section 260543 "Underground Ducts and Utility Structures," and shall be at least 12 inches (300 mm) deep, with cover.
    1) Test Wells: Install at least one test well for each service, unless otherwise indicated. Install at the ground rod electrically closest to service entrance. Set top of test well flush with finished grade or floor.
e. Bonding Straps and Jumpers: Install in locations accessible for inspection and maintenance, except where routed through short lengths of conduit.
    1) Bonding to Structure: Bond straps directly to basic structure, taking care not to penetrate any adjacent parts.
    2) Bonding to Equipment Mounted on Vibration Isolation Hangers and Supports: Install so vibration is not transmitted to rigidly mounted equipment.
    3) Use exothermic-welded connectors for outdoor locations, but if a disconnect-type connection is required, use a bolted clamp.
f. Grounding and Bonding for Piping:
    1) Metal Water Service Pipe: Install insulated copper grounding conductors, in conduit, from building's main service equipment, or grounding bus, to main metal water service entrances to building. Connect grounding conductors to main metal water service pipes, using a bolted clamp connector or by bolting a lug-type connector to a pipe flange, using one of the lug bolts of the flange. Where a dielectric main water fitting is installed, connect grounding conductor on street side of fitting. Bond metal grounding conductor conduit or sleeve to conductor at each end.
    2) Water Meter Piping: Use braided-type bonding jumpers to electrically bypass water meters. Connect to pipe with a bolted connector.
    3) Bond each aboveground portion of gas piping system downstream from equipment shutoff valve.
    4) Bond all Gas Processing Piping where it transitions above Grade to Stainless Steel pipe.

1.4B.3(11)J Field Quality Control

a. Testing Agency: Contractor will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
b. Perform the following tests and inspections and prepare test reports:
    1) After installing grounding system but before permanent electrical circuits have

been energized, test for compliance with requirements.

2) Test completed grounding system at each location where a maximum ground-resistance level is specified, at service disconnect enclosure grounding terminal, at ground test wells, and at individual ground rods. Make tests at ground rods before any conductors are connected.
3) Measure ground resistance not less than two full days after last trace of precipitation and without soil being moistened by any means other than natural drainage or seepage and without chemical treatment or other artificial means of reducing natural ground resistance.
4) Perform tests by fall-of-potential method according to IEEE 81.
5) Prepare dimensioned drawings locating each test well, ground rod and ground rod assembly, and other grounding electrodes. Identify each by letter in alphabetical order, and key to the record of tests and observations. Include the number of rods driven and their depth at each location, and include observations of weather and other phenomena that may affect test results. Describe measures taken to improve test results.
6) Provide point to point measurements, continuity measurements for all electrical equipment and boxes accessible above grade.
7) Report measured ground resistances that exceed 5 ohms.
8) Excessive Ground Resistance: If resistance to ground exceeds specified values, notify Engineer promptly and include recommendations to reduce ground resistance.

1.4B.3(12) Exterior Lighting

1.4B.3(12)A Luminaire Installation

a. Install light fixtures per the manufacturer's written installation instructions.
b. Install lamps in each luminaire.
c. Fasten luminaire to structural supports. Use fastening methods and materials selected to resist seismic forces defined for the application and approved by manufacturer.
d. Adjust luminaires that require field adjustment or aiming. Include adjustment of photoelectric device to prevent false operation of relay by artificial light sources.
e. Sensor Installation: Install and aim sensors in locations to achieve not less than 90 percent coverage of areas indicated. Do not exceed coverage limits specified in manufacturer's written instructions.
f. Corrosion Prevention: Steel Conduits: Comply with Division 26 Section 26 05 33 "Raceways, Boxes and Cabinets." In concrete foundations, wrap conduit with 0.010-inch-thick, pipe-wrapping plastic tape applied with a 50 percent overlap. When in direct contact with a dissimilar metal, protect aluminum by insulating fittings or treatment.

1.4B.3(12)C Field Quality Control

a. Inspect each installed fixture for damage. Replace damaged fixtures and components.
b. Illumination Observations: Verify normal operation of lighting units after installing luminaires and energizing circuits with normal power source.
c. Verify operation of photoelectric controls.

d. Prepare a written report of tests, inspections, observations, and verifications indicating and interpreting results. If adjustments are made to lighting system, retest to demonstrate compliance with standards.
e. Perform the following field tests and inspections and prepare test reports:
f. After installing time switches and sensors, and after electrical circuitry has been energized, adjust and test for compliance with requirements.
g. Operational Test: Verify operation of each lighting control device and adjust time delays.
h. Lighting control devices that fail tests and inspections are defective work.

1.4B.3(13) Pad Mounted Liquid Filled Transformers
1.4B.3(13)A Examination

a. Examine areas and conditions for compliance with requirements for medium-voltage transformers.
b. Examine roughing-in of conduits and grounding systems to verify the following:
    1) Wiring entries comply with layout requirements.
    2) Entries are within conduit-entry tolerances specified by manufacturer and no feeders will have to cross section barriers to reach load or line lugs.
c. Examine walls, floors, roofs, and concrete bases for suitable mounting conditions where transformers will be installed.
d. Verify that ground connections are in place and that requirements in Division 26 Section "Grounding and Bonding" have been met. Maximum ground resistance shall be 5 ohms at location of transformer.
e. Proceed with installation only after unsatisfactory conditions have been corrected.

1.4B.3(13)B Installation

a. Install transformers on concrete bases.
    1) Anchor transformers to concrete bases according to manufacturer's written instructions, seismic codes at Project, and requirements in Division 26 Section "Electrical Supports and Seismic Restraints."
    2) Concrete bases are constructed by others
    3) Place and secure anchorage devices. Use supported equipment manufacturer's setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
    4) Tack-weld or bolt transformers to channel-iron sills embedded in concrete bases. Install sills level and grout flush with floor or base.
b. Maintain minimum clearances and workspace at equipment according to manufacturer's written instructions and NFPA 70.
c. Refer to FM Global and EPA Requirements for Spill Containment. Coordinate foundation and containment pit design with Owner prior to conduit installation.

1.4B.3(13)C Identification

a. Identify field-installed wiring and components and provide warning signs as specified in Division 26 Section “Electrical Identification."

1.4B.3(13)D Connections

a. Ground equipment according to Division 26 Section "Grounding and Bonding."
b. Connect wiring according to Division 26 Section "Conductors and Cables."

1.4B.3(13)E Field Quality Control

a. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect and adjust field-assembled components and equipment installation, including connections. Report results in writing.
b. Testing Agency: Contractor will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
    1) After installing transformers but before primary is energized, verify that grounding system at substation is tested at specified value or less.
    2) After installing transformers and after electrical circuitry has been energized, test for compliance with requirements.
    3) Perform visual and mechanical inspection and electrical test stated in NETA ATS 7.2.2. Certify compliance with test parameters.
    4) Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.
c. Remove and replace malfunctioning units and retest as specified above.
d. Test Reports: Prepare written reports to record the following:
    1) Test procedures used.
    2) Test results that comply with requirements.
    3) Test results that do not comply with requirements and corrective actions taken to achieve compliance with requirements.

1.4B.3(13)F Inspection

a. All equipment furnished shall be subject to Owner's inspection. Owner shall be notified at least three (3) calendar weeks in advance of date equipment is ready for shipment.

1.4B.3(13)G Shipment

a. All equipment shall be suitably crated and protected for handling and shipment to the job site. Each shipping section shall be equipped with lifting lugs. Size of shipping section shall be given on approved drawings.
b. Impact recorders shall be included in all shipments involving power transformers. For rail shipment, one (1) impact recorder shall be provided and shall be mounted to record in the direction of greatest probable impact. For truck shipment, two (2) impact recorders shall be provided. One (1) shall be mounted to measure impacts in the vertical direction and one (1) shall be mounted to record in the direction of greatest probable impact in the horizontal direction.
c. Any accessories or components, which will be shipped separately, shall be listed by the manufacturer as to the contents of the package. Any such accessories, which would be

damaged by exposure to the weather, shall be shipped in weatherproof packages or, if not weatherproof packages, shall be clearly marked, "Store Out Of the Weather".

1.4B.3(13)H Equipment Manufacturer's Field Supervision

a. Manufacturer shall include a separate cost for field engineering services as described below:
    1) General Requirements:
        a) The services of the manufacturer's qualified field engineer are required to supervise, in the future, critical phases of installation; inspect, check, adjust, test and operate the equipment just prior to and/or at the time the equipment is energized and placed in service and to instruct Owner's authorized personnel in the safe and proper operation and maintenance of the equipment prior to final acceptance by the Owner or Owner's duly authorized representative.
        b) Specific Requirements: The services of the manufacturer's qualified engineer shall be required specifically for, but not necessarily limited to, the following:
            (1) Those inspections, checks, adjustments, tests, operations, etc., normally recommended and conducted by the equipment manufacturer.
            (2) Necessary additional work recommended by the equipment manufacturer.
            (3) Tests as required by the Owner.
            (4) Instruction as required by the Owner.

1.4B.3(13)H Equipment Manufacturer's Field Supervision Owner Acceptance

a. The Owner's acceptance of this equipment shall be contingent upon the equipment satisfactorily meeting the specifications and tests stipulated herein, satisfactory start up, the Owner's final instructions and delivery of the required instruction books.

1.4B.3(14) Remote Telemetry Unit (RTU) system

The Remote Telemetry system shall be fully compatible with the existing telemetry and SCADA systems.

Refer to owner guidelines and specific requirements.

1.4B.4 Scope of Work
1.4B.4(1) General

a. The Electrical Contractor (E.C.) shall provide a complete integrated distributed generation plant including all appurtenances, in accordance with the intent of these specifications, the accompanying drawings (jointly referenced as the “Contract Documents”) for a complete and working Electrical Distribution System upon completion. The Electrical Contractor shall be qualified and as such provide qualified personnel on this project. The Foreman and project manager assigned to the winning

bid for the E.C. shall have extensive experience in Electrical Distribution Systems and be familiar with all construction means and methods.

b. It is expected successful electrical contractor is experienced in this type installation including all proper tooling and dies and molds, means and methods, rigging, components, and appurtenances required for a complete installation. The design documents dictate intent and all major components required for a complete installation only. It is the contractor's responsibility to provide all proper bolts, connectors, grounding straps, splices, insulators, supports for conduits, terminations, jumpers, and all other appurtenances for a complete and working system. These appurtenances shall be included as part of the E.C.'s bid and change orders will not be granted for such items.
c. The Design Documents (Drawings and Specifications) are complementary to each other and dictate the intent and all major components required for a complete installation as regards to the scope of work. All electrical items that are necessary to satisfy the intent and scope included in the Design Documents (Drawings and Specifications), such as Good General and Engineering Practices shall be considered as part of the Scope of Work, and as such, shall be included as part of the E.C.'s bid, and change orders will not be granted for such items.
d. Should there be a discrepancy between the Design Documents (Drawings and Specifications) the following shall apply:
    1) During the bidding process:
        a) The bidding Electrical Contractor or Vendor shall notify the engineer for a written resolution; the resolution from the Engineer will be final.
        b) The bidding Electrical Contractor or Vendor shall notify the Engineer for a written clarification, or a qualification shall be included in its bid documents.
        c) Change orders will not be granted for discrepancies that have not been qualified by the bidding Electrical Contractor during the bid process.
    2) During construction:
        a) The awarded Electrical Contractor or Vendor shall notify the Engineer of the discrepancy prior to installation. The Engineer will provide a preferred resolution from content in either the Drawings or Specifications and shall be situation specific. The resolution from the Engineer will be final and change orders will not be granted to the Electrical Contractor or Vendor.

1.4B.4(2) Regional Characteristics

a. Weather Conditions, Altitude, Seismic, etc.: Specific for project location; Kelso, WA

1.4B.4(3) Scope of Work - General Provisions

a. The Electrical Contractor (E.C.) shall provide a complete integrated Electrical Distribution System, in accordance with the intent of these specifications, the accompanying drawings (jointly referenced as the "Contract Documents"), Utility requirements, Construction Managers/Builders requirements and all Owner rules and requirements associated with this project. The work shall include, but not be limited to the following:
    1) Complete conduit and wiring system including all appurtenances for final connections to new equipment within the scope of work, as defined by the contract

documents. This shall include, but not be limited to: all junction boxes, back boxes, wiring devices, switches, receptacles, telecommunications wiring, transformers, switchgear, distribution panelboards, medium voltage switchgear, generators, generator radiators, underground electrical distribution, motor control centers, contactors and starters.

2) Lockable disconnects shall be furnished within the motor control center, therefore, no local motor disconnects shall be provided, unless otherwise shown on the drawings.
3) Unless otherwise noted as “pre-purchase”, provide all electrical distribution equipment, overhead electrical distribution, underground conduits, ductbanks, handholes, communications wiring, etc. and all appurtenances.
4) The electrical contractor shall be responsible for all final power, controls and communications terminations, complete installation of the equipment per manufacturer's instructions, installation of shipper loose items, temporary physical and element protection during construction, temporary wiring for heaters and control power, conduit and wire, shipping splits bolting and connections, and standby assistance during commissioning for the following owner purchased equipment: Note: Actual commissioning (including final check of the terminations, start-up and testing of equipment) will be performed by the manufacturer’s representative.
5) All conduit and wiring run above grade shall be galvanized rigid steel conduit outdoors; EMT indoors, unless otherwise noted.
6) All conduits terminated in a junction box or enclosure shall be provided with conduit bushing; grounding bushings on metal conduits.
7) Underground conduit with stub-ups: All 600V, low voltage power and controls conduit underground shall be Schedule 40 PVC, unless otherwise noted; Provide PVC 90 degree fitting and PVC stub up above final grade and/or slab up to final finished floor level, unless otherwise noted; transition to above ground with Rigid Galvanized fittings and conduit. All conduits shall be equipped with pull strings and mud caps on both ends during backfill.
8) Unless otherwise indicated on the drawings, depth for underground conduit shall conform to the following:
    a) 600V conduits: 24-inches below final grade
    b) Communications and controls: 12-inches below final grade, maintaining a minimum separation of 12-inches (lateral and vertical) from 600V conduits.
9) Provide coordination drawings integrated with other trades. Provide all as-built documentation and close out documents as required by the project close out procedures at the completion of the project.
10) All work shall be in accordance with the 2011 NEC, or the local adopted edition of the National Electrical Code (NEC), National Electrical Safety Code (NESC), Utility requirements, Owner requirements, Utility interconnect agreements and all applicable local codes and regulations. Provide all project documentation as required by Owner and Utility.
11) Provide temporary lighting and power. Electrical contractor shall provide a temporary engine generator for the duration of the project for all temporary construction power requirements. Provide generator sized to support all

construction activities. E.C shall provide fuel, generator capacity, and man-power to run, in addition to the construction lighting and power, 24/7 operation of switchgear heaters and controls. Provide alternate for a temp service from Utility.

12) Provision of a complete grounding system and all appurtenances as required by the contract documents. All below grade components of the grounding grid including but not limited to: #4/0 ground grid, and all interconnections to equipment as shown and described in contract documents and coordinated with “backfill construction sequence”. All connections shall be exothermal welds.
13) Installation of a complete underground Electrical Service. Provide all electrical underground distribution equipment, underground conduits, duct-banks, hand-holes, etc, and all appurtenances for a complete and working system. Refer to Utility, Construction Managers/Builders and all Owner rules, requirements and standards. The E.C. shall coordinate all of the installation with Utility, Construction Managers/Builders and the Owner. The electrical contractor is responsible for furnishing and installing all electrical service appurtenances, as required by the contract documents and specifications listed.
14) Secure all electrical permits as required.
15) Provide thorough final cleaning of all electrical equipment including vacuuming and wiping down of all interior sections including bus bars, C/B’s, sheet metals, etc.
16) All electrical equipment including controls panels shall be UL listed. Where equipment cannot be listed; a third party inspection may be required to satisfy local requirements.
17) EC shall coordinate shutdown time for tie-ins to existing electrical systems with owner. EC shall be responsible for coordination of all lock-out/tag-out procedures for all parties during the shutdown.
18) E.C. shall be responsible for coordination of all lock-out tag-out procedures for all parties. All lock-out tag-out procedures shall require a minimum of two locks for each point. E.C. shall provide all lock-out tag equipment.
19) The E.C. shall provide a Project Manager, all required Project Management, and representation at job meetings. E.C. shall maintain a schedule electronically in Microsoft Project or Primavera as requested by the Construction Manager and update at his request.
20) All of the electrical work shall be new and provided by the E.C., unless otherwise noted, e.g.: "Existing" for existing installation, "By Others" for work provided by others than the E.C., etc.
21) Complete conduit (with pull strings fish wires) system including all appurtenances for final connections to new equipment within the scope of work, as defined by the contract documents. This shall include, but not be limited to: all junction boxes, back boxes, hand holes and underground electrical distribution.
22) The contractor shall verify all dimensions and conditions before proceeding with the work and shall notify the engineer of any discrepancies prior to commencing with the work. Existing electrical equipment that interferes with new arrangement shall be removed, reinstalled, relocated, rerouted, extended or abandoned as required, to suit the new arrangement. The electrical contractor is responsible for reviewing and coordinating with the documents of all trades. For locations of all mechanical equipment refer mechanical and civil plans.

1.4B.4(4) Equipment Testing / Commissioning / Start-up

a. The Contractor will engage a qualified testing and inspecting agency to perform field tests and inspections and prepare test reports.
b. E.C. shall provide full time assistance for third party testing work and Utility.
c. E.C. shall provide full time assistance for third party testing, commissioning and start-up work for the different pieces of equipment.
d. E.C. shall provide (40 Hours) Foreman and Journeyman for standby startup support for Generator testing through startup.
e. E.C. shall provide (40 Hours) of Foreman and Journeyman for standby startup support for Utility performance testing.

1.4B.4(5) Site Work

a. The E.C. shall exclude excavation from his bid. The E.C. shall coordinate details with the Construction Manager's / Builders.
b. The E.C. shall exclude concrete encasement in underground duct banks; concrete encasement shall be provided where shown in the electrical drawings. The E.C. shall coordinate details with the Construction Manger's / Builders.
c. The E.C. shall be responsible for all underground electrical work on the site: raceway system (conduit and underground boxes) and conductors.
d. Provide neat and orderly jobsite at all times. Electrical trash produced by E.C. shall be disposed of daily in dumpsters; coordinate with Construction Manager's / Builders.
e. The contractor shall verify all dimensions and conditions at the site before proceeding with the work. It shall be the responsibility of the contractor to verify field conditions at the site and notify the engineer of any discrepancies prior to commencing with the work.
f. Existing electrical equipment that interferes with new arrangement shall be removed, reinstalled, relocated, rerouted, extended or abandoned as required, to suit the new arrangement.
g. E.C. shall be responsible for receiving, unloading, rigging, handling and final installation (including bolting to pads, per equipment manufacturer's recommendations) of Owner-furnished items at Project site.

1.4B.4(6) Scope of Work - Specific Provisions

a. The electrical Scope of Work includes improvements by this E.C. to an existing Electrical Distribution System.
b. Provision of a complete 600V aboveground and underground electrical distribution, as required by the contract documents. Provide all appurtenances for a complete operational and working system. E.C. shall provide new underground and above ground raceway system (conduits, hand holes and pull boxes); 600V branch feeders terminated in two-hole compression mechanical lugs (mechanical lugs by this E.C.); 600V, 300V, DC controls and communications wiring with final connections and terminations. E. C. shall coordinate details with Owner and Construction Manager's / Builders.

c. Medium Voltage Work; shall be provided by the E.C.; refer to the electrical drawings.
    1) Replace the existing transformer with a new larger one. E.C. shall verify physical dimensions; layout and equipment arrangement for the new transformer to match the existing and to accommodate to existing field conditions.
        a) E.C. shall provide Lock-Out / Tag-Out procedures.
        b) E.C. shall disconnect and safe existing primary and secondary conductors in place.
        c) Replace transformer and test.
        d) On satisfactory tests results, reconnect primary and secondary conductors.
        e) E.C. shall remove Lock-Out / Tag-out.

d. Low Voltage Work; shall be provided by the E.C.; refer to the electrical drawings.
    1) Low voltage point of connection shall be the existing pad mount Low Voltage Switchgear.
    2) Remove existing Diesel Fuel Engine Stand-By Power Generator Set and associated electrical feeder from the project area; remove conductors, conduit to remain for reuse.
    3) Remove existing Automatic Transfer Switch and associated electrical feeders from the project area; remove conductors, conduits to remain for reuse.
    4) Provide new Diesel Fuel Engine Stand-By Power Generator Set in the project area.
    5) Provide new (utility-generator scheme) Automatic Transfer Switch in the project area.
    6) Provide new Power Panelboard in the project area.
    7) Provide new 480V electrical services (conduits and conductors) from the Low Voltage Switchgear to the Automatic Transfer Switch, the Stand-By Power Generator Set and the Power panelboard.
    8) Provide new 480V electrical service (conduits and conductors) from the Power panelboard to the remote Gas Skid/Flare.
    9) Provide 120V circuit from existing panelboard in the Gas Skid to site lighting and site receptacles; site lighting and site receptacles by E.C.
    10) (Alternate Price): Provide Stand-Alone Solar Power System for communications equipment. Vendor shall be responsible for sizing the system for a complete operational system.
    11) Install communications equipment, refer to owner's instructions; communications equipment furnished by the Owner; typical of (5) systems.
    12) Provide 120VAC power branch circuit and communications wiring to communications equipment; typical of (4) systems.
    13) Provide DC power circuit and communications wiring to communications equipment; typical of (1) system.
    14) On all motor circuits fed from Variable Frequency Drives (VFD), provide cables specifically rated for the applications, e.g.: VFD cables.
    15) Provide a complete and operational lighting system including, but not limited to: lighting fixtures, lighting switches, outlet boxes, lighting control system, raceway system (conduit and boxes) and wiring; refer to the Drawings.
    16) Provide a complete and operational receptacle and power distribution system including, but not limited to: wiring devices, outlet boxes, control system, raceway system (conduit and boxes) and wiring; refer to the Drawings.

17) All of the electrical installation shall conform to rules and regulations from NFPA and the local power utility company.
18) Provide new Hand Holes for underground electrical installation, as shown on the Drawings and as required to suit to field conditions, unless otherwise noted.
19) Provide new Pull Boxes for overhead electrical installation, as shown on the Drawings and as required to suit to field conditions. The new Pull Boxes shall be adequate for the location and shall be sized per NEC.
20) Provision of a complete grounding protection system and all appurtenances as required by the contract documents. All below grade components of the grounding grid including but not limited to: #4/0 ground grid, and all interconnections to equipment as shown and described in contract documents and "backfill construction sequence". All connections shall be exothermal welds. All underground conductors shall be copper. All above grade components of the lightning protection system shall be aluminum; transition from copper to aluminum not less than 18-inches from grade.
    a) Provide grounding connections to all above ground (stainless steel) mechanical piping
21) Provide a complete Remote Telemetry System, fully compatible with the existing telemetry and SCADA systems.

1.4B.4(7) Drawings and Specifications

a. The drawings indicate general arrangements and approximate sizes and relative locations of principle materials to be provided. Drawings are diagrammatic and are a graphic representation of contract requirements to best available standards at the scale required.
b. All references made to any typical item in the singular number shall apply equally to as many identical items that the work may require.
c. Occasionally, the indicative or subjunctive mood may be used in the Section Text for clarity to describe responsibilities that must be fulfilled indirectly by Contractor or by others when so noted.
d. The words "shall," "shall be," or "shall comply with," depending on the context, are implied where a colon (:) is used within a sentence or phrase.
e. The terms "This Contractor", "The Contractor", "The Electrical Contractor", "The Electrical Trade Contractor", "Electrical Contractor", "E.C." shall mean the Contractor or Contractors performing the Electrical Trades Contract Work in Division 26 of the Project Specifications.
f. The word "Others", "Other Contractor", "Other Trade Contractor" shall mean the contractor or contractors performing Trade Contract Work in Divisions of the Project Specifications other than Division 26.
g. The word "Furnish", unless otherwise specified, shall mean supply, deliver, off load on site, store in place in an on-site location as directed by the Project Engineer and obtain a receipt for material or equipment delivered. Equipment, devices, material with factory finishes and insulated wire shall be stored indoors in a dry location.
h. The words "Install" in relation to material or equipment not furnished in Division 26, shall mean sign for and transport to final location, install, connect, adjust, test, operate and

perform any additional work, in conjunction with the furnishing Trade, necessary to make ready for final acceptance.

i. The word "Connect" in relation to material or equipment not installed in place in Division 26 shall mean connect, adjust, test, operate and perform any additional work, in conjunction with the installing trade, necessary to make ready for final acceptance.
j. The word "Provide" shall mean furnish, install, connect, adjust, test, operate and perform any additional work necessary to make ready for final acceptance.
k. "Approval", "approved", refers to acceptance by Owner's representative, code enforcing authority, or utility inspecting authority.
l. "Required" expressed or implied requirements of Specifications or Drawings, or of referenced applicable codes.
m. "Drawings" refers to the Contract Drawing(s); does not include Shop Drawings.

1.4B.4(8) Shop Drawings and Related Sections of Specifications

a. Submit shop drawings in accordance with special conditions and as indicated below and in subsequent sections of this division. Assume responsibility for quantities and correct mounting details. All shop drawings submitted must have a filled out subcontractors approval stamp on them, prior to submitting to the engineer. All shop drawings submitted shall be stamped "Division 26" for easy processing. Submit shop drawings for equipment and devices included in this specification.

1.4B.4(9) Compliance with Codes, Standards and Regulations

a. Provide equipment that is in conformance with these specifications and applicable requirements of the following:
    1) Latest applicable edition of the National Electrical Code (NEC). NOTE: All references to the NEC in these specifications shall be interpreted to mean the current edition of the code.
    2) Local Inspection Agency.
    3) Local and/or State Building Codes.
    4) American National Standards Institute (ANSI)
    5) National Electrical Manufacturers Association (NEMA)
    6) National Electrical Safety Code (NESC)
    7) Institute of Electrical and Electronics Engineers (IEEE)
    8) Insulated Cable Engineers' Association (ICEA)
    9) Underwriters Laboratories, Inc. (UL)
    10) Factory Mutual (FM)
    11) Occupational Safety and Health Administration (OSHA)
    12) International Building Code (IBC)
    13) International Electrical Testing Association (NETA)

1.4B.4(10) Substantial Completion

a. The E.C. will be responsible for the completion of the Work by the Substantial Completion Date defined for the project. The Project Scope shall be considered substantially

complete according to the following definition: ELECTRICAL SYSTEM READY TO ENERGIZE.

b. Electrical
    1) All power, lighting, control equipment, circuitry, systems, etc., complete, cleaned, tested and functional. Megger readings submitted and approved.
    2) List of fuses and overload heaters approved. Proper size fuses and overload heaters installed.
    3) All equipment protective devices set and functionally tested according to the System Coordination Study.
    4) All personnel and equipment protection devices set and functionally tested.
    5) All standby power systems tested and operational including batteries fully charged. Battery chargers (power supplies) tested and functional.
    6) All equipment and devices have been identified per the Contract Documents.
    7) At least one (1) set of as built drawings available for switching and troubleshooting.
    8) All interlocks tested and keys available to Owner.
    9) All electrical areas restricted to authorized personnel only.
    10) All spare parts (fuses, overload heaters, etc.) per Contract Documents available to Owner.
    11) All temporary power circuitry, conduit, etc. removed.
    12) All electrical equipment cleaned per the Contract Documents.
    13) All unused openings closed.
c. Instrumentation
    1) All wiring and tubing installed; equipment and field instruments installed, calibrated, documented and functionally tested.
    2) All control valves and automated on/off valves installed, calibrated where required, documented and operationally tested.
    3) All safety relief devices (valves/rupture discs) installed and operational. All gags or blanks removed. Any required documentation complete.
    4) All tubing and signal/control wiring dressed and secured.
    5) Control panels installed, tested, cleaned up and dressed out.
    6) I/O panels installed, tested, cleaned up and dressed out.
    7) All control loops tested for functionality per loop sheets and P&ID's.
    8) All intrinsically safe systems checked for proper system grounding.
    9) All interfacing control circuits (instrumentation/control to MCC) to be checked for continuity and functionality for loop sheets and P&ID's.
    10) All certification reports completed and submitted.

1.4B.4(11) Inspection and Certification

a. Obtain and deliver a final, Certification of approval from the Electrical Inspection Agency. Make delivery to engineer for transmittal to the owner upon completion of the work and before final payment. Pay all charges made by the inspection authority and include their cost in the bid.
b. At the end of the project, the E.C. shall provide the owner with a letter of certification stating that the construction has been completed in compliance with the requirements of the Contract Documents.

1.4B.4(12) Warranty

a. Provide one year on all parts and labor after Substantial Completion.

1.4B.5 Independent Electrical Testing

1.4B.5(1) Summary

a. This Section includes requirements for electrical field testing and inspecting. General requirements include the following:
    1) Independent electrical testing agency shall be a direct subcontractor of the Construction Managers/Builders. A subcontractor of the electrical contractor is not acceptable. NETA Accredited Companies bidding on this project shall provide qualifications and resume of successful testing of similar installations. The NETA Accredited Companies shall be qualified and as such provide qualified personnel on this project. The Project manager assigned to the winning bid for the NETA Accredited Company shall have extensive experience in relay and medium voltage work and be familiar with all testing means and methods.
    2) Suitability of test equipment.
    3) Calibration of test instruments.
    4) Coordination requirements for testing and inspecting.
    5) Reporting requirements for testing and inspecting.
b. In addition to this testing; any additional testing required by Owner for Electrical Equipment shall be part of the NETA testing firm Scope of Work.

1.4B.5(2) Testing Agency Qualifications

a. An independent agency, with the experience and capability to conduct the testing indicated, that is a member company of the International Electrical Testing Association, and that is acceptable to authorities having jurisdiction.
b. The testing organization shall be an independent, third party entity which can function as an unbiased testing authority, professionally independent of the manufacturers, suppliers, and installers of equipment or systems being evaluated.
c. The testing organization shall be regularly engaged in the testing of electrical equipment devices, installations, and systems.
d. The testing organization shall use technicians who are regularly employed for testing services.
e. An organization having a designation of “NETA Accredited Company” issued by the International Electrical Testing Association meets the above criteria.
f. The testing organization shall submit appropriate documentation to demonstrate that it satisfactorily complies with these requirements.
g. Testing Personnel
    1) Technicians performing these electrical tests and inspections shall be trained and experienced concerning the apparatus and systems being evaluated. These individuals shall be capable of conducting the tests in a safe manner and with complete knowledge of the hazards involved. They must evaluate the test data and make a judgment on the serviceability of the specific equipment.

2) Technicians shall be certified in accordance with ANSI/NETA ETT-2000, Standard for Certification of Electrical Testing Personnel. Each on-site crew leader shall hold a current certification, Level III or higher, in electrical testing.

h. Test Equipment Suitability: Comply with NETA ATS, Section 5.2.
i. Test Equipment Calibration: Comply with NETA ATS, Section 5.3.

1.4B.5(3) Scope of Testing

a. A third party testing agency shall test the following per the specifications in each section and industry standards with properly calibrated equipment. The third party testing agency shall be responsible for reports to be issued to the client/engineer.
b. Grounding and Bonding system shall be tested per Section 7.13 - "Grounding Systems" per NETA "Acceptance Testing Specifications"-2009. Testing shall include but not be limited to:
    1) Point to point testing for all equipment to ground grid, each test well, and each piece of electrical equipment. Point to Point testing shall be for all new equipment and existing equipment (existing generators, existing outdoor electrical equipment, and existing fence).
    2) 3 Point fall of potential test for multiple points from switchgear and ground grid minimum 100 points.
c. Conductors and Cables shall be meggar tested per Section 7.3.2 - "Cables; Low Voltage, 600V maximum" of NETA "Acceptance Testing Specifications"-2009.
    1) Control wiring 50 Volts or less shall not be required to be tested by the Independent testing contractor.
    2) Fiber Optic Cable and connectors shall be tested using all applicable tests per NETA "Acceptance Testing Specifications"-2009 Section 7.25.
        a) Refer to Testing Section of Section 27 15 10 "Fiber Optic Cabling System" for additional detailed requirements.
d. Panelboards shall be tested using all applicable tests per NETA "Acceptance Testing Specifications"-2009.
    1) Section 7.1: Switchgear and Switchboard Assemblies. Meggar bus of panels only.
    2) Section 7.6.1.1: Circuit Breakers; Air Insulated-Case/Molded Case. Primary current injection is not required.

1.4C AIR COMPRESSOR

1.4C.1 Description

This Work consists of all purchase and installation for a new air compressor in accordance with these Specifications and as shown in the Plans or designated by the Engineer.

1.4C.2 Equipment

The air compressor is to be a two stage 7.5 HP reciprocating air compressor.

1.4C.3 Sizing

The air compressor system is sized to output 24 ACFM at 100psig and expected service life of 10-15 years with adequate maintenance.

1.4C.4 Output

Air usage for each pump was determined from the pump curves provided by QED. Air consumption for one pump at an average well depth of 120ft is 1.15 scf/gal.

1.4C.5 Housing

The compressor system will be housed in a prefabricated 12’ x 10’ shed with 7’ tall walls. The supplier should place the shed on concrete blocks, supporting the 4” x 6” floor beams, to level the shed. The shed size will give adequate space for further equipment expansion if needed, as well as space to perform maintenance on the air compressor system. Other components in the compressor housing include an air intake fan, an air outlet through the wall of the shed and an automatic electronic fluid drain installed at the base of the tank and released through the floor of the shed.

1.4D VERTICAL WELL PUMP

1.4D.1 Description

This work consists of all purchase and installation of all pneumatic down-well pumps in accordance with these specifications and as shown in the Plans or designated by the Engineer. The vertical well pump to be used for the landfill will be the QED AutoPump AP4+ (or equivalent with approval from the engineer).

1.4D.2 Components

The QED AP4+ is a pneumatic submersible pump. The pump will operate using the compressed air line and will discharge into the 3” liquid conveyance line. The QED AP4+ can be easily integrated into liquid conveyance and compressed air lines. The pump is controlled by water level via a float, becoming more active as water levels rise.

1.4D.3 Installation

1. Cover the pump tubing/hose ends with tape if they are to be pulled through trenches or liad on the ground. This is to prevent debris from entering the lines.
2. Blow out all water and particles from compressed air conduits (including downwell pump air supply) and fluid lines for at least 10 seconds after the water and particles exit before connecting them to the system.
3. Slip clamps over appropriate tubing/hose prior to connecting the tubing/hose to the pump barbs.
4. Push tubing/hose down flush with the fitting’s nut (hex) if possible; cover at least three

barbs if three or more are present.

5. Attach pump support rope/cable to pump.
6. Attach pump air supply and liquid discharge lines to the well cap. Attach the air exhaust line to the well cap if the pump air is to exhaust outside the well.
7. Connect the pump air supply and liquid discharge lines to the appropriate surface lines/headers.
8. Turn on the air pressure to the pump (minimum of 0.5 psi per foot of vertical static head).
9. Lower the pump to the desired depth in the well (10ft from bottom of well).
10. Secure the pump by tying off the pump support line or by placing the well cap (or flange) on the well.
11. Increase the air pressure to the pump until the pump is pushing the fluid out at the desired rate. With sufficient air pressure, the pump will gradually draw down the fluid level in the well to the level of the pump. The time required for this draw down caries with the yield of the well as compared to the flow rate of the pump.

1.4D.4 Troubleshooting

1. Air Supply
    - If the air pressure is too low, or if the flow is severely restricted, the pump will not cycle. The minimum air pressure requirement for pump operation is 0.5 psi per foot of vertical static head.
    - If the air pressure exceeds the design limitation of the pump, the pump may fail to cycle, or the exhaust may have locked up and caused air to enter the fluid discharge.

2. Fluid Level
    - The fluid level must be above the fluid inlet on a Top-Loading pump. On a bottom-loading pump, the fluid must be no lower than 9 inches below the head of the pump.

3. Air Exhaust Restricted
    - The exhaust line must not be kinked, plugged, or too small in diameter.
    - The air exhaust outlet must be above the fluid level.
    - If the air exhausts in the well, the well must be vented to the atmosphere or a functioning vapor recovery line.
    - If the air exhausts to the atmosphere and a vacuum is drawn on the well, the pump may fail to fill. In order for the pump to fill under these conditions, the pump must be submerged to make up for the pressure difference between the atmosphere and the partial vacuum in the well

4. Fluid Inlet Clogged
    - If the fluid inlet screen is clogged with debris water cannot enter the pump.

5. Debris, Scale, or very Viscous Fluid
    - If debris, scale or a very viscous fluid has accumulated inside the pump, the float may not move freely up and down, or the control rod may not slide easily through

the float.
- Clean the float, control rod, and the casing.

6. Level Pivot Wear
   - Grasp the center of the lever with thumb and forefinger. Rotate the lever to horizontal.
   - Push up and down, toward and away from the head. Confirm that there is less than 1/32 inch of movement.
   - Replace the lever if the pivot hole is worn.

7. Debris in Air Inlet Valve
   - Open the pump. Connect the air supply. Pull the control rod down. Listen to determine if air leaks through. If air still leaks through the valve with the control rod down, the air tubing must be removed to access the valve inlet to check for debris in the valve. Clean the valve by blowing air or water through it from both ends.
   - Push the rod upwards. If little or no air passes through, remove the tubing access the valve inlet. Blow air through the valve from the poppet side to clear debris from the poppet.

8. Fluid Check Valves
   - Open the pump. Hold the pump vertically and pour water into the discharge check valve. If water flows through clean the valve.
   - Remove the valve and use emery cloth or a very fine sand paper to polish the surface where the ball seats.
   - If the pump is a Bottom-Loading design, inspect the seat of the bottom check valve for debris and wear. Clean or replace if necessary.
   - If the pump is a Top-Loading design, remove the fluid inlet check valve and inspect the seating surface and the ball for debris and wear.

9. Air Inlet Valve Timing
   - Call QED Service Department for correct air valve timing for your pump.

1.4D.5 Cleaning the AP4+

- Pump clean water or water with a gentle soap solution through the pump to remove free product and particles.
- Rinse all soap off of the equipment.
- Soak and rinse the outside of the unit water to remove loose debris and dirt.
- Steam clean inside and out to remove difficult dirt and contaminants.

1.4E Drilling Past Obstructions

1.4E.1 Description

This work consists of procedures in place if drilling refusal is encountered by Contractor due to any object such as perched water or other common landfill features (stone, buried haul roads, asphalt, etc.), or if drilling operations are hindered due to leachate in large quantities, cave-ins, etc.

1.4E.2 Procedure

1. Drill for 1-hour in the area of refusal or hindered drilling operations.
2. If the obstruction is not passed and/or drilling has not progressed in the 1-hour time frame, Contractor will contact the Design Engineer.
3. If the Design Engineer decides to continue drilling in this area, the work will be accomplished by force account under the bid item Miscellaneous Construction.
4. If the obstruction/drilling hindrance cannot be passed, all work at the abandoned well location will be under the bid item Miscellaneous Construction.

1.5 OWNER-SUPPLIED SERVICES

Services to be provided by the OWNER for this project include:

- OWNER will provide an adequate storage area and equipment parking area in the vicinity of the actual construction area.
- OWNER will provide a Site Manager to interface with CONTRACTORS working at the site.
- OWNER will provide full-time independent third-party construction quality assurance (CQA) field monitoring, field testing, and applicable laboratory testing services.
- OWNER will provide a disposal area for any waste or deleterious materials that are excavated and removed by the CONTRACTOR during the project.
- OWNER will provide a source of water for soil conditioning.
- OWNER will provide a source for borrow soil.
- OWNER will provide approval of Work.

All other construction services required for this project shall be provided by OTHERS.

1.6 CONTRACTOR'S SCOPE OF WORK

The CONTRACTOR shall furnish all labor, materials, and equipment for the construction of the work as shown and indicated on the construction drawings and technical specification. The scope of work covered by this Contract includes, but is not necessarily limited to, the following (items correspond to Bid Proposal):

1. **Miscellaneous Construction.** See Special Provisions for Bid Item 1 Miscellaneous Construction.

2. **Mobilization.** See Special Provisions for Bid Item 2 Mobilization.

3. **12-inch HDPE SDR 11 Header (See Item 3 of Bid Proposal):** Measurement for this item shall be on an installed linear foot basis of 12-inch diameter HDPE SDR 17 header piping, as measured during the conformance survey conducted by Owner's CQA Consultant. The majority of the installation of this item is in a common trench with new air and forcemain piping. Installation of 12-inch header piping must ensure a minimum of 3% drop, downgrade, in order to facilitate the movement of condensate. Payment for this item will be at the contract unit price per linear foot. Payment includes excavation, trenching, clean soil backfill, and soil compaction; and fittings, joining materials, and accessories required for the installation of piping, including connections to proposed/existing piping, pressure testing, and incidentals. Payment shall constitute full compensation for all material, labor, equipment and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

4. **6-inch HDPE SDR 11 Lateral (See Item 4 of Bid Proposal):** Measurement for this item shall be on an installed linear foot basis of 6-inch diameter HDPE SDR 17 lateral piping, as measured during the conformance survey conducted by Owner's CQA Consultant. Installation of this item is to be placed in a common trench with new air and forcemain piping. Installation of 12-inch header piping must ensure a minimum of 3% drop, downgrade, in order to facilitate the movement of condensate. Payment for this item will be at the contract unit price per linear foot. Payment includes excavation, trenching, clean soil backfill, and soil compaction; and pipe, fittings, joining materials, tees and accessories required for the installation of piping, including connections to proposed piping and proposed/existing wells, pressure testing, and incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

5. **Vertical LFG Extraction Wells (8-inch PVC SCH 80) (See Item 5 of Bid Proposal):** Drilling and installation of vertical LFG extraction wells shall be measured on an installed vertical foot basis measured from existing ground surface to the bottom of the wellbore as measured in the field and approved by Owner's CQA Consultant. Lengths of the solid PVC SCH 80 are to be set at 30 feet, in order to maintain the calculated radius on influence (ROI) within each well. Use of bentonite, non-calcareous stone, and clean soil backfill will be used within the borehole in order to prevent solid LFG vertical well piping from bending and potentially breaking.

   Lengths of perforated PVC SCH 80 are to be dependent on surface, liner and existing Weyerhauser waste elevations. Lengths are set to maximize collection while also maintaining compliance and minimizing the potential for bad gas collection. Pipe is to be perforated with 3/8" X 6" slots, slots are to be spaced 90 degrees apart horizontally and 6" apart vertically.

   Payment for this item will be at the contract unit price per vertical foot installed. Payment includes all drilling, transport of all materials, well aggregate, clean soil and bentonite backfill, well plugs, perforated and solid piping, pipe connections, wellbore reinforcement grate, health and safety requirements, and temporary caps. Payment shall constitute full

compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

The labor and equipment costs for drilling past obstructions in excess of one (1) hour as approved by Owner's CQA Consultant shall be paid under the bid item Miscellaneous Construction. If the Engineer determines that a well should be relocated after drilling has begun, the labor and equipment costs associated with drilling and backfilling the abandoned well location will be paid under the bid item Miscellaneous Construction.

6. **2-inch Flow Wing Style Wellhead (See Item 6 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. The wellhead comes from ISCO premade and ready to install. The Flow Wing Style Wellhead is to be used with two monitoring ports attached with acetal quick-disconnect ports. Other components of the wellhead will include a temperature port on the top side of the wellhead, a 2" fernco cap at the top of the meter run, a 2" SCH 80 PVC union, and a 2" SCH 80 PVC gate valve. Payment for this item will be at the contract unit price per each installed 2-inch Flow Wing Wellhead. Payment includes supply and installation of materials and connections to laterals, well caps, and other necessary connections or incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

7. **QED AP4+ Ultra Vertical Well Pump (See Item 7 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. The QED AP4+ Ultra Well Pump includes three (3) lines. A steel cable, forcemain line and an air in and out line. Payment for this item will be at the contract unit price per each installed QED AP4+ Ultra pump. Payment includes supply and installation of materials and connections to laterals, well caps, and other necessary connections or incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

8. **8-inch QED Model GWC82 Well Cap (See Item 8 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. The QED Model Well Cap is a fernco fitting well cap, designed to accommodate a pump and hold a wellhead. Payment for this item will be at the contract unit price per installed 8-inch Well Cap (QED Model GWC82 or similar). Payment includes supply and installation of well cap and accessories to make connections to extraction well and wellhead. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

9. **Liquid Discharge Sump Tie-In (See Item 9 of Bid Proposal):** Measurement for this item shall on a per installed unit basis, with only one liquid discharge tie in to the existing Cell 1 sump. This item consist of a 3-inch discharge line extrusion welded into the side of the sump, with four gusset welds into a 90 degree elbow to discharge liquids into the bottom of the sump. Payment includes supply and installation of materials and connections to laterals, well caps, and other necessary connections or incidentals. Payment shall constitute full compensation

for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

10. **12-inch Header Isolation Valve (Gear Operated, Below-Grade) Installation (See Item 10 of Bid Proposal):** Measurement for this item shall be on a per unit basis. Payment for this item will be at the contract unit price per each installed 12-inch diameter header isolation valve. This item includes an HDPE beveled flange adapter with ring, however valve spacers may be used in place of beveled adapter. The valve is a butterfly valve lug body, stainless steel disc, with gear operator and extension handle to above grade. Payment includes excavation, clean soil backfill, transport of excavated materials, and soil compaction; and supply and installation of valve, fittings, spacers, stem extension, and joining materials required for connection of valve to proposed piping with flanges and installation of a monitoring port on each side of the valve. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

11. **6-inch Header Isolation Valve (Gear Operated, Below-Grade) Installation (See Item 11 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. Payment for this item will be at the contract unit price per each installed 6-inch diameter header isolation valve. This item includes an HDPE beveled flange adapter with ring, however valve spacers may be used in place of beveled adapter. The valve is a butterfly valve lug body, stainless steel disc, with gear operator and extension handle to above grade. Payment includes excavation, clean soil backfill, transport of excavated materials, and soil compaction; and supply and installation of valve, fittings, spacers, stem extension, and joining materials required for connection of valve to proposed piping with flanges and installation of a monitoring port on each side of the valve. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

12. **6-Inch Lateral Tie-In to 12-Inch Header (See Bid Item 12 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. This item contains a simple 12” X 6” HDPE Tee connection. All wells included in this expansion use a 6” lateral with a connection into a new or existing 12” header. The tee is to be butt fusion welded to the 12” header as well as to the 6” lateral connection. Payment for this item will be at the contract unit price per each installed header tie-in. Payment includes excavation, clean soil backfill, transport of excavated materials, and soil compaction; and supply and installation of HDPE spacers, extensions, and joining materials required for connection of proposed piping. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

13. **12-Inch Header Tie-In to 18-Inch Header (See Bid Item 13 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. There is only one of these items within the expansion, this item will use an 18” X 12” butt fusion welded tee. The 12” header running down Cell 1 shall remain above the geotextile filter of the final cover in Cell 1. The pipe shall rest on 6” of sand bedding or existing dirt in order to minimize any potential damage to the

geotextile. With piping support the header will cross the concrete channel and 90 degree elbow in to the existing 18" LFG header. Payment for this item will be at the contract unit price per each installed header tie-in. Payment includes excavation, clean soil backfill, transport of excavated materials, and soil compaction; and supply and installation of HDPE spacers, extensions, and joining materials required for connection of proposed piping. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

14. **6-Inch LFG Stub-Up (See Bid Item 14 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. This item includes a 6" X 4" flange reducer into a 4" X 2" concentric reducer. This ties into a 2" QED Solarguard Hose with a powerlock kanaflex clamp. Payment for this item will be at the contract unit price per each installed stub-up. Payment includes supply and installation of materials and connections to laterals, well caps, and other necessary connections or incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

15. **3-inch HDPE SDR 18 Condensate Forcemain (See Item 15 of Bid Proposal):** Measurement for this item shall be on an installed linear foot basis of 3-inch diameter HDPE SDR 11 condensate forcemain piping installed, as measured during the conformance survey conducted by Owner's CQA Consultant. The majority of the installation will be in a common trench with LFG and compressed air piping. Condensate forcemain piping that is ran along existing 12" and 18" will not share a common trench, and ran within its own trench. Forcemain piping will be ran to every well in the expansion for the potential to have a pump installed within the well. Payment for this item will be at the contract unit price per linear foot. Payment includes fittings, joining materials, and accessories required for the installation of piping, including connections to sump and isolation valves, pressure testing, and incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

16. **Liquid Conveyance Cleanout Installation (See Bid Item 16 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. This item includes camlock fittings above grade with threaded male adapters for vacuum truck access as needed. Camlock fitting are threaded with an HDPE to SS transition fitting. Camlock extensions are tied into the 3-inch conveyance line at a 45 degree angle to ensure the ability to flood out and clean the conveyance cleanout. Payment for this item will be at the contract unit price per each installed 3-inch diameter HDPE SDR 11 liquid conveyance cleanout. Payment includes excavation, clean soil backfill, transport of excavated materials, and soil compaction; and supply and installation of wyes, valves, fittings, spacers, extensions, and joining materials required for connection of cleanout to proposed liquid conveyance piping. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

17. **3-Inch Liquid Conveyance Line Isolation Valve Installation (See Bid Item 17 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. This item consists of a 3-Inch HDPE ball valve, full bore and butt fusion welded to additional 3" HDPE piping, elbowed down into the running liquid conveyance line. Payment for this item will be at the contract unit price per each installed 3-inch diameter HDPE SDR 11 liquid conveyance line isolation valve. Payment includes excavation, clean soil backfill, transport of excavated materials, and soil compaction; and supply and installation of valves, fittings, spacers, extensions, and joining materials required for connection of isolation valves to proposed liquid conveyance piping. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

18. **2-inch HDPE SDR 9 Air Supply Line (See Item 18 of Bid Proposal):** Measurement for this item shall be on an installed linear foot basis of 2-inch diameter HDPE SDR 11 air supply line installed, as measured during the conformance survey conducted by Owner's CQA Consultant. The majority of the installation will be in a common trench with LFG and liquid conveyance piping. Air supply piping that is ran along existing 12" and 18" will not share a common trench and ran within its own trench. Air supply piping will be ran to every well in the expansion for the potential to have a pump installed within the well. Payment for this item will be at the contract unit price per linear foot. Payment includes pipe, fittings, joining materials, and accessories required for the installation of the piping, including connections to proposed/existing piping, pressure testing, and incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

19. **2-Inch Air Line Isolation and Blowoff Valve Installation (See Item 19 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. Payment for this item will be at the contract unit price per each installed 2-inch diameter stainless steel air line isolation valve and associated 1-inch blowoff valves. This item consists of a 2-inch flanged connection to assist in removal of the ball valve for maintenance. The blowoff valve is a 1-inch female by female threaded stainless steel ball valve with lever handle. The 1-inch blowoff valves are used to blow off liquids that accumulate in the air line. Payment includes excavation, clean soil backfill, transport of excavated materials, and soil compaction; and supply and installation of valves, fittings, spacers, extensions, and joining materials required for connection of blowoff and isolation valves to proposed air conveyance piping. These valves are to be installed inside Owner or Engineer approved vaults in areas of high operations traffic. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

20. **12-inch Header Road Crossing (See Item 20 of Bid Proposal):** Measurement for this item shall be on an installed linear foot basis of 12-inch header pipe, as measured during the conformance survey conducted by Owner's CQA Consultant, as well as the cost of double walled corrugated polyethylene (CPE) (6" larger in diameter than the sum of pipe diameters running through the CPE). Payment for this item will be at the contract unit price per linear foot. Payment includes excavation; road base, clean soil, and aggregate backfilling;

compaction; placement of piping; repair of the road to its original condition after construction; and other incidentals. Payment shall constitute full compensation for all material, labor, equipment and Work incidental thereto, necessary to complete this item in accordance with the Construction Plans.

21. **2-inch Air Line Road Crossing (See Item 21 of Bid Proposal):** Measurement for this item shall be on an installed linear foot basis of 2-inch Air Line, as measured during the conformance survey conducted by Owner's CQA Consultant, as well as the cost of double walled 8" diameter corrugated polyethylene (CPE). The air-line shall remain above the existing geotextile filter within the final cover of Cell 1, crossing over-top of the concrete channel and into the CPE. Payment for this item will be at the contract unit price per linear foot. Payment includes excavation; road base, clean soil, and aggregate backfilling; compaction; placement of piping; repair of the road to its original condition after construction; and other incidentals. Payment shall constitute full compensation for all material, labor, equipment and Work incidental thereto, necessary to complete this item in accordance with the Construction Plans.

22. **12-Inch Flanged Termination (See Item 22 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. This item consists of a blind flange at the ending segment of the 12-inch LFG header. If the termination occurs inside the waste a HDPE cap may be used to terminate if needed. Backfill should be no closer than 6" away from the blind flange in order to keep the flange accessible. Payment for this item will be at the contract unit price per each installed flanged termination. Payment includes supply and installation of materials and connections to laterals, well caps, and other necessary connections or incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

23. **Wellhead Centralizer (WC-020) (See Item 23 in Bid Proposal):** Measurement for this item shall be on a per each unit basis. This item is to be a stainless-steel wellhead centralizer, with the intention to be the ISCO WC-020 model, but an approved alternative may be used as well. The centralizer is to be installed just below the QED Well Cap within the well casing. Payment for this item will be at the contract unit price per each installed centralizer. Payment includes supply and installation of materials and connections to laterals, well caps, and other necessary connections or incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

24. **1-3 – Inch Washed; Fractured Non-Calcareous Stone Backfill (See Item 24 in Bid Proposal):** Measurement for this item shall be on a per cubic yard of stone. This item is to be any non-calcaerous stone, "river rock" is the most commonly used material to satisfy this. Fractured rock is preferred as it compacts and becomes more stable than unfractured rock. Payments for this item will be at the contract unit price per cubic yard installed. Payment includes supply and installation of materials and connections to laterals, well caps, and other necessary connections or incidentals. Payment shall constitute full compensation for all

material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

25. **1-Inch Conduit (See Item 25 in Bid Proposal):** Measurement for this item shall be on a per linear foot basis. Payment for this item will be at the contract unit price per each installed 1-inch diameter conduit. Payment includes excavation, clean soil backfill, transport of excavated materials, and soil compaction; and supply and installation of valve, fittings, spacers, stem extension, and joining materials required for connection of valve to proposed piping with flanges and installation of a monitoring port on each side of the valve. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

26. **Air Conveyance Compressor, Electric Reciprocating Air Compressor (See bid Item 26 of Bid Proposal):** Measurement for this item shall be on a per each unit basis. The design intention of the air compressor was to be an Ingersoll Rand 2-Stage Reciprocating Air Compressor, a similar and approved alternative will also be accepted. The air compressor is to sit in the middle of the shed in order to allow for full 360-degree access to the compressor for maintenance and cleaning operations. The compressor will be anchored into wood flooring. Payment for this item shall be at the contract unit price per item installed. Payment includes supply and installation of materials and connections to power conduit, other necessary connections or incidentals. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

27. **Air Compressor Electrical Components (See Bid Item 27 of Bid Proposal):** No unit of measure shall apply to the lump sum item Air Compressor Electrical Components. Payment for this item at the lump sum contract price includes power conduit from existing electrical panels as well as integration into the grounding plan. Payment shall constitute full compensation for all material, labor, equipment, and work incidental thereto, necessary to complete this item in accordance with the Construction Plans and Specifications.

1.7 SERVICES TO BE FURNISHED BY OTHERS

- CQA Consultant (TBD)
- Surveying (Owner/CQA Consultant)
- Design Services (Energyneering Solutions)

PREVAILING MINIMUM HOURLY WAGE RATES

State of Washington
Department of Labor & Industries
Prevailing Wage Section - Telephone 360-902-5335
PO Box 44540, Olympia, WA 98504-4540

Washington State Prevailing Wage
The PREVAILING WAGES listed here include both the hourly wage rate and the hourly rate of fringe benefits. On public works projects, worker's wage and benefit rates must add to not less than this total. A brief description of overtime calculation requirements are provided on the Benefit Code Key.

Journey Level Prevailing Wage Rates for the Effective Date: 8/4/2025

Cowlitz County

Trade	Job Classification	Wage	Holiday	Overtime	Note	Ris
Asbestos Abatement Workers	Journey Level	$59.48	**6Z**	**1M**		
Boilermakers	Journey Level	$78.89	**5N**	**1C**		
Brick Mason	Brick Finisher	$48.08	**5A**	**1B**		
Brick Mason	Caulker-Pointer-Cleaner	$74.09	**5A**	**1B**		
Brick Mason	Journey Level	$74.09	**5A**	**1B**		
Building Service Employees	Janitor	$16.66		**1**		
Building Service Employees	Shampooer	$16.66		**1**		

Building Service Employees	Waxer	$16.66		1		
Building Service Employees	Window Cleaner	$16.66		1		
Cabinet Makers (In Shop)	Journey Level	$16.66		1		
Carpenters	Acoustical Worker	$67.80	15J	11U	9L	
Carpenters	Bridge & Highway Carpenter	$69.08	15J	11U	9L	
Carpenters	Floor Layer And Floor Finishers	$67.97	15J	11U	9L	
Carpenters	General Carpenter	$67.80	15J	11U	9L	
Carpenters	Scaffold/Shoring Erecting & Dismantling	$67.70	7E	4X	8N	
Carpenters	Stationary Power Saw	$67.97	15J	11U	9L	
Cement Masons	Application of all Composition Mastic	$77.30	15J	4U		
Cement Masons	Application of all Epoxy Material	$76.78	15J	4U		
Cement Masons	Application of all Plastic Material	$77.30	15J	4U		
Cement Masons	Application of Sealing Compound	$76.78	15J	4U		

Cement Masons	Application of Underlayment	$77.30	**15J**	**4U**	
Cement Masons	Building General	$76.78	**15J**	**4U**	
Cement Masons	Composition or Kalman Floors	$77.30	**15J**	**4U**	
Cement Masons	Concrete Paving	$76.78	**15J**	**4U**	
Cement Masons	Curb & Gutter Machine	$77.30	**15J**	**4U**	
Cement Masons	Curb & Gutter, Sidewalks	$76.78	**15J**	**4U**	
Cement Masons	Curing Concrete	$76.78	**15J**	**4U**	
Cement Masons	Finish Colored Concrete	$77.30	**15J**	**4U**	
Cement Masons	Floor Grinding	$77.30	**15J**	**4U**	
Cement Masons	Floor Grinding/Polisher	$76.78	**15J**	**4U**	
Cement Masons	Green Concrete Saw, self-powered	$77.30	**15J**	**4U**	
Cement Masons	Grouting of all Plates	$76.78	**15J**	**4U**	
Cement Masons	Grouting of all Tilt-up Panels	$76.78	**15J**	**4U**	
Cement Masons	Gunite Nozzleman	$77.30	**15J**	**4U**	

Cement Masons	Hand Powered Grinder	$77.30	**15J**	**4U**		
Cement Masons	Journey Level	$76.78	**15J**	**4U**		
Cement Masons	Patching Concrete	$76.78	**15J**	**4U**		
Cement Masons	Pneumatic Power Tools	$77.30	**15J**	**4U**		
Cement Masons	Power Chipping & Brushing	$77.30	**15J**	**4U**		
Cement Masons	Sand Blasting Architectural Finish	$77.30	**15J**	**4U**		
Cement Masons	Screed & Rodding Machine	$77.30	**15J**	**4U**		
Cement Masons	Spackling or Skim Coat Concrete	$76.78	**15J**	**4U**		
Cement Masons	Troweling Machine Operator	$77.30	**15J**	**4U**		
Cement Masons	Troweling Machine Operator on Colored Slabs	$77.30	**15J**	**4U**		
Cement Masons	Tunnel Workers	$77.30	**15J**	**4U**		
Divers & Tenders	Assistant Tender	$75.35	**15J**	**11T**	**9I**	
Divers & Tenders	Bell/Vehicle or Submersible	$124.92	**15J**	**11T**	**9I**	

	Operator Not Under Pressure					
Divers & Tenders	Dive Master	$94.29	**15J**	**11T**	**9I**	
Divers & Tenders	Dive Supervisor	$94.29	**15J**	**11T**	**9I**	
Divers & Tenders	Diver Diving	$124.92	**15J**	**11T**	**9I**	
Divers & Tenders	Diver Tender	$80.92	**15J**	**11T**	**9I**	
Divers & Tenders	Divers Including Stand-By Diver	$89.29	**15J**	**11T**	**9I**	
Divers & Tenders	Manifold Operator	$85.92	**15J**	**11T**	**9I**	
Divers & Tenders	Manifold Operator Mixed Gas	$90.92	**15J**	**11T**	**9I**	
Divers & Tenders	ROV Operator	$80.92	**15J**	**11T**	**9I**	
Divers & Tenders	ROV Tender/Technician	$75.35	**15J**	**11T**	**9I**	
Dredge Workers	Assistant Engineer	$72.54	**5D**	**1N**	**8D**	
Dredge Workers	Assistant Mate (deckhand)	$67.18	**5D**	**1N**	**8D**	
Dredge Workers	Boatman (licensed)	$72.54	**5D**	**1N**	**8D**	
Dredge Workers	Fill Equipment Operator	$69.88	**5D**	**1N**	**8D**	
Dredge Workers	Fireman	$71.05	**5D**	**1N**	**8D**	

Dredge Workers	Leverman (hydraulic & Clamshell)	$75.70	**5D**	**1N**	**8D**	
Dredge Workers	Mate	$72.54	**5D**	**1N**	**8D**	
Dredge Workers	Oiler	$67.18	**5D**	**1N**	**8D**	
Dredge Workers	Tenderman (boatman Attending Dredge Plant)	$71.05	**5D**	**1N**	**8D**	
Dredge Workers	Welder	$72.54	**5D**	**1N**	**8D**	
Drywall Applicator	Journey Level	$67.80	**5A**	**1B**		
Drywall Tapers	Journey Level	$66.95	**7E**	**1E**		
Electrical Fixture Maintenance Workers	Journey Level	$25.23		**1**		
Electricians - Inside	Journey Level	$95.68	**5A**	**1B**		
Electricians - Inside	Journeyman, Welder	$102.22	**5A**	**1B**		
Electricians - Motor Shop	Craftsman	$16.66		**1**		
Electricians - Motor Shop	Journey Level	$16.66		**1**		
Electricians - Powerline Construction	Cable Splicer	$102.42	**5A**	**4D**		
Electricians - Powerline Construction	Certified Line Welder	$93.99	**5A**	**4D**		

Electricians - Powerline Construction	Groundperson	$59.30	**5A**	**4D**		
Electricians - Powerline Construction	Heavy Line Equipment Operator	$93.99	**5A**	**4D**		
Electricians - Powerline Construction	Journey Level Lineperson	$93.99	**5A**	**4D**		
Electricians - Powerline Construction	Line Equipment Operator	$80.96	**5A**	**4D**		
Electricians - Powerline Construction	Meter Installer	$59.30	**5A**	**4D**	**8W**	
Electricians - Powerline Construction	Pole Sprayer	$93.99	**5A**	**4D**		
Electricians - Powerline Construction	Powderperson	$69.84	**5A**	**4D**		
Electronic Technicians	Journey Level	$79.08	**5A**	**1B**		
Elevator Constructors	Mechanic	$115.62	**5N**	**4A**		
Elevator Constructors	Mechanic In Charge	$125.08	**5N**	**4A**		
Fabricated Precast Concrete Products	Journey Level	$16.66		**1**		
Fabricated Precast Concrete Products	Journey Level - In-Factory Work Only	$16.66		**1**		
Fence Erectors	Fence Erector	$54.63	**6Z**	**1M**	**8S**	
Fence Erectors	Fence Laborer	$54.63	**6Z**	**1M**	**8S**	

Flaggers	Journey Level	$54.63	**6Z**	**1M**	**8S**	
Glaziers	Journey Level	$76.47	**7I**	**11K**		
Heat & Frost Insulators And Asbestos Workers	Mechanic	$85.39	**5N**	**1F**		
Heating Equipment Mechanics	Journey Level	$102.92	**7F**	**1E**		
Hod Carriers & Mason Tenders	Journey Level	$62.10	**5D**	**1B**		
Industrial Power Vacuum Cleaner	Journey Level	$16.66		**1**		
Inland Boatmen	Boat Operator	$71.28	**5B**	**1K**		
Inland Boatmen	Cook	$69.70	**5B**	**1K**		
Inland Boatmen	Deckhand	$70.00	**5B**	**1K**		
Inland Boatmen	Deckhand Engineer	$69.55	**5B**	**1K**		
Inland Boatmen	Launch Operator	$71.23	**5B**	**1K**		
Inland Boatmen	Mate	$89.12	**5B**	**1K**		
Inspection/Cleaning/Sealing Of Sewer & Water Systems By Remote Control	Cleaner Operator, Foamer Operator	$16.66		**1**		
Inspection/Cleaning/Sealing Of Sewer & Water Systems By Remote Control	Grout Truck Operator	$16.66		**1**		

Inspection/Cleaning/Sealing Of Sewer & Water Systems By Remote Control	Head Operator	$16.66		**1**		
Inspection/Cleaning/Sealing Of Sewer & Water Systems By Remote Control	Technician	$16.66		**1**		
Inspection/Cleaning/Sealing Of Sewer & Water Systems By Remote Control	Tv Truck Operator	$16.66		**1**		
Insulation Applicators	Journey Level	$67.97	**15J**	**11U**	**9L**	
Ironworkers	Journey Level	$81.13	**15K**	**11N**		
Laborers	Anchor Machines	$59.48	**6Z**	**1M**		
Laborers	Application (Including Pot Power Tender For Same), Applying Protective Material By Hand Or Nozzle On Utility Lines Or Storage Tanks On Project	$58.86	**6Z**	**1M**		
Laborers	Asbestos Removal	$59.48	**6Z**	**1M**		
Laborers	Asphalt Plant Laborers	$58.04	**6Z**	**1M**		
Laborers	Asphalt Raker	$60.00	**6Z**	**1M**		

Laborers	Asphalt Spreaders	$58.04	6Z	1M	
Laborers	Ballast Regulators	$59.48	6Z	1M	
Laborers	Batch Weighman	$58.04	6Z	1M	
Laborers	Bit Grinder	$59.48	6Z	1M	
Laborers	Brick Pavers (Dry)	$58.04	6Z	1M	
Laborers	Broomers	$58.04	6Z	1M	
Laborers	Brush (Power Saw)	$58.86	6Z	1M	
Laborers	Brush Burners And Cutters	$58.04	6Z	1M	
Laborers	Burners	$58.86	6Z	1M	
Laborers	Car And Truck Loaders	$58.04	6Z	1M	
Laborers	Carpenter Tender	$58.04	6Z	1M	
Laborers	Change-house Man Or Dry Shack Man	$58.04	6Z	1M	
Laborers	Chipping Guns	$58.86	6Z	1M	
Laborers	Choker Setters	$58.04	6Z	1M	
Laborers	Choker Splicer	$58.86	6Z	1M	
Laborers	Chuck Tender	$58.86	6Z	1M	

Laborers	Clary Power Spreader And Similar Types	$58.86	6Z	1M		
Laborers	Clean Up Laborers	$58.04	6Z	1M		
Laborers	Clean-up Nozzleman-Green-Cutter (Concrete Rock, Etc.)	$58.86	6Z	1M		
Laborers	Concrete Crew, Bull Gang	$58.86	6Z	1M		
Laborers	Concrete Laborers	$58.86	6Z	1M		
Laborers	Concrete Nozzlemen	$60.00	6Z	1M		
Laborers	Concrete Power Buggyman	$58.86	6Z	1M		
Laborers	Concrete Saw Operator	$59.48	6Z	1M		
Laborers	Concrete Saw Operator (Walls)	$60.00	6Z	1M		
Laborers	Confined Space / Hole Watch	$54.63	6Z	1M	8S	
Laborers	Crusher Feeder	$58.86	6Z	1M		
Laborers	Curing, Concrete	$58.04	6Z	1M		

Laborers	Demolition And Wrecking Charred Materials	$58.86	6Z	1M		
Laborers	Demolition, Wrecking And Moving Laborers	$58.04	6Z	1M		
Laborers	Drill Doctor	$59.48	6Z	1M		
Laborers	Drill Operators, Air Tracks, Cat Drills, Wagon Drills, Rubber-mounted Drills And Other Similar Types, Including At Crusher Plants	$60.00	6Z	1M		
Laborers	Dry Pack Machine	$58.86	6Z	1M		
Laborers	Dry Stack Walls	$58.04	6Z	1M		
Laborers	Dumpers, Road Oiling Crew	$58.04	6Z	1M		
Laborers	Dumpmen (for Grading Crew)	$58.04	6Z	1M		
Laborers	Elevator Feeders	$58.04	6Z	1M		
Laborers	Erosion Control Specialist	$58.04	6Z	1M		
Laborers	Final Clean-up	$54.63	6Z	1M	8S	

Laborers	Fine Graders	$58.04	6Z	1M		
Laborers	Fire Watch	$54.63	6Z	1M	8S	
Laborers	Form Strippers (Not Swinging Stages)	$58.04	6Z	1M		
Laborers	General Laborer	$58.04	6Z	1M		
Laborers	Grade Checker	$60.00	6Z	1M		
Laborers	Guard Rail, Median Rail, Reference Post Guide Post, Right-of-way Marker	$58.04	6Z	1M		
Laborers	Gunite Nozzleman	$60.00	6Z	1M		
Laborers	Gunite Nozzleman Tender	$58.86	6Z	1M		
Laborers	Gunite or Sand Blasting Pot Tender	$58.86	6Z	1M		
Laborers	Hand Placed Sand Blasting (Wet)	$58.86	6Z	1M		
Laborers	Handlers Or Mixers Of All Materials Of An Irritating Nature (Including Cement & Lime)	$58.86	6Z	1M		
Laborers	Hazardous Waste Worker	$59.48	6Z	1M		

Laborers	High Scalers, Strippers & Drillers (covers work in swinging stages, chairs or belts under extreme conditions unusual to normal drilling, blasting, barring down or slopping and stripping	$60.00	**6Z**	**1M**	
Laborers	Laser Beam	$60.00	**6Z**	**1M**	
Laborers	Laser Beam (Pipe Laying) - Applicable When Employee Assigned To Move, Set Up, Align	$60.00	**6Z**	**1M**	
Laborers	Laser Beam (Tunnel) - Applicable When Employee Assigned To Move, Set Up, Align	$60.00	**6Z**	**1M**	
Laborers	Lead Abatement	$59.48	**6Z**	**1M**	
Laborers	Leverman Or Aggregate Spreaders (Flaherty And Similar Types)	$58.04	**6Z**	**1M**	

Laborers	Loading Spotters	$58.04	6Z	1M		
Laborers	Loop Installation	$60.00	6Z	1M		
Laborers	Manhole Building	$59.48	6Z	1M		
Laborers	Material Yard Man	$58.04	6Z	1M		
Laborers	Miner - Tunnel	$60.00	6Z	1M		
Laborers	Mold Remediation Or Removal	$59.48	6Z	1M		
Laborers	Nippers And Timbermen	$59.48	6Z	1M		
Laborers	Nuclear Plant Workers - Lead Shield, Power Saw Operators (Bucking & Falling)	$59.48	6Z	1M		
Laborers	Pilot Car	$54.63	6Z	1M	8S	
Laborers	Pipe Doping & Wrapping	$58.86	6Z	1M		
Laborers	Pipe Layer All Types	$60.00	6Z	1M		
Laborers	Pittsburgh Chipper Operator Or Similar Types	$58.04	6Z	1M		
Laborers	Post Hold Digger, Air, Gas Or Electric	$58.86	6Z	1M		

Laborers	Powderman - Tunnel	$60.00	6Z	1M	
Laborers	Powderman Tender	$58.04	6Z	1M	
Laborers	Power Jacks	$59.48	6Z	1M	
Laborers	Pressure Washer	$58.86	6Z	1M	
Laborers	Railroad Track Laborers	$58.04	6Z	1M	
Laborers	Ribbon Setter, Head	$58.86	6Z	1M	
Laborers	Ribbon Setters (Including Steel Forms)	$58.04	6Z	1M	
Laborers	Rigger/Signalperson	$58.04	6Z	1M	
Laborers	Rip Rap Man (Hand Packed)	$58.04	6Z	1M	
Laborers	Rip Rap Man (Head)	$58.86	6Z	1M	
Laborers	Road Pump Tender	$58.04	6Z	1M	
Laborers	Sand Blasting (Dry)	$59.48	6Z	1M	
Laborers	Scaffold Tender	$58.04	6Z	1M	
Laborers	Sewer Labor	$58.04	6Z	1M	
Laborers	Sewer Timbermen	$59.48	6Z	1M	

Laborers	Signalman	$58.04	6Z	1M	
Laborers	Skipman	$58.04	6Z	1M	
Laborers	Slopers	$58.04	6Z	1M	
Laborers	Spraymen	$58.04	6Z	1M	
Laborers	Stake Chaser	$58.04	6Z	1M	
Laborers	Stake-setter	$58.86	6Z	1M	
Laborers	Stockpiler	$58.04	6Z	1M	
Laborers	Tampers	$58.86	6Z	1M	
Laborers	Tie Back Shoring	$58.86	6Z	1M	
Laborers	Timber Faller And Bucker (Hand Labor)	$58.04	6Z	1M	
Laborers	Tool Operators - Jackhammer	$58.86	6Z	1M	
Laborers	Tool Operators - Paving Breakers	$58.86	6Z	1M	
Laborers	Toolroom Man (At Job Site)	$58.04	6Z	1M	
Laborers	Track Liners	$59.48	6Z	1M	
Laborers	Traffic Control Laborer	$58.04	6Z	1M	

Laborers	Traffic Control Supervisor	$58.86	6Z	1M	
Laborers	Traffic Control Supervisor	$58.86	6Z	1M	
Laborers	Tugger Operator	$59.48	6Z	1M	
Laborers	Tunnel Bullgang (Above Ground)	$60.00	6Z	1M	
Laborers	Tunnel Chuck Tenders	$60.00	6Z	1M	
Laborers	Tunnel Motorman - Dinky Locomotive	$60.00	6Z	1M	
Laborers	Tunnel Muckers, Brakemen	$60.00	6Z	1M	
Laborers	Tunnel Shield Operator	$60.00	6Z	1M	
Laborers	Vibrating Screed	$60.00	6Z	1M	
Laborers	Vibrators (All Types)	$60.00	6Z	1M	
Laborers	Water Blaster	$59.48	6Z	1M	
Laborers	Weight-Man-Crusher (Aggregate When Used)	$58.04	6Z	1M	
Laborers	Welder	$59.48	6Z	1M	

Laborers - Underground Sewer & Water	General Laborer and Topman	$60.00	**6Z**	**1M**		
Landscape Construction	Landscape Operator	$68.46	**7B**	**4G**	**8U**	
Landscape Construction	Landscaping or Planting Laborer	$46.95	**6Z**	**1M**	**8T**	
Landscape Maintenance	Groundskeeper	$16.66		**1**		
Lathers	Journey Level	$67.80	**5A**	**1B**		
Marble Setters	Journey Level	$75.09	**5A**	**1B**		
Metal Fabrication (In Shop)	Fitter	$25.33	**7S**	**1B**		
Metal Fabrication (In Shop)	Machine Operator	$25.33	**7S**	**1B**		
Metal Fabrication (In Shop)	Welder	$25.33	**7S**	**1B**		
Millwright	Journey Level	$80.28	**5A**	**1B**		
Modular Buildings	Journey Level	$16.66		**1**		
Painters	Bridge Painter	$60.44	**7E**	**11L**		
Painters	Commercial Painter	$51.86	**7E**	**11L**		
Painters	Industrial Painter	$53.93	**7E**	**11L**	**9F**	
Pile Driver	Journey Level	$69.08	**15J**	**11U**	**9L**	
Plasterers	Journey Level	$64.24	**5H**	**1E**		

Playground & Park Equipment Installers	Journey Level	$16.66		1		
Plumbers & Pipefitters	Journey Level	$90.87	5A	1G		
Power Equipment Operators	Air Filtration Equipment(group 6)	$65.24	7B	4G	8U	
Power Equipment Operators	Asphalt Plant (any Type) (assistant Engineer Required) (group 2)	$74.18	7B	4G	8U	
Power Equipment Operators	Asphalt, Burner & Reconditioner (any Type), (asst To Engineer If Required)(group 5)	$68.46	7B	4G	8U	
Power Equipment Operators	Asphalt, Extrusion Machine Operator(group 5)	$68.46	7B	4G	8U	
Power Equipment Operators	Asphalt, Paver (screed Man Required)(group 4)	$69.70	7B	4G	8U	
Power Equipment Operators	Asphalt, Pugmill (any Type)(group 6)	$65.24	7B	4G	8U	
Power Equipment Operators	Asphalt, Raker(group 6)	$65.24	7B	4G	8U	
Power Equipment Operators	Asphalt, Roller (any Asphalt Mix)(group 5)	$68.46	7B	4G	8U	

Power Equipment Operators	Asphalt, Roto-mill, Pavement Profiler Under 8 Ft Lateral Cut(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Asphalt, Roto-mill, Pavement Profiler, 8 Ft Lateral Cut & Over(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Asphalt, Roto-mill, Pavement Profiler, Groundman(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Asphalt, Screed(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Asphalt, Truck Mounted Spreader, With Screed(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Auger Oiler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Auto Grader Or "trimmer" (grade Checker Required) (group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Back Filling Machine (assistant To Engineer Required) (group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators	Backhoe, Robotic, Track And Wheel Type Up To And Including 20,000 Lbs. With Any Attachments(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Band Wagons (in Conjuction With Whell Excavator) (group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Bell Man (any Type Of Comunication) (group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Blade Any Type(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Blade, Robotic(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Boatman(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Boatman, Licensed(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Bobcat, Skid Steer (< 1yd)(group 6)	$65.24	**7B**	**4G**	**8U**	

Power Equipment Operators	Boom Type Lifting Device, 5 Ton Capacity Or Less(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Boring Machine (asst To Engineer Required)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Broom Self-propelled, Construction Job Site(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Bulldozer Operator, 20,000 Lbs Or Less, Or 100 Horse Or Less(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Bulldozer Operator, Over 20,000 Lbs And More Than 100 Horse Up To 70,000 Lbs(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Bulldozer Over 70,000 Lbs Up To And Including 120,000 Lbs(group 3)	$73.03	**7B**	**4G**	**8U**	
Power Equipment Operators	Bulldozer Over 120,000 Lbs And Above(group 2)	$74.18	**7B**	**4G**	**8U**	

Power Equipment Operators	Bulldozer Robotic Equipment(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Cable-plow (any Type)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Cableway 25 Ton & Over(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Cableway Up To 25 Ton(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Canal Trimmer (grade Oiler Required)(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Cat Drill (john Henry)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Cement Pump(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Challenger(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Chip Spreading Machine(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Chippers (asst To Engineer If Required)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Churn Drill & Earth Boring Machine(group 5)	$68.46	**7B**	**4G**	**8U**	

Power Equipment Operators	Combination Heavy Duty Mechanic-welder, When Required To Do Both(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Compactor Self Propelled Without Blade(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Compactor With Blade Self Propelled(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Compactor, Multi-engine(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Compactor, Robotic(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Compressor (any Power) 1,250 Cu Ft And Over Total Capacity(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Compressor Operator (any Power) Under 1,250 Cu Ft Total Capacity(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete Batch Plant And/or Wet Mix (3 Units Or More) (group1)	$76.09	**7B**	**4G**	**8U**	

Power Equipment Operators	Concrete Batch Plant And/or Wet Mix Operator (1 & 2 Drums)(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete Batch Plant Quality Control(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete Breaker (assistant To Engineer Required) (group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete Canal Line, Assistant To Engineer Required(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete Curing Machine (riding Type)(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete Diamond Head Profiler(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete Paving Road Mixer(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete Planer(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete Saw(group 6)	$65.24	**7B**	**4G**	**8U**	

Power Equipment Operators	Concrete, Automatic Slip Form Paver (asst To Engineer Required) (group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Combination Mixer & Compressor Operator, Gunite Work(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Curb Machine Mechanical Berm, Curb And/or Curb And Gutter(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Finishing Machine(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Grout Plant(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Grouting Machine(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Joint Machine(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Mixer Mobile(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators	Concrete, Mixer Single Drum Any Capacity(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Paving Machine 8' And Less (asst To Engineer Required) (group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Placing Boom(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Pump Truck(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Pump(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Pumpcrete Operator (any Type) (group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Reinforced Tank Banding Machine (asst To Engineer Required)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Slip Form Pumps, Power Driven Hydraulic Lifting Device For	$68.46	**7B**	**4G**	**8U**	

	Concrete Forms(group 5)					
Power Equipment Operators	Concrete, Spreader(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Telebelt(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Concrete, Treated Base Roller Operator, Oiling(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Conveyor Operator Or Assistant(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Conveyored Material Hauler(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Bridge Locomotive, Gantry And Overhead(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Carry Deck(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Chicago Boom & Similar Types(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Floating (derrick Barge) 30	$74.18	**7B**	**4G**	**8U**	

	Ton But Less Than 150 Ton (asst To Engineer Required) (group 2)					
Power Equipment Operators	Crane, Floating 150 Ton But Less Than 250 Ton (asst To Engineer Required) (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Floating 250 Ton And Over (asst To Engineer And Deckhand Required) (group 1)	$78.25	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Floating Clamshell 3 Cu. Yds. & Over (fireman Or Diesel Electric Engineer Required(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Floating Clamshell, Dragline Etc. Operator Under 3 Cu. Yds. Or Less Than 30 Ton (diesel-electric Engineer Required)(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators	Crane, Hydraulic 200 Ton Through 399 Ton (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Hydraulic 50 Ton Through 89 Ton With Luffing Or Tower Attachment(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Hydraulic 50 Ton Through 89 Tons(group 3)	$73.03	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Hydraulic 90 Ton Through 199 Ton With Luffing Or Tower Attachment (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Hydraulic 90 Ton Through 199 Ton(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Hydraulic Crane 200 Ton Through 300 Ton With Luffing Or Tower Attachment(group 1)	$78.25	**7B**	**4G**	**8U**	

Power Equipment Operators	Crane, Hydraulic Crane 400 Ton And Over(group 1)	$80.41	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Hydraulic Crane Over 300 Ton Through 399 Ton With Luffer Or Tower Attachment(group 1)	$80.41	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Hydraulic Under 50 Ton(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Lattice Boom 200 Ton Through 299 Ton, With Over 200' Boom(group 1)	$78.25	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Lattice Boom 300 Ton Through 399 Ton(group 1)	$78.25	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Lattice Boom 300 Ton Through 399 Ton, With Over 200' Boom(group 1)	$80.41	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Lattice Boom 50 Ton Through 89 Ton With 150' Boom Or Less(group 3)	$73.03	**7B**	**4G**	**8U**	

Power Equipment Operators	Crane, Lattice Boom 50 Ton Through 89 Ton With Over 150' Boom	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Lattice Boom 90 Ton Through 199 Ton With 150' - 200' Boom(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Lattice Boom Under 50 Ton(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Lattice Boom, 200 Ton Through 299 Ton With 200' Boom Or Less (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Lattice Boom, 90 Ton Through 199 Ton With Over 200' Boom (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Shovel, Dragline Or Clamshell 3 Cu. Yds. But Less Than 5 Cu. Yds. (asst To Engineer Required) (group 3)	$73.03	**7B**	**4G**	**8U**	

Power Equipment Operators	Crane, Tower Crane With 175' Tower Or Less And With Less Than 200' Jib(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Tower Crane With Over 175' Tower Or Over 200' Jib (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Tugger(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Whirley 90 Ton And Over (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators	Crane, Whirley Under 90 Ton(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Crusher Feederman(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Crusher Oiler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Crusher Plant(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Deckhand(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Derrick Operator Under 100 Ton (two	$69.70	**7B**	**4G**	**8U**	

	Operators Required When Swing Control Is Remote From Hoist)(group 4)					
Power Equipment Operators	Diesel-electric Engineer (plant Or Floating)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Directional Drill Over 20,000 Lbs Pullback(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Drill Assistant(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Drill Cat Operator(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Drill Directional Type Less Than 20,ooo Lbs Pullback(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Drill Doctor And/or (bit Grinder)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Drill Mud Mixer(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Drill Oscillator(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators	Drill, Directinal Locator(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Driller, Percussion, Diamond, Core, Cable, Rotary & Similar Type(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Elevating Grader Operator, Tractor Towed Requiring Operator Or Grader(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Elevating Loader Operator (any Type) (group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Elevator To Move Personnel Or Materials(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Excavator Over 80,000 Lbs Through 130,000 Lbs(group 3)	$73.03	**7B**	**4G**	**8U**	
Power Equipment Operators	Excavator Operator, Over 20,000 Lbs Through 80,000 Lbs(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Excavator Operator, Over 130,000	$74.18	**7B**	**4G**	**8U**	

	Lbs(group 2)					
Power Equipment Operators	Fireman(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Floating, Crane 350 Ton And Over (asst To Engineer And Deckhand Required) (group 1)	$80.41	**7B**	**4G**	**8U**	
Power Equipment Operators	Fork Lift(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Fork Lift, Over 10 Ton Or Robotic(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Generator Operator(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Grade Checker(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Grade Setter / Layout From Plans(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Grade-all(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Guardrail Machines, I.e. Punch, Auger, Etc.(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Guardrail Punch Oiler(group 6)	$65.24	**7B**	**4G**	**8U**	

Power Equipment Operators	Hammer Operator (pile Driver)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Heavy Duty Repairman Assistant(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Heavy Equipment Robotics Operator Or Mechanic(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Helicopter Hoist(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Helicopter Radioman (ground) (group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Helicopter When Used In Erecting Workcrane(group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators	Hoist Operator, Single Drum(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Hoist, 2 Drums Or More(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Hoist, Stiff Leg, Guy Derrick Or Similar Type, 50 Ton And Over(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators	Hydraulic Backhoe Track Type Up To And Including 20,000 Lbs(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Hydraulic Backhoe Wheel Type (any Make)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Hydraulic Pipe Press(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Hydro Axe (loader Mounted Or Similar Type)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Hydrographic Seeder Machine Straw, Pulp Or Seed(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Hydrostatic Pump Operator(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Internal Full Slab Vibrator Operator(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Jack Operator, Elevating Barges, Barge Operator, Self-unloading (asst To Engineer Required)(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators	Laser Screed(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Lattice Boom Crane 400 Ton And Over(group 1)	$80.41	**7B**	**4G**	**8U**	
Power Equipment Operators	Lime Spreader, Construction Job Site(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Loaders Operator, Front End & Overhead, 25,000 Lbs And Less Than 60,000 Lbs(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Loaders, 120,000 Lbs And Above(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Loaders, 60,000 Lbs And Less Than 120,000 Lbs(group 3)	$73.03	**7B**	**4G**	**8U**	
Power Equipment Operators	Loaders, Rubber-tire Type, Less Than 25,000 Lbs(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Log Skidders(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators	Master Environmental Maintenance Mechanic(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Material Handler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Mechanic, Heavy Duty(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Mixer Box (c.t.b., Dry Batch, Etc.)(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Oiler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Parts Man (tool Room)(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Pavement Grinder And Or Grooving Machine (riding Type)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Pile Driver Operator (not Crane Type) (asst To Engineer Required)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Pipe Bending, Cleaning, Doping And Wrapping Machines(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators	Pipe, Cast In Place Pipe Laying Machine(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Plant Oiler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Pump (any Power) (group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Pump Operator, More Than 5 Pumps (any Size)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Ballast Compactor, Regulator Or Tamper Machines(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Ballast Tamper Multi-purpose(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Brakeman, Switchman, Motorman(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Car Mover(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Clip Applicator(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, High Rail Self Loader Truck(group	$68.46	**7B**	**4G**	**8U**	

	5)					
Power Equipment Operators	Rail, Lo-railer(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Locomotive, 40 Ton And Over (asst To Engineer Required)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Shuttle Car Operator(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Speedswing(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Switchman(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Tamping Machine, Mechanical, Self-propelled(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Rail, Track Liner(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Remote Controlled Earth Moving Equipment(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Rigger(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Roller Grading (not Asphalt)(group 6)	$65.24	**7B**	**4G**	**8U**	

Power Equipment Operators	Rubber-tired Dozers And Pushers(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Scraper All Types(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Service Oiler (greaser)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Shovel, Dragline, Clamshell, 5 Yards And Over(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Side-boom(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Skip Loader, Drag Box(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Stump Grinder (loader Mounted Or Similar Type)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Surface Heater And Planer(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Sweeper Self-propelled, Construction Job Site(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Tar Pot Fireman (power Agitated) Or Not(group 6)	$65.24	**7B**	**4G**	**8U**	

Power Equipment Operators	Tractor Rubber-tired, 50 Hp Flywheel & Under(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Tractor, Rubber-tired Over 50 Hp Flywheel(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Trenching Machine 3 Ft Depth And Deeper (asst To The Operator If Required)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Trenching Machine Operator, Maximum Digging Capacity 3 Ft Depth(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Truck Crane Oiler-driver(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Truck, All Terrain Or Track Type(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Truck, Barrel Type(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Truck, Boom(group 5)	$68.46	**7B**	**4G**	**8U**	

Power Equipment Operators	Truck, Off-road Trucks, Articulated And Non-articulated Trucks(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Truck, Offraod Trucks, Articulated And Non-articulated Trucks(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Truck, Vacuum(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Truck, Water(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Tub Grinder(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Tunnel Boring Machine Mechanic(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Tunnel Boring Machine(group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators	Tunnel Segment Plant(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Tunnel Separation Plant(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Tunnel Shaef Loader(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators	Tunnel, Locomotive, Dinkey(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Tunnel, Micro Boring Tunnel Machine(group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators	Tunnel, Mucking Machine(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Tunnel, Power Jumbo Setting Slip Forms, Etc.(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators	Tunnel, Shield Operator(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Ultra High Pressure Water Jet Cutting Tool System Operator(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Underwater Equipment, Remote Or Otherwise(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Vacuum Blasting Machine Operator(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Water Pulls, Water Wagon(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Welder's Assistant(group 6)	$65.24	**7B**	**4G**	**8U**	

Power Equipment Operators	Welder; Heavy Duty, Certified Or Not(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators	Welding Machine(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators	Wheel Excavation Any Size (grade Oiler Required) (group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators	Wire Mat Or Brooming Machine(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Air Filtration Equipment(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Asphalt Plant (any Type) (assistant Engineer Required) (group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Asphalt, Burner & Reconditioner (any Type), (asst To Engineer If Required)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Asphalt, Extrusion Machine Operator(group 5)	$68.46	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Asphalt, Paver (screed Man Required)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Asphalt, Pugmill (any Type)(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Asphalt, Raker(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Asphalt, Roller (any Asphalt Mix)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Asphalt, Roto-mill, Pavement Profiler Under 8 Ft Lateral Cut(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Asphalt, Roto-mill, Pavement Profiler, 8 Ft Lateral Cut & Over(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Asphalt, Roto-mill, Pavement Profiler, Groundman(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Asphalt, Screed(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Asphalt, Truck Mounted Spreader, With Screed(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Auger Oiler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Auto Grader Or "trimmer" (grade Checker Required) (group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Back Filling Machine (assistant To Engineer Required) (group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Backhoe, Robotic, Track And Wheel Type Up To And Including 20,000 Lbs. With Any Attachments(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Band Wagons (in Conjuction With Whell Excavator) (group 2)	$74.18	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Bell Man (any Type Of Comunication) (group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Blade Any Type(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Blade, Robotic(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Boatman(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Boatman, Licensed(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Bobcat, Skid Steer (< 1yd)(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Boom Type Lifting Device, 5 Ton Capacity Or Less(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Boring Machine (asst To Engineer Required)(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Broom Self-propelled, Construction Job Site(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Bulldozer Operator, 20,000 Lbs Or Less, Or 100 Horse Or Less(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Bulldozer Operator, Over 20,000 Lbs And More Than 100 Horse Up To 70,000 Lbs(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Bulldozer Over 70,000 Lbs Up To And Including 120,000 Lbs(group 3)	$73.03	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Bulldozer Over 120,000 Lbs And Above(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Bulldozer Robotic Equipment(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Cable-plow (any Type)(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Cableway 25 Ton & Over(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Cableway Up To 25 Ton(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Canal Trimmer (grade Oiler Required)(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Cat Drill (john Henry)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Cement Pump(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Challenger(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Chip Spreading Machine(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Chippers (asst To Engineer If Required)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Churn Drill & Earth Boring Machine(group 5)	$68.46	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Combination Heavy Duty Mechanic-welder, When Required To Do Both(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Compactor Self Propelled Without Blade(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Compactor With Blade Self Propelled(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Compactor, Multi-engine(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Compactor, Robotic(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Compressor (any Power) 1,250 Cu Ft And Over Total Capacity(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Compressor Operator (any Power) Under 1,250 Cu Ft Total Capacity(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground	Concrete Batch Plant And/or Wet	$76.09	**7B**	**4G**	**8U**	

Sewer & Water	Mix (3 Units Or More) (group1)					
Power Equipment Operators- Underground Sewer & Water	Concrete Batch Plant And/or Wet Mix Operator (1 & 2 Drums)(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete Batch Plant Quality Control(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete Breaker (assistant To Engineer Required) (group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete Canal Line, Assistant To Engineer Required(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete Curing Machine (riding Type)(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete Diamond Head Profiler(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete Paving Road Mixer(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground	Concrete Planer(group 5)	$68.46	**7B**	**4G**	**8U**	

Sewer & Water						
Power Equipment Operators- Underground Sewer & Water	Concrete Saw(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Automatic Slip Form Paver (asst To Engineer Required) (group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Combination Mixer & Compressor Operator, Gunite Work(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Curb Machine Mechanical Berm, Curb And/or Curb And Gutter(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Finishing Machine(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Grout Plant(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Grouting Machine(group 5)	$68.46	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Concrete, Joint Machine(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Mixer Mobile(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Mixer Single Drum Any Capacity(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Paving Machine 8' And Less (asst To Engineer Required) (group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Placing Boom(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Pump Truck(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Pump(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Pumpcrete Operator (any Type) (group 5)	$68.46	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Concrete, Reinforced Tank Banding Machine (asst To Engineer Required)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Slip Form Pumps, Power Driven Hydraulic Lifting Device For Concrete Forms(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Spreader(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Telebelt(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Concrete, Treated Base Roller Operator, Oiling(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Conveyor Operator Or Assistant(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Conveyored Material Hauler(group 5)	$68.46	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Crane, Bridge Locomotive, Gantry And Overhead(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Carry Deck(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Chicago Boom & Similar Types(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Floating (derrick Barge) 30 Ton But Less Than 150 Ton (asst To Engineer Required) (group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Floating 150 Ton But Less Than 250 Ton (asst To Engineer Required) (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Floating 250 Ton And Over (asst To Engineer And Deckhand Required) (group 1)	$78.25	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Crane, Floating Clamshell 3 Cu. Yds. & Over (fireman Or Diesel Electric Engineer Required(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Floating Clamshell, Dragline Etc. Operator Under 3 Cu. Yds. Or Less Than 30 Ton (diesel-electric Engineer Required)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Hydraulic 200 Ton Through 399 Ton (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Hydraulic 50 Ton Through 89 Ton With Luffing Or Tower Attachment(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Hydraulic 50 Ton Through 89 Tons(group 3)	$73.03	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Hydraulic 90 Ton Through 199 Ton With Luffing Or	$76.09	**7B**	**4G**	**8U**	

	Tower Attachment (group 1)					
Power Equipment Operators- Underground Sewer & Water	Crane, Hydraulic 90 Ton Through 199 Ton(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Hydraulic Crane 200 Ton Through 300 Ton With Luffing Or Tower Attachment(group 1)	$78.25	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Hydraulic Crane 400 Ton And Over(group 1)	$80.41	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Hydraulic Crane Over 300 Ton Through 399 Ton With Luffer Or Tower Attachment(group 1)	$80.41	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Hydraulic Under 50 Ton(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Lattice Boom 200 Ton Through 299 Ton, With Over 200' Boom(group 1)	$78.25	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Crane, Lattice Boom 300 Ton Through 399 Ton(group 1)	$78.25	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Lattice Boom 300 Ton Through 399 Ton, With Over 200' Boom(group 1)	$80.41	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Lattice Boom 50 Ton Through 89 Ton With 150' Boom Or Less(group 3)	$73.03	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Lattice Boom 50 Ton Through 89 Ton With Over 150' Boom	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Lattice Boom 90 Ton Through 199 Ton With 150' - 200' Boom(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Lattice Boom Under 50 Ton(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Lattice Boom, 200 Ton Through 299 Ton With 200' Boom Or Less (group 1)	$76.09	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Crane, Lattice Boom, 90 Ton Through 199 Ton With Over 200' Boom (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Shovel, Dragline Or Clamshell 3 Cu. Yds. But Less Than 5 Cu. Yds. (asst To Engineer Required) (group 3)	$73.03	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Tower Crane With 175' Tower Or Less And With Less Than 200' Jib(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Tower Crane With Over 175' Tower Or Over 200' Jib (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Tugger(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crane, Whirley 90 Ton And Over (group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground	Crane, Whirley Under 90 Ton(group	$74.18	**7B**	**4G**	**8U**	

Sewer & Water	2)					
Power Equipment Operators- Underground Sewer & Water	Crusher Feederman(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crusher Oiler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Crusher Plant(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Deckhand(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Derrick Operator Under 100 Ton (two Operators Required When Swing Control Is Remote From Hoist)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Diesel-electric Engineer (plant Or Floating)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Directional Drill Over 20,000 Lbs Pullback(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground	Drill Assistant(group 6)	$65.24	**7B**	**4G**	**8U**	

Sewer & Water						
Power Equipment Operators- Underground Sewer & Water	Drill Cat Operator(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Drill Directional Type Less Than 20,ooo Lbs Pullback(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Drill Doctor And/or (bit Grinder)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Drill Mud Mixer(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Drill Oscillator(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Drill, Directinal Locator(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Driller, Percussion, Diamond, Core, Cable, Rotary & Similar Type(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Elevating Grader Operator, Tractor Towed Requiring	$68.46	**7B**	**4G**	**8U**	

	Operator Or Grader(group 5)					
Power Equipment Operators- Underground Sewer & Water	Elevating Loader Operator (any Type) (group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Elevator To Move Personnel Or Materials(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Excavator Over 80,000 Lbs Through 130,000 Lbs(group 3)	$73.03	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Excavator Operator, Over 20,000 Lbs Through 80,000 Lbs(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Excavator Operator, Over 130,000 Lbs(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Fireman(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Floating, Crane 350 Ton And Over (asst To Engineer And Deckhand Required) (group 1)	$80.41	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Fork Lift(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Fork Lift, Over 10 Ton Or Robotic(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Generator Operator(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Grade Checker(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Grade Setter / Layout From Plans(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Grade-all(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Guardrail Machines, I.e. Punch, Auger, Etc.(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Guardrail Punch Oiler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Hammer Operator (pile Driver)(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Heavy Duty Repairman Assistant(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Heavy Equipment Robotics Operator Or Mechanic(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Helicopter Hoist(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Helicopter Radioman (ground) (group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Helicopter When Used In Erecting Workcrane(group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Hoist Operator, Single Drum(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Hoist, 2 Drums Or More(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Hoist, Stiff Leg, Guy Derrick Or Similar Type, 50 Ton And Over(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground	Hydraulic Backhoe Track Type Up To	$68.46	**7B**	**4G**	**8U**	

Sewer & Water	And Including 20,000 Lbs(group 5)					
Power Equipment Operators- Underground Sewer & Water	Hydraulic Backhoe Wheel Type (any Make)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Hydraulic Pipe Press(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Hydro Axe (loader Mounted Or Similar Type)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Hydrographic Seeder Machine Straw, Pulp Or Seed(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Hydrostatic Pump Operator(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Internal Full Slab Vibrator Operator(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Jack Operator, Elevating Barges, Barge Operator, Self-unloading (asst To Engineer Required)(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Laser Screed(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Lattice Boom Crane 400 Ton And Over(group 1)	$80.41	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Lime Spreader, Construction Job Site(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Loaders Operator, Front End & Overhead, 25,000 Lbs And Less Than 60,000 Lbs(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Loaders, 120,000 Lbs And Above(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Loaders, 60,000 Lbs And Less Than 120,000 Lbs(group 3)	$73.03	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Loaders, Rubber-tire Type, Less Than 25,000 Lbs(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground	Log Skidders(group 4)	$69.70	**7B**	**4G**	**8U**	

Sewer & Water						
Power Equipment Operators- Underground Sewer & Water	Master Environmental Maintenance Mechanic(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Material Handler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Mechanic, Heavy Duty(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Mixer Box (c.t.b., Dry Batch, Etc.)(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Oiler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Parts Man (tool Room)(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Pavement Grinder And Or Grooving Machine (riding Type)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Pile Driver Operator (not Crane Type) (asst To Engineer Required)(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Pipe Bending, Cleaning, Doping And Wrapping Machines(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Pipe, Cast In Place Pipe Laying Machine(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Plant Oiler(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Pump (any Power) (group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Pump Operator, More Than 5 Pumps (any Size)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, Ballast Compactor, Regulator Or Tamper Machines(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, Ballast Tamper Multi-purpose(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, Brakeman, Switchman, Motorman(group 6)	$65.24	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Rail, Car Mover(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, Clip Applicator(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, High Rail Self Loader Truck(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, Lo-railer(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, Locomotive, 40 Ton And Over (asst To Engineer Required)(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, Shuttle Car Operator(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, Speedswing(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, Switchman(group 6)	$65.24	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Rail, Tamping Machine, Mechanical, Self-propelled(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rail, Track Liner(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Remote Controlled Earth Moving Equipment(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rigger(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Roller Grading (not Asphalt)(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Rubber-tired Dozers And Pushers(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Scraper All Types(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Service Oiler (greaser)(group 5)	$68.46	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Shovel, Dragline, Clamshell, 5 Yards And Over(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Side-boom(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Skip Loader, Drag Box(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Stump Grinder (loader Mounted Or Similar Type)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Surface Heater And Planer(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Sweeper Self-propelled, Construction Job Site(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tar Pot Fireman (power Agitated) Or Not(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tractor Rubber-tired, 50 Hp Flywheel & Under(group 5)	$68.46	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Tractor, Rubber-tired Over 50 Hp Flywheel(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Trenching Machine 3 Ft Depth And Deeper (asst To The Operator If Required)(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Trenching Machine Operator, Maximum Digging Capacity 3 Ft Depth(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Truck Crane Oiler-driver(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Truck, All Terrain Or Track Type(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Truck, Barrel Type(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Truck, Boom(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Truck, Off-road Trucks, Articulated And Non-articulated Trucks(group 5)	$68.46	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Truck, Offraod Trucks, Articulated And Non-articulated Trucks(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Truck, Vacuum(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Truck, Water(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tub Grinder(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tunnel Boring Machine Mechanic(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tunnel Boring Machine(group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tunnel Segment Plant(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tunnel Separation Plant(group 4)	$69.70	**7B**	**4G**	**8U**	

Power Equipment Operators- Underground Sewer & Water	Tunnel Shaef Loader(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tunnel, Locomotive, Dinkey(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tunnel, Micro Boring Tunnel Machine(group 1)	$76.09	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tunnel, Mucking Machine(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tunnel, Power Jumbo Setting Slip Forms, Etc.(group 5)	$68.46	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Tunnel, Shield Operator(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Ultra High Pressure Water Jet Cutting Tool System Operator(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Underwater Equipment, Remote Or Otherwise(group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground	Vacuum Blasting Machine	$69.70	**7B**	**4G**	**8U**	

Sewer & Water	Operator(group 4)					
Power Equipment Operators- Underground Sewer & Water	Water Pulls, Water Wagon(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Welder's Assistant(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Welder; Heavy Duty, Certified Or Not(group 4)	$69.70	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Welding Machine(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Wheel Excavation Any Size (grade Oiler Required) (group 2)	$74.18	**7B**	**4G**	**8U**	
Power Equipment Operators- Underground Sewer & Water	Wire Mat Or Brooming Machine(group 6)	$65.24	**7B**	**4G**	**8U**	
Power Line Clearance Tree Trimmers	Journey Level In Charge	$64.20	**5A**	**4A**		
Power Line Clearance Tree Trimmers	Spray Person	$60.74	**5A**	**4A**		
Power Line Clearance Tree Trimmers	Tree Equipment Operator	$64.20	**5A**	**4A**		

Power Line Clearance Tree Trimmers	Tree Trimmer	$57.29	**5A**	**4A**		
Power Line Clearance Tree Trimmers	Tree Trimmer Groundperson	$43.05	**5A**	**4A**		
Refrigeration & Air Conditioning Mechanics	Journey Level	$95.46	**5A**	**1G**		
Residential Brick Mason	Journey Level	$23.02		**1**		
Residential Carpenters	Journey Level	$26.70		**1**		
Residential Cement Masons	Journey Level	$16.66		**1**		
Residential Drywall Applicators	Journey Level	$36.07		**1**		
Residential Drywall Tapers	Journey Level	$16.66		**1**		
Residential Electricians	Journey Level	$30.53		**1**		
Residential Glaziers	Journey Level	$42.76		**1**		
Residential Insulation Applicators	Journey Level	$28.53		**1**		
Residential Laborers	Journey Level	$46.95	**6Z**	**1M**	**8T**	
Residential Marble Setters	Journey Level	$23.02		**1**		
Residential Painters	Journey Level	$51.86	**7E**	**11L**		
Residential Plumbers & Pipefitters	Journey Level	$51.05		**1**		

Residential Refrigeration & Air Conditioning Mechanics	Journey Level	$102.92	**7F**	**1E**	
Residential Sheet Metal Workers	Journey Level	$102.92	**7F**	**1E**	
Residential Soft Floor Layers	Journey Level	$61.44	**7E**	**11Q**	
Residential Sprinkler Fitters (Fire Protection)	Journey Level	$41.11		**1**	
Residential Stone Masons	Journey Level	$23.02		**1**	
Residential Terrazzo Workers	Journey Level	$16.66		**1**	
Residential Terrazzo/Tile Finishers	Journey Level	$36.64		**1**	
Residential Tile Setters	Journey Level	$16.66		**1**	
Roofers	Journey Level	$67.45	**5A**	**3H**	
Roofers	Using Irritable Bituminous Materials	$70.45	**5A**	**3H**	
Sheet Metal Workers	Journey Level (Field or Shop)	$102.92	**7F**	**1E**	
Shipbuilding & Ship Repair	New Construction Heat & Frost Insulator	$85.39	**5N**	**1F**	

Shipbuilding & Ship Repair	Ship Repair Heat & Frost Insulator	$85.39	**5N**	**1F**		
Sign Makers & Installers (Electrical)	Journey Level	$16.88		**1**		
Sign Makers & Installers (Non-Electrical)	Journey Level	$16.66		**1**		
Soft Floor Layers	Journey Level	$63.29	**15J**	**4C**		
Solar Controls For Windows	Journey Level	$16.66		**1**		
Sprinkler Fitters (Fire Protection)	Journey Level	$75.89	**7J**	**1R**		
Stage Rigging Mechanics (Non Structural)	Journey Level	$16.66		**1**		
Stone Masons	Journey Level	$74.09	**5A**	**1B**		
Street And Parking Lot Sweeper Workers	Journey Level	$16.66		**1**		
Surveyors	Chain Person	$65.24	**7B**	**1B**	**9H**	
Surveyors	Instrument Person	$68.46	**7B**	**1B**	**9H**	
Surveyors	Party Chief	$74.18	**7B**	**1B**	**9H**	
Telecommunication Technicians	Journey Level	$79.08	**5A**	**1B**		
Telephone Line Construction - Outside	Cable Splicer	$41.35	**5A**	**2B**		

Telephone Line Construction - Outside	Hole Digger/Ground Person	$27.31	**5A**	**2B**	
Telephone Line Construction - Outside	Telephone Equipment Operator (Light)	$34.53	**5A**	**2B**	
Telephone Line Construction - Outside	Telephone Lineperson	$39.07	**5A**	**2B**	
Terrazzo Workers	Journey Level	$64.27	**5A**	**1B**	
Tile Setters	Journey Level	$64.27	**5A**	**1B**	
Tile, Marble & Terrazzo Finishers	Finishers	$47.95	**5A**	**1B**	
Traffic Control Stripers	Journey Level	$88.42	**15N**	**1K**	
Truck Drivers	Asphalt Mix Over 10 Yards	$49.39	**5A**	**1B**	
Truck Drivers	Asphalt Mix To 10 Yards	$49.24	**5A**	**1B**	
Truck Drivers	Dump Truck	$49.24	**5A**	**1B**	
Truck Drivers	Dump Truck And Trailer	$49.39	**5A**	**1B**	
Truck Drivers	Other Trucks	$49.39	**5A**	**1B**	
Truck Drivers - Ready Mix	Transit Mix 5 cubic yards and under	$49.24	**5A**	**1B**	

Truck Drivers - Ready Mix	Transit Mix over 11 cubic yards up to 15 cubic yards	$49.85	**5A**	**1B**	
Truck Drivers - Ready Mix	Transit Mix over 5 cubic yards up to 7 cubic yards	$49.39	**5A**	**1B**	
Truck Drivers - Ready Mix	Transit Mix Over 7 cubic yards up to 11 cubic yards	$49.54	**5A**	**1B**	
Well Drillers & Irrigation Pump Installers	Irrigation Pump Installer	$16.66		**1**	
Well Drillers & Irrigation Pump Installers	Oiler	$16.66		**1**	
Well Drillers & Irrigation Pump Installers	Well Driller	$17.97		**1**	

Washington State Department of Labor and Industries
Policy Statement
(Regarding the Production of "Standard" or "Non-standard" Items)

Below is the department's (State L&I's) list of criteria to be used in determining whether a prefabricated item is "standard" or "non-standard". For items not appearing on WSDOT's predetermined list, these criteria shall be used by the Contractor (and the Contractor's subcontractors, agents to subcontractors, suppliers, manufacturers, and fabricators) to determine coverage under RCW 39.12. The production, in the State of Washington, of non-standard items is covered by RCW 39.12, and the production of standard items is not. The production of any item outside the State of Washington is not covered by RCW 39.12.

1. Is the item fabricated for a public works project? If not, it is not subject to RCW 39.12. If it is, go to question 2.

2. Is the item fabricated on the public works jobsite? If it is, the work is covered under RCW 39.12. If not, go to question 3.

3. Is the item fabricated in an assembly/fabrication plant set up for, and dedicated primarily to, the public works project? If it is, the work is covered by RCW 39.12. If not, go to question 4.

4. Does the item require any assembly, cutting, modification or other fabrication by the supplier? If not, the work is not covered by RCW 39.12. If yes, go to question 5.

5. Is the prefabricated item intended for the public works project typically an inventory item which could reasonably be sold on the general market? If not, the work is covered by RCW 39.12. If yes, go to question 6.

6. Does the specific prefabricated item, generally defined as standard, have any unusual characteristics such as shape, type of material, strength requirements, finish, etc? If yes, the work is covered under RCW 39.12.

Any firm with questions regarding the policy, WSDOT's Predetermined List, or for determinations of covered and non-covered workers shall be directed to State L&I at (360) 902-5330.

WSDOT's
Predetermined List for
Suppliers - Manufactures - Fabricator

Below is a list of potentially prefabricated items, originally furnished by WSDOT to Washington State Department of Labor and Industries, that may be considered non-standard and therefore covered by the prevailing wage law, RCW 39.12. Items marked with an X in the "YES" column should be considered to be non-standard and therefore covered by RCW 39.12. Items marked with an X in the "NO" column should be considered to be standard and therefore not covered. Of course, exceptions to this general list may occur, and in that case shall be evaluated according to the criteria described in State and L&I's policy statement.

	ITEM DESCRIPTION	YES	NO
1.	Metal rectangular frames, solid metal covers, herringbone grates, and bi-directional vaned grates for Catch Basin Types 1, 1L, 1P, and 2 and Concrete Inlets. See Std. Plans		X
2.	Metal circular frames (rings) and covers, circular grates, and prefabricated ladders for Manhole Types 1, 2, and 3, Drywell Types 1, 2, and 3 and Catch Basin Type 2. See Std. Plans		X
3.	Prefabricated steel grate supports and welded grates, metal frames and dual vaned grates, and Type 1, 2, and 3 structural tubing grates for Drop Inlets. See Std. Plans.		X
4.	Concrete Pipe - Plain Concrete pipe and reinforced concrete pipe Class 2 to 5 sizes smaller than 60 inch diameter.		X
5.	Concrete Pipe - Plain Concrete pipe and reinforced concrete pipe Class 2 to 5 sizes larger than 60 inch diameter.		X
6.	Corrugated Steel Pipe - Steel lock seam corrugated pipe for culverts and storm sewers, sizes 30 inch to 120 inches in diameter. May also be treated, 1 thru 5.		X
7.	Corrugated Aluminum Pipe - Aluminum lock seam corrugated pipe for culverts and storm sewers, sizes 30 inch to 120 inches in diameter. May also be treated, #5.		X

	ITEM DESCRIPTION	YES	NO
8.	Anchor Bolts & Nuts - Anchor Bolts and Nuts, for mounting sign structures, luminaries and other items, shall be made from commercial bolt stock. See Contract Plans and Std. Plans for size and material type.		X
9.	Aluminum Pedestrian Handrail - Pedestrian handrail conforming to the type and material specifications set forth in the contract plans. Welding of aluminum shall be in accordance with Section 9-28.14(3).	X	
10.	Major Structural Steel Fabrication - Fabrication of major steel items such as trusses, beams, girders, etc., for bridges.	X	
11.	Minor Structural Steel Fabrication - Fabrication of minor steel Items such as special hangers, brackets, access doors for structures, access ladders for irrigation boxes, bridge expansion joint systems, etc., involving welding, cutting, punching and/or boring of holes. See Contact Plans for item description and shop drawings.	X	
12.	Aluminum Bridge Railing Type BP - Metal bridge railing conforming to the type and material specifications set forth in the Contract Plans. Welding of aluminum shall be in accordance with Section 9-28.14(3).		X
13.	Concrete Piling--Precast-Prestressed concrete piling for use as 55 and 70 ton concrete piling. Concrete to conform to Section 9-19.1 of Std. Spec..	X	
14.	Precast Manhole Types 1, 2, and 3 with cones, adjustment sections and flat top slabs. See Std. Plans.		X
15.	Precast Drywell Types 1, 2, and with cones and adjustment Sections. See Std. Plans.		X
16.	Precast Catch Basin - Catch Basin type 1, 1L, 1P, and 2 With adjustment sections. See Std. Plans.		X

	ITEM DESCRIPTION	YES	NO
17.	Precast Concrete Inlet - with adjustment sections, See Std. Plans		X
18.	Precast Drop Inlet Type 1 and 2 with metal grate supports. See Std. Plans.		X
19.	Precast Grate Inlet Type 2 with extension and top units. See Std. Plans		X
20.	Metal frames, vaned grates, and hoods for Combination Inlets. See Std. Plans		X
21.	Precast Concrete Utility Vaults - Precast Concrete utility vaults of various sizes. Used for in ground storage of utility facilities and controls. See Contract Plans for size and construction requirements. Shop drawings are to be provided for approval prior to casting		X
22.	Vault Risers - For use with Valve Vaults and Utilities X Vaults.		X
23.	Valve Vault - For use with underground utilities. See Contract Plans for details.		X
24.	Precast Concrete Barrier - Precast Concrete Barrier for use as new barrier or may also be used as Temporary Concrete Barrier. Only new state approved barrier may be used as permanent barrier.		X
25.	Reinforced Earth Wall Panels – Reinforced Earth Wall Panels in size and shape as shown in the Plans. Fabrication plant has annual approval for methods and materials to be used. See Shop Drawing. Fabrication at other locations may be approved, after facilities inspection, contact HQ. Lab.	X	
26.	Precast Concrete Walls - Precast Concrete Walls - tilt-up wall panel in size and shape as shown in Plans. Fabrication plant has annual approval for methods and materials to be used	X	

	ITEM DESCRIPTION	YES	NO
27.	Precast Railroad Crossings - Concrete Crossing Structure Slabs.	X	
28.	12, 18 and 26 inch Standard Precast Prestressed Girder – Standard Precast Prestressed Girder for use in structures. Fabricator plant has annual approval of methods and materials to be used. Shop Drawing to be provided for approval prior to casting girders. See Std. Spec. Section 6-02.3(25)A	X	
29.	Prestressed Concrete Girder Series 4-14 - Prestressed Concrete Girders for use in structures. Fabricator plant has annual approval of methods and materials to be used. Shop Drawing to be provided for approval prior to casting girders. See Std. Spec. Section 6-02.3(25)A .	X	
30.	Prestressed Tri-Beam Girder - Prestressed Tri-Beam Girders for use in structures. Fabricator plant has annual approval of methods and materials to be used. Shop Drawing to be provided for approval prior to casting girders. See Std. Spec. Section 6-02.3(25)A	X	
31.	Prestressed Precast Hollow-Core Slab – Precast Prestressed Hollow-core slab for use in structures. Fabricator plant has annual approval of methods and materials to be used. Shop Drawing to be provided for approval prior to casting girders. See Std. Spec. Section 6-02.3(25)A.	X	
32.	Prestressed-Bulb Tee Girder - Bulb Tee Prestressed Girder for use in structures. Fabricator plant has annual approval of methods and materials to be used. Shop Drawing to be provided for approval prior to casting girders. See Std. Spec. Section 6-02.3(25)A	X	
33.	Monument Case and Cover See Std. Plan.		X

	ITEM DESCRIPTION	YES	NO
34.	Cantilever Sign Structure - Cantilever Sign Structure fabricated from steel tubing meeting AASHTO-M-183. See Std. Plans, and Contract Plans for details. The steel structure shall be galvanized after fabrication in accordance with AASHTO-M-111.	X	
35.	Mono-tube Sign Structures - Mono-tube Sign Bridge fabricated to details shown in the Plans. Shop drawings for approval are required prior to fabrication.	X	
36.	Steel Sign Bridges - Steel Sign Bridges fabricated from steel tubing meeting AASHTO-M-138 for Aluminum Alloys. See Std. Plans, and Contract Plans for details. The steel structure shall be galvanized after fabrication in accordance with AASHTO-M-111.	X	
37.	Steel Sign Post - Fabricated Steel Sign Posts as detailed in Std Plans. Shop drawings for approval are to be provided prior to fabrication		X
38.	Light Standard-Prestressed - Spun, prestressed, hollow concrete poles.	X	
39.	Light Standards - Lighting Standards for use on highway illumination systems, poles to be fabricated to conform with methods and materials as specified on Std. Plans. See Specia Provisions for pre-approved drawings.	X	
40.	Traffic Signal Standards - Traffic Signal Standards for use on highway and/or street signal systems. Standards to be fabricated to conform with methods and material as specified on Std. Plans. See Special Provisions for pre-approved drawings	X	
41.	Precast Concrete Sloped Mountable Curb (Single and DualFaced) See Std. Plans.		X

	ITEM DESCRIPTION	YES	NO
42.	Traffic Signs - Prior to approval of a Fabricator of Traffic Signs, the sources of the following materials must be submitted and approved for reflective sheeting, legend material, and aluminum sheeting. **NOTE:** *** Fabrication inspection required. Only signs tagged "Fabrication Approved" by WSDOT Sign Fabrication Inspector to be installed	X	X
		Custom Message	Std Signing Message
43.	Cutting & bending reinforcing steel		X
44.	Guardrail components	X	X
		Custom End Sec	Standard Sec
45.	Aggregates/Concrete mixes	Covered by WAC 296-127-018	
46.	Asphalt	Covered by WAC 296-127-018	
47.	Fiber fabrics		X
48.	Electrical wiring/components		X
49.	treated or untreated timber pile		X
50.	Girder pads (elastomeric bearing)	X	
51.	Standard Dimension lumber		X
52.	Irrigation components		X

ITEM DESCRIPTION	YES	NO
53. Fencing materials		X
54. Guide Posts		X
55. Traffic Buttons		X
56. Epoxy		X
57. Cribbing		X
58. Water distribution materials		X
59. Steel "H" piles		X
60. Steel pipe for concrete pile casings		X
61. Steel pile tips, standard		X
62. Steel pile tips, custom	X	

Prefabricated items specifically produced for public works projects that are prefabricated in a county other than the county wherein the public works project is to be completed, the wage for the offsite prefabrication shall be the applicable prevailing wage for the county in which the actual prefabrication takes place.

It is the manufacturer of the prefabricated product to verify that the correct county wage rates are applied to work they perform.

See RCW 39.12.010
(The definition of "locality" in RCW 39.12.010(2) contains the phrase "wherein the physical work is being performed." The department interprets this phrase to mean the actual work site.

WSDOT's List of State Occupations not applicable to Heavy and Highway Construction Projects

This project is subject to the state hourly minimum rates for wages and fringe benefits in the contract provisions, as provided by the state Department of Labor and Industries.
The following list of occupations, is comprised of those occupations that are not normally used in the construction of heavy and highway projects.
When considering job classifications for use and / or payment when bidding on, or building heavy and highway construction projects for, or administered by WSDOT, these Occupations will be excepted from the included "Washington State Prevailing Wage Rates For Public Work Contracts" documents.

- Building Service Employees
- Electrical Fixture Maintenance Workers
- Electricians - Motor Shop
- Heating Equipment Mechanics
- Industrial Engine and Machine Mechanics
- Industrial Power Vacuum Cleaners
- Inspection, Cleaning, Sealing of Water Systems by Remote Control
- Laborers - Underground Sewer & Water
- Machinists (Hydroelectric Site Work)
- Modular Buildings
- Playground & Park Equipment Installers
- Power Equipment Operators - Underground Sewer & Water
- Residential *** ALL ASSOCIATED RATES ***
- Sign Makers and Installers (Non-Electrical)
- Sign Makers and Installers (Electrical)
- Stage Rigging Mechanics (Non Structural)

The following occupations may be used only as outlined in the preceding text concerning "WSDOT's list for Suppliers - Manufacturers - Fabricators"

- Fabricated Precast Concrete Products
- Metal Fabrication (In Shop)

Definitions for the Scope of Work for prevailing wages may be found at the Washington State Department of Labor and Industries web site and in WAC Chapter 296-127.

Washington State Department of Labor and Industries
Policy Statements
(Regarding Production and Delivery of Gravel, Concrete, Asphalt, etc.)

WAC 296-127-018 Agency filings affecting this section

Coverage and exemptions of workers involved in the production and delivery of gravel, concrete, asphalt, or similar materials.

(1) The materials covered under this section include but are not limited to: Sand, gravel, crushed rock, concrete, asphalt, or other similar materials.

(2) All workers, regardless of by whom employed, are subject to the provisions of chapter 39.12 RCW when they perform any or all of the following functions:

(a) They deliver or discharge any of the above-listed materials to a public works project site:

(i) At one or more point(s) directly upon the location where the material will be incorporated into the project; or

(ii) At multiple points at the project; or

(iii) Adjacent to the location and coordinated with the incorporation of those materials.

(b) They wait at or near a public works project site to perform any tasks subject to this section of the rule.

(c) They remove any materials from a public works construction site pursuant to contract requirements or specifications (e.g., excavated materials, materials from demolished structures, clean-up materials, etc.).

(d) They work in a materials production facility (e.g., batch plant, borrow pit, rock quarry, etc.,) which is established for a public works project for the specific, but not necessarily exclusive, purpose of supplying materials for the project.

(e) They deliver concrete to a public works site regardless of the method of incorporation.

(f) They assist or participate in the incorporation of any materials into the public works project.

(3) All travel time that relates to the work covered under subsection (2) of this section requires the payment of prevailing wages. Travel time includes time spent waiting to load, loading, transporting, waiting to unload, and delivering materials. Travel time would include all time spent in travel in support of a public works project whether the vehicle is empty or full. For example, travel time spent returning to a supply source to obtain another load of material for use on a public works site or returning to the public works site to obtain another load of excavated material is time spent in travel that is subject to prevailing wage. Travel to a supply source, including travel from a public works site, to obtain materials for use on a private project would not be travel subject to the prevailing wage.

(4) Workers are not subject to the provisions of chapter 39.12 RCW when they deliver materials to a stockpile.

(a) A "stockpile" is defined as materials delivered to a pile located away from the site of incorporation such that the stockpiled materials must be physically moved from the stockpile and transported to another location on the project site in order to be incorporated into the project.

(b) A stockpile does not include any of the functions described in subsection (2)(a) through (f) of this section; nor does a stockpile include materials delivered or distributed to multiple locations upon the project site; nor does a stockpile include materials dumped at the place of incorporation, or adjacent to the location and coordinated with the incorporation.

(5) The applicable prevailing wage rate shall be determined by the locality in which the work is performed. Workers subject to subsection (2)(d) of this section, who produce such materials at an off-site facility shall be paid the applicable prevailing wage rates for the county in which the off-site facility is located. Workers subject to subsection (2) of this section, who deliver such materials to a public works project site shall be paid the applicable prevailing wage rates for the county in which the public works project is located.

[Statutory Authority: Chapter 39.12 RCW, RCW 43.22.051 and 43.22.270. 08-24-101, § 296-127-018, filed 12/2/08, effective 1/2/09. Statutory Authority: Chapters 39.04 and 39.12 RCW and RCW 43.22.270. 92-01-104 and 92-08-101, § 296-127-018, filed 12/18/91 and 4/1/92, effective 8/31/92.]

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Overtime Codes

Overtime calculations are based on the hourly rate actually paid to the worker. On public works projects, the hourly rate must be not less than the prevailing rate of wage minus the hourly rate of the cost of fringe benefits actually provided for the worker.

1. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

B. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

C. The first two (2) hours after eight (8) regular hours Monday through Friday and the first ten (10) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other overtime hours and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

D. The first two (2) hours before or after a five-eight (8) hour workweek day or a four-ten (10) hour workweek day and the first eight (8) hours worked the next day after either workweek shall be paid at one and one-half times the hourly rate of wage. All additional hours worked and all worked on Sundays and holidays shall be paid at double the hourly rate of wage.

E. The first two (2) hours after eight (8) regular hours Monday through Friday and the first eight (8) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other hours worked Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

F. The first two (2) hours after eight (8) regular hours Monday through Friday and the first ten (10) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other overtime hours worked, except Labor Day, shall be paid at double the hourly rate of wage. All hours worked on Labor Day shall be paid at three times the hourly rate of wage.

G. The first ten (10) hours worked on Saturdays and the first ten (10) hours worked on a fifth calendar weekday in a four-ten hour schedule, shall be paid at one and one-half times the hourly rate of wage. All hours worked in excess of ten (10) hours per day Monday through Saturday and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

H. All hours worked on Saturdays (except makeup days if work is lost due to inclement weather conditions or equipment breakdown) shall be paid at one and one-half times the hourly rate of wage. All hours worked Monday through Saturday over twelve (12) hours and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

I. All hours worked on Sundays and holidays shall also be paid at double the hourly rate of wage.

J. The first two (2) hours after eight (8) regular hours Monday through Friday and the first ten (10) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked over ten (10) hours Monday through Saturday, Sundays and holidays shall be paid at double the hourly rate of wage.

K. All hours worked on Saturdays and Sundays shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid at double the hourly rate of wage.

M. All hours worked on Saturdays (except makeup days if work is lost due to inclement weather conditions) shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

Overtime Codes Continued

1. N. All hours worked on Saturdays (except makeup days) shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

O. The first ten (10) hours worked on Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays, holidays and after twelve (12) hours, Monday through Friday and after ten (10) hours on Saturday shall be paid at double the hourly rate of wage.

P. All hours worked on Saturdays (except makeup days if circumstances warrant) and Sundays shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid at double the hourly rate of wage.

Q. The first two (2) hours after eight (8) regular hours Monday through Friday and up to ten (10) hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked in excess of ten (10) hours per day Monday through Saturday and all hours worked on Sundays and holidays (except Christmas day) shall be paid at double the hourly rate of wage. All hours worked on Christmas day shall be paid at two and one-half times the hourly rate of wage.

R. All hours worked on Sundays and holidays shall be paid at two times the hourly rate of wage.

U. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays (except Labor Day) shall be paid at two times the hourly rate of wage. All hours worked on Labor Day shall be paid at three times the hourly rate of wage.

V. All hours worked on Sundays and holidays (except Thanksgiving Day and Christmas day) shall be paid at one and one-half times the hourly rate of wage. All hours worked on Thanksgiving Day and Christmas day shall be paid at double the hourly rate of wage.

W. All hours worked on Saturdays and Sundays (except make-up days due to conditions beyond the control of the employer)) shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid at double the hourly rate of wage.

X. The first four (4) hours after eight (8) regular hours Monday through Friday and the first twelve (12) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked over twelve (12) hours Monday through Saturday, Sundays and holidays shall be paid at double the hourly rate of wage. When holiday falls on Saturday or Sunday, the day before Saturday, Friday, and the day after Sunday, Monday, shall be considered the holiday and all work performed shall be paid at double the hourly rate of wage.

Y. All hours worked outside the hours of 5:00 am and 5:00 pm (or such other hours as may be agreed upon by any employer and the employee) and all hours worked in excess of eight (8) hours per day (10 hours per day for a 4 x 10 workweek) and on Saturdays and holidays (except labor day) shall be paid at one and one-half times the hourly rate of wage. (except for employees who are absent from work without prior approval on a scheduled workday during the workweek shall be paid at the straight-time rate until they have worked 8 hours in a day (10 in a 4 x 10 workweek) or 40 hours during that workweek.) All hours worked Monday through Saturday over twelve (12) hours and all hours worked on Sundays and Labor Day shall be paid at double the hourly rate of wage.

Z. All hours worked on Saturdays and Sundays shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid the straight time rate of pay in addition to holiday pay.

Overtime Codes Continued

2. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

   B. All hours worked on holidays shall be paid at one and one-half times the hourly rate of wage.

   F. The first eight (8) hours worked on holidays shall be paid at the straight hourly rate of wage in addition to the holiday pay. All hours worked in excess of eight (8) hours on holidays shall be paid at double the hourly rate of wage.

   M. This code appears to be missing. All hours worked on Saturdays, Sundays and holidays shall be paid at double the hourly rate of wage.

   R. All hours worked on Sundays and holidays and all hours worked over sixty (60) in one week shall be paid at double the hourly rate of wage.

   U. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked over 12 hours in a day or on Sundays and holidays shall be paid at double the hourly rate of wage.

3. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

   F. All hours worked on Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sunday shall be paid at two times the hourly rate of wage. All hours worked on paid holidays shall be paid at two and one-half times the hourly rate of wage including holiday pay.

   H. All work performed on Sundays between March 16th and October 14th and all Holidays shall be compensated for at two (2) times the regular rate of pay. Work performed on Sundays between October 15th and March 15th shall be compensated at one and one half (1-1/2) times the regular rate of pay.

   J. All hours worked between the hours of 10:00 pm and 5:00 am, Monday through Friday, and all hours worked on Saturdays shall be paid at a one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

   K. Work performed in excess of eight (8) hours of straight time per day, or ten (10) hours of straight time per day when four ten (10) hour shifts are established, or forty (40) hours of straight time per week, Monday through Friday, or outside the normal 5 am to 6pm shift, and all work on Saturdays shall be paid at one and one-half times the hourly rate of wage. All work performed after 6:00 pm Saturday to 5:00 am Monday and Holidays, and all hours worked in excess of twelve (12) hours in a single shift shall be paid at double the hourly rate of wage.

   After an employee has worked eight (8) hours at an applicable overtime rate, all additional hours shall be at the applicable overtime rate until such time as the employee has had a break of eight (8) hours or more. When an employee returns to work without at least eight (8) hours time off since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until he/she shall have the eight (8) hours rest period.

Overtime Codes Continued

4. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

A. All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at double the hourly rate of wage. All hours worked on Saturdays, Sundays and holidays shall be paid at double the hourly rate of wage

C. On Monday through Friday, the first four (4) hours of overtime after eight (8) hours of straight time work shall be paid at one and one half (1-1/2) times the straight time rate of pay, unless a four (4) day ten (10) hour workweek has been established. On a four (4) day ten (10) hour workweek scheduled Monday through Thursday, or Tuesday through Friday, the first two (2) hours of overtime after ten (10) hours of straight time work shall be paid at one and one half (1-1/2) times the straight time rate of pay. On Saturday, the first twelve (12) hours of work shall be paid at one and one half (1-1/2) times the straight time rate of pay, except that if the job is down on Monday through Friday due to weather conditions or other conditions outside the control of the employer, the first ten (10) hours on Saturday may be worked at the straight time rate of pay. All hours worked over twelve (12) hours in a day and all hours worked on Sunday and Holidays shall be paid at two (2) times the straight time rate of pay.

D. All hours worked in excess of eight (8) hours per day or forty (40) hours per week shall be paid at double the hourly rate of wage. All hours worked on Saturday, Sundays and holidays shall be paid at double the hourly rate of pay. Rates include all members of the assigned crew.

EXCEPTION:
On all multipole structures and steel transmission lines, switching stations, regulating, capacitor stations, generating plants, industrial plants, associated installations and substations, except those substations whose primary function is to feed a distribution system, will be paid overtime under the following rates:

The first two (2) hours after eight (8) regular hours Monday through Friday of overtime on a regular workday, shall be paid at one and one-half times the hourly rate of wage. All hours in excess of ten (10) hours will be at two (2) times the hourly rate of wage. The first eight (8) hours worked on Saturday will be paid at one and one-half (1-1/2) times the hourly rate of wage. All hours worked in excess of eight (8) hours on Saturday, and all hours worked on Sundays and holidays will be at the double the hourly rate of wage.

All overtime eligible hours performed on the above described work that is energized, shall be paid at the double the hourly rate of wage.

E. The first two (2) hours after eight (8) regular hours Monday through Friday and the first eight (8) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other hours worked Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

On a four-day, ten-hour weekly schedule, either Monday thru Thursday or Tuesday thru Friday schedule, all hours worked after ten shall be paid at double the hourly rate of wage. The Monday or Friday not utilized in the normal four-day, ten hour work week, and Saturday shall be paid at one and one half (1½) times the regular shift rate for the first eight (8) hours. All other hours worked Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

G. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked Monday through Saturday over twelve (12) hours and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

I. The First eight (8) hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked in excess of eight (8) per day on Saturdays shall be paid at double the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

Overtime Codes Continued

4. J. The first eight (8) hours worked on a Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked in excess of eight (8) hours on a Saturday shall be paid at double the hourly rate of wage. All hours worked over twelve (12) in a day, and all hours worked on Sundays and Holidays shall be paid at double the hourly rate of wage.

K. All hours worked on a Saturday shall be paid at one and one-half times the hourly rate of wage, so long as Saturday is the sixth consecutive day worked. All hours worked over twelve (12) in a day Monday through Saturday, and all hours worked on Sundays and Holidays shall be paid at double the hourly rate of wage.

L. The first twelve (12) hours worked on a Saturday shall be paid at one and one-half times the hourly rate of wage. All hours worked on a Saturday in excess of twelve (12) hours shall be paid at double the hourly rate of pay. All hours worked over twelve (12) in a day Monday through Friday, and all hours worked on Sundays shall be paid at double the hourly rate of wage. All hours worked on a holiday shall be paid at one and one-half times the hourly rate of wage, except that all hours worked on Labor Day shall be paid at double the hourly rate of pay.

S. On a four (4) day ten (10) hour workweek scheduled Monday through Thursday, or Tuesday through Friday, work performed in excess of (10) hours shall be paid at one and one half (1-1/2) times the hourly rate of pay. On Monday through Friday, work performed outside the normal work hours of 6:00 a.m. and 6:00 p.m. shall be paid at one and one-half (1-1/2) times the straight time rate, (except for special shifts or multiple shift operations).

All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All work performed on Sundays and holidays shall be paid at double the hourly rate of wage. When an employee returns to work without at least eight (8) hours time off since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until such time as the employee has had a break of eight (8) hours.

Multiple Shift Operations: When the first shift of a multiple shift (a two or three shift) operation is started at the basic straight time rate or at a specific overtime rate, all shifts of that day's operation shall be completed at that rate. Special Shifts: The Special Shift Premium is the basic hourly rate of pay plus $2.00 an hour. When due to conditions beyond the control of the employer or when an owner (not acting as the contractor), a government agency or the contract specifications require more than four (4) hours of a special shift can only be performed outside the normal 6am to 6pm shift then the special shift premium will be applied to the basic straight time for the entire shift. When an employee works on a special shift, they shall be paid the special shift premium for each hour worked unless they are in overtime or double-time status. (For example, the special shift premium does not waive the overtime requirements for work performed on Saturday or Sunday).

U. The first four (4) hours after eight (8) regular hours Monday through Friday and the first twelve (12) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. (Except on makeup days if work is lost due to inclement weather, then the first eight (8) hours on Saturday may be paid the regular rate.) All hours worked over twelve (12) hours Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

Overtime Codes Continued

4. X. All hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays and holidays shall be paid at double the hourly rate of wage. Work performed outside the normal shift of 6 am to 6pm shall be paid at one and one-half the straight time rate, (except for special shifts or three shift operations). All work performed on Sundays and holidays shall be paid at double the hourly rate of wage. Shifts may be established when considered necessary by the Employer.

   The Employer may establish shifts consisting of eight (8) or ten (10) hours of work (subject to WAC 296-127-022), that shall constitute a normal forty (40) hour work week. The Employer can change from a 5-eight to a 4-ten hour schedule or back to the other. All hours of work on these shifts shall be paid for at the straight time hourly rate. Work performed in excess of eight hours (or ten hours per day (subject to WAC 296-127-022) shall be paid at one and one-half the straight time rate.

   When due to conditions beyond the control of the Employer, or when contract specifications require that work can only be performed outside the regular day shift, then by mutual agreement a special shift may be worked at the straight time rate, eight (8) hours work for eight (8) hours pay. The starting time shall be arranged to fit such conditions of work.

   When an employee returns to work without at a break of eight (8) hours since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until such time as the employee has had a break of eight (8) hours.

Overtime Codes Continued

11. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

   B After an employee has worked eight (8) hours, all additional hours worked shall be paid at the applicable overtime rate until such time as the employee has had a break of eight (8) hours or more.

   C The first two (2) hours after eight (8) regular hours Monday through Friday and the first eight (8) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other overtime hours worked, except Labor Day, and all hours on Sunday shall be paid at double the hourly rate of wage. All hours worked on Labor Day shall be paid at three times the hourly rate of wage. All non-overtime and non-holiday hours worked between 4:00 pm and 5:00 am, Monday through Friday, shall be paid at a premium rate of 15% over the hourly rate of wage.

   D. All hours worked on Saturdays and holidays shall be paid at one and one-half times the hourly rate of wage. All hours worked on Sundays shall be paid at double the hourly rate of wage.

   After an employee has worked eight (8) hours, all additional hours worked shall be paid at the applicable overtime rate until such time as the employee has had a break of eight (8) hours or more.

   E. The first two (2) hours after eight (8) regular hours Monday through Friday, the first ten (10) hours on Saturday, and the first ten (10) hours worked on Holidays shall be paid at one and one-half times the hourly rate of wage. All hours worked over ten (10) hours Monday through Saturday, and Sundays shall be paid at double the hourly rate of wage.

   After an employee has worked eight (8) hours, all additional hours worked shall be paid at the applicable overtime rate until such time as the employee has had a break of eight (8) hours or more.

Overtime Codes Continued

11. F. The first two (2) hours after eight (8) regular hours Monday through Friday and the first eight (8) hours on Saturday shall be paid at one and one-half times the hourly rate of wage. All other hours worked Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

On a four-day, ten-hour weekly schedule, either Monday thru Thursday or Tuesday thru Friday schedule, all hours worked after ten shall be paid at double the hourly rate of wage. The Monday or Friday not utilized in the normal four-day, ten hour work week, and Saturday shall be paid at one-half times the hourly rate of wage for the first eight (8) hours. All other hours worked Monday through Saturday, and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

G. Work performed in excess of eight (8) hours of straight time per day, or ten (10) hours of straight time per day when four ten (10) hour shifts are established, or forty (40) hours of straight time per week, Monday through Friday, or outside the normal 5 am to 6pm shift, and all work on Saturdays shall be paid at one and one-half times the hourly rate of wage.

All work performed after 6:00 pm Saturday to 5:00 am Monday and Holidays, and all hours worked in excess of twelve (12) hours in a single shift shall be paid at double the hourly rate of wage.

After an employee has worked eight (8) hours at an applicable overtime rate, all additional hours shall be at the applicable overtime rate until such time as the employee has had a break of nine (9) hours or more. When an employee returns to work without at least nine (9) hours time off since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until he/she shall have the nine (9) hours rest period.

H. Work performed in excess of eight (8) hours of straight time per day, or ten (10) hours of straight time per day when four ten (10) hour shifts are established, or forty (40) hours of straight time per week, Monday through Friday, or outside the normal 5 am to 6pm shift, and all work on Saturdays shall be paid at one and one-half times the hourly rate of wage.

All work performed after 6:00 pm Saturday to 5:00 am Monday and Holidays, and all hours worked in excess of twelve (12) hours in a single shift shall be paid at double the hourly rate of wage.

After an employee has worked eight (8) hours at an applicable overtime rate, all additional hours shall be at the applicable overtime rate until such time as the employee has had a break of ten (10) hours or more. When an employee returns to work without at least ten (10) hours time off since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until he/she shall have the ten (10) hours rest period.

J. All hours worked on holidays shall be paid at double the hourly rate of wage.

K. On Monday through Friday hours worked outside 4:00 am and 5:00 pm, and the first two (2) hours after eight (8) hours worked shall be paid at one and one-half times the hourly rate. All hours worked over 10 hours per day Monday through Friday, and all hours worked on Saturdays, Sundays, and Holidays worked shall be paid at double the hourly rate of wage.

L. An employee working outside 5:00 am and 5:00 pm shall receive an additional two dollar ($2.00) per hour for all hours worked that shift. All hours worked on holidays shall be paid at one and one-half times the hourly rate of wage. All hours worked on holidays shall be paid at one and one-half times the hourly rate of wage.

Overtime Codes Continued

11. M. On Monday through Friday, the first four (4) hours of overtime after eight (8) hours of straight time work shall be paid at one and one half (1-1/2) times the straight time rate of pay, unless a four (4) day ten (10) hour workweek has been established. On a four (4) day ten (10) hour workweek scheduled Monday through Thursday, or Tuesday through Friday, the first two (2) hours of overtime after ten (10) hours of straight time work shall be paid at one and one half (1-1/2) times the straight time rate of pay.

Work performed outside the normal work hours of 5:00 a.m. and 6:00 p.m. shall be paid at one and one-half (1-1/2) times the straight time rate, (except for special shifts or multiple shift operations). When the first shift of a multiple shift (a two or three shift) operation is started at the basic straight time rate or at a specific overtime rate, all shifts of that day's operation shall be completed at that rate. When due to conditions beyond the control of the Employer or when contract specifications require that work can only be performed outside the regular day shift of 5:00 am to 6:00 pm, then a special shift may be worked at the straight time rate, plus the shift pay premium when applicable. The starting time of work will be arranged to fit such conditions of work. Such shift shall consist of eight (8) hours work for eight (8) hours pay or ten (10) hours work for ten (10) hours pay for four ten shifts.

On Saturday, the first twelve (12) hours of work shall be paid at one and one half (1-1/2) times the straight time rate of pay. All work performed after 6:00 pm Saturday to 5:00 am Monday, all work performed over twelve (12) hours, and all work performed on holidays shall be paid at double the straight time rate of pay.

Shift Pay Premium: In an addition to any overtime already required, all hours worked between the hours of 6:00 pm and 5:00 am shall receive an additional two dollars ($2.00) per hour.

N. All work performed over twelve hours in a shift and all work performed on Sundays and Holidays shall be paid at double the straight time rate.

Any time worked over eight (8) hours on Saturday shall be paid double the straight time rate, except employees assigned to work six 10-hour shifts per week shall be paid double the straight time rate for any time worked on Saturday over 10 hours.

O. All work performed on Saturdays, Sundays, and Holidays shall be paid at one and one half (1-1/2) times the straight time rate of pay.

Overtime Codes Continued

11. P. Work performed in excess of ten (10) hours of straight time per day when four ten (10) hour shifts are established and all work on Saturdays, except for make-up days shall be paid at time and one-half (1 ½) the straight time rate.

Work performed outside the normal work hours of 5:00 a.m. and 6:00 p.m. shall be paid at one and one-half (1-1/2) times the straight time rate, (except for special shifts or multiple shift operations). When the first shift of multiple shift (a two or three shift) operation is started at the basic straight time rate or at a specific overtime rate, all shifts of that day's operation shall be completed at that rate. When due to conditions beyond the control of the Employer or when contract specifications require that work can only be performed outside the regular day shift of 5:00 a.m. to 6:00 p.m., then a special shift may be worked at the straight time rate, plus the shift pay premium when applicable. The starting time of work will be arranged to fit such conditions of work. Such shifts shall consist of eight (8) hours work for eight (8) hours pay or ten (10) hours work for ten (10) hours pay for four ten-hour shifts.

In the event the job is down due to weather conditions, then Saturday may, be worked as a voluntary make-up day at the straight time rate. However, Saturday shall not be utilized as a make-up day when a holiday falls on Friday. All work performed on Sundays and holidays and work in excess of twelve (12) hours per day shall be paid at double (2x) the straight time rate of pay.

After an employee has worked eight (8) hours at an applicable overtime rate, all additional hours shall be at the applicable overtime rate until such time as the employee has had a break of eight (8) hours.

When an employee returns to work without a break of eight (8) hours since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until such time as the employee has had a break of eight (8) hours.

Q. All hours worked between the hours of 6:00 pm and 6:00 am, Monday through Saturday, shall be paid at a premium rate of 35% over the hourly rate of wage. Work performed on Sundays shall be paid at double time. All hours worked on holidays shall be paid at double the hourly rate of wage.

R On Monday through Saturday hours worked outside 6:00 am and 7:00 pm, and all hours after eight (8) hours worked shall be paid at one and one-half times the hourly rate. All hours worked on Sundays and Holidays shall be paid at double the hourly rate of wage.

When a holiday falls on a Saturday, the Friday before shall be the observed holiday. When a holiday falls on a Sunday, the following Monday shall be the observed holiday.

S. The first ten (10) hours worked on Saturdays shall be paid at one and one-half times the hourly rate of wage. In the event the job is down due to weather conditions, or other conditions beyond the control of the Employer, then Saturday may be worked at the straight time rate, for the first eight (8) hours, or the first ten (10) hours when a four day ten hour workweek has been established.

All hours worked Monday through Saturday over twelve (12) hours and all hours worked on Sundays and holidays shall be paid at double the hourly rate of wage.

When an employee returns to work without a break of eight (8) hours since their previous shift, all such time shall be a continuation of shift and paid at the applicable overtime rate until such time as the employee has had a break of eight (8) hours.

11. T. On Monday through Friday, the first four (4) hours of overtime after eight (8) hours of straight time work shall be paid at one and one half (1-1/2) times the straight time rate of pay, unless a four (4) day ten (10) hour workweek has been established. On a four (4) day ten (10) hour workweek scheduled Monday through Thursday, or Tuesday through Friday, the first two (2) hours of overtime after ten (10) hours of straight time work shall be paid at one and one half (1-1/2) times the straight time rate of pay.

On Saturday, the first twelve (12) hours of work shall be paid at one and one half (1-1/2) times the straight time rate of pay, except that if the job is down on Monday through Friday due to weather conditions or other conditions outside the control of the employer, the first ten (10) hours on Saturday may be worked at the straight time rate of pay.

All hours worked over twelve (12) hours in a day and all hours worked on Sunday and Holidays shall be paid at two (2) times the straight time rate of pay.

U. On Monday through Friday, the first four (4) hours of overtime after eight (8) hours of straight time work shall be paid at one and one half (1-1/2) times the straight time rate of pay, unless a four (4) day ten (10) hour workweek has been established. On a four (4) day ten (10) hour workweek scheduled Monday through Thursday, or Tuesday through Friday, the first two (2) hours of overtime after ten (10) hours of straight time work shall be paid at one and one half (1-1/2) times the straight time rate of pay.

On Saturday, the first twelve (12) hours of work shall be paid at one and one half (1-1/2) times the straight time rate of pay, except that if the job is down on Monday through Friday due to weather conditions or other conditions outside the control of the employer, the first ten (10) hours on Saturday may be worked at the straight time rate of pay.

All hours worked over twelve (12) hours in a day and all hours worked on Sunday and Holidays shall be paid at two (2) times the straight time rate of pay.

If, due to conditions beyond the control of the Employer or when contract specifications require that work can only be performed outside the regular day shift, then a Special Shift may be worked, Monday through Friday, at the straight-time rate. The starting time of work for the Special Shift will be arranged to fit such conditions of work. Such Special Shift shall consist of eight (8) hours of work for eight (8) hours of pay or ten (10) hours of work for ten(10) hours of pay on a four-ten workday schedule.

Holiday Codes

5. A. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, and Christmas Day (7).

B. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, the day before Christmas, and Christmas Day (8).

C. Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (8).

D. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, And Christmas Day (8).

H. Holidays: New Year's Day, Memorial Day, Independence Day, Thanksgiving Day, the Day after Thanksgiving Day, And Christmas (6).

Holiday Codes Continued

5. I. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day (6).

K. Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday After Thanksgiving Day, The Day Before Christmas, And Christmas Day (9).

L. Holidays: New Year's Day, Martin Luther King Jr. Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, And Christmas Day (8).

N. Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, The Friday After Thanksgiving Day, And Christmas Day (9).

P. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday And Saturday After Thanksgiving Day, The Day Before Christmas, And Christmas Day (9). If A Holiday Falls On Sunday, The Following Monday Shall Be Considered As A Holiday.

Q. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day (6).

R. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Day After Thanksgiving Day, One-Half Day Before Christmas Day, And Christmas Day. (7 1/2).

S. Paid Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, And Christmas Day (7).

Z. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veterans Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (8).

Holiday Codes Continued

6. G. Paid Holidays: New Year's Day, Martin Luther King Jr. Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Veterans' Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Day, and Christmas Eve Day (11).

H. Paid Holidays: New Year's Day, New Year's Eve Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday After Thanksgiving Day, Christmas Day, The Day After Christmas, And A Floating Holiday (10).

T. Paid Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, The Friday After Thanksgiving Day, The Last Working Day Before Christmas Day, And Christmas Day (9).

Z. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, And Christmas Day (7). If a holiday falls on Saturday, the preceding Friday shall be considered as the holiday. If a holiday falls on Sunday, the following Monday shall be considered as the holiday.

Holiday Codes Continued

7. A. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, And Christmas Day (8). Any Holiday Which Falls On A Sunday Shall Be Observed As A Holiday On The Following Monday. If any of the listed holidays falls on a Saturday, the preceding Friday shall be a regular work day.

B. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, And Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

C. Holidays: New Year's Day, Martin Luther King Jr. Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

D. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (8). Unpaid Holidays: President's Day. Any paid holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any paid holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

E. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (7). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

F. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, the last working day before Christmas day and Christmas day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

Holiday Codes Continued

7. G. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, and Christmas Day (6). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday.

H. Holidays: New Year's Day, Martin Luther King Jr. Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, the Last Working Day before Christmas Day and Christmas Day (9). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

I. Holidays: New Year's Day, President's Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day, The Friday After Thanksgiving Day, The Day Before Christmas Day And Christmas Day (9). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

J. Holidays: New Year's Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day and Christmas Day (6). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

Holiday Codes Continued

7. K. Holidays: New Year's Day, Memorial Day, Independence Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, And Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

L. Holidays: New Year's Day, Memorial Day, Labor Day, Independence Day, Thanksgiving Day, the Last Work Day before Christmas Day, And Christmas Day (7). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

N. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, And Christmas Day (7). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. When Christmas falls on a Saturday, the preceding Friday shall be observed as a holiday.

P. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, And Christmas Day (7). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday.

Q. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, the Last Working Day before Christmas Day and Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. If any of the listed holidays falls on a Saturday, the preceding Friday shall be a regular work day.

S. Paid Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Friday after Thanksgiving Day, Christmas Day, the Day after Christmas, and A Floating Holiday (9). If any of the listed holidays falls on a Sunday, the day observed by the Nation shall be considered a holiday and compensated accordingly.

V. Holidays: New Year's Day, President's Birthday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Day, the day before or after Christmas, and the day before or after New Year's Day. If any of the above listed holidays falls on a Sunday, the day observed by the Nation shall be considered a holiday and compensated accordingly.

W. Holidays: New Year's Day, Day After New Year's, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Eve Day, Christmas Day, the day after Christmas, the day before New Year's Day, and a Floating Holiday.

X. Holidays: New Year's Day, Day before or after New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Day, and the day before or after Christmas day. If a holiday falls on a Saturday or on a Friday that is the normal day off, then the holiday will be taken on the last normal workday. If the holiday falls on a Monday that is the normal day off or on a Sunday, then the holiday will be taken on the next normal workday.

Y. Holidays: New Year's Day, Presidents' Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day. (8) If the holiday falls on a Sunday, then the day observed by the federal government shall be considered a holiday and compensated accordingly.

Z. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, Christmas Eve, and Christmas Day (9). Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday. Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday.

Holiday Codes Continued

15. G. New Year's Day, Washington's Birthday, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, The Friday After Thanksgiving Day, the last scheduled workday before Christmas, and Christmas Day (9). If any of the listed holidays falls on a Sunday, the day observed by the Nation shall be considered a holiday and compensated accordingly.

H. Holidays: New Year's Day, Martin Luther King Jr. Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, the Last Working Day before Christmas Day and Christmas Day (9). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

I. Holidays: New Year's Day, President's Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day, The Friday After Thanksgiving Day, The Day Before Christmas Day And Christmas Day (9). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

J. Holidays: New Year's Day, Martin Luther King Jr. Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, and Christmas Day (9). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. If any of the listed holidays falls on a Saturday, the preceding Friday shall be a regular work day.

K. Holidays: New Year's Day, Memorial Day, Independence Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, And Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. Any holiday which falls on a Saturday shall be observed as a holiday on the preceding Friday.

L. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. If any of the listed holidays falls on a Saturday, the preceding Friday shall be a regular work day.

M. Holidays: New Year's Day, Martin Luther King Jr. Day, Independence Day, Memorial Day, Labor Day, Thanksgiving Day, the Friday after Thanksgiving Day, Christmas Eve Day and Christmas Day (9). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday. If any of the listed holidays falls on a Saturday, the preceding Friday shall be a regular work day.

N. Holidays: New Year's Day, Memorial Day, Independence Day, Labor Day, Veteran's Day, Thanksgiving Day, the Friday after Thanksgiving Day, and Christmas Day (8). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday.

O. Holidays: New Year's Day, Martin Luther King Jr. Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, the Friday and Saturday after Thanksgiving Day, the day before Christmas day, and Christmas Day (10). Any holiday which falls on a Sunday shall be observed as a holiday on the following Monday.

Note Codes

8. D. Workers working with supplied air on hazmat projects receive an additional $1.00 per hour.

L. Workers on hazmat projects receive additional hourly premiums as follows -Level A: $0.75, Level B: $0.50, And Level C: $0.25.

M. Workers on hazmat projects receive additional hourly premiums as follows: Levels A & B: $1.00, Levels C & D: $0.50.

N. Workers on hazmat projects receive additional hourly premiums as follows -Level A: $1.00, Level B: $0.75, Level C: $0.50, And Level D: $0.25.

S. Effective August 31, 2012 – A Traffic Control Supervisor shall be present on the project whenever flagging or spotting or other traffic control labor is being utilized. Flaggers and Spotters shall be posted where shown on approved Traffic Control Plans or where directed by the Engineer. All flaggers and spotters shall possess a current flagging card issued by the State of Washington, Oregon, Montana, or Idaho. This classification is only effective on or after August 31, 2012.

T. Effective August 31, 2012 – A Traffic Control Laborer performs the setup, maintenance and removal of all temporary traffic control devices and construction signs necessary to control vehicular, bicycle, and pedestrian traffic during construction operations. Flaggers and Spotters shall be posted where shown on approved Traffic Control Plans or where directed by the Engineer. All flaggers and spotters shall possess a current flagging card issued by the State of Washington, Oregon, Montana, or Idaho. This classification is only effective on or after August 31, 2012.

U. Workers on hazmat projects receive additional hourly premiums as follows – Class A Suit: $2.00, Class B Suit: $1.50, And Class C Suit: $1.00. Workers performing underground work receive an additional $0.40 per hour for any and all work performed underground, including operating, servicing and repairing of equipment. The premium for underground work shall be paid for the entire shift worked. Workers who work suspended by a rope or cable receive an additional $0.50 per hour. The premium for work suspended shall be paid for the entire shift worked. Workers who do “pioneer” work (break open a cut, build road, etc.) more than one hundred fifty (150) feet above grade elevation receive an additional $0.50 per hour.

8. V. In addition to the hourly wage and fringe benefits, the following depth and enclosure premiums shall be paid. The premiums are to be calculated for the maximum depth and distance into an enclosure that a diver reaches in a day. The premiums are to be paid one time for the day and are not used in calculating overtime pay.

Depth premiums apply to depths of fifty feet or more. Over 50' to 100' - $2.00 per foot for each foot over 50 feet. Over 101' to 150' - $3.00 per foot for each foot over 101 feet. Over 151' to 220' - $4.00 per foot for each foot over 220 feet. Over 221' - $5.00 per foot for each foot over 221 feet.

Enclosure premiums apply when divers enter enclosures (such as pipes or tunnels) where there is no vertical ascent and is measured by the distance travelled from the entrance. 25’ to 300’ - $1.00 per foot from entrance. 300’ to 600’ - $1.50 per foot beginning at 300’. Over 600’ - $2.00 per foot beginning at 600’.

W. Meter Installers work on single phase 120/240V self-contained residential meters. The Lineman/Groundmen rates would apply to meters not fitting this description.

Note Codes Continued

X. Workers on hazmat projects receive additional hourly premiums as follows - Class A Suit: $2.00, Class B Suit: $1.50, Class C Suit: $1.00, and Class D Suit: $0.50. Special Shift Premium: Basic hourly rate plus $2.00 per hour.

When due to conditions beyond the control of the Employer or when an owner (not acting as the contractor), a government agency or the contract specifications requires that work can only be performed outside the normal 5 am to 6pm shift, then the special shift premium will be applied to the basic hourly rate. When an employee works on a special shift, they shall be paid a special shift premium for each hour worked unless they are in OT or Double-time status. (For example, the special shift premium does not waive the overtime requirements for work performed on Saturday or Sunday.)

Y. Tide Work: When employees are called out between the hours of 6:00 p.m. and 6:00 a.m. to work on tide work (work located in the tide plane) all time worked shall be at one and one-half times the hourly rate of pay.

Swinging Stage/Boatswains Chair: Employees working on a swinging state or boatswains chair or under conditions that require them to be tied off to allow their hands to be free shall receive seventy-five cents ($0.75) per hour above the classification rate.

Z. Workers working with supplied air on hazmat projects receive an additional $1.00 per hour.

Special Shift Premium: Basic hourly rate plus $2.00 per hour. When due to conditions beyond the control of the Employer or when an owner (not acting as a contractor), a government agency or the contract specifications require that more than (4) hours of a special shift can only be performed outside the normal 6 am to 6pm shift, then the special shift premium will be applied to the basic straight time for the entire shift. When an employee works on a special shift, they will be paid a special shift premium for each hour worked unless they are in overtime or double-time status. (For example, the special shift premium does not waive the overtime requirements for work performed on Saturday or Sunday.)

Note Codes Continued

9. A. Workers working with supplied air on hazmat projects receive an additional $1.00 per hour.

Special Shift Premium: Basic hourly rate plus $2.00 per hour. When due to conditions beyond the control of the Employer or when an owner (not acting as the contractor), a government agency or the contract specifications require that more than four (4) hours of a special shift can only be performed outside the normal 6 am to 6pm shift, then the special shift premium will be applied to the basic straight time for the entire shift. When an employee works on a special shift, they shall be paid a special shift premium for each hour worked unless they are in overtime or double-time status. (For example, the special shift premium does not waive the overtime requirements for work performed on Saturday or Sunday.)

Certified Crane Operator Premium: Crane operators requiring certifications shall be paid $0.50 per hour above their classification rate.

Boom Pay Premium: All cranes including tower shall be paid as follows based on boom length:

(A) – 130’ to 199’ – $0.50 per hour over their classification rate.
(B) – 200’ to 299’ – $0.80 per hour over their classification rate.
(C) – 300’ and over – $1.00 per hour over their classification rate.

Note Codes Continued

9. B. The highest pressure registered on the gauge for an accumulated time of more than fifteen (15) minutes during the shift shall be used in determining the scale paid.

Tide Work: When employees are called out between the hours of 6:00 p.m. and 6:00 a.m. to work on tide work (work located in the tide plane) all time worked shall be at one and one-half times the hourly rate of pay. Swinging Stage/Boatswains Chair: Employees working on a swinging stage or boatswains chair or under conditions that require them to be tied off to allow their hands to be free shall receive seventy-five cents ($0.75) per hour above the classification rate.

C. Tide Work: When employees are called out between the hours of 6:00 p.m. and 6:00 a.m. to work on tide work (work located in the tide plane) all time worked shall be at one and one-half times the hourly rate of pay. Swinging Stage/Boatswains Chair: Employees working on a swinging stage or boatswains chair or under conditions that require them to be tied off to allow their hands to be free shall receive seventy-five cents ($0.75) per hour above the classification rate.

Effective August 31, 2012 – A Traffic Control Supervisor shall be present on the project whenever flagging or spotting or other traffic control labor is being utilized. A Traffic Control Laborer performs the setup, maintenance and removal of all temporary traffic control devices and construction signs necessary to control vehicular, bicycle, and pedestrian traffic during construction operations. Flaggers and Spotters shall be posted where shown on approved Traffic Control Plans or where directed by the Engineer. All flaggers and spotters shall possess a current flagging card issued by the State of Washington, Oregon, Montana, or Idaho. These classifications are only effective on or after August 31, 2012.

D. Industrial Painter wages are required for painting within industrial facilities such as treatment plants, pipelines, towers, dams, bridges, power generation facilities and manufacturing facilities such as chemical plants, etc., or anywhere abrasive blasting is necessary to prepare surfaces, or hazardous materials encapsulation is required.

E. Heavy Construction includes construction, repair, alteration or additions to the production, fabrication or manufacturing portions of industrial or manufacturing plants, hydroelectric or nuclear power plants and atomic reactor construction. Workers on hazmat projects receive additional hourly premiums as follows -Level A: $1.00, Level B: $0.75, Level C: $0.50, And Level D: $0.25.

F. Industrial Painter wages are required for painting within industrial facilities such as treatment plants, pipelines, towers, dams, power generation facilities and manufacturing facilities such as chemical plants, etc., or anywhere abrasive blasting is necessary to prepare surfaces, or hazardous materials encapsulation is required.

H. One (1) person crew shall consist of a Party Chief. (Total Station or similar one (1) person survey system). Two (2) person survey party shall consist of a least a Party Chief and a Chain Person. Three (3) person survey party shall consist of at least a Party Chief, an Instrument Person, and a Chain Person.

9. I. In addition to the hourly wage and fringe benefits, the following depth and enclosure premiums shall be paid. The premiums are to be calculated for the maximum depth and distance into an enclosure that a diver reaches in a day. The premiums are to be paid one time for the day and are not used in calculating overtime pay.

Depth premiums apply to depths of fifty feet or more. Over 50' to 100' - $2.00 per foot for each foot over 50 feet. Over 101' to 150' - $3.00 per foot for each foot over 101 feet. Over 151' to 220' - $4.00 per foot for each foot over 220 feet. Over 221' - $5.00 per foot for each foot over 221 feet.

Enclosure premiums apply when divers enter enclosures (such as pipes or tunnels) where there is no vertical ascent and is measured by the distance travelled from the entrance. 25’ to 300’ - $1.00 per foot from entrance. 300’ to 600’ - $1.50 per foot beginning at 300’. Over 600’ - $2.00 per foot beginning at 600’.

Employees may be required to perform any combination of work within the Diving team/crew, (with the exception of dive Supervisor) provided they are paid at the highest rate at which he/she has worked for the shift.

L. Workers on hazmat projects receive additional hourly premiums as follows -Level A: $0.75, Level B: $0.50, And Level C: $0.25.

Tide Work: When employees are called out between the hours of 6:00 p.m. and 6:00 a.m. to work on tide work (work located in the tide plane) all time worked shall be at one and one-half times the hourly rate of pay.

Swinging Stage/Boatswains Chair: Employees working on a swinging stage or boatswains chair or under conditions that require them to be tied off to allow their hands to be free shall receive seventy-five cents ($0.75) per hour above the classification rate.

Appendices

(*******)

The following appendices are attached and made a part of this contract:

Appendix A – Plans

APPENDIX A

PLANS

ATTENTION PROPERTY OWNERS
AND
CONTRACTORS

CALL BEFORE
YOU DIG
1-800-424-5555

The Cowlitz County Utility Coordination Council is comprised of local utilities whose common purpose is to help prevent accidents and damages to their underground facilities. ONE TELEPHONE CALL, 1-800-424-5555, two (2) working days prior to digging will relay a message to these utilities. On the next page is a listing of utilities and entities belonging to the Council.

Forty-eight (48) hours' notice (excluding weekends and holidays) is requested to permit our locators to mark our facilities for you. ONE CALL answering service is available twenty-four (24) hours a day, seven (7) days a week. All calls are recorded. (EMERGENCY LINE LOCATES ARE AVAILABLE AT ALL TIMES).

RCW 19.122.010, Washington Laws, 1988, Chapter 99 on Underground Utilities states that utilities shall be assigned "...responsibilities for locating and keeping accurate records of utility locations, protecting and repairing damage to existing underground facilities, and protecting the public health and safety from interruption in utility services caused by damage to existing underground utility facilities."

Callers are asked to use white paint to show their proposed path of excavation. Each locator uses a different color paint to show their underground facility (see reverse page). Digging should be done by hand 18" on either side of marking until utility is visible, before using other equipment.

PLAN FOR SAFETY – CALL BEFORE YOU DIG
LOCATING SERVICES ARE FREE

Thank you,

Cowlitz County
Utility Coordination Council

THE FOLLOWING LOCAL UTILITIES, ENTITIES AND OTHERS FORM THE COWLITZ COUNTY UTILITY COORDINATION COUNCIL:

		COLOR CODE
POWER	P.U.D. OF COWLITZ COUNTY	RED
GAS	CASCADE NATURAL GAS NORTHWEST PIPELINE CORPORATION OLYMPIC PIPE LINE COMPANY	YELLOW
TELEPHONE	AT&T GENERAL TELEPHONE KALAMA TELEPHONE U.S. SPRINT COMMUNICATIONS CENTURY LINK VERIZON COMMUNICATIONS FRONTIER CASCADE NETWORKS	ORANGE
WATER	BEACON HILL SEWER DISTRICT CITY OF CASTLE ROCK CITY OF KALAMA CITY OF KELSO CITY OF LONGVIEW CITY OF WOODLAND COWLITZ COUNTY PUBLIC WORKS P.U.D. OF COWLITZ COUNTY	BLUE
SEWER	BEACON HILL SEWER DISTRICT CITY OF CASTLE ROCK CITY OF KALAMA CITY OF KELSO CITY OF LONGVIEW CITY OF WOODLAND COWLITZ COUNTY PUBLIC WORKS (includes leachate pipeline)	GREEN
T.V. CABLE	COMCAST WASHINGTON STATE DEPARTMENT OF TRANSPORTATION	ORANGE

(OTHER UTILITIES MAY JOIN IN THE FUTURE – PLEASE ASK THE OPERATOR)

REPORT ALL EMERGENCIES TO “911”. All other damages should be reported directly to the utilities involved.

Nicks in insulation of gas, power or telephone should be reported to utilities promptly, as failure later can cause serious injuries or damages.

END OF CONTRACT