



**FORMAL BID  
2023-027**

**KITSAP COUNTY PUBLIC WORKS DEPARTMENT,  
SOLID WASTE DIVISION**

**FOR**

**OLYMPIC VIEW TRANSFER STATION  
ELECTRICAL IMPROVEMENTS**

**RESPONSE DEADLINE:  
TUESDAY, JUNE 20, 2023 AT 2:00 P.M.**

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# CERTIFICATE PAGE

## Kitsap County Public Works Solid Waste Division

### Olympic View Transfer Station Electrical Improvements

The engineering material and data contained in the Plans and Specifications were prepared under the supervision and direction of the undersigned, whose seal as a registered professional engineer is affixed below.

	<p>Specifications:</p>  <p>Karl Hufnagel, P.E. Parametrix</p>
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## INVITATION TO BID FORMAL BID 2023-027

### KITSAP COUNTY PUBLIC WORKS SOLID WASTE DIVISION OLYMPIC VIEW TRANSFER STATION ELECTRICAL IMPROVEMENTS

**BID SUBMISSION DATE & TIME** **TUESDAY, JUNE 20, 2023, AT 2:00 P.M.**

SUBMISSION VIA USPS DELIVERY:

Kitsap County Purchasing Office  
Attn: Glen McNeill, Purchasing Agent  
614 Division Street, MS-7  
Port Orchard, Washington 98366

SUBMISSION VIA COURIER OR HAND DELIVERY:

Kitsap County Administration Building  
Purchasing Office, 4th Floor  
Attn: Glen McNeill, Purchasing Agent  
619 Division Street  
Port Orchard, Washington 98366

**BID OPENING TIME & LOCATION** **TUESDAY, JUNE 20, 2023, AT 2:00 P.M.**

Kitsap County Administration Building  
Commissioners Chambers, 3rd Floor  
619 Division Street  
Port Orchard, Washington 98366

**OPTIONAL SITE VISIT** **WEDNESDAY, MAY 31, 2023, AT 9:30 A.M.**

SITE VISIT MEETING LOCATION:

Kitsap County Randy W. Casteel Public Works Annex  
8600 SW Imperial Way  
Bremerton, Washington 98312

PROJECT WORK SITE:

Kitsap County  
Olympic View Transfer Station  
9380 SW Barney White Road  
Bremerton, Washington 98312

**ENGINEERS ESTIMATE:** \$300,000.00

**WRITTEN QUESTIONS DUE:** **WEDNESDAY, JUNE 7, 2023 AT 12:00 P.M.**  
*Email only to Purchasing Agent below*

**PURCHASING AGENT:** Glen McNeill, Purchasing Agent  
Phone: (360) 337-4789  
Email: [purchasing@kitsap.gov](mailto:purchasing@kitsap.gov)  
Website: [www.kitsapgov.com/das/Pages/Online-Bids.aspx](http://www.kitsapgov.com/das/Pages/Online-Bids.aspx)

The Kitsap County Board of Commissioners will receive sealed bids for the **Olympic View Transfer Station Electrical Improvements** until the time and date indicated above. Bids received before the deadline will be publicly opened and read aloud at the location described above. Instructions for the delivery of bids are contained in this Invitation to Bid for the Project. Prospective Bidders are hereby notified that they are solely responsible for ensuring timely delivery of their bid to the Kitsap County Purchasing Office on or before the bid submission date and time indicated above.

The principal items or elements of construction include:

1. Supply and install a 200 kW, diesel-fueled, standby engine generator with appurtenances.
2. Concrete base pad.
3. Auxiliary electrical switchboard.
4. Automatic transfer switches.
5. Grounding system.
6. Raceways, conduits and wiring.

#### **INSTRUCTIONS:**

SITE VISIT. An optional pre-bid site visit will be held at the location described above. The site visit will start with a meeting at the Kitsap County Randy W. Casteel Public Works Annex and then all attendees will proceed as a group to Olympic View Transfer Station for a tour of the project work site to familiarize bidders with the environment in which the services under this solicitation will be provided. This will be the only tour of the site and facilities.

Oral statements or instructions made during the site visit will not constitute an amendment to this solicitation. Any doubt as to the requirements of this solicitation or any apparent omission or discrepancy must be submitted in writing via email to the Purchasing Agent.

Attendance at the site visit must be prearranged with the Purchasing Agent and limited to a maximum of two (2) representatives from each bid team. Personal protective equipment (PPE), including hard hats, safety vests, and closed-toe shoes, must be worn by all attendees. Those attending should provide their own PPE for the site visit. Attendees planning to attend shall email the full name of attendees to the Purchasing Agent a minimum 24-hours in advance (**RSVP via email to the Purchasing Agent by 9:30 A.M. Tuesday, May 30, 2023**).

COMMUNICATION. All communication concerning this solicitation, including but not limited to questions about the bid process, the contract terms and conditions, how to obtain copies of the bid documents, and/or questions resulting from attendance at the pre-bid site visit, must be directed *via email only* to Kitsap County's Purchasing Agent at [purchasing@kitsap.gov](mailto:purchasing@kitsap.gov). Questions will be accepted until **Wednesday, June 7, 2023 at 12:00 p.m.** All correspondence related to this solicitation should refer to the solicitation number and page. Bidders are responsible for asking any questions they may have; failure to do so will not relieve the Bidders of any responsibilities under this solicitation or any subsequent contract. Bidders may only rely on written answers issued by the Purchasing Agent. Substantive questions and answers will be posted as addenda on the Kitsap County website. It is the responsibility of the bidder to assure that they received responses to questions if any are issued. *Oral communications are unofficial and nonbinding on the County.* Questions to or communications with other Kitsap County staff may disqualify bidders from the evaluation process. Bid documents may be found on the Kitsap County Website [www.kitsapgov.com/das/Pages/Online-Bids.aspx](http://www.kitsapgov.com/das/Pages/Online-Bids.aspx).



ADDENDA. The County will issue a written addendum if it changes, revises, deletes, clarifies, increases, or otherwise modifies the solicitation. All addenda and appendices will be published on the Kitsap County website. It is the bidder's responsibility to check for addenda and appendices. Bidders shall acknowledge receipt of all addenda and complete and submit all solicitation appendices with the offer. Bidders that do not comply with this section may be rejected as non-responsive.

SUBMISSION. Each bid proposal shall be submitted in hard copy format, completely sealed in a separate envelope, properly addressed as stated above, with the name and address of the bidder and the name of the project and solicitation number plainly written on the outside of the envelope. Two (2) paper copies of the bid proposal must be provided as well as one (1) electronic copy (flash/thumb drive).

All bids shall be accompanied by:

- County Bid Proposal – as published in Invitation to Bid
- Signed acknowledgment of receipt of all addenda
- Surety company Bid Bond on an approved form, certified check, or cashier's check payable to Kitsap County in an amount not less than five percent (5%) of the bid Proposal
- Subcontractor's List
- Bidder Information
  - Bidder Responsibility Checklist
  - Subcontractor Responsibility Checklist
  - Project References
- Non-Collusion Affidavit
- Certification of Compliance with Wage Payment Statutes

All of the above items must be complete in all respects, including signatures (notarized where required). Kitsap County reserves the right to award the bid in a manner which will best serve the County, taking into consideration the Bidder Responsibility Statement included with the bids, the requirements of the Specifications herein, and the Contract Documents.

WAIVERS AND REJECTION. Kitsap County reserves the right to reject any and all bids and to waive informalities or irregularities. Bids received after the time set for submission of bids will not be considered. The County in its sole discretion also retains the absolute right without penalty to withdraw and/or amend all or any portion of this solicitation at any time, for any reason and no reason, up to contract execution. If there is any conflict between amendments, or between an amendment and the solicitation documents, whichever document was issued last in time shall control. The County may at any time reject all or part of any offer as non-responsive for any of the following reasons: 1) late or incomplete offer; 2) noncompliance with any part of the solicitation; 3) inaccurate, misleading, exaggerated, or false information; or 4) failure to respond to every solicitation item or to provide all information requested.

**Bids are likely to be rejected if the lowest, responsible, responsive Bid received exceeds the Engineer's estimate by an unreasonable amount.**

WITHDRAWAL OF BID. Bidders may modify or withdraw a submitted bid prior to the due date and time. A request to modify or withdraw must be in writing, signed by an authorized representative of the bidder, and submitted to the Purchasing Agent. Faxed withdrawals will NOT be accepted. A withdrawn bid may be resubmitted prior to the offer due date and time. Negligence in preparing a bid confers no right of withdrawal or modification after the due date and time.

BOND FORFEIT. Should the successful bidder fail to enter into a contract with the County in accordance with the Bid and furnish all documents and bonds required within the time frames stated in the specifications, the bid proposal deposit or bond shall be forfeited to Kitsap County.

MINORITY AND WOMEN OWNED BUSINESS ENTERPRISE PARTICIPATION. Pursuant to RCW 39.19, it is the policy of Kitsap County to foster an environment that encourages economic growth and diversification, business development and retention, increases competition and reduces unemployment. In support of that policy, Kitsap County reaffirms its commitment to maximize opportunities in public contracting for all contractors including minority and women owned business enterprises. Bidders are encouraged to utilize qualified, local businesses in Kitsap County and Washington State where cost effectiveness is deemed competitive. In addition, bidders are encouraged to subcontract with firms certified by the Washington State Office of Minority and Women's Business Enterprises (MWBE).

LIABILITY FOR ERRORS. While the County has used considerable efforts to ensure the information in the solicitation is accurate, the County does not guarantee or warrant the information to be accurate nor is it necessarily comprehensive or exhaustive. Nothing in this solicitation is intended to relieve the bidder from forming their own opinions and conclusions with respect to the matters addressed in the solicitation.

PREPARATION COSTS. The County is not liable for any costs incurred by the bidder in preparing, evaluating, submitting, developing, demonstrating, presenting, negotiating, or providing a response, and/or samples for this solicitation. All such activities are done at the bidder's own expense. Bids submitted for consideration should be prepared simply and economically, providing adequate information in a straightforward and concise manner.

ACCEPTANCE IS NOT BINDING. Acceptance of an offer does not bind the County until the offer is approved by the appropriate County level of authority and a contract is executed by both parties.

BRAND NAMES AND EQUIVALENTS. References to manufacturers, trade names, brand names or catalog numbers in the solicitation are intended to be descriptive, not restrictive, unless otherwise stated, and are intended to indicate the level of quality, design, or performance desired. Any offer which proposes equal or greater quality, design or performance may be considered. Offers based on equivalent products must clearly describe the alternate offered and indicate how it differs from the product specified; and, include complete and sufficient descriptive literature and/or specifications to enable a full and fair determination as to whether the proposed alternate will be equal to or better than the product named in the solicitation. The County has the sole authority to accept or reject any like item and may require the bidder to provide additional information and/or samples. If the bidder does not specify otherwise, it is understood that the referenced brand will be supplied.

SPECIFICATIONS. The apparent silence of the Specifications as to any detail shall be regarded as meaning that only the best commercial practice is to prevail and that only material and workmanship of the finest quality are to be used. All interpretations of the specifications shall be made based on this statement.

DESCRIPTIVE LITERATURE. All bids shall include complete manufacturer's descriptive literature regarding the equipment, goods and/or services proposed to be furnished. Literature shall be sufficient in detail to allow full and fair evaluation of the offer submitted. Failure to include this information may result in the bid being rejected.

CONFLICT OF INTEREST. Bidders shall disclose whether the bidder is an immediate family member of or engaged in any business enterprise with a County employee or elected or appointed official with authority to award the solicitation. Such disclosure shall be identified in writing in the bid proposal.

GRATUITIES AND KICKBACKS. The bidder and any employee or agent thereof is prohibited from soliciting, accepting, offering, or giving, or agreeing to solicit, accept, offer, or give, any gratuity, service, or reward, including an offer of employment, with the purpose of or in a manner that would influence any decision, approval, disapproval, recommendation, or preparation of any part of a program requirement or purchase request, to influence the content of any specification or procurement standard, or to influence any investigation, audit, proceeding or application, request for ruling, determination on a claim or controversy, or other matter related to or associated with this solicitation.

NOTICE. Washington law imposes civil and criminal penalties for violation of purchasing guidelines, bribes, gratuities, and kickbacks.

REFERENCE CHECKS. The County may conduct reference checks to verify the bidder's past performance. Reference checks indicating poor or failed performance may be cause for rejection. Failure to provide requested reference contact information may result in the bid being non-responsive. The County reserves the right to obtain reference checks, other than those provided by the bidder, relevant to the services to be provided and the prospective working relationship between the County and the bidder.

PERSONNEL. It is essential the bidder provide adequate experienced personnel, capable of and devoted to the successful accomplishment of the work to be performed in this solicitation. The bidder agrees that those persons identified in their submittal shall not be removed or replaced without a written request to and approval from the County.

PROTESTS. Protests of this solicitation must follow RCW 39.04.105.

**BIDDERS ARE STRONGLY ENCOURAGED TO READ THE ENTIRE SOLICITATION AND TO REVIEW AND UNDERSTAND THE CONDITIONS, REQUIREMENTS, AND CONTRACTOR RESPONSIBILITIES OUTLINED IN THIS INVITATION TO BID.**

## BID PROCEDURES AND CONDITIONS

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## BID PROPOSAL

TO: Kitsap County Board of Commissioners  
614 Division Street  
Port Orchard, WA 98366

Board of Commissioners:

The undersigned bidder agrees, if this bid is accepted, to enter into a contract with the County, in the form included herein to perform and furnish the work as specified or indicated in the bidding documents for the bid price and within the bid times indicated in this bid and in accordance with the other terms and conditions of the contract documents.

In submitting this bid, bidder represents, as more fully set forth in the contract, that:

1. This bid will remain subject to acceptance for sixty (60) days after the day of bid opening. The County retains the right to request the apparent low bidder extend the award period or adjust their price accordingly. If an adjustment is requested, the County reserves the right to request the same adjustment from other bidders.
2. The County has the right to reject this bid.
3. Bidder will sign and submit the contract attached hereto with all bonds and other documents required by the bidding requirements within ten (10) days after the date of County's Notice of Award.
4. Bidder has examined copies of all the bidding documents.
5. Bidder has made sufficient examination and has investigated and is satisfied as to the conditions to be encountered, the character, quantity, quality and scope of work, the quantities and qualities of materials to be supplied and equipment and labor to be used, and the requirements of the contract and proposal submitted, including all addenda for performance of the work.
6. Bidder has visited the jobsite, or has waived such visit, and is completely familiar with the existing conditions, concurrently scheduled construction, access, staging and site limitations, and has made allowances for those conditions in their bid.
7. Bidder is familiar with all federal, state, and local laws, ordinances and regulations which in any manner might affect those engaged or employed in the work, the materials, equipment, or procedures used in the work, or which in any other way might affect the conduct of the work. The Bidder is assumed to be familiar with such laws and regulations, and no plea of misunderstanding or ignorance of the law will be considered.
8. Bidder has correlated the information known to bidder, information and observations obtained from visits to the site, reports and drawings identified in the bidding documents and additional examinations, investigations, explorations, tests, studies, and data with the bidding documents.
9. Bidder agrees that the work will be completed within the time period established in the Contract Documents, as defined in the Specifications, from the date of Notice to Proceed.

10. The bidder has determined from careful examination the methods, materials, labor and equipment required to perform the work in full and shall reflect the same in its bid price. If, during the performance of the work, methods, materials, labor or equipment required are beyond those anticipated by the bidder, the Bidder will not be entitled to additional compensation except as may be provided for elsewhere in these specifications.

**Bidder has received the following addenda, receipt of which is hereby acknowledged:**

DATE	NUMBER
_____	_____
_____	_____
_____	_____
_____	_____

**SUMMARY OF BID DOCUMENTATION:**

It is mandatory that each bidder complete and submit with its bid the documentation required by the contract documents, including but not limited to the following:

1. Bid Proposal
2. Bid Bond
3. Subcontractor's List
4. Bidder Information
  - a. Bidder Responsibility Checklist
  - b. Subcontractor Responsibility Checklist
  - c. Project References
5. Non-Collusion Affidavit Certificate
6. Certification of Compliance with Wage Payment Statutes

**BASIC BID:**

Pursuant to and in compliance with the advertisement for bids and other documents relating thereto, the undersigned Bidder hereby certifies having carefully examined the Contract Documents for **Olympic View Transfer Station Electrical Improvements** as well as conditions affecting the work, and is familiar with the sites; and having made the necessary examinations, hereby proposes to furnish all labor, materials, equipment, and services necessary to complete the work in strict accordance with the bidding and Contract Documents for an amount computed upon the basis of the quantity of work actually performed at the Bid prices set forth herein.

**PROPOSAL:**

The County seeks bids on work to purchase and install a large standby generator to power most of the Olympic View Transfer Station property in the event of a power outage. Further details are provided in the Plans and Specifications.

**UNIT PRICES:**

The Bidder certifies that the cost of all labor, equipment, plans, materials, including overhead and profit, necessary for proper completion of the work shall be included in the prices for the various bid items. NOTE: UNIT PRICES FOR ALL ITEMS, ALL EXTENSIONS, AND THE TOTAL AMOUNT OF BID MUST BE SHOWN. All prices shall be in legible and written in ink, typed, or computer printed. Erasures, interlineations, or other modifications in the proposal shall be initialed in original blue ink by the authorized person signing the proposal. The proposal shall include: a unit price for each item (omitting digits more than four places to the right of the decimal point); an extension for each unit price (omitting digits more than two places to the right of the decimal point); and the total contract price (the sum of all extensions). Unit prices for all numbers shall be shown in both words and figures. In case of conflict, words shall govern.

**SALES TAX:**

All work identified in the bid schedule is subject to collection of Washington State sales tax on the Contract Price. Bidders should contact the Washington State Department of Revenue for further clarification of sales tax rules. If the project extends through a sales tax increase, the Contractor will be allowed a commensurate increase in the sales tax and adjustment in the contract amount. However, the County will not adjust payment if the Bidder bases a Bid on a misunderstood tax liability.

**DELIVERY:**

The total cost shall include all freight, handling, delivery, surcharges, and other incidental charges that may be required to provide the services or deliver the commodities. All prices shall include freight FOB destination, freight included to the designated delivery point. Additional charges such as fuel surcharges will not be accepted by the County. If the delivery combines items from more than one purchase order, separate packing slips shall be included in the shipment.

**ALTERNATES:**

The Bidder shall bid on all alternates and/or schedules as they are fully considered in making the award. If a bidder fails to bid an alternate or schedule, or if he or she notes "no bid," it will be construed as meaning that there will be no change in the contract amount and that the alternate or schedule is included in the contract amount.



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# BID SCHEDULE

## Olympic View Transfer Station Electrical Improvements

Item No.	Ref. Section	Estimated Quantity	Unit	Unit Price	Amount (Qty x Unit Price)
1. Electrical Improvements	All	1	<u>LS</u>	\$	\$
<b>Subtotal</b>					<b>\$</b>
<b>Sales Tax @ 9.2%</b>					<b>\$</b>
<b>Total</b>					<b>\$</b>

**AWARD OF SCHEDULES:**

The Proposal contains one schedule to assist the County in tracking the costs associated with separate components of the overall project. The intent of the County is to award a Contract for all schedules to the lowest responsive and responsible bidder provided the Bid has been submitted in accordance with the requirements of these specifications. However, the County reserves the right to award any of the schedules singularly or in combination thereof. Failure to complete all schedules in their entirety will result in the bid being non-responsive. The sum of all schedules will be used to determine the lowest responsible bidder.

**OPENING OF BIDS:**

Bids received prior to the time of opening will be kept unopened and secured until the time of the bid opening as specified in the Advertisement for Bids. No bid received thereafter will be considered. No responsibility will attach, and bidders waive any and all complaints against the County, for premature opening of an improperly addressed or identified bid.

At the time and place fixed for the opening of bids, every bid received within appropriate time will be opened and publicly read aloud.

The County reserves the right to postpone the date and time for receiving and/or opening of bids at any time prior to the date and time established in the Invitation to Bid. Postponement notices shall be mailed to bidders in the form of addenda.

The County may reject all bids if they exceed budgeted cost or the County may negotiate bid pricing with the apparent low responsive bidder including changes in the plans and specifications, to bring the bid within budgeted cost.

**CONTRACT AND BOND:**

If notified of the acceptance of this bid within sixty (60) days of the time set for opening of bids, the undersigned agrees to execute a contract for the above work, for a compensation computed from the above-stated sums, on the Contract provided herein and to furnish the performance and payment bonds as required.

**BID BOND:**

It is agreed that if the undersigned fails to execute the Contract and furnish the performance and payment bonds within ten (10) days after written notice of award of Contract, then the Bid Bond shall be retained by the County as liquidated damages. If this bid is not accepted within sixty (60) days after the time set for the opening of bids, or if the undersigned delivers said Contract and bonds in a timely manner, then the check or cash shall be returned, or the Bid Bond shall become void.

SIGNATURE

Signed By: \_\_\_\_\_ Date: \_\_\_\_\_

Printed Name: \_\_\_\_\_ Title: \_\_\_\_\_

Name of Firm: \_\_\_\_\_

Address: \_\_\_\_\_

Phone: (\_\_\_\_\_) \_\_\_\_\_ Fax: (\_\_\_\_\_) \_\_\_\_\_

**END OF BID PROPOSAL**

**BID BOND  
FORMAL BID 2023-027**

KNOW ALL MEN BY THESE PRESENTS, that we, the undersigned, \_\_\_\_\_, hereinafter called the Principal, and \_\_\_\_\_, hereinafter called the Surety, are jointly and severally held and firmly bound unto the Kitsap County Department of Public Works, hereinafter called the Owner, each in the sum of five percent (5%) of the total amount of the Bid of the Principal for the work, this sum not to exceed \_\_\_\_\_ dollars (\$\_\_\_\_\_) of lawful money of the United States for the payment thereof unto the Owner, the Principal, and Surety jointly and severally bind themselves forever firmly by these presents.

WHEREAS, the Principal is herewith submitting its offer for the fulfillment of Owner's contract for construction of: **Olympic View Transfer Station Electrical Improvements**.

NOW, THEREFORE, the condition of this obligation is such that if the Principal is awarded the contract, and if the Principal, within the time specified in the bid for such contract, enters into, executes, and delivers to the Owner an agreement in the form provided herein complete with evidences of insurance, and if the Principal within the time specified in the bid gives the Performance and Payment Bond on the form provided herein to the Owner, then this obligation shall be void; otherwise, the Principal and Surety will pay unto the Owner the sum set forth above.

AND IT IS HEREBY DECLARED AND AGREED that the Surety shall be liable under this obligation as Principal, and that nothing of any kind or nature whatsoever that will not discharge the Principal shall operate as a discharge or a release of liability of the Surety.

IT IS HEREBY FURTHER DECLARED AND AGREED that this obligation shall be binding upon and inure to the benefit of the Principal, the Surety, and the Owner and their respective heirs, executors, administrators, successors, and assigns.

SIGNED AND SEALED this \_\_\_\_\_ day of \_\_\_\_\_, 202\_.

*Contractor's Corporate Seal*

\_\_\_\_\_  
Principal  
\_\_\_\_\_  
Signature for Principal  
\_\_\_\_\_  
Title of Signatory

*Surety's Corporate Seal*

\_\_\_\_\_  
Surety  
\_\_\_\_\_  
Signature for Surety  
\_\_\_\_\_  
Title of Signatory

**END OF BID BOND**

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## **SUBCONTRACTORS LIST**

Each bidder is required to submit as part of the bid or within one hour after the published bid submittal time, the names of the subcontractors with whom the bidder, if awarded the contract, will subcontract for performance of the work of heating, ventilation and air conditioning; plumbing as described in RCW 18.106; and electrical as described in RCW 19.28; or to name itself for the work. Additionally, each bidder is required to submit as part of the bid or within 48-hours after the published bid submittal time, the names of the subcontractors with whom the bidder, if awarded the contract, will subcontract for performance of the work of structural steel and rebar. The Bidder shall not list more than one subcontractor for each category of work identified, unless subcontractors vary with bid alternates, in which case the bidder must indicate which subcontractor will be used for which alternate. Failure of the Bidder to submit the names of such subcontractors or to name itself to perform such work or the naming of two or more subcontractors to perform the same work shall render the Bidder's bid non-responsive and, therefore, void.

### **List subcontractors appropriately**

#### HEATING, VENTILATION AND AIR CONDITIONING

Subcontractor Name: \_\_\_\_\_

#### PLUMBING

Subcontractor Name: \_\_\_\_\_

#### ELECTRICAL

Subcontractor Name: \_\_\_\_\_

#### STRUCTURAL STEEL INSTALLATION

Subcontractor Name: \_\_\_\_\_

#### REBAR INSTALLATION

Subcontractor Name: \_\_\_\_\_

#### CURED-IN-PLACE PIPE (CIPP) (Note: This is required by this contract and not RCW 39.30.060)

Subcontractor Name: \_\_\_\_\_

#### WET WELL COATING (Note: This is required by this contract and not RCW 39.30.060)

Subcontractor Name: \_\_\_\_\_

OTHER SUBCONTRACTORS (whose work is equal to or greater than 10% of the bid)  
(Note: This is required by this contract and not RCW 39.30.060)

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**[THIS FORM SHALL BE COMPLETED IN FULL AND SUBMITTED WITH THE BID PROPOSAL]**

**END OF SUBCONTRACTORS LIST**



## BIDDER INFORMATION

Contracting Firm Name:
Number of Years Contractor has been in the construction business under its present firm name:
Present gross dollar amount of work under contract:
Present gross dollar amount remaining to be completed of work under contract:
General type of work performed by firm:

List the top five major pieces of equipment to be used on this project:	Owned	Leased	Rented
1.			
2.			
3.			
4.			
5.			

Project Manager and Superintendent responsible for this project	# of Years with Firm
Name of Project Manager:	
Name of Superintendent:	

Bank Reference:
Have you changed bonding companies within the last three years?
If so, why? (Optional)

Have you ever been sued by a client or have you ever sued a client on any public works contract for a special purpose district, municipality, county, or state government? \_\_\_\_\_

For what reason? \_\_\_\_\_

\_\_\_\_\_

Disposition of case, if settled: \_\_\_\_\_

\_\_\_\_\_

Do you have any outstanding payments due to the Department of Revenue? \_\_\_\_\_

If yes, describe the plan to address those payments \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Bidder agrees that the County shall retain the right to obtain any and all credit reports?

(\_\_\_\_\_) \_\_\_\_\_  
Yes Signature

In the last 5 years, has the Bidder had a three-year average Experience Modification Rate (EMR) no greater than 1.1 (Include EMR documentation)?

(\_\_\_\_\_) \_\_\_\_\_  
Yes/No Signature

Does the Bidder have sufficient bonding capacity?

(\_\_\_\_\_) \_\_\_\_\_  
Yes/No Signature

The Bidder shall include with their Bid a notarized statement from an admitted and Washington State approved surety insurer, which states that Bidder's current bonding capacity is sufficient for this project.

In the last five (5) years, has the Bidder had their Contractor's license revoked?

(\_\_\_\_\_) \_\_\_\_\_  
Yes/No Signature

In the last five (5) years, has the Bidder been "defaulted" or "terminated" by an owner (other than for convenience of the owner)?

(\_\_\_\_\_) \_\_\_\_\_  
Yes/No Signature

In the last five (5) years, has the Bidder been convicted of a crime involving the awarding of a contract of a government (local, state, or federal) construction project or the bidding or performance of a government construction contract?

(\_\_\_\_\_) \_\_\_\_\_  
Yes/No Signature

In the last five (5) years, has the Bidder been found guilty in a criminal action, for making any false claim or material misrepresentations to any public agency or entity?

(\_\_\_\_\_) \_\_\_\_\_  
Yes/No Signature

In the last five (5) years, has the Bidder been convicted of a crime involving any federal, state or local law related to construction, including acts of dishonesty?

(\_\_\_\_\_) \_\_\_\_\_  
Yes/No Signature

**[THIS FORM SHALL BE COMPLETED IN FULL AND SUBMITTED WITH THE BID PROPOSAL]**

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## SUBCONTRACTOR RESPONSIBILITY CHECKLIST

The following checklist will be used to document that the Bidder meets the mandatory bidder responsibility criteria. Please print a copy of documentation from the appropriate website to be included with the submittal.

General Information	
Project Name: Olympic View Transfer Station Electrical Improvements	Solicitation Number: 2023-027
Subcontractor's Business Name:	Bid Submittal Deadline: Tuesday, June 20, 2023 at 2:00 p.m.
Contractor Registration	
License Number:	Status: Active: Yes <input type="checkbox"/> No <input type="checkbox"/>
Effective Date (must be effective on or before Subcontract Bid Submittal Deadline):	Expiration Date:
Contractor Infraction List	
Is Subcontractor on Infraction List? <span style="float: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></span>	
Current UBI Number	
UBI Number:	Account Status: Open <input type="checkbox"/> Closed <input type="checkbox"/>
Industrial Insurance Coverage	
Account Number:	Account Current: Yes <input type="checkbox"/> No <input type="checkbox"/>
Employment Security Department Number	
Employment Security Department Number:	
<i>Provide a copy of latest correspondence containing subcontractor's account number with Employment Security Department. Do not provide documents containing personal information such as social security numbers.</i>	
State Excise Tax Registration Number	
Tax Registration Number:	Account Status: Open <input type="checkbox"/> Closed <input type="checkbox"/>
Not Disqualified from Bidding	
Has the Subcontractor ever been disqualified from bidding on any public works contract under RCW 39.06.010 or 39.12.065(3)? <span style="float: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></span>	
Has the Subcontractor been listed on the County's debarment list in the last two (2) years? <span style="float: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></span>	
Has the Subcontractor received training on the requirements related to public works and prevailing wage (RCW 39.04.350(f))? <span style="float: right;">Yes <input type="checkbox"/> No <input type="checkbox"/> Exempt <input type="checkbox"/></span>	
Contractor Licenses	
Electrical: If required by Chapter 19.28 RCW, does the Subcontractor have an Electrical Contractor's License? <span style="float: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></span>	Elevator: If required by Chapter 70.87 RCW, does the Subcontractor have an Elevator Contractor's License? <span style="float: right;">Yes <input type="checkbox"/> No <input type="checkbox"/></span>
Checked by:	
Name of Employee:	Date:

**[THIS FORM SHALL BE COMPLETED IN FULL FOR EACH SUBCONTRACTOR AND SUBMITTED WITH THE BID PROPOSAL]**

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## NON-COLLUSION AFFIDAVIT

The undersigned, being duly sworn, deposes and says that the person, firm, association, co-partnership or corporation herein named, has not, either directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken any action in restraint of free competitive bidding in the preparation and submission of this proposal to Kitsap County for its consideration in the award of the contract.

\_\_\_\_\_  
Legal Name of Bidder

\_\_\_\_\_  
By (Signature)

Sole Proprietorship  Partnership  Joint Venture  Corporation  Other

\_\_\_\_\_  
Street Address

\_\_\_\_\_  
City

\_\_\_\_\_  
State

\_\_\_\_\_  
Zip

\_\_\_\_\_  
Telephone

\_\_\_\_\_  
State of Washington Contractor's Number

STATE OF WASHINGTON)

( \_\_\_\_\_ ) SS.

COUNTY OF KITSAP)

On this day personally appeared before me \_\_\_\_\_ to me known to be the individual described in and who executed the within and foregoing instrument, and acknowledged that \_\_\_\_\_ signed the same as \_\_\_\_\_ free and voluntary act and deed, for the uses and purposes therein mentioned.

GIVEN under my hand and official seal this \_\_\_\_\_ day of \_\_\_\_\_, 202\_\_

\_\_\_\_\_  
Notary Public in and for the State of Washington, residing at

\_\_\_\_\_  
My Commission Expires: \_\_\_\_\_

**[THIS FORM SHALL BE COMPLETED IN FULL AND SUBMITTED WITH THE BID PROPOSAL]**

**END OF NON-COLLUSION AFFIDAVIT**

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# CERTIFICATION OF COMPLIANCE WITH WAGE PAYMENT STATUTES

The bidder hereby certifies that, within the three-year period immediately preceding the bid solicitation date of **Tuesday, May 23, 2023**, the bidder is not a “willful” violator, as defined in RCW 49.48.082, of any provision of chapters 49.46, 49.48, or 49.52 RCW, as determined by a final and binding citation and notice of assessment issued by the Department of Labor and Industries or through a civil judgment entered by a court of limited or general jurisdiction.

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

\_\_\_\_\_  
Bidder’s Business Name

\_\_\_\_\_  
Signature of Authorized Official\*

\_\_\_\_\_  
Printed Name

\_\_\_\_\_  
Title

\_\_\_\_\_                      \_\_\_\_\_                      \_\_\_\_\_  
Date                                      City                                      State

*Check One:*

Sole Proprietorship       Partnership       Joint Venture       Corporation

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

\_\_\_\_\_

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

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

**[THIS FORM SHALL BE COMPLETED IN FULL AND SUBMITTED WITH THE BID PROPOSAL]**

**END OF CERTIFICATION OF COMPLIANCE WITH WAGE PAYMENT STATUTES**

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# BIDDER'S CHECKLIST

NOTE: The purpose of this checklist is to serve as a reminder of major items to be addressed in submitting a bid and by the Successful Bidder after notification of award and is not intended to be all-inclusive. It does not alleviate the Bidder from the responsibility of becoming familiar with all aspects of the Contract Documents and proper completion and submission of the Bid.

- 1. Contract Documents thoroughly read and understood. \_\_\_\_\_
- 2. Attend pre-bid conference. \_\_\_\_\_
- 3. All blank spaces in proposal filled in, preferably in black ink. \_\_\_\_\_
- 4. Receipt of all addenda acknowledged. \_\_\_\_\_
- 5. Review of geotechnical information acknowledged. \_\_\_\_\_
- 6. Bid Form and other documents are signed by authorized officer. \_\_\_\_\_
- 7. Prices computed and presented correctly. \_\_\_\_\_
- 8. Subcontractors are named as indicated in the Contract Documents. \_\_\_\_\_
- 9. The following documents, to be submitted with the bid, completed, signed, and dated as applicable.
  - a. Bid Proposal \_\_\_\_\_
  - b. Bid Guaranty Bond \_\_\_\_\_
  - c. Subcontractors List \_\_\_\_\_
  - d. Bidder Information
    - i. Bidder Responsibility Checklist \_\_\_\_\_
    - ii. Subcontractor Responsibility Checklist \_\_\_\_\_
    - iii. Project References \_\_\_\_\_
  - e. Non-Collusion Affidavit Certificate \_\_\_\_\_
  - f. Certification of Compliance with Wage Payment Statutes \_\_\_\_\_
- 10. Bid documents submitted in sealed envelope and properly labeled. \_\_\_\_\_
- 11. The following documents shall be executed and complied with after the contract is awarded:
  - a. Capital Projects Contract Agreement \_\_\_\_\_
  - b. Performance and Payment Bond \_\_\_\_\_
  - c. Insurance Certificates \_\_\_\_\_

**END OF BIDDER'S CHECKLIST**

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## CONTRACT REQUIREMENTS

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**CONTRACT NO. KC-215-23  
CAPITAL PROJECTS CONTRACT AGREEMENT**

This Contract is made and entered into this \_\_\_\_\_ day of \_\_\_\_\_, 2023 between Kitsap County, a political subdivision of the State of Washington, having its principal offices at 614 Division Street, Port Orchard, Washington 98366 (“County”), and [CONTRACTOR], a [CONTRACTOR TYPE], having its principal offices at [CONTRACTOR ADDRESS] (“Contractor”).

WHEREAS, the County desires to construct the **Olympic View Transfer Station Electrical Improvements**, in Commissioner District #2, and

WHEREAS, the Contractor has been selected by competitive bid **2023-027** as the responsible bidder with the lowest responsive bid as is required by Chapter 39.04 RCW.

NOW THEREFORE, in consideration of the terms and conditions of this Contract, the County and the Contractor mutually agree as follows:

**1. CONTRACT DOCUMENTS**

The Contract between the parties is expressed in the Contract Documents, which include Formal Bid 2023-027 and all parts thereof; all Addenda; the full and complete accepted Bid Proposal and Bid Bond; all Performance and Payment Bonds; the Plans and Specifications; all change orders, field orders and other modifications thereof entered into in accordance with the Contract, and this Contract itself.

**2. DESCRIPTION OF THE WORK**

This Contract provides for the construction of electrical improvements in accordance with the Plans and Specifications entitled “**Olympic View Transfer Station Electrical Improvements.**” Contractor agrees to furnish all material, labor, carriage, tools, equipment, apparatus, facilities, and anything else necessary to complete the work in a professional and workmanlike manner.

The Contractor shall complete its Work in a timely manner and in general accordance with the agreed schedule submitted by the Contractor and approved by the County.

**3. NOTICE TO PROCEED**

The County shall issue a Notice to Proceed after the execution of the Contract and receipt of all necessary required documents, including, where applicable, Performance and Payment Bond, a copy of insurance policies and/or any and all Certificates of Insurance and Additional Insured Endorsements. The Notice to Proceed shall provide the Start Date.

**4. TIME IS OF THE ESSENCE; LIQUIDATED DAMAGES**

Time is of the essence in the performance of this Contract. The Contractor agrees to work promptly and fully complete the work within the limits as described in the Contract Documents. Failure to complete the work within the allowed time limit will subject the Contractor to the payment of liquidated damages as described herein.

Delays in the completion of this Contract will negatively affect the efficient and continuous operation of the Olympic View Transfer Station through prolonged disruption of the operations area and when, during bad weather events, electricity is interrupted and prevents key pieces of equipment from managing solid waste entering the facility. Delays also cost taxpayers undue sums of money, adding time needed for additional administration, engineering, inspection, and supervision. Accordingly, the Contractor agrees to pay liquidated damages in the amount of

\$350.00 for each working day beyond the number of working days established below, and to authorize the County to deduct these liquidated damages from any money due to coming due to the Contractor.

When the Contract Work has progressed to Substantial Completion, as defined below, the County may determine the Contract Work is Substantially Complete. The County will notify the Contractor in writing of the Substantial Completion Date. For overruns in Contract time occurring after the date so established, liquidated damages identified 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 County, the Contractor shall furnish a written schedule for completing the physical Work on the Contract.

Liquidated damages will not be assessed for any days for which an extension of time is granted. No deduction or payment of liquidated damages will, in any degree, release the Contractor from further obligations and liabilities to complete the entire Contract.

## **5. TIME FOR COMPLETION**

The work to be performed under this Contract shall commence upon receipt of Notice to Proceed. Time for Completion of the Contract Documents and Substantial Completion of the work shall be achieved within eighty [80] Working Days, exclusive of a Procurement Suspension.

Substantial Completion is when all physical work is complete except for punch list items. In other words, this is the date that the contracting agency has full and unrestricted use of the facilities, both from an operational and safety standpoint. Only minor incidental work remains, such as replacement of temporary substitute facilities or minor corrections or repairs.

Contract Time may be suspended for procurement of critical materials (Procurement Suspension). In order to receive a Procurement Suspension, the Contractor shall within 7 calendar days after approved submittals, place purchase orders for all materials deemed critical by the County for physical completion of the Contract. The Contractor shall provide copies of purchase orders for critical materials. Such purchase orders shall disclose the purchase order date and estimated delivery dates for such critical material.

The Contractor shall show procurement of the materials listed below as activities in the Project Schedule. If the approved Project Schedule indicates that the materials procurement are critical activities, and if the Contractor has provided documentation that purchase orders are placed for the critical materials within the prescribed 7 calendar days, then Contract Time will be suspended for physical completion of critical work dependent upon the below listed critical materials:

- Standby Engine Generator

Charging of the final ten [10] Working Days of Contract Time in accordance with the Work Sequence within the Specifications shall resume upon delivery of the critical materials to the Contractor.

## **6. CONTRACT AMOUNT**

The County hereby agrees to pay the Contractor according to the Contractor's Bid in the amount of **[\$[CONTRACT AMOUNT]]** (including accepted alternates and Washington State Sales Tax (WSST)), at the time and manner and upon the conditions provided for in this Contract.

## 7. CONTRACT REPRESENTATIVES

Each party to this Contract shall have a representative. Each party may change its representative upon providing written notice to the other party. These representatives will be:

### County's Contract Representative

Name: [County Rep Name]  
Title: [County Rep Title]  
Address: [County Rep Addr]  
Phone: [County Rep Phone]  
Email: [County Rep Email]

### Contractor's Contract Representative

Name: [Contractor Rep Name]  
Title: [Contractor Rep Title]  
Address: [Contractor Rep Addr]  
Phone: [Contractor Rep Phone]  
Email: [Contractor Rep Email]

All instructions, modifications, and changes to the Contract shall be conveyed to the Contractor through the County's Representative. Any work executed upon the direction of any person or entity other than the County's Representative may be considered defective and will be performed without reimbursement for said work to the Contractor. The County's Representative shall have the authority to reject any and all nonconforming or defective work under the Contract Documents.

## 8. PAYMENT

At monthly intervals, unless determined otherwise by the County, the Contractor shall submit to the County an invoice or billing statement. Within thirty (30) calendar days of receiving an invoice or billing statement, the County shall pay ninety-five (95) percent of the invoice if such invoice or statement is acceptable to the County. Five (5) percent of the invoice or statement amount shall be retained in accordance with Chapter 60.28 RCW. No invoice or billing statement will be paid until all schedules for the previous month have been met and other documentation required by the Contract Documents have been submitted.

In the event the Contractor has failed to perform any substantial obligation to be performed by the Contractor under this Contract and such failure has not been cured within ten (10) working days following notice from the County, then, in its sole discretion and upon written notice to the Contractor, the County may withhold any and all monies due and payable to the Contractor without penalty until such failure to perform is cured or otherwise adjudicated.

Unless otherwise provided for in this Contract or any of the Contract Documents, the Contractor will not be paid for any billings or invoices presented for payment prior to the execution of this Contract and the Notice to Proceed or for work performed after the Contract's termination.

No payment shall be made for any work performed by the Contractor, except for work identified and set forth in this Contract or the Contract Documents.

## 9. PREVAILING WAGES

Contractor shall be responsible for complying with the prevailing wage requirements associated with Chapter 39.12 RCW and WAC 296-127.

Pursuant to Chapter 39.12 RCW and WAC 296-127, the Contractor shall pay not less than the prevailing rate of per diem wages to its employees and provide documentation to the County of its compliance with prevailing wage laws and regulations. The prevailing rate shall be calculated as of **June 20, 2023** for Kitsap County and the applicable trade. For all subcontractors, the Contractor agrees that the date for determining prevailing wages will be the date of the contract between the Contractor and the subcontractor. A copy of such prevailing rates of per diem wages can be found at <https://lni.wa.gov/licensing-permits/public-works-projects/prevailing-wage-rates/> and shall be posted by the Contractor at the work site.

A "Statement of Intent to Pay Prevailing Wages" (hereinafter "Statement of Intent") must be submitted to and approved by the State Department of Labor and Industries prior to beginning work by the Contractor. The Statement of Intent shall include the Contractor's registration number, the prevailing wage for each classification of workers, and an estimate of the number of workers in each classification. An 'Affidavit of Wages Paid' must be submitted to and approved by the State Department of Labor and Industries by the Contractor prior to release of the retained percentage. Copies of these documents shall be provided to the County prior to any payment being made to the Contractor. The fee for each of these documents shall be paid by the Contractor.

## 10. PERFORMANCE AND PAYMENT BONDS; RETAINAGE

a. The Contractor agrees to provide Performance and Payment Bonds on forms approved by the County. Pursuant to Chapter 39.08 RCW, the Contractor shall make, execute, and deliver to the County the performance and payment bonds for the full contract amount of **[\$[CONTRACT AMOUNT]**. The bonds shall also cover any and all approved change orders. The bonds must be submitted within ten (10) days after contract execution.

b. The County shall reserve a contract retainage of five (5) percent of every invoice in accordance with chapter 60.28 RCW. The County shall promptly release any retained percentage withheld if after sixty (60) calendar days of final completion and acceptance of all contract work, no liens or claims are filed against the project, and after receipt of the Department of Revenue's Certificate designating taxes due or to become due are discharged and receipt by the County of an "Affidavit of Wages Paid."

c. For purposes of the RCW 60.28.011, the term "completion of all contract work" has the same meaning as the "date of final acceptance" under RCW 36.08.010.

d. Neither the County nor the County's Representative shall have an obligation to pay or ensure the payment of money to any subcontractor except as may otherwise be required by law.

e. Payment and performance bonds for this project have been issued by **[SURETY COMPANY NAME]**, Street address: **[ADDRESS]**, City: **[CITY]**, Telephone: **[PHONE NUMBER]**, Contact Person: **[CONTACT PERSON]**, in the amount of **[BOND AMOUNT]**.

## **11. HOLD HARMLESS AND INDEMNIFICATION**

To the fullest extent permitted by law, the Contractor shall indemnify, defend, and hold harmless Kitsap County and its elected and appointed officials, officers, employees, and agents (collectively "Indemnitees") from and against all Claims resulting from or arising out of the performance of the Contract, whether such Claims arise from the acts, errors, or omissions of the Contractor, its Personnel, third parties, or anyone directly or indirectly employed by any of them, or anyone for whose acts, errors, or omissions for which any of them may be liable. It is the specific intent of the parties that the Indemnitees shall, in all instances except Claims arising from the sole negligence or willful misconduct of the Indemnitees, be indemnified by the Contractor from and against any and all Claims.

With regard to any Claim against any Indemnitee by any of the Contractor's Personnel, or anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the Contractor's indemnification obligation shall not be limited in any way by a limitation on the amount or type of damages, compensation, or benefits payable by or for the Contractor or the Contractor's Personnel under workers compensation acts, disability benefit acts, or other employee benefit acts. Solely for the purposes of this indemnification provision, the Contractor expressly waives its immunity under Title 51 RCW (Industrial Insurance) and acknowledges this waiver was mutually negotiated by the parties.

Should a court of competent jurisdiction determine the Contract is subject to RCW 4.24.115, then, in the event of liability for damages arising out of bodily injury to persons or damages to property caused by or resulting from the concurrent negligence of the Contractor and the County, its officers, officials, employees, and agents, the Contractor's liability hereunder, including the duty and cost to defend, will be only to the extent of the Contractor's negligence.

"Claim" means all losses, claims, suits, actions, liabilities, damages, demands, judgments, settlements, expenses, fines, or other liabilities of any kind or nature whatsoever, including without limitation, all costs including costs of Claim processing, investigation, reasonable attorneys' fees, consequential damages, and punitive damages, for any personal or bodily injury, sickness, disease, disability, or death, or loss or damage to tangible or intangible business or property, including the loss of use. Claim includes any infringement, violation, or misappropriation of copyright, patent, trademark, or other proprietary rights of any third parties.

Obligations/Notice of Claim. The County will provide the Contractor notice of the assertion of liability by a third party that may give rise to a Claim by the County against the Contractor based on the indemnity contained herein. The Contractor shall respond to the County's tender of defense of a claim in writing within fourteen (14) calendar days from the notice date and will advise the County if the Contractor accepts or denies tender of the claim. The County may in its discretion withhold all or part of any payment due the Contractor under the Contract until the Contractor responds to such notice. The Contractor shall keep the County timely and fully informed through all stages of the defense and promptly respond to and comply with the County's requests for information. The County at all times reserves the right but has no obligation to participate in the defense and settlement of any Claim. Such participation shall not constitute a waiver of the Contractor's indemnity and defense obligations under the Contract. The Contractor shall not settle or compromise any Claim in any manner that imposes any obligations upon the County without the prior written consent of the County. The Contractor shall promptly advise the County of any occurrence or information known to the Contractor that could reasonably result in a Claim against the County. The violation of any provisions of this section, including improper refusal to accept tender, is a material breach.

## 12. INSURANCE

Contractor agrees to comply with the insurance requirements described below.

- a. Minimum Insurance Required. The Contractor and its subcontractors, if any, shall procure and maintain, until all of Contract obligations have been fully discharged, including any warranty period, all insurance required in this Section with an insurance company duly licensed in Washington State with an A.M. Best Company ratings of not less than A-VIII and a category rating of not less than "8", with policies and forms satisfactory to the County. Use of alternative insurers requires prior written approval from the County. Coverage limits shall be at minimum the limits identified in this Section, or the limits available under the policies maintained by the Contractor without regard to the Contract, whichever is greater.
- b. Professional Liability. (Check one of the following options):
  - Not applicable.
  - Not less than \$1,000,000 per occurrence and \$2,000,000 annual aggregate. Coverage will apply to liability for professional error, act or omission arising out of or in connection with the Contractor's Services under the Contract. The coverage shall not exclude bodily injury, property damage, or hazards related to the work rendered as part of the Contract or within the scope of the Contractor's services under the Contract, including testing, monitoring, measuring operations, or laboratory analysis where such Services are rendered under the Contract.
- c. Commercial General Liability ("CGL"). Not less than \$1,000,000 per occurrence and \$2,000,000 annual aggregate. Coverage shall include personal injury, bodily injury, and property damage for premise-operations liability, products/completed operations, personal/advertising injury, contractual liability, independent contractor liability, and stop gap/employer's liability. Coverage shall not exclude or contain sub-limits less than the minimum limits required herein, without the prior written approval of the County. The certificate of insurance for the CGL policy shall expressly cover the indemnification obligations required by the Contract.
- d. Automobile Liability. (Check one of the following options):
  - Contractor shall maintain personal automobile insurance on all vehicles used for Contract purposes as required by law.
  - Not less than \$1,000,000 per occurrence and \$2,000,000 annual aggregate. Coverage shall include liability for any and all owned, hired, and non-owned vehicles. Coverage may be satisfied with an endorsement to the CGL policy.
  - Not less than \$100,000 per occurrence and \$300,000 annual aggregate. If a personal automobile liability policy is used to meet this requirement, it must include a business rider and cover each vehicle to be used in the performance of the Contract. If the Contractor will use non-owned vehicles in performance of the Contract, the coverage shall include owned, hired, and non-owned automobiles.



- e. Umbrella or Excess Liability. The Contactor may satisfy the minimum liability limits required for the CGL and Automobile Liability under an Umbrella or Excess Liability policy. There is no minimum per occurrence limit of liability under the Umbrella or Excess Liability; however, the annual aggregate limit shall not be less than the highest “Each Occurrence” limit for either CGL or Automobile Liability. The Contractor agrees to an endorsement naming the County as an additional insured as provided in Section 7, unless the Umbrella or Excess Liability provides coverage on a “Follow-Form” basis.
- f. Workers’ Compensation and Employer Liability. If applicable, the Contractor shall maintain workers’ compensation insurance as required under the Title 51 RCW (Industrial Insurance), for all Contractor’s Personnel eligible for such coverage. If the Contract is for over \$50,000, then the Contractor shall also maintain employer liability coverage with a limit of not less than \$1,000,000.
- g. Primary, Non-Contributory Insurance/Subcontractors. The Contractor’s and its subcontractors’ insurance policies and additional named insured endorsements will provide primary insurance coverage and be non-contributory. Any insurance or self-insurance programs maintained or participated in by the County will be excess and not contributory to such insurance policies. All Contractor’s and its subcontractors’ liability insurance policies must be endorsed to show as primary coverage. The Contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements for each subcontractor. All subcontractors shall comply with all insurance and indemnification requirements herein.
- h. Review of Policy Provisions. Upon request, the Contractor shall provide a full and complete copy of all requested insurance policies to the County. The County reserves the right without limitation, but has no obligation to revise any insurance requirement, or to reject any insurance policies that fail to meet the requirements of the Contract. The County also has the right, but no obligation to review and reject any proposed insurer providing coverage based upon the insurer’s financial condition or licensing status in Washington. The County has the right to request and review the self-insurance retention limits and deductibles, and the Contractor’s most recent annual financial reports and audited financial statements, as conditions of approval. Failure to demand evidence of full compliance with the insurance requirements or failure to identify any insurance deficiency shall not relieve the Contractor from, nor be construed or deemed a waiver, of its obligation to maintain all the required insurance at all times as required herein.
- i. Waiver of Subrogation. In consideration of the Contract award, the Contractor agrees to waive all rights of subrogation against the County, its elected and appointed officials, officers, employees, and agents. This waiver does not apply to any policy that includes a condition that expressly prohibits waiver of subrogation by the insured or that voids coverage should the Contractor enter into a waiver of subrogation on a pre-loss basis.
- j. Additional Insured, Endorsement, and Certificate of Insurance. All required insurance coverage, other than the workers’ compensation and professional liability, shall name the County, its elected and appointed officials, officers, employees, and agents, as additional insureds and be properly endorsed for the full available limits of coverage maintained by the Contractor and its subcontractors. Endorsement is not required if the Contractor is a self-insured government entity, or insured through a government risk pool authorized by Washington State.

The Certificate of Insurance and endorsement shall identify the Contract number and shall require not less than thirty (30) days' prior notice of termination, cancellation, nonrenewal, or reduction in coverage. At the time of execution, the Contractor shall provide the Certificate of Insurance, endorsement, and all insurance notices to: Risk Management Division, Kitsap County Department of Administrative Services, 614 Division Street, MS-7, Port Orchard, WA 98366.

- k. No Limitation on Liability. The coverage limits identified herein are minimum requirements only and will not in any manner limit or qualify the liabilities or obligations of the Contractor under the Contract. All insurance policy deductibles and self-insured retentions for policies maintained under the Contract shall be paid by the Contractor. Any failure to comply with reporting provisions of the policies shall not affect coverage provided to the County, its elected and appointed officials, officers, employees, or agents. The Contractor's insurance shall apply separately to each insured against whom a claim is made or suit is brought, subject to the limits of the insurer's liability.
- l. Claims-Made. If the Contractor's liability coverage is written as a claims-made policy, the Contractor shall purchase an extended-reporting period or "tail" coverage for a minimum of three (3) years following completion of the performance or attempted performance of the provisions of this Contract.

### **13. WARRANTY**

The Contractor shall warranty all work as required in the Specifications. Further, the Contractor shall ensure that for any equipment, material, or item installed under this Agreement, the County will be a beneficiary of any and all warranties that are furnished as a customary trade practice and that installation will not void any such warranty. To effect this arrangement, all subcontracts executed in performance of this Agreement shall include the following language:

This contract is for the benefit of the Olympic View Transfer Station, which is owned by Kitsap County. Kitsap County is therefore hereby made a third-party beneficiary to this contract and is entitled to the rights and benefits hereunder and may enforce the provisions hereof as if it were a party hereto.

### **14. TERMINATION**

This contract may be terminated by the officials or agents of the County authorized to contract for or supervise the execution of such work.

The County may terminate this Contract in whole or in part whenever the County determines, in its sole discretion, that such termination is in the best interests of the County. The County may terminate this Contract upon giving ten (10) calendar days written notice by Certified Mail to the Contractor. In that event, the County shall pay the Contractor for all cost incurred by the Contractor in performing the Contract up to the date of such notice. Payment shall be made in accordance with this Contract.

In the event that funding for this project is withdrawn, reduced or limited in any way after the effective date of this Contract, the County may summarily terminate this Contract notwithstanding any other termination provision of this Contract. Termination under this paragraph shall be effective upon the date specified in the written notice of termination sent by the County to the Contractor. After the effective date, no charges incurred under this Contract are allowable.

Termination of this Contract shall not relieve the Contractor of any responsibilities under the Contract for work performed. Nor shall termination of the Contract relieve the Surety or Sureties of obligations under the Performance and Payment Bond or any Retainage Bond for work performed.

If the Contractor breaches any of its obligations hereunder, and fails to cure the breach within ten (10) calendar days of written notice to do so by the County, the County may terminate this Contract, in which case the County shall pay the Contractor only for the costs of work performed and accepted by the County. Upon such termination, the County, at its discretion, may obtain performance of the work elsewhere, and the Contractor shall bear all costs and expenses incurred by the County in completing the work and all damage sustained by the County by reason of the Contractor's breach.

#### **15. NON-WAIVER OF RIGHTS**

The parties agree that the excuse or forgiveness of performance or waiver of any provisions of this Contract does not constitute a waiver of such provisions for future performance, or prejudice the right of the waiving party to enforce any of the provisions of this Contract at a later time.

#### **16. INDEPENDENT CONTRACTOR**

The Contractor shall perform this Contract as an Independent Contractor and not as an agent, employee or servant of the County. The parties agree that the Contractor is not entitled to any benefits or rights enjoyed by employees of the County. Contractor shall comply with all laws regarding workers' compensation.

The Contractor specifically has the right to direct and control Contractor's own activities in providing the agreed services in accordance with the specifications set out in this Contract. Furthermore, the Contractor shall have and maintain complete responsibility and control over all of its subcontractors, employees, agents, and representatives. No subcontractor, employee, agent, or representative of the Contractor shall be or deem to be or act or purport to act as an employee, agent, or representative of the County, unless otherwise directed by the terms of this Contract.

The Contractor agrees to immediately remove any of its employees or agents from assignment to perform services under this Contract upon receipt of a written request to do so from the County's Representative or designee.

#### **17. NONDISCRIMINATION**

The Contractor, its assignees, delegates, or subcontractors in the performance of this Contract shall not discriminate against any person on the basis of race, color, creed, religion, national origin, age, sex, marital status, sexual orientation, veteran status, disability, or other circumstance prohibited by federal, state, or local law, and shall comply with Title VI of the Civil Rights Act of 1964, P.L. 88 354 and Americans with Disabilities Act of 1990.

#### **18. CHOICE OF LAW, JURISDICTION AND VENUE**

Any action at law, suit in equity, or other judicial proceeding for the enforcement of this contract or any provisions thereof shall be instituted as provided for in RCW 36.01.050. It is mutually understood and agreed that this contract shall be governed by the laws of the State of Washington, both as to interpretation and performance.

## **19. SUCCESSORS AND ASSIGNS**

The County, to the extent permitted by law, and the Contractor each bind themselves, their partners, successors, executors, administrators, and assigns to the other Party to this Contract and to the partners, successors, administrators, and assigns of such other party in respect to all covenants of this Contract.

## **20. ASSIGNMENT, DELEGATION, AND SUBCONTRACTING**

- a. The Contractor shall perform the terms of the contract using only its bona fide employees or agents, and the obligations and duties of the Contractor under this Contract shall not be assigned, delegated, or subcontracted to any other person or firm without the prior express written consent of the County.
- b. The Contractor warrants that it has not paid nor has it agreed to pay any company, person, partnership, or firm, other than a bona fide employee working exclusively for Contractor, any fee, commission, percentage, brokerage fee, gift, or other consideration contingent upon or resulting from the award or making of this Contract.

## **21. SEVERABILITY**

If a court of competent jurisdiction holds any part, term or provision of this Contract to be illegal, or invalid in whole or in part, the validity of the remaining provisions shall not be affected, and the parties' rights and obligations shall be construed and enforced as if the Contract did not contain the particular provision held to be invalid.

If it should appear that any provision of this Contract is in conflict with any statutory provision of the United States or the State of Washington, said provision which may conflict therewith shall be deemed inoperative and null and void insofar as it may be in conflict therewith, and shall be deemed modified to conform to such statutory provision.

## **22. ENTIRE AGREEMENT**

The parties agree that this Contract is the complete expression of its terms and conditions. Any oral or written representations or understandings not incorporated in this Contract are specifically excluded.

## **23. NOTICES**

Any notices, demands and other communications required by the Contract will be effective if personally served upon the other party representative or if mailed by registered or certified mail, postage prepaid, return receipt requested, to the other party's representative identified in Section 3 at the address therein, or if emailed (with read receipt) to the other Party's representative at the email address therein. Notice will be deemed to be given three (3) days following the date of mailing, or immediately if personally served. For service by email, service will be effective upon confirmation of receipt or three (3) days after mailing the original.

## **24. MODIFICATION**

All amendments or modifications, including Change Orders, shall be in writing, signed by both parties consistent with Kitsap County Code, and attached to this Contract.

## **25. COMPLIANCE WITH LAWS**

The Contractor shall comply with all applicable federal, state and local laws, rules and regulations in performing this Contract.

## **26. COMPLIANCE WITH PUBLIC RECORDS ACT**

Contractor acknowledges that the County is subject to the Public Records Act, chapter 42.56 RCW ("Act"). All records owned, used, or retained by the County are public records subject to disclosure unless exempt under the Act, whether or not such records are in the possession or control of the County or Contractor. Contractor shall cooperate with the County so County may comply with all of its obligations under the Act. Contractor shall promptly provide County with all records relating to this Agreement requested by County for purposes of complying with the Act at no cost to the County. With the exception of this Contract, if the Contractor considers any portion of any record, electronic or hard copy, to be protected from disclosure under the Act the Contractor shall clearly label or identify all specific information it claims to be confidential or proprietary. If the County receives a request under the Act to inspect or copy proprietary information that has been identified by the Contractor as protected from disclosure and the County determines that release of the information is required by the Act or otherwise appropriate, the County's sole obligation will be to make a reasonable effort to notify the Contractor of the request and the date that such protected information will be released unless the Contractor obtains a court order to enjoin disclosure pursuant to RCW 42.56.540. Of the contractor fails to timely obtain a court order enjoining disclosure, the County will release the requested information on the date specified. The County has no obligation on behalf of the Contractor to claim any exemption from disclosure under the Act. The County will not be liable to the Contractor for releasing records pursuant to the Act.

## **27. RECORDS RETENTION**

The Contractor and its Personnel shall retain all books, documents, and records relating to performance of the Contract and Services provided in connection with this Contract for six (6) years after completion of the Contract or longer if requested by the County. All records shall be subject to inspection and audit by the County at no cost to the County. Upon request, the Contractor shall promptly make available to the County a legible copy of all books, documents, and records at no cost to the County. In addition to its other indemnification and defense obligations under this Agreement, Contractor shall indemnify and defend the County from and against any and all losses, penalties, fines, claims, demands, expenses (including, but not limited to, attorney's fees and litigation expenses), suits, judgments, or damage arising from or relating to any failure of Contractor to comply with this subsection. This subsection shall survive expiration or termination of the Agreement.

## **28. AUTHORIZATION**

Each party signing below warrants to the other party, that they have the full power and authority to execute this Agreement on behalf of the party for whom they sign.

Dated this \_\_\_\_ day of \_\_\_\_\_, 202\_

Dated this \_\_\_\_ day of \_\_\_\_\_, 202\_

**CONTRACTOR NAME**

**BOARD OF COUNTY COMMISSIONERS  
KITSAP COUNTY, WASHINGTON**

\_\_\_\_\_  
Signature

\_\_\_\_\_  
CHAIR NAME, CHAIR

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
COMMISSIONER NAME, COMMISSIONER

\_\_\_\_\_  
Title

\_\_\_\_\_  
COMMISSIONER NAME, COMMISSIONER

\_\_\_\_\_  
Contractor Registration No.

**ATTEST:**

\_\_\_\_\_  
Federal Tax ID No.

\_\_\_\_\_  
DANA DANIELS, CLERK OF THE BOARD

**END OF CAPITAL PROJECTS CONTRACT AGREEMENT**



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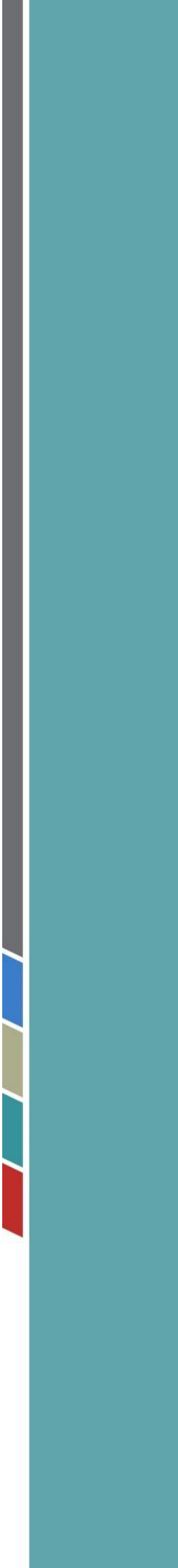


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## CONTRACT DOCUMENTS

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Division 01  
General Requirements





**SPECIFICATIONS**  
**Olympic View Transfer Station Electrical Improvements**

**SECTION 01 11 00**  
**SUMMARY OF WORK**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Section includes the following:
  - 1. Definitions.
  - 2. Project description.
  - 3. Work by Owner and Others.
  - 4. Permits.
  - 5. Work Schedule.
  - 6. Liquidated Damages.
  - 7. Warranty.
  - 8. Coordination with Owner's Concurrent Operations.

**1.02 DEFINITIONS**

- A. Throughout these Specifications certain terms are capitalized. Capitalized terms have the definitions assigned to them in the Specifications. Definitions of terms will be found throughout these Specifications. There is no one central location for the defined terms.
- B. A/E Representative: Owner's Technical Representative (Parametrix) responsible for development of technical Specifications and Plans, interpretation of design intent, responding to requests for information (RFI), and reviewing technical submittals.
- C. Contractor: Awardee of this Capital Projects Contract Agreement.
- D. Construction Manager (CM): Owner's Technical Representative (Parametrix) responsible for monitoring and inspecting (including but not limited to quality assurance) the progress of the construction work to verify that it conforms with the requirements of the Contract Documents, and processing of progress payments and Change Orders.
- E. Plans: The design drawings.
- F. Project Representative: Owner designee (Solid Waste Division).

- G. Project: The total construction of which the Work to be provided under the Contract Documents is the whole.
- H. Project Site: The Owner's Olympic View Transfer Station (OVTS) located at 9380 SW Barney White Road, Bremerton, Washington, 98312.

### 1.03 PROJECT DESCRIPTION

#### A. General:

1. The descriptions in this section are not intended to provide or be construed as a complete summary of the Contract Documents. The following only identifies in broad terms the general nature of the Work to be performed by the Contractor and its Subcontractors.
2. Contractor shall perform and complete all Work in accordance with the requirements set forth in the Contract Documents.
3. This section should be read as if "Provide and Install" were included at the front of each sentence.
  - a. Responsibility for the providing and the installing of every element is borne by the Contractor.

#### B. Preparation and General Site Work:

1. Documentation prepared by the Contractor for purposes of identifying the Contractor's construction planning and administration activities, including but not limited to the work plan documents indicated in this section.
2. Obtain and pay for all permits.
3. Temporary facilities including but not limited to temporary utilities, Contractor's office trailer (if needed), supplies, temporary fencing, signage, traffic management, flagging and other means of protecting the public and operations staff from hazards of the Work including traffic control during delivery and offloading of standby engine generator equipment, and items in accordance with requirements of Section 01 57 19, "Temporary Facilities and Controls."
4. Construction set out.

#### C. Standby Engine Generator:

1. Supply and install a 200 kW, diesel-fueled, standby engine generator with appurtenances.
2. Concrete base pad.
3. Auxiliary electrical switchboard.
4. Automatic transfer switches.



5. Grounding system.
6. Raceways, conduits and wiring.

#### **1.04 WORK BY OWNER AND OTHERS**

##### **A. Owner's Testing and Inspection Services:**

1. The Owner contracts with the testing and inspection agencies and/or uses in-house testing services for performing quality assurance services on the Project Site including any special inspection required by the permitting agencies.
2. Contractor Testing Responsibilities:
  - a. The Contractor is required to perform its own quality control program, including testing, inspection, and special inspections, as necessary to accommodate the Contractor's activities including source quality control testing as specified in Section 01 45 16, "Quality Control," at no additional cost to the Owner.
  - b. The Contractor shall pay for Owner's testing of Work that is subject to corrective action or that was otherwise untested, not observed or other problem attributable to the Contractor's performance of the Work.
  - c. The Contractor shall pay for additional testing above and beyond that required by the Contract Documents to facilitate its means and methods.

##### **B. Other Construction Work:**

1. No other construction work by Owner or others is anticipated to occur on the Project Site concurrently with Contractor's Work, other than possible minor repairs and maintenance to Owner's facilities and equipment in the transfer station operating area.
2. Contractor shall provide reasonable access to other contractors who are performing such minor repair and maintenance.

#### **1.05 PERMITS**

- A. The Contractor is responsible to obtain all permits.

#### **1.06 WORK SCHEDULE**

- A. In order to accommodate the Owner's continued operations on the Project Site throughout the construction work, the Work at the Project Site shall be carried out over an approximately 8-calendar-week period in accordance with the work sequence detailed in Attachment A, Required Work Sequence, at the end of this section.
  1. Work requiring electrical shutdowns shall be scheduled for non-operating hours of the OVTS facility, between 8:00 pm and 6:00 am.

## **1.07 LIQUIDATED DAMAGES**

- A. Liquidated Damages of \$350 per calendar day, as described in Section 4 of the Contract, shall apply if the Contractor does not complete all Work as indicated in 1.06 Work Schedule, above, and as required in Section 5 of the Contract.

## **1.08 WARRANTY**

- A. The Work shall be warranted for a period of 1 year from the date of Final Acceptance of the Work. The Contractor shall repair or remove and replace any and all work, together with any other work which may be displaced in so doing, that is found to be defective in workmanship and/or materials within the 1-year warranty period, without expense whatsoever to the Owner, ordinary wear and tear and unusual abuse or neglect excepted.
  - 1. This warranty is independent of the equipment warranty that the standby engine generator manufacturer shall provide to the Owner for the equipment furnished under the Contract.
- B. In the event of failure to comply with the above-mentioned conditions within five (5) calendar days after being notified in writing, the Owner is hereby authorized to proceed to have the defects remedied and made good at the expense of the Contractor who hereby agrees to pay the cost and charges therefore immediately on demand.
- C. This article does not in any way limit the guarantee on any items for which a longer guarantee is specified or on any items for which a manufacturer or supplier gives a guarantee for a longer period.

## **1.09 COORDINATION WITH OWNER'S CONCURRENT OPERATIONS**

- A. OVTS will remain open to transfer operations throughout the construction and standby engine generator installation work as noted in Attachment A, Required Work Sequence.
- B. Refer to the Plans for traffic management details and requirements regarding the Owner's transfer station traffic and operations.

## **PART 2 – PRODUCTS (NOT USED)**

## **PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

**(ATTACHMENT A FOLLOWS)**





**SECTION 01 20 00**  
**PAYMENT PROCEDURES**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Section includes the following:
  - 1. Progress payments.
  - 2. Progress payment supporting materials.
  - 3. Resubmittal of progress payment applications.
  - 4. Conditions necessary for payment.

**1.02 PROGRESS PAYMENTS**

- A. Progress Payments will be made on the basis of pay items that correspond to the bid items in the Bid Form and Contract.
- B. Submit Applications for Payment to the Project Representative at monthly intervals, unless otherwise determined by the County.
- C. Sign by authorized representative of the Contractor.

**1.03 PROGRESS PAYMENT SUPPORTING MATERIALS**

- A. Provide in a consistent manner month to month.
- B. Include the following information:
  - 1. Percentage complete of each pay item.
  - 2. Work purchased but not installed:
    - a. Identify the location, and disposition of materials, products, fabrications, and equipment as of the date of the Application for Payment.
    - b. Provide invoices.
    - c. Provide an insurance certificate or a copy of the bond from the bonded warehouse storing the material.
    - d. Provide photo documentation if requested.
    - e. Identify exact material; include quantity and measurement unit.

#### **1.04 RESUBMITTAL OF PROGRESS PAYMENT APPLICATIONS**

- A. Should the Project Representative determine an Application for Payment is incomplete, improperly executed, or incorrect, it may be returned to the Contractor for resubmittal.
- B. Revise and resubmit in accordance with provisions of this section.
- C. Processing of the resubmittal will begin when required revisions have been submitted and are deemed reviewable by the Project Representative.
- D. Comply with instructions provided by the Project Representative identifying required revisions.

#### **1.05 CONDITIONS NECESSARY FOR PAYMENT**

- A. Failure to comply with the requirements of this section will be cause for delay in review and acceptance of the Application for Payment as defined in the Contract.
- B. The Monthly Update Schedule identified in Section 01 32 16, "Scheduling," is required to accompany Applications for Payment as a condition of receiving payment for Work accomplished each payment period.
- C. As-Built Drawings:
  - 1. Maintaining as-built drawings up to date during field installation is a requirement for approval for each Application for Payment.

#### **PART 2 – PRODUCTS (NOT USED)**

#### **PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 31 19**  
**PROJECT MEETINGS**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Section includes the following:
  - 1. Project coordination.
  - 2. Preconstruction meeting.
  - 3. Pre-installation meetings.
  - 4. Weekly project meetings.
  - 5. Submittal information.

**1.02 PROJECT COORDINATION**

- A. General: Coordinate off-site fabrication and on-site construction activities to ensure efficient and orderly performance of the Work and avoidance of interference with Owner's transfer station operations.

**1.03 PRECONSTRUCTION MEETING**

- A. Schedule:
  - 1. The Project Representative will schedule a Preconstruction Meeting.
  - 2. It is anticipated that the Preconstruction Meeting will be held within 14 calendar days of issuance of the Notice to Proceed.
- B. Purpose:
  - 1. Establish lines of communication.
  - 2. Discuss and review administrative requirements of the Contract.
  - 3. Review forms required to be used by the Contractor in administration of the Work.
  - 4. Review and discuss Owner's concurrent operations issues, and permitting issues including requirements of authorities having jurisdiction.
  - 5. Definition of and interpretation of roles, and responsibilities in performance of the Contract.
  - 6. Review and discuss Contract Documents including Plans and Specifications.

- C. Notification: The Project Representative will notify the Contractor and required attendees not less than 2 calendar days in advance of the proposed meeting time.
- D. Required Attendees:
  - 1. Construction Manager.
  - 2. Project Representative.
  - 3. Transfer Station Operations Representative(s).
  - 4. A/E Representative.
  - 5. Contractor, including its project manager and site superintendent.
  - 6. Engine generator manufacturer's representative.
- E. Meeting Minutes: The Project Representative will prepare and distribute the minutes from the Preconstruction Meeting.

#### **1.04 PRE-INSTALLATION MEETING**

- A. The Project Representative will schedule a Pre-installation Meeting for the standby engine generator installation.
- B. The meeting will be scheduled to occur approximately one (1) week before the actual start of generator delivery and installation work on site.
- C. The agenda of the pre-installation meeting shall include the following:
  - 1. Project conditions, including anticipated temperature and weather conditions, readiness of the site for installation; and project-specific issues affecting the Work.
  - 2. Review and discuss facility and site access, flagging activities, security, safety and procedural issues.
  - 3. Review and discuss Owner's concurrent operations issues.
  - 4. Discuss administration, and performance of sign-in and sign-out responsibilities.
  - 5. Coordinate mobilization activities.
  - 6. Installation schedule, sequencing, and coordination with Owner's operations.
  - 7. Installation procedures.
  - 8. Quality control procedures; specifically, Contractor accommodation of Project Representative inspections of the Work and other quality expectations.



## 1.05 WEEKLY PROJECT MEETINGS

- A. Weekly Project Meetings will be scheduled and led by the Project Representative during the course of the work at the Project Site.
- B. The Project Representative will prepare, coordinate, convene, and arrange Weekly Project Meetings.
- C. Purpose:
  - 1. Maintain and improve lines of communication.
  - 2. Demonstrate performance of administrative requirements of the Contract.
  - 3. Complete and maintain forms required to be used by the Contractor in administration of the Work.
  - 4. Review and discuss the Weekly Look Ahead Schedule.
  - 5. Review and coordinate Owner's concurrent operations issues, work quality issues, and permitting issues (if any) including requirements of authorities having jurisdiction.
  - 6. Review and discuss specific contract execution and performance issues.
- D. Attend weekly project meetings; be prepared to discuss the agenda items identified in this section.
- E. Follow the direction of the Project Representative in preparation for weekly meetings, including:
  - 1. Ensure that the Contractor's project manager and site superintendent, and others as needed are present in accordance with provisions of this section.
  - 2. Ensure that required attendees are prepared, and familiar with the Project and the Project Schedule.
  - 3. Submit the Weekly Look Ahead Schedule at least 24 hours in advance of the meeting.
- F. Attendance at Weekly Project Meetings:
  - 1. Construction Manager.
  - 2. Project Representative.
  - 3. Transfer Station Operations Representative(s).
  - 4. A/E Representative (if necessary).
  - 5. Contractor, including its project manager and site superintendent.

G. Agenda for Weekly Project Meetings:

1. Be prepared to discuss the following, to the extent deemed appropriate by the Project Representative:
  - a. Safety Report by the Contractor-designated safety representative.
  - b. Review and approve minutes or record of previous meeting.
  - c. Review work progress during the preceding week.
  - d. Note field observations, problems and decisions.
  - e. Identify problems that impede planned progress.
  - f. Coordinate activities to the Project Representative's satisfaction, to permit the Project Schedule to be maintained, or improved.
  - g. Develop corrective measures, and procedures to maintain or improve the Project Schedule.
  - h. Discuss progress of preparation and maintenance of administrative documents required in accordance with this section.
  - i. Review planned work identified in the Weekly Look Ahead Schedule in accordance with Section 01 32 16, "Scheduling."
  - j. Review impacts of Changes on the Project Schedule.
  - k. Discuss status, and action related to Changes.
  - l. Discuss additional scope, costs, schedule impacts, deviations, substitutions and other Changes.
  - m. Review safety measures.
  - n. Maintenance and improvement of quality, work standards, and competence.
  - o. Resolution of construction nonconformities.

H. Meeting Minutes: The Project Representative will prepare and distribute minutes from each Weekly Progress Meeting.

**1.06 SUBMITTALS**

A. General: Submit the following in accordance with Section 01 33 00, "Submittals:"

1. Contractor Staffing and Organization Chart:
  - a. Submit an Organization Chart showing the Contractor personnel and key points of contact with the Owner within 3 weeks following the Notice to Proceed.

2. Submit a list of Contractor's personnel and Subcontractors, to include their responsibilities and contact information within 3 weeks following the Notice to Proceed.
  - a. Include the Contractor's project manager and the project site superintendent.
  - b. Provide telephone numbers with voice mail service, and email addresses monitored daily for each designee of the Contractor.
  - c. Indicate emergency and after-hours contacts, and the means of reaching these people.
  - d. Revise the list as approved by the Project Representative whenever changes in staffing may occur.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01 32 16**  
**SCHEDULING**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Section includes the following:
  - 1. Scheduling of Work.

**1.02 DEFINITIONS**

- A. Preliminary Construction Schedule:
  - 1. A Preliminary Construction Schedule shall be submitted during the Invitation to Bid (ITB) process.
- B. Baseline Schedule:
  - 1. The Project Schedule submitted following the Notice to Proceed and prior to the Preconstruction Meeting, reviewed and commented on by the Project Representative, with detailed information and work planning activities in accordance with this section.
  - 2. Significant differences between the Preliminary Construction Schedule and the Baseline Schedule may require the Contractor to demonstrate the reasoning and impacts for such changes.
- C. Float Time: Time between the earliest start date, and the latest start date of an activity, or succession of dependent activities.
- D. Weekly Look Ahead Schedule: Annotated, detailed schedule of activity for the following 7-day week.
- E. Project Schedule: The approved Baseline Schedule, inclusive of any subsequent approved Changes.

**1.03 PERFORMANCE**

- A. Perform scheduling responsibilities required in this section.
- B. Be responsible for completion, and administration of required forms.

C. Scheduling of Work:

1. The scheduling requirements identified in this section are in addition to the requirements of General Conditions.
2. Failure of the Contractor to provide suitable and sufficient information may result in the Project Representative denying or delaying an Application for Payment.
3. Scheduling of construction is the responsibility of the Contractor.
4. Level of Detail Required:
  - a. Show a continuous flow of Work from the date of Contract Execution to Final Acceptance.
  - b. Do not exceed duration of 5 days for any single activity, unless otherwise approved by the Project Representative.
  - c. Use Notice to Proceed as constraint only.
  - d. Use start-start, and finish-start relationships, and milestone activities.
5. Phases of Work:
  - a. Identify activities in accordance with Section 01 11 00, "Summary of Work."
  - b. Break down activities that are necessary to occur in more than one (1) Phase.
6. Baseline Schedule:
  - a. Incorporate Project Representative comments from the Preliminary Construction Schedule.
  - b. The Baseline Schedule provides precedence diagram and a defined critical path.
  - c. Provide a schedule which accurately describes completion of the Work within the Contract Time and stipulated Milestones.
  - d. When reviewed by the Project Representative, and after the Project Representative's comments have been resolved, the Baseline Schedule constitutes the Project Schedule for monitoring, and completion of the Work in performance of the Contract.
7. Weekly Look Ahead Schedule: When site construction work is in progress, provide 7-day schedule that reflects work tasks to be completed in the next calendar week period, and coordinated with the work results in the preceding calendar week period.

#### **1.04 SUBMITTALS**

- A. General: Submit the following in accordance with Section 01 33 00, "Submittals."
  - 1. Baseline Schedule:
    - a. Submit within 14 calendar days after the Notice to Proceed.
  - 2. Weekly Look Ahead Schedule:
    - a. Submit 24 hours in advance of Weekly Progress Meetings in accordance with Section 01 31 19, "Project Meetings."

#### **1.05 QUALITY CONTROL**

- A. Dates imposed on the Project by the Baseline Schedule are not binding on the Owner, and do not limit or restrain the Owner in its activities for administration of the Contract.

#### **PART 2 – PRODUCTS (NOT USED)**

#### **PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

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**SECTION 01 33 00**  
**SUBMITTALS**

**PART 1 – GENERAL**

**1.01 SUMMARY**

A. Section includes the following:

1. Submittal Procedures.
2. Submittal Schedule.
3. Submittal Transmittal Form.

**1.02 DEFINITIONS**

A. Complete: A submittal shall not be deemed complete until the submittal has been reviewed and returned by the Project Representative with one of the following annotations: (1) NO EXCEPTIONS TAKEN or (2) MAKE CORRECTIONS NOTED.

B. Submittal Categories:

1. Approval Submittals: Documentation necessary to demonstrate product, material, equipment, or manufacturer's qualifications compliance with Contract requirements.
2. Quality Assurance Submittals: Documentation necessary to demonstrate product, material or equipment conformance with approved Approval Submittals.

**1.03 SUBMITTAL PROCEDURES**

A. Submittals will only be accepted from the Contractor.

1. Materials provided by subcontractors and others who are not the Contractor will not be received and will not be reviewed or acted upon.
2. All materials and submittals must be submitted to the Project Representative by the Contractor itself, and not through proxies.

B. On Hold Status:

1. A submittal deemed by the Project Representative to be On Hold will not be reviewed until it is corrected by the Contractor.
2. The Project Representative will return submittals which are not corrected by the Contractor during the On-Hold period; the review and return time will be as for a resubmittal.

C. Identification of Submittals:

1. Identify each submittal by Specification section number where the requirement for the submittal was identified.
2. Provide a submittal transmittal form indicating the date of the submittal, the subcontractor's name, and the date the submittal is supposed to be returned by the Project Representative in accordance with the Submittal Schedule.
3. Filenames shall include the Specification section, and the date of the submittal.

D. Administrative Submittals:

1. These documents include:
  - a. Construction schedules in accordance with Section 01 32 16, "Scheduling."
  - b. Permits not provided by the Owner but required in the course of the Work.
  - c. Source inspection and test reports in accordance with Section 01 45 16, "Quality Control."

E. Required Submittal Dates:

1. Except where specified otherwise in other sections, all submittals required for standby engine generator shall be submitted no later than 21 calendar days following the date of issuance of the Notice to Proceed.
2. Review and Return Time: Submittals will be reviewed and returned to the Contractor within 30 calendar days after receipt of each submittal, or resubmittal.

F. Submittal Log:

1. Project Representative will maintain an electronic Submittal Log coordinated with the Submittal Schedule.
2. The Submittal Log will indicate where in the process of review any particular submittal should be, as a check for the Project Representative to administer the submittal review process.
  - a. Assign each submittal entry the appropriate Review Action designation in accordance with its status.
3. Submittal Log shall be revised by the Project Representative at least weekly and be shared with the Contractor on a weekly basis until all submittals are complete.

G. Shop, Fabrication and Installation Drawings:

1. Submit drawings drawn to an appropriate scale and sufficiently legible to discern detail.
2. Accurately and completely describe or otherwise identify any deviation from the Contract Documents.
3. Provide dimensions, identify adjacent materials, systems and Work of other systems to the best of your ability. Include field verified dimensions when appropriate.

H. Product Data:

1. Mark product data sheets to show choices and option selections.
2. Clearly identifying the system, assembly, material or product for which it is submitted using the names or terminology for the system, assembly, material or product in the Contract Documents.
3. Identify how accessories will be incorporated into assemblies.
4. Identify the basis of compliance with the requirements identified in the Contract Documents. When one or more criteria cannot be determined, identify the criteria which represent the basis for selection.

I. Samples:

1. Submit appropriately sized samples in accordance with the Contract Documents.
2. Clearly label samples, identifying the system, assembly, material or product for which it is submitted using the names or terminology for the system, assembly, material or product in the Contract Documents.
3. Provide three duplicate samples or sets of samples unless noted otherwise in the Contract Documents.
4. Include with samples a statement of the availability of each product, and compliance with applicable standards.
5. Submit a full set of choices when selection will be from a range of products.
  - a. Demonstrate finishes including color, sheen, texture and other physical attributes including toughness, resistance to damage from scratching, crushing and wear.
6. Provide samples from the range of materials that are being proposed.

J. Project Representative Response to Submittals:

1. Submittals will be returned to the Contractor by the Project Representative, including A/E Representative responses consistent with one of the following:
  - a. NO EXCEPTIONS TAKEN: Indicates submittal has been reviewed and appears to be in conformance with requirements of the Contract Documents. Contractor may proceed with construction shown on the submittal.
  - b. MAKE CORRECTIONS NOTED: Indicates submittal appears to be in conformance with requirements of the Contract Documents, with the exception of noted corrections. Contractor shall incorporate the corrections noted and may proceed with construction shown on the submittal. No resubmittal is required.
  - c. AMEND-RESUBMIT: Indicates submittal does not appear to be in conformance with the Contract Documents. A/E Representative's comments will be noted on the submittal or in a separate memorandum or letter from the Project Representative. Contractor shall recheck, make necessary revisions, and resubmit.
    - 1) Do not permit submittals marked "Amend-Resubmit" to be used at the Project Site, or elsewhere where Work is in progress.
  - d. REFERENCE: Indicates submittal gives general information incidental to but not required for construction.
  - e. SUBMITTALS NOT REQUIRED-NO ACTION TAKEN: Indicates that the submittal is not called for by the Contract Documents and that no action was taken by Project Representative on the gratuitous submittal.

**1.04 QUALITY ASSURANCE**

A. Personnel:

1. Designate a single point of contact that will act through the course of the Project to administer the submittals.
2. This person is to be solely responsible for delivering the submittals to the Project Representative in accordance with this section.

B. Contractor's Required Review: The Contractor shall review every submittal for completeness and will coordinate the Work prior to submitting materials to the Project Representative.

1. Completeness:

- a. Transmit complete submittal packages to the Project Representative at the previously agreed upon review dates established by the approved Submittal Schedule.

- b. Submittals without required information are not acceptable; such submittals will be returned for correction and resubmittal without further review.
  - c. Review of submittals by the Project Representative does not relieve the Contractor of responsibility for errors in the submittals, and does not demonstrate an assumption of risks, or of liabilities by the Owner.
2. Contractor Coordination of Submittals:
- a. Submittals that are not reviewed by the Contractor, that are out of sequence with other submittals, or that are dependent on other Work that has not been coordinated, are not acceptable; such submittals will be returned for correction.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION**

**3.01 SUBMITTAL SCHEDULE**

- A. Check each Specification section for the complete submittal requirements.
- B. The Submittal Schedule identifies in broad terms the general nature of the submittals that are required from the Contractor.
  - 1. The information contained in this Submittals Schedule is provided for the convenience of the Contractor.
  - 2. This list may not be complete or completely consistent with submittal requirements in the technical sections in Divisions 1 through 26. Refer all differences between the submittal schedule and requirements in specific sections to the Project Representative for resolution.
- C. Submittals Schedule:

<b>Section No.</b>	<b>Title</b>	<b>Submittal</b>
01 11 00	Summary of Work	Contractor furnished Permits
01 20 00	Payment Procedures	Progress payment requests with supporting materials
01 31 19	Project Meetings	Contractor Staffing and Organization Chart
01 32 16	Scheduling	Baseline Schedule Monthly Update Schedules Weekly Look Ahead Schedules
01 45 16	Quality Control	Standby engine generator fabrication quality control/quality assurance plan Fabrication quality control test results

<b>Section No.</b>	<b>Title</b>	<b>Submittal</b>
01 57 19	Temporary Facilities and Controls	Work site traffic control plan Health and safety plan
03 15 19	Anchors, Inserts, and Embedded Products	Shop drawings, manufacturer's data, current ICBO evaluation reports for expansion and adhesive anchors
03 30 01	Cast-in-Place Concrete	Concrete mix designs, product data for reinforcing steel and curing compounds
13 05 41	Seismic Restraint Requirements for Nonstructural Components	List of freestanding equipment weighing more than 200 pounds, anchorage details for equipment and freestanding items weighing more than 200 pounds, sway bracing information, required anchorage and bracing drawings and calculations for items weighing over 400 pounds
26 05 11	Basic Electrical Methods and Materials	Shop drawings, bill of materials, circuit breaker replacement rating plug product information, circuit breaker replacement product information, nameplate schedule, power outage request(s), field test results, applicable O&M information, functional check-out procedures, record drawings
26 05 19	Low-Voltage Wire and Cable	Shop drawings
26 05 26	Grounding and Bonding for Electrical Systems	Shop drawings Product information/data
26 05 29	Hangers and Supports for Electrical Systems	Catalog cuts, shop drawings for raceway support systems, attachment details
26 05 33	Raceway and Boxes for Electrical Systems	Shop drawings
26 05 53	Identification for Electrical Systems	Name plate schedules, raceway/conduit schedules, wire marker schedules, physical samples
26 05 73	Short Circuit, Coordination, and Arc Flash Report	Procedures, Short Circuit, Coordination, and Arc Flash Reports, Power Study Report, laboratory qualifications, electronic copy of model, settings, and report

<b>Section No.</b>	<b>Title</b>	<b>Submittal</b>
26 24 16	Panelboards	Shop drawings, seismic certification and equipment anchorage details, factory test plan, field test plan, certified production test reports, field test reports
26 28 00	Low-Voltage Circuit Protective Devices	Shop drawings, product data
26 32 13	Standby Diesel Engine-Generator Set	With bid: floor layout drawings, engine emission data, foundation requirements, job-site storage requirements, certified calculations of generator sizing Prior to manufacture: product data and shop drawings, description of factory testing program, testing equipment, reporting procedure and pass/fail criteria, certification of compliance with seismic Zone 3 anchorage requirements with sketch of anchorage system Prior to shipment: certified factory test report, description of field-testing program, preliminary O&M manual Prior to Substantial Completion: certified field test report, certificate of proper installation, O&M manual
26 36 23	Low Voltage Automatic Transfer Switches	Internal connection diagrams, data indicating current ratings, catalog data, WCR certification letter, outline drawings and equipment elevations with clearance requirements, O&M manuals, installation certification form
26 43 00	Surge Protective Devices	Catalog cuts, dimension and outline drawings, O&M manuals, extended 2-year warranty

**END OF SECTION**

**(SUBMITTAL TRANSMITTAL FORM FOLLOWS)**

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# SUBMITTAL TRANSMITTAL

PROJECT TITLE: **Olympic View Transfer Station** PMX W/O NO. 533 1578 151 PROJECT NO. XXX-XXX  
 PROJECT LOCATION: 9380 SW Barney White Road, Bremerton, WA 98312 CONTRACT TITLE: Electrical Improvements

## CONTRACTOR'S TRANSMITTAL

## A/E REPRESENTATIVE REVIEW

Check One

This is:                      an original submittal

a first resubmittal                       TRANSMITTAL NO. \_\_\_\_\_

a \_\_\_\_\_ resubmittal                       SPEC. SECTION NO. \_\_\_\_\_

**LEGEND:**

NE	No Exceptions Taken	AR	Amend Resubmit
MC	Make Corrections Noted	RF	Reference
		NA	Submittals Not Required, No Action Taken

NO. COPIES	MANUFACTURER	MFR. NO.	REV. NO.	SUBJECT	Action Taken	DISTRIBUTION				
						Contractor	Constr. Manager	Project Rep.	Shop Dwg. File	Extra

Complete either (a) or (b) following:

(a) We have reviewed the material, equipment, or other items contained in this submittal and certify that it is correct and in strict conformance with the Contract Documents (no exceptions). Check One

(b) We have reviewed the material, equipment, or other items contained in this submittal and certify that it is correct and in strict conformance with the Contract Documents except for the following deviations (list deviations):

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

For additional remarks see Serial Letter No. \_\_\_\_\_

CONTRACTOR'S NAME \_\_\_\_\_

ADDRESS \_\_\_\_\_

BY \_\_\_\_\_ DATE \_\_\_\_\_

**A/E REPRESENTATIVE'S REMARKS:**

1. No marks or review comments on this submittal are intended to constitute changes affecting cost or time.

2. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

For additional remarks see Serial Letter No. \_\_\_\_\_

BY \_\_\_\_\_ DATE \_\_\_\_\_

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**SECTION 01 45 16**  
**QUALITY CONTROL**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Section includes the following:
  - 1. Quality Control Plan.
  - 2. Quality assurance, including:
    - a. Qualifications.
    - b. Manufacturer's field services.
  - 3. Quality control, including:
    - a. Source quality control.
    - b. Field quality control.

**1.02 REFERENCES**

- A. American Council of Independent Laboratories (ACIL): Procurement and Effective Practice of Construction Materials Engineering and Testing.

**1.03 SUBMITTALS**

- A. General: Submit the following in accordance with Section 01 33 00, "Submittals."
- B. Standby Engine Generator Installation Quality Control/Quality Assurance (QC/QA) Plan: Provide within 14 calendar days of Notice to Proceed:
  - 1. Statement of how the installation QC/QA Plan will operate.
  - 2. A supporting organization chart indicating the manufacturer's staff responsible for implementation and management of the QC/QA Plan.
  - 3. Detailed description of the various quality control and quality assurance checks and tests that make up the QC/QA Plan, including sample check and test forms and documentation.
  - 4. Description of procedures followed for correcting nonconformities discovered as by the QC/QA process.

## 1.04 QUALITY ASSURANCE

### A. Manufacturer Qualifications:

1. Manufacturers providing products for incorporation into the Project are to be principally engaged in the business of manufacture of products for the building construction industry.
2. Manufacturers shall follow detailed written quality control plans and procedures, including testing and inspection by qualified in-house or independent testing agencies, in the manufacture of their products.
3. Manufacturers of technical products and equipment are required to have knowledgeable, experienced technical representatives available for answering questions and performing other responsibilities as indicated and appropriate for the Work.

### B. Supplier Qualifications:

1. Suppliers for products, material and equipment for incorporation into the Project are to be principally engaged in the business of supplying wholesale products for the building construction industry.
2. Suppliers of materials that produce such as aggregates, hot mix asphalt and concrete, shall follow detailed written quality control plans and procedures, including testing and inspection by qualified in-house or independent testing agencies, in the manufacture of their products.
3. Suppliers are required to be able to provide services to assist the Contractor in procurement of such quantities and volumes of materials, products and items necessary for the Work.
4. Suppliers are required to expedite and otherwise facilitate the availability of sufficient quantities and volumes of materials, products, and items necessary for the Work.

### C. Fabricator Qualifications:

1. Fabricators providing assemblies, products, fabrications and other custom unitized construction elements are to be principally engaged in the production of such equipment for the building construction industry.
2. Fabricators constructing elements of the Project that are subject to structural requirements of the codes applicable to the construction are to employ skilled, experienced employees to perform the Work.
3. Fabricators employees are to be competent and able to perform the necessary Work in conformance with the requirements.

D. Installer Qualifications:

1. Installers performing work activities of the Project are to be principally engaged in the performance of work activities for the building construction industry.
2. Installers are to be competent, experienced, qualified, and appropriately informed about the work activities required to be performed.
3. Installers are to be adequately supervised by a person able to direct, correct, and otherwise adjust the work activities in progress to meet the standards of the Work.

E. Manufacturer's Field Services:

1. Require supplier, distributor, and manufacturer to provide qualified field personnel.
2. Field personnel are required to:
  - a. Prepare manufacturer's field reports.
  - b. Identify suitability of conditions to receive work and notify Contractor if conditions are not suitable.
  - c. Identify important aspects of installation unique to the product, installation, and Project.
  - d. Identify quality of workmanship issues.
  - e. Assist startup of equipment and systems.

**1.05 SOURCE QUALITY CONTROL**

A. Source Quality Control Procedures:

1. Maintain quality control over suppliers, manufacturers, products, materials, and services to produce products and materials for the Work in compliance with Contract Documents and industry standards at the source where those products and materials are produced and/or manufactured.
2. Owner may conduct its own sampling and testing at the source to verify quality and compliance with Contract Documents.

**1.06 FIELD QUALITY CONTROL**

A. Testing and Inspection Services:

1. The Owner will conduct its own independent testing and inspection for Work performed at the Project Site.
  - a. Refer also to Section 01 11 00, "Summary of Work," paragraph 1.04 B. for further discussion of Owner testing and inspection services.

2. Results of the Owner's testing and inspection shall be the primary source of information for determining acceptability of the Work at the project site.
3. Procedures for Owner provided testing and inspection services will be an agenda topic at the Preconstruction Meeting and weekly field progress meetings identified in Section 01 31 19, "Project Meetings."
4. Owner and Contractor testing and inspection services will:
  - a. Comply with identified standards and record information that substantially represents conditions important to the determination of conformance to the named standards.
  - b. Keep written records.
  - c. Protect samples and other items from situations and physical conditions to the degree possible to prevent or reduce the potential for false, inaccurate or irregular results.
    - 1) Do not jostle samples of mixes.
    - 2) Maintain appropriate curing conditions consistent with good practice, and the intent of the standards.
  - d. Use only molds, and other appurtenances appropriate to the named tests.
  - e. Identify test procedures and modifications of test procedures deemed more appropriate and better suited for the Work, in advance.
    - 1) Obtain concurrence of the Project Representative prior to testing and inspecting using standards other than as named.
5. Contractor shall provide secure storage containers to protect material samples.
6. Contractor shall be responsible for costs of additional samples and testing of samples to facilitate accelerated concrete form and shoring removal.

**B. Manufacturer Technical and Field Services:**

1. Contractor shall require suppliers and manufacturers to provide qualified manufacturer technical and field personnel in accordance with the Specifications, and when directed to do so by the Project Representative.

**PART 2 – PRODUCTS (NOT USED)**

**PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**

**SECTION 01 57 19**  
**TEMPORARY FACILITIES AND CONTROLS**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Section includes the following:
  - 1. Environmental Controls.
  - 2. Health and Safety Plan (HASP).
  - 3. Project Utilities Sources.
  - 4. Temporary Facilities.
  - 5. Temporary Controls.

**1.02 ENVIRONMENTAL CONTROLS**

- A. Noise Control: Do not exceed local noise ordinance limits, including but not limited to City of Bremerton requirements.
  - 1. Verify work activities comply with the rules by taking measurements as necessary and when directed to do so by the Project Representative.
  - 2. Take measurements using an appropriate sound pressure meter, and at locations around the site acceptable to the Project Representative.

**1.03 HEALTH AND SAFETY PLAN (HASP)**

- A. Prior to any work at the project site, submit a health and safety plan, including detailed COVID-19 precaution protocols, for review by the Owner.
- B. Do not start work at the project site until the HASP has been reviewed and accepted by the Owner.
- C. Review the HASP at the project site regularly and circulate to all subcontractors performing work at the site.

**1.04 PROJECT UTILITY SOURCES**

- A. Water Service: Contractor may utilize the on-site water distribution system for reasonable quantities of water needed for construction.
- B. Electrical Power: Contractor may utilize the on-site electrical distribution system for reasonable quantities of power needed for construction.

- C. Fire Protection Service: Contractor shall make provisions for fire protection for its operations utilizing the existing water system and portable firefighting equipment.
- D. Telecommunications: Arrange and pay for telecommunications services as required.
- E. Wastewater: Provide a single lockable ADA-accessible sani-can or portable toilet unit.
  - 1. Provide an external hand washing station utilizing fresh water, and stocked with paper supplies and handwashing detergent.
  - 2. Contractor may not utilize the Owner's site sanitary facilities.
- F. The Contractor shall be responsible to arrange and pay all costs associated with connecting to the existing water and electrical utility systems.
- G. Do not interfere with, disrupt, damage or destroy the water, power and lighting systems at the transfer station.

#### **1.05 TEMPORARY FACILITIES**

- A. Access and Parking: Comply with Owner's requirements to maintain customer and Owner operational access and transit throughout the project site.
- B. Staging and Work Areas: Limit occupancy to Work and Staging Areas only as indicated on the Plans, and/or at any Contractor provided areas off the Project Site in a manner which does not impact Owner's transfer station operations.
- C. Coordinate movements through adjacent operational areas with Owner. Limit any longer-term use of these adjacent areas to station shutdown periods or other non-busy times as approved by Owner. Refer to Section 01 11 00, "Summary of Work," for allowable station shutdown periods.
- D. Parking: Contractor shall limit parking to available sites within the Contractor's Work Area in the lower yard as designated on the Plans. Do not park in the upper level parking lot unless approved by the Owner.

#### **1.06 TEMPORARY CONTROLS**

- A. Temporary Construction and Construction Aids:
  - 1. Temporary construction and construction aids shall be of the Contractor's own design.
- B. Traffic Management:
  - 1. At least 2 weeks before starting work at the Project Site, provide a Work Site Traffic Control Plan for Owner's approval.
  - 2. Provide temporary signage, flaggers, and portable traffic delineation devices for major equipment deliveries.



- C. Temporary Barriers and Enclosures: Provide temporary barriers and enclosures as necessary to prevent accidents and injury.
- D. Security:
  - 1. Protect the Project Site from vandalism, trespass and neglect during progress of the Work.
  - 2. Contractor shall not rely on Owner's operations staff to provide security for the Project Site.
  - 3. Coordinate with Project Representative on methods to secure the Project Site.
  - 4. Notify the Project Representative in the event an unauthorized entry into the Project Site, or vandalism occurs to the Contractor's or Owner's property during the Project.

## **PART 2 – PRODUCTS (NOT USED)**

## **PART 3 – EXECUTION**

### **3.01 PROTECTION**

- A. Protect Work from damage, deterioration, theft, destruction and loss.
- B. Protect existing structures, property, cultivated and planted areas, and other surface improvements.
- C. Assess and protect subsurface utilities and improvements.
- D. Provide shoring, bracing, or other Work necessary to protect structures and improvements.
- E. Provide protection and special requirements identified elsewhere in the Contract Documents.
- F. Repair or replace damaged structures, pavement, improvements, utilities, materials and equipment to a condition equivalent to the condition prior to the damage, unless otherwise instructed by the Project Representative. All such remedial activities shall be at the Contractor's expense.

**END OF SECTION**

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Division 03  
Concrete





**SECTION 03 15 19**  
**ANCHORS, INSERTS, AND EMBEDDED PRODUCTS**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. This section specifies the materials and installation requirements for metal embedment into concrete or grouted masonry.
- B. Items Included:
  - 1. Cast-in-place anchor bolts (anchor rods).
  - 2. Manufactured cast-in-place inserts for suspended piping or electrical items.
  - 3. Inserts for structural attachments.
  - 4. Collars or sleeves for pipe penetrations.
  - 5. Post-installed anchors.

**1.02 SUBMITTALS**

- A. Shop drawings for all anchors, inserts, and embedded products (wall castings, pipes with seep rings, and special castings or fabrications).
- B. Manufacturer's Data: Submit complete data for fasteners including materials, dimensions, resins, colors, and other information.
- C. Current ICBO Evaluation Reports for all expansion and adhesive anchors.

**PART 2 – PRODUCTS**

**2.01 MATERIALS**

- A. Cast-in-place Anchor Bolts: ASTM F1554, Grade 36, hot dip galvanized steel unless otherwise noted. Configuration shall be as shown or noted on the Drawings.
- B. Expansion (Wedge) Anchors: ICBO approved for use in cracked and uncracked concrete for all anchors used for wind or seismic anchorage applications.
  - 1. All anchors to be Stainless Steel complying with the following:
    - a. Stud: Stainless steel bar conforming to ASTM A276 with chemical composition of AISI Type 316.
    - b. Wedge: Manufactured from either AISI Type 316 stainless steel.
    - c. Nut: Stainless steel conforming to ASTM F594 with chemical composition of AISI Type 316 and meeting dimensional requirements of ANSI B18.2.2.
    - d. Washer: AISI Type 316 stainless steel conforming to ASTM A240.

2. Products:
  - a. Hilti, Kwik-Bolt TZ SS 316.
  - b. Powers Fasteners, Power-Stud + SD6.
  - c. Simpson Strong Tie, Strong-Bolt 2, Type 316 stainless steel.
  - d. Other manufacturers upon approval of Engineer.

C. Adhesive Anchors:

1. Anchor rod material shall conform to ASTM A316 stainless steel.
2. Products:
  - a. Hilti, HIT-RE 500-V3.
  - b. Powers Fasteners, PE1000+.
  - c. Simpson Strong-Tie, SET-XP.
  - d. Other manufacturers upon approval of Engineer.

D. Stainless Steel Plates and Shapes: Conform to AISI Type 316 unless otherwise noted.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Coordinate the location and placement of all items to be embedded in concrete.
- B. Coat any embedded aluminum with asphalt paint.
- C. Adhesive and expansion anchors to be installed in holes drilled with carbide tipped drill bits. Anchors shall be installed per manufacturer's recommendations. Insert and tighten bolts in accordance with manufacturer's installation instructions. In case of interference with reinforcing bars or steel objects, notify the Engineer.

### **3.02 EMBEDDING**

- A. Set accurately and hold in position all embedded products during placement until the concrete is set.

### **3.03 INSPECTION**

- A. Anchors shall be inspected by Special Inspector as required by the Inspection Requirements described in the Structural General Notes contained on the Drawings or as required by the Building Official.

## **END OF SECTION**

**SECTION 03 30 01**  
**CAST-IN-PLACE CONCRETE**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. This section specifies cast-in-place reinforced concrete, including embedded material and formwork.

**1.02 QUALITY ASSURANCE**

- A. Referenced Standards: This section incorporates by reference the latest revision of the following document. It is a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

<u>Reference</u>	<u>Title</u>
ACI 301	Specifications for Structural Concrete for Buildings.
ACI 318	Building Code Requirements for Reinforced Concrete.
ASTM A615	Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
ASTM C33	Specification for Concrete Aggregates.
ASTM C94	Specification for Ready-Mixed Concrete.
ASTM C150	Specification for Portland Cement.
ASTM E329	Specification for Agencies Engaged in the Testing and/or Inspection of Materials Used in Construction Manual of Standard Practice.

**1.03 TESTING**

- A. Perform and submit materials testing to demonstrate conformance with the specifications.

**1.04 SUBMITTALS**

- A. Concrete-Mix Designs.
- B. Reinforcing Steel.
- C. Curing Compound.

**1.05 CONCRETE MIX DESIGNS**

- A. Compressive Strengths: Unless otherwise specified, provide the following as minimum:
  - 1. All Concrete: 4,000 psi.

## **PART 2 – PRODUCTS**

### **2.01 REINFORCEMENT**

- A. Comply with the following as minimums:
  - 1. Bars – ASTM A615, grade 60, unless otherwise shown, using deformed bars for Number 3 and larger.
  - 2. Bending – ACI 318.
- B. Fabricate reinforcement to the required shapes and dimensions, within fabrication tolerances stated in the CRSI.
- C. Do not use reinforcement having any of the following defects:
  - 1. Bar lengths, depths, or bends exceeding the specified fabricating tolerances.
  - 2. Bends or kinks not indicated on the Drawings or required for this work.
  - 3. Bars with cross-section reduced due to excessive rust or other causes.

### **2.02 CONCRETE**

- A. Minimum Requirements:
  - 1. Portland Cement: ASTM C150, Type I or II, low-alkali.
  - 2. Aggregate, General:
    - a. ASTM C33, uniformly graded and clean.
    - b. Do not use aggregate known to cause excessive shrinkage.
  - 3. Aggregate, Coarse: Crushed rock or washed gravel with size between 3/4-inch and 1-1/2 inches.
  - 4. Aggregate, Fine: natural washed sand of hard and durable particles varying from fine to particles passing a 3/8-inch screen, of which at least 12 percent shall pass a 50-mesh screen.
  - 5. Water: Clean and potable.
  - 6. Flyash: for the cementitious portion of the concrete mix, up to 20 percent of the cement content may be flyash or ground granulated blast furnace slag. A higher percentage of flyash can be used if a mix design and Plan for form removal is approved by the Owner's Representative.
  - 7. Cementitious content (including fly ash or slag) not less than 564 pounds per cubic yard of concrete.



8. Entrained air 5-1/2 percent plus or minus 1 percent.
9. Maximum water/cement ratio shall be a maximum of 0.40 to reduce shrinkage cracking.

B. Admixtures:

1. Water-reducing admixtures shall conform to ASTM C494, and be used in accordance with the manufacturer's recommendations.
2. No chloride containing admixtures shall be used.

## **2.03 OTHER MATERIALS**

- A. Provide other materials, not specifically described but required for a complete and proper installation, as selected by the Contractor.

## **PART 3 – EXECUTION**

### **3.01 EXISTING CONDITIONS**

- A. Examine the areas and conditions under which work of this section will be performed. Correct conditions detrimental to timely and proper completion of the work. Do not proceed until unsatisfactory conditions are corrected.

### **3.02 EMBEDDED ITEMS**

- A. Do not embed piping or electrical conduit in structural concrete unless indicated on the Drawings or approved by the Owner's Representative.
- B. Set and secure bolts, inserts, and other required items in the precise locations needed so these items are not displaced.
- C. Prior to concrete placement, ensure the actual locations of embedded items are noted on the as built set of Drawings.

### **3.03 FORMS**

- A. Design, erect, support, brace, and maintain formwork to safely support vertical and lateral loads which will be applied until such loads can be supported safely by the concrete structure.
- B. Construct forms to the exact sizes, shapes, lines, and dimensions shown, and as required to obtain accurate alignment, location, grades, and level and plumb work in the finished structure.

### **3.04 MIXING CONCRETE**

- A. Transit mix the concrete in accordance with provisions of ASTM C94.
- B. Do not use concrete that has stood for over 60 minutes after leaving the batch plant, or concrete that is not placed within 90 minutes after water is first introduced into the mix.

### **3.05 PLACING CONCRETE**

#### A. Preparation:

- 1. Remove foreign matter accumulated in the forms.
- 2. Rigidly close openings left in the formwork.
- 3. Wet wood forms sufficiently to tighten up cracks; wet other material sufficiently to maintain workability of the concrete.
- 4. Use only clean tools.
- 5. Schedule inspection with Owner's Representative 24 hours minimum prior to concrete placement.

#### B. Conveying:

- 1. Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic.
- 2. Deposit concrete as nearly as practicable in its final location to avoid separation due to rehandling and flowing.
- 3. Do not use concrete which becomes non-plastic and unworkable, or does not meet required quality control limits, or has been contaminated by foreign materials.
- 4. Remove concrete from the work site that does not meet specifications.

#### C. Placing Concrete in Forms:

- 1. Deposit concrete in horizontal layers not deeper than 24 inches and avoid inclined construction joints.
- 2. Remove temporary spreaders in forms when concrete has reached the elevation of the spreaders.

#### D. Placing Concrete Slabs:

- 1. Deposit and consolidate concrete slabs in a continuous operation, within limits of construction joints, until the placing of a panel or section is completed.
- 2. Bring slab surfaces to the correct level with a straightedge, and then strike off.

3. Use bullfloats or darbies to smooth the surface, leaving the surface free from bumps and hollows.
4. Do not sprinkle water on the plastic surface.
5. Do not disturb the slab surface prior to start of finishing operations.

### **3.06 CONSOLIDATION**

- A. Consolidate each layer of concrete while placing by use of internal concrete vibrators and supplemented by hand spading, rodding, or tamping.
- B. Do not vibrate forms or reinforcement.
- C. Do not use vibrators to transport concrete inside the forms.

### **3.07 JOINTS**

- A. Construction Joints:
  1. Construction joints shall be placed as shown on the Drawings. If other joints are found to be required, submit for the Owner's Representative's approval of joint design and location prior to start of concrete placement.

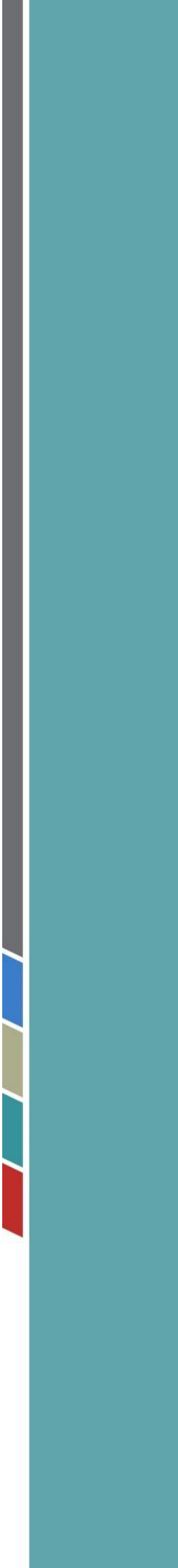
### **3.08 CONCRETE FINISHING**

- A. Unless otherwise indicated, provide the following finishes at the indicated locations.
  1. Non-slip broom finish: apply to slabs, walks, stairs, drives, ramps, and similar pedestrian and vehicular areas.
  2. Formed surfaces: repair all rock pockets, voids, air bubbles, etc. greater than 1/2 inch in any dimension.

**END OF SECTION**

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Division 13  
Special Construction





## SECTION 13 05 41

### SEISMIC RESTRAINT REQUIREMENTS FOR NONSTRUCTURAL COMPONENTS

#### PART 1 – GENERAL

##### 1.01 SUMMARY

- A. This section specifies the anchorage and bracing for equipment and seismic anchoring and bracing for suspended equipment and equipment over 200 pounds.

##### 1.02 QUALITY ASSURANCE

- A. Reference Standards: This section incorporates by reference the latest revisions of the following documents. These documents are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.

<u>Reference</u>	<u>Title</u>
IBC 2018	International Building Code
ASCE/SEI 7-16	Minimum Design Loads for Buildings and Other Structures

##### 1.03 SUBMITTALS

- A. Procedures: Section 01 33 00, "Submittals."
- B. List of freestanding equipment weighing 200 pounds or more.
- C. Anchorage details for equipment and freestanding items weighing between 200 and 400 pounds.
- D. Sway bracing for elevated or suspended items such as ceiling systems, ducting, conduits, cable trays, and piping.
- E. No less than 4 weeks in advance of equipment installation, for items weighing over 400 pounds. Required anchorage and bracing drawings and calculations bearing the stamp of a Professional Engineer; show the criteria used to determine seismic coefficients and forces applied to the equipment, including seismic zone, soil profile type, and importance factors.

##### 1.04 DESIGN AND PERFORMANCE REQUIREMENTS

- A. In accordance with IBC, all equipment shall be anchored and braced to resist seismic forces prescribed in the code and ASCE/SEI 7, Chapter 13 or 15. All equipment includes equipment which is free standing, supported by stand frames, suspended, anchored to walls, and anchored to floors or slabs.
- B. Seismic anchorage and bracing for equipment shall be designed by a State of Washington Registered Structural Engineer using the site-specific seismic criteria.

## **1.05 SITE SEISMIC CRITERIA**

- A. Short Periods,  $S_d = 1.08$ .
- B. 1 Second Period,  $S_{d1} = \text{null}$ .
- C. Importance Factor,  $I_p = 1.50$ .
- D. Site Class = D.
- E. Occupancy Risk Category: III.
- F. Seismic Design Category: D.
- G. Response Modification Coefficient and Amplification Factors: In accordance with ASCE/SEI 7-10 Sections 13.5 or 13.6.

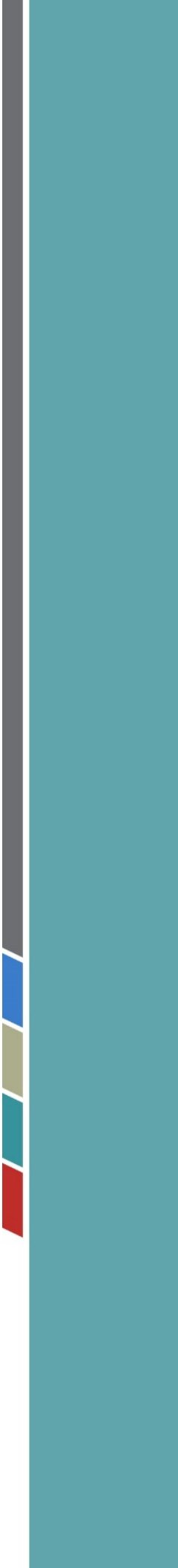
## **PART 2 – PRODUCTS (NOT USED)**

## **PART 3 – EXECUTION (NOT USED)**

**END OF SECTION**



Division 26  
Electrical





**SECTION 26 05 11**  
**BASIC ELECTRICAL METHODS AND MATERIALS**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. Provide electrical materials and labor to satisfactorily complete electrical work shown on the Drawings, specified, or neither shown nor specified but necessary for a complete and fully operating facility.
- B. Mounting details of equipment, devices, raceways, junction boxes, etc., are not usually shown or specified, provide per industry standard practice and code requirements as necessary for proper installation and operation, shall be included in the Contractor's estimate, the same as if specified or shown.
- C. Contractor shall install Owner's purchased replacement compactors and all associated ancillary equipment.

**1.02 SUBMITTALS**

- A. Procedures: See Division 1.
- B. Submittal package shall be organized by equipment type. Include separators and tabs or other means of identifying each item.
- C. Shop Drawings: Show dimensions, physical configurations, methods of connecting equipment, mounting details, and wiring schematics. Drawings shall be complete with device numbers, wire numbers, and terminal board numbers. Submit fabrication details and nameplate legends. Include material lists and/or bills of material. Submit manufacturer's catalog cuts for each item for which shop drawings are not required. Manufacturers' catalog cuts, specifications, or data sheets shall be clearly marked to delineate the options or styles to be furnished.
  - 1. Contractor shall submit shop drawings showing conduit installation and routing to Owner for review and approval prior to installing the conduit. Shop drawing shall show as a minimum but not limited to the following: conduit bodies, conduit type, pull boxes, wall penetrations, entry locations to electrical equipment.
- D. Bill of Material (BOM): BOM shall include equipment item number, quantity, manufacturer, part number, model number, and descriptions.
- E. Submit circuit breaker replacement rating plug product information.
- F. Nameplate schedule.
- G. Power outage request.
- H. Field test results specified in Part 3 of this section.

- I. Applicable operation and maintenance information on an item-by-item basis in accordance with Division 1. Operation and maintenance information shall be provided at the time of equipment, device, or material site delivery, or at a certain stage of project completion as required by Division 1, whichever is the earlier. Full-size drawings shall be reduced to 11 by 17 inches.
  - 1. Submit O&M manual content for electrical equipment provided.
- J. Description of functional checkout procedures, specified in this specification, 30 days prior to performing functional checkout tests.
- K. Record Drawings:
  - 1. Contract Drawings – Upon completion of the work, transfer the Contractor-maintained as-built drawings to a clean set of full-size drawings with red ink to indicate additions and green ink to indicate deletions. Submit these full-size drawing markups to the Engineer and copy to the Owner.

### **1.03 QUALITY ASSURANCE**

- A. Variances: In instances where two or more codes are at variance, the most restrictive requirements shall apply.
- B. Standards: Equipment shall conform to applicable standards of American National Standards Institute (ANSI), Electronics Industries Association (EIA), Institute of Electrical and Electronics Engineers (IEEE), and National Electrical Manufacturers Association (NEMA). The revisions of these standards in effect on the date of issuance of the Contract Documents shall apply.
- C. Electrical equipment, materials, and installation methods shall conform to applicable local and state codes as well as the editions of the following in effect on the date of issuance of the Contract Documents:
  - 1. National Electrical Code (NEC).
  - 2. National Electrical Safety Code (NESC).
- D. Electrical equipment must be listed or labeled by a Nationally Recognized Testing Laboratory (NRTL). An NRTL is recognized by Occupational Safety and Health Administration (OSHA) as being capable of independently assessing equipment for compliance to safety requirements and applicable standards. UL is an example of an NRTL.
- E. Series short circuit ratings for protective devices are not allowed.

### **1.04 DRAWINGS**

- A. The Electrical Drawings are diagrammatic; exact locations of products shall be verified with the Owner prior to installation. Except where special details are used to illustrate the method of installation of a particular piece or type of equipment or material, the requirements or descriptions in this and other Division 26 sections shall take precedence in the event of conflict.

- B. Field-verify scaled dimensions on Drawings.
- C. Review the Drawings and specification divisions of other trades and perform the electrical work that will be required for the installations.
- D. Submit in writing to the Engineer details of any proposed changes in or departures from these Contract Documents along with the reasons, therefore. Make no changes or departures without the prior written favorable review of the Engineer.
- E. Maintain a set of as-built drawings on-site that documents changes made to both the Contract Drawings and approved equipment manufacturer shop drawings.

### **1.05 JOB CONDITIONS**

- A. Generator:
  - 1. Contractor shall install standby generator, automatic transfer switches, switchboard as specified in the Contract Documents.
  - 2. Contractor shall disconnect and salvage the existing conduit and wiring as specified on the Drawings for integration of the automatic transfer switches into the existing electrical system. Provide conduit and wiring as specified and terminate per manufacturer installation instructions.
  - 3. Provide wiring and conduit to the standby generator's auxiliary devices (battery charger, heater, etc.) per the Drawings.
- B. Storage:
  - 1. Provide conditioned storage for equipment and materials per manufacturer's requirements that will become part of the completed facility so that it is protected from weather, dust, water, or construction operations.

### **1.06 DAMAGED PRODUCTS**

- A. Notify the Engineer in writing in the event that any equipment or material is damaged.
- B. Obtain prior favorable review by the Engineer before making repairs to damaged products.

### **1.07 MATERIALS**

- A. Provide first quality, new materials, free from defects, and suitable for the intended use and space. Where two or more units of the same class of material are required, provide products of a single manufacturer.
- B. Unless otherwise indicated, provide materials and equipment that are the standard products of manufacturers regularly engaged in the production of such materials and equipment. Provide the manufacturer's latest standard design that conforms to these Specifications.

## **1.08 LOCATIONS**

- A. General: Use equipment, materials, and wiring methods suitable for the types of locations in which they are located, as defined in Paragraph B herein.
- B. Definitions of Types of Locations:
  - 1. Dry Locations: Indoor areas which do not fall within the definitions below for Wet, Damp, Hazardous, or Corrosive Locations and that are not otherwise designated on the Drawings.
  - 2. Wet Locations: Locations exposed to the weather, whether under a roof or not, or designated as Wet Locations by applicable codes and regulations, unless otherwise designated on the Drawings.
  - 3. Damp Locations: Location wholly or partially underground, or having a wall or ceiling forming part of a channel or tank, or designated as Damp Locations by applicable codes and regulations, unless otherwise designated on the Drawings.

## **PART 2 – PRODUCTS**

### **2.01 STANDARD OF QUALITY**

- A. It is the intent of these Specifications and Drawings to secure high quality in materials, workmanship, and equipment in order to facilitate operation and maintenance of the facility. Equipment and materials shall be new and the products of reputable suppliers having adequate experience in the manufacture of these particular items. For uniformity, only one manufacturer will be accepted for each type of product. Equipment shall be designed for the service intended and shall be of rugged construction, of ample strength for stresses that may occur during fabrication, transportation, erection, and continuous or intermittent operation. Equipment shall be adequately stayed, braced, and anchored and shall be installed in a neat and workmanlike manner. Appearance, as well as utility, shall be given consideration in the design of details.
- B. Components and devices installed shall be standard items of industrial grade or better, unless otherwise noted, and shall be of sturdy and durable construction suitable for long, trouble-free service. Light-duty, fragile, and commercial grade devices of doubtful durability shall not be used.

### **2.02 PAINTING AND COATING**

- A. Equipment: Refer to each electrical equipment section of these Specifications for painting and coating requirements of equipment and enclosures. Repair any final finish that has been damaged or is otherwise unsatisfactory using touchup materials approved by the manufacturers, to the satisfaction of the Owner.

## **2.03 MAIN SWITCHBOARD (EXISTING)**

- A. Open switchboard breakers feeding Panel HA, MCC-1, and Transformer T2 and disconnect and salvage load side wiring.
- B. Install conduit and wire from the switchboard breakers to the automatic transfer switches per the Drawings.

## **2.04 NEW EQUIPMENT**

- A. Install the following equipment and their incoming and outgoing conduit and wire per the Contract Documents:
  - 1. Automatic transfer switches ATS-001 and ATS-002.
  - 2. Panel HB.
  - 3. Standby generator GEN-100.

## **PART 3 – EXECUTION**

### **3.01 PERMITTING**

- A. See Section 01 11 00, “Summary of Work,” for permitting requirements.

### **3.02 GENERAL**

- A. Work shall be performed by craftsmen skilled in their trade. Work shall present a neat, finished appearance.
- B. Install equipment in strict accordance with the manufacturer’s instructions unless directed otherwise. Wherever a conflict occurs between manufacturer’s instructions, codes and regulations, or these Contract Documents, follow Engineer’s direction. Keep a copy of manufacturer’s installation instructions on the job site available for review at times.
- C. Schedule all electrical shutdowns with Kitsap County and get Kitsap County approval prior to electrical shutdowns.
  - 1. Electrical shutdowns shall be scheduled during nonoperational hours.
  - 2. Electrical shutdowns shall not interrupt or interfere with OVTS facility operations.
- D. Provide protection for materials and equipment against loss or damage. Protect everything from the effects of weather. Prior to installation, store items in indoor locations. In addition, items subject to corrosion under damp conditions, and items containing insulation, such as transformers, motors, and control, shall be stored in indoor, heated, dry locations.
- E. Following installation, protect materials and equipment from corrosion, physical damage, and the effects of moisture on insulation. Cap conduit runs during construction with manufactured seals. Keep openings in boxes or equipment closed during construction.

- F. Do not cut or notch any structural member or building surface without specific approval of Engineer. Carefully carry out any cutting, channeling, chasing, or drilling of floors, walls, partitions, ceilings, paving, or other surfaces required for the installation, support, or anchorage of conduit, raceways, or other electrical materials and equipment. Following such work, restore surfaces neatly to original condition using skilled craftsmen of the trades involved at no additional cost to the Owner.
- G. Keep the premises free from accumulation of waste material or rubbish. Upon completion of work, remove materials, scraps, and debris from premises and from interior and exterior of devices and equipment. Touch up scratches, scrapes, or chips in interior and exterior surfaces of devices and equipment with finishes matching as nearly as possible the type, color, consistency, and type of surface of the original finish.
- H. Label electrical and control equipment, including electrical switchgear, VFD panels, motor starter panels, generator sets, automatic transfer switches, control panels, equipment within electrical and control panels, disconnect switches, motors, pumps, local control stations, instrument transmitters, analytical controllers.

### **3.03 GROUNDING**

- A. Bond and ground equipment for which a ground connection is required per NEC whether not specifically shown on the Drawings.
- B. Bond and ground compactor equipment per the manufacturer's instructions and as specified on the Drawings and Section 26 05 26.

### **3.04 FIELD TESTS**

- A. Contractor shall field test 480 V power between the installed pieces of equipment. Contractor shall measure phase voltage and phase rotation at the load side of the automatic transfer switches to ensure proper operation of loads.
- B. Contractor shall assist and support the generator and transfer switch manufacturer's field testing and commissioning of the equipment to ensure proper operation and Owner's satisfaction of the electrical connections.
- C. Perform inspection and acceptance testing and submit test reports for the equipment specified in this section and other Division 26 sections.
- D. Give a 1-week notice to the Engineer and Owner prior to any test to permit witnessing the test.
- E. Retesting will be required for unsatisfactory tests after the equipment or system has been repaired. Retest related equipment and systems if required by the Engineer. Repair and retest equipment and systems that have been satisfactorily tested but later fail, until satisfactory performance is obtained.



### **3.05 FINAL CLEANING**

- A. Contractor shall provide final cleaning of electrical equipment and work spaces and work areas.
- B. Contractor shall clean all items worked on under this Contract. Contractor shall leave work areas free of stains, damage, or other defects prior to final acceptance.
  - 1. Cleaning shall include wiping, sweeping, and vacuuming to leave work areas and equipment free of refuse, debris, dust, and moisture.

### **3.06 RECORD DRAWINGS**

- A. Maintain a set of as-built drawings on-site that documents changes made to both the Contract Drawings and approved equipment manufacturer shop drawings.
- B. At the completion of the project, Contractor shall submit a set of as-built drawings which include legible as-built red-lines from the project. Contractor shall submit red-lines to manufacturer's shop drawings.

**END OF SECTION**

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**SECTION 26 05 19**  
**LOW-VOLTAGE WIRE AND CABLE**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Provide low-voltage ( $\leq 600$  volts) wire and cable as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

**1.02 QUALITY ASSURANCE**

- A. Comply with the following requirements:
  - 1. NFPA 70 National Electrical Code (NEC).
  - 2. Local codes and ordinances.

**1.03 SUBMITTALS**

- A. Shop Drawings: Submit product information/data shop drawings for materials in accordance with Section 26 05 11.

**PART 2 – PRODUCTS**

**2.01 GENERAL**

- A. Comply with the following standards:
  - 1. UL 83 for thermoplastic insulated wire and cable.
  - 2. UL 44 for rubber or rubber-like and cross-linked thermosetting polyethylene insulated wire and cable.
- B. Provide copper wire only.
- C. No underground splices allowed unless approved by the Engineer.

**2.02 WIRE AND CABLE IN RACEWAY**

- A. Control Conductors, Lighting, and General-Purpose Receptacles:
  - 1. Insulation: Type THHN rated 600 V.
  - 2. Control conductor wire size: 14 AWG - 10 AWG.

B. Power:

1. Insulation: Type XHHW-2 rated for 600 V.
2. Use stranded wire for all power conductors.
3. Use minimum No. 12 AWG conductors for receptacles and lighting.

**2.03 JOINTS, TAPS, SPLICES, AND TERMINATIONS**

- A. Conductors No. 10 AWG and Smaller: Use twist type insulated wire nut solderless connectors. The twist type insulated wire nut solderless connectors are only allowed for lighting and 120 V receptacles branch circuits.
- B. Conductors No. 8 AWG and Larger: Use solderless compression type connectors that will not loosen under vibration or normal strains.
- C. Control and Instrumentation Conductors: Use crimp-type spade connectors where control wires are connected to screw terminals of equipment.
- D. Joints, Taps, and Splices Located in Enclosures Subject to Moisture: Use watertight splice kits.
  1. Contractor shall obtain written approval for each location where wiring splices are required.
- E. Contractor shall obtain written approval from Owner and Engineering prior to splicing feeder conductors or instrumentation/control wiring.

**2.04 COLOR CODING**

A. General:

1. Multiconductor control cable colors shall be manufacturer's standard.

B. Control Conductors:

1. Provide conductors with a minimum of five unique insulation colors for the installation of control conductors within the same raceway. Do not use brown, orange, and yellow for control conductor insulation colors.

C. Power Conductors:

1. Power conductors shall be color coded in accordance with the following table. For multi-conductor cables colored tape may be applied to the ends to provide the required color code.

Use	Cable	Color
Three-phase, 460/277 V power	Phase A	Brown
	Phase B	Orange
	Phase C	Yellow
	Neutral	Tray
	Ground	Green
Three-phase, 120/208 V power	Phase A	Black
	Phase B	Red
	Phase C	Blue
	Neutral	White
	Ground	Green
Single-phase, 120/240 V power	Line 1	Red
	Line 2	Black
	Neutral	White
	Ground	Green

2. Conductors sized 4 AWG and larger may be black with colored 3/4-inch vinyl plastic tape applied in 3-inch lengths around the cable at each end.
3. Mark the conductor cables at terminations and on cables in pull boxes, handholes, and manholes.
4. Provide identification of the coding scheme at branch circuit distribution equipment in accordance with the requirements of NEC 210.5 and 215.12.

## 2.05 PERMANENT WIRE MARKERS

- A. Provide as specified in Section 26 05 53, "Identification for Electrical Systems."

## PART 3 – EXECUTION

### 3.01 CONTROLS CONDUCTORS

- A. Provide conductors with multiple unique insulation colors for installation of controls conductors within the same raceway.
- B. Equally distribute duplicate insulation colors used in a raceway when the number of required controls conductors is greater than five.
- C. Consult with Owner prior to purchase and installation of controls conductors within raceways to confirm the Owner's requirements.

### 3.02 INSTALLATION

- A. Install wiring and cable as specified in Conduit and Cable Schedules.
- B. Install wiring system in accordance with manufacturer's recommendations.

- C. Install wire and cable in conduit unless otherwise shown on the Drawings.
- D. Maintain barrier, physical separation, or conduit separation between power conductors and instrumentation conductors to avoid magnetic interaction where such conductors enter and pass through same manhole, handhole, casing pipe, box, electrical trough, or enclosure.
- E. Exercise care in pulling wires and cables into conduit or wireways so as to avoid kinking, putting undue stress on the cables, or otherwise abrading them. No grease will be permitted in pulling cables. Only listed pulling compound will be permitted. The raceway construction shall be complete and protected from the weather before cable is pulled into it. Swab conduits before installing cables and exercise care in pulling to avoid damage to conductors.
- F. Cable bending radius shall be per applicable code. Install feeder cables in one continuous length.
- G. Provide an equipment-grounding conductor, whether or not it is shown on the Drawings, inside any flexible conduit or any raceway in which all or any portion of a run consists of nonmetallic duct or conduit. External bonding jumpers are not acceptable.
- H. In panels, bundle incoming wire and cables, No. 6 AWG and smaller; lace at intervals not greater than 6 inches; neatly spread into trees with sufficient length to land on respective terminals. Allow sufficient slack in cables for alterations in terminal connections. Perform lacing with plastic cable ties or linen lacing twine. Where plastic panel wiring duct is provided for cable runs, lacing is not necessary when the cable is properly installed in the duct.
- I. General Contractor shall terminate power conductors, and the Compactor manufacturer shall terminate control and signal wiring.
- J. For cables crossing hinges, utilize extra flexible stranded wire, make up into groups not exceeding 12, and arrange so that there will be protection from chafing and excess flexing when the hinged member is moved.

### **3.03 CONDUCTOR SPLICES AND TERMINATIONS**

- A. Splices:
  - 1. Install conductors without splices unless necessary for installation, as determined by the Owner or Engineer. Splices, when permitted, and terminations shall be in accordance with the splice or termination kit manufacturer's instructions. Splice or terminate wire and cable as follows:
    - a. Watertight Splices: Splices in concrete pull boxes, for any type of cable or wire, shall be watertight. Make splices in low-voltage cables using epoxy resin splicing kits rated for application up to 600 V.

- B. Terminations: Terminate stranded No. 14 wire using crimp-type terminals where not terminated in a box lug-type terminal. Terminals must be coordinated with type of terminal board where provided.

### **3.04 CONDUCTOR IDENTIFICATION**

- A. Install as specified in Section 26 05 53, "Identification for Electrical Systems."

### **3.05 FIXTURE OUTLETS**

- A. Use minimum AWG No. 12 wire for conductors supplying power to single fixture.

### **3.06 FIELD TESTS**

- A. Perform inspection and acceptance testing and submit test reports for the equipment specified in this section and other Division 26 sections.
- B. Give a 2-day notice to the Engineer and Owner prior to any test to permit witnessing the test.
- C. Retesting will be required for all unsatisfactory tests after the equipment or system has been repaired. Retest all related equipment and systems if required by the Engineer. Repair and retest equipment and systems that have been satisfactorily tested but later fail, until satisfactory performance is obtained.
- D. Field Test Report:
  - 1. A field test report shall be prepared and submitted as a single bound submittal package and shall include each test specified in this section and other Division 26 sections. Include separators and tabs, or other means of identification, for each individual test.
  - 2. The test data records shall include the following:
    - a. Identification of the testing technician and organization.
    - b. Equipment identification.
    - c. Description of test method and equipment, including test equipment calibration dates.
    - d. Identification of conditions that may affect the test results such as humidity and temperature.
    - e. Date and time.
    - f. Inspection and test results. For each test, include range of acceptable test values.
    - g. Indication of "as-found" and "as-left" results, as applicable.
    - h. Comments and test summary.

E. Conductor Insulation Test:

1. Perform an insulation resistance test for each conductor with a circuit voltage above 150 V to ground.
2. Test procedure shall conform to NETA ATS.
3. Insulation-resistance test values shall not be less than 50 megohms.

F. Phase Rotation: The phase rotation of all circuits shall be clockwise in sequence. The Contractor shall verify that each three-phase service, feeder, and branch circuits meet this requirement. A record shall be kept at each circuit tested and, on completion, submitted to the Engineer for review.

**END OF SECTION**



**SECTION 26 05 26**  
**GROUNDING AND BONDING FOR ELECTRICAL SYSTEMS**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. This section specifies the system for grounding electrical equipment.

**1.02 REFERENCE STANDARDS**

- A. Referenced Standards: This section incorporates by reference the latest revisions of the following documents. In case of conflict between the requirements of this section and the listed documents, the requirements of the Contract Specifications shall prevail.
  - 1. NFPA 70: National Electric Code (NEC).
  - 2. UL.

**1.03 SUBMITTALS**

- A. Shop Drawings: Submit shop drawings for materials in accordance with Section 26 05 11.
- B. Submit product information/data for material and equipment.

**1.04 QUALITY ASSURANCE**

- A. Source Quality Control: Products shall be listed and labeled by an approved Nationally Recognized Testing Lab (NRTL) such as Underwriter’s Laboratories, Inc. (UL), ETL, or Canadian Standards Association.

**PART 2 – PRODUCTS**

**2.01 GENERAL**

- A. The grounding system shall consist of grounding conductors, ground bus, ground fittings and clamps, and bonding conductors to equipment and structural steel as shown on the Drawings or as required to meet the requirements of the NEC.

**2.02 SYSTEM COMPONENTS**

- A. Ground Conductors:
  - 1. Conductors shall be soft drawn copper.
  - 2. Sizes over No. 6 AWG shall be stranded.
  - 3. Coat ground connections with electrical joint compound, nonpetroleum type, listed for copper and aluminum applications.

4. Provide ground conductors with either green colored insulation or uninsulated bare copper unless noted otherwise in the Contract Documents.
5. If cable sizes are not specified, the minimum sizes shall be as follows:
  - a. 480 V Switchgear: 4/0 AWG
  - b. 480 V MCC, Switchboards, and Transformers: 2/0 AWG
  - c. Lighting Panels: 1/0 AWG
  - d. Exposed Metal: 2 AWG
  - e. Control Panels: 12 AWG

B. Ground Connections:

1. Binding Post Connectors:
  - a. Lugs for attachment of cables to steel enclosures shall be of the binding post type with a 1/2-13 NC stud.
  - b. Each post shall accommodate cables from No. 4 AWG to No. 4/0 AWG.
2. Compression Connectors:
  - a. Material-pure wrought copper extrusions.
  - b. Irreversible compression connection.
  - c. Acceptable Manufacturer:
    - 1) Thomas and Betts.
    - 2) Burndy.
    - 3) Approved equal.
3. Bolted Connectors:
  - a. Acceptable Manufacturer:
    - 1) Burndy.
    - 2) O. Z. Gedney.
    - 3) Approved equal.

C. Ground Rods:

1. Copper covered steel, 3/4-inch diameter and 10 feet long.

2. Rods shall have threaded type removable caps so that extension rods of the same diameter and length may be added where necessary.

D. Junction Box Ground Bar:

1. Equipment grounding terminal bar shall have screw terminals listed for #14 AWG through #4 copper conductors.
2. Ground bar shall be large enough to terminate required number of grounding conductors in junction box.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Ground equipment for which a ground connection is required per NEC whether or not the ground connection is specifically shown on the Drawings.
- B. Prior to making ground connections or bonds, clean metal surface at the point of connection.
- C. Metallic Conduits:
  1. Assembled to provide a continuous ground path and bonded using insulated grounding bushings.
  2. Bond using insulated grounding bushings.
- D. Non-Metallic Conduits: Insulated ground conductor sized in compliance with the NEC.
- E. Grounding Bushings: Connected to the grounding system using conductors sized in compliance with NFPA 70.
- F. Provide a ground wire in every conduit carrying a circuit of over 50 V to ground.

### **3.02 EQUIPMENT AND ENCLOSURE GROUND**

- A. Connect electrical and distribution equipment to the grounding system. Cables sized as specified.
- B. Connect non-electrical equipment with metallic enclosures to the grounding system.

**END OF SECTION**

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**SECTION 26 05 29**  
**HANGERS AND SUPPORTS FOR ELECTRICAL SYSTEMS**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. This section specifies the furnishing of installation of hangers and supports for electrical systems as indicated on the Contract Drawings and herein specified.

**1.02 REFERENCE STANDARDS**

- A. This section incorporates by reference the latest revision of the following documents. These references are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of the listed documents, the requirements of this section shall prevail.
  - 1. ASTM A123: Standard Specification for Zinc Coatings on Iron and Steel.
  - 2. ASTM A193/A193M REV C: Alloy-Steel and Stainless Steel Bolting Materials for High Temperature Service.
  - 3. NFPA 70: National Electrical Code (NEC).

**1.03 SYSTEM DESCRIPTION**

- A. Design Requirements:
  - 1. Contractor shall provide shop drawings depicting raceway supports and seismic bracing.
  - 2. Raceway supporting systems, structures, and elements shall be designed to meet seismic and other building structural requirements and to support the static and dynamic load of the wiring and raceways that they will carry.

**1.04 SUBMITTALS**

- A. As specified in Section 26 05 11, "Basic Electrical Methods and Materials."
- B. Include manufacturer's catalog cuts.
- C. Submit shop drawings for raceway support systems.
- D. Submit attachment details for any new support connections to the existing structure.

## **PART 2 – PRODUCTS**

### **2.01 GENERAL FASTENING AND SUPPORT HARDWARE**

- A. Provide fasteners, anchors, clamps, supports, strut, rod, plates, posts, and brackets made of the following material in the identified area:
  - 1. Electrical Rooms, interior spaces and areas – Hot dipped galvanized.
  - 2. Outdoor areas and spaces where exposed to rain or washdown – PVC-coated RGS.
  - 3. Corrosive and underwater locations, unless otherwise specified, shall be minimum 304 Stainless Steel.
    - a. Bolts: shall be ASTM A193 Grade B8, Class 2 Stainless Steel, AISI 304.
    - b. Nuts: shall be ASTM A194 Grade 8 Stainless Steel, AISI 304.
- B. Expansion shield and tamperproof pin style anchors are not acceptable. Size anchors to meet load requirements. Minimum size anchor bolt is 3/8 inch.
- C. All equipment fasteners and anchors shall be reversible to allow equipment to be removed or replaced.
- D. All conduit supports shall include braces for seismic loadings.

### **2.02 RACEWAY SUPPORTS**

- A. Conduit Supports:
  - 1. Provide strut channel with end caps to support groups of conduits.
  - 2. Individual conduit supports shall be one-hole pipe straps used with clamp backs and nesting backs where required.
- B. Ceiling Hangers:
  - 1. Ceiling hangers shall be adjustable rod hangers as specified. Straps or hangers of plumber's perforated tape are not acceptable.
  - 2. Unless otherwise indicated, hanger rods shall be 1/2-inch all-thread rod and shall meet ASTM A193.
- C. Suspended Raceway Supports (Racks):
  - 1. Suspended raceway supports shall consist of concrete inserts, rod hangers, and jamb nuts supporting strut channel or lay-in pipe hangers as required.
  - 2. Unless otherwise indicated, hanger rods shall be 1/2-inch all-thread rod and shall meet ASTM A193.
  - 3. Brace suspended raceway supports at 30-foot intervals (alternating from one side to the other) to meet specified seismic requirements.

D. Raceway Support for PGRS:

1. PVC-coated conduit shall be supported by PVC-coated supports.
2. Similar support specified in this section, but for use with PVC-coated conduit.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. Treat ferrous metal exposed male threads, cut surfaces, and damaged ends with corrosion-resistant coatings, such as “Crown Premium 7007” prepared by L.H. Dottie or “Zinc-It” prepared by CRC, or equal. Application shall follow manufacturer’s recommendation.
- B. For PVC-coated conduit, use touch-up and repair compound for male threads, cut surfaces, and damaged ends with compound recommended by the PVC-coated conduit manufacturer. Reference product manufacturers such as Perma-cote touch-up compounds, Ocal Touch-up PVC patch, Plasti-Bond PVC coating repair kit, or approved equal.

### **3.02 HANGER AND SUPPORT LOCATIONS**

- A. Locate at least one hanger or support within 2 feet from a conduit change in direction, change in elevation, adjacent to flexible joints and couplings, and where shown on the Drawings.
- B. Locate a vertical conduit support within 1 foot above each floor penetration.
- C. Locate hangers and supports to ensure that connections to equipment, panels, etc., are substantially free from loads transmitted by the conduit.
- D. Conduit supports shall not be placed at a location which will cause interference with the operation of equipment or other items that need to be accessed for regular operation and maintenance of the facility. Do not install conduit supports and hangers in equipment access areas.
- E. Maximum Support Spacing: Support spacing shall be determined by the Design Professional, but in no case shall the maximum spans exceed those listed as follows: Support spacing shall not exceed 4 feet for PVC and any other non-metallic piping systems. Support spacing shall not exceed 6 feet for metal conduit systems unless otherwise approved by the Engineer.

### **3.03 INSTALLATION**

- A. Conduit support hangers, brackets, etc. shall be of suitable capacity and shall be appropriate to the individual structural member used to support the conduit.
- B. Conduit may be supported from the nearest structural element (ceiling, wall) as long as these attachments shall not cause the structural member to exceed the design live load criteria shown on the Drawings.

- C. Do not support any conduit from any piping supports.
- D. Brace hanging conduit against horizontal movement by both longitudinal and lateral sway bracing.
- E. Install lateral supports for seismic loads at all changes in direction and where conduit support does not provide adequate lateral support for tributary seismic loads.
- F. Install hangers and supports to allow controlled thermal and seismic movement of conduit systems, to permit freedom of movement between conduit support anchors, and to facilitate action of expansion joints and similar units.
- G. Install pipe anchors where required to withstand expansion thrust loads and to direct and control thermal expansion.
- H. Repair mounting surfaces to original condition after attachments are made.
- I. Strut System Installation: Arrange for grouping of parallel runs of conduit and support together on field-assembled struts.
- J. Bolted attachments to the building structural steel shall be in accordance with the equipment manufacturer's installation instructions. Unless otherwise indicated, do not drill or burn holes in the building structural steel.
- K. Do not use hanger components for purposes other than that for which they were designed. Do not use them for rigging and erection purposes.
- L. Finishing Hanger and support components in contact with nonmetallic conduit shall be free of burrs and sharp edges.
- M. Prior to grouting, rough finished floor beneath structural attachments and framing channel post bases. Grout between base plate and floor shall be free of voids and foreign material.
- N. Provide plastic or rubber end caps at the exposed ends of all framing channels that are located up to 7 feet above the floor.
- O. Where hangers and supports are exposed to rain and washdown, hangers, supports, conduit, braces, and fittings shall be PVC coated.

**END OF SECTION**



**SECTION 26 05 33**  
**RACEWAY AND BOXES FOR ELECTRICAL SYSTEMS**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Provide raceway and boxes as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

**1.02 QUALITY ASSURANCE**

- A. Comply with the following requirements:
  - 1. NFPA 70 National Electrical Code (NEC).
  - 2. Local codes and ordinances.

**1.03 SUBMITTALS**

- A. Shop Drawings: Submit product information/data shop drawings for materials in accordance with Section 26 05 11.
  - 1. Contractor to submit shop drawing depicting the internal components and spacing along with enclosure sizing for the Terminal Box Enclosure.
  - 2. Shop drawing shall show the routing and path of raceways for the Owner to preapprove prior to construction.

**PART 2 – PRODUCTS**

**2.01 GENERAL**

- A. Provide conduit system of the types of conduit as indicated in the Conduit Usage Schedule in Part 3 of this section.
- B. Provide minimum of 3/4-inch trade size conduit.
- C. Both 90-degree short radius and 90-degree large radius adapter elbows are prohibited.
- D. Provide junction boxes as necessary to facilitate pulling and/or splicing of wires.
- E. All equipment fasteners and anchors shall be reversible to allow equipment to be removed or replaced.

## **2.02 METAL CONDUIT AND FITTINGS**

### **A. Galvanized Rigid Steel Conduit (GRS) and Fittings:**

1. Conduit: Comply with ANSI C80.1 and UL 6 standards.
2. Fittings: Comply with UL 514B and NEMA FB1 and FB2.10 standards.
3. Hot-dip galvanized steel.
4. Couplings shall be threaded type. Setscrew-type and compression-type are not acceptable.
5. Union couplings for conduits shall be the three-piece (Erickson) type. Threadless couplings shall not be used.

### **B. PVC-Coated Rigid Steel Conduit (PGRS) and Fittings:**

1. Conduit: Comply with ANSI C80.1 and UL 6 standards.
2. PGRS shall be hot dipped galvanized rigid steel conduit. The inside and outside, as well as the threads shall be galvanized. A minimum 40-mil-thick PVC coating shall be bonded to the outside of the conduit, and the inside shall be coated with 2-mil urethane. Coating shall be free of pinholes. Bending of conduit shall not damage either the interior or exterior coating. Bond strength shall exceed the tensile strength of the PVC coat. Elbows shall be factory made and coated.
3. Fittings: Similarly coated to the same thickness as the conduit and provided with Type 316 stainless steel hardware. A 2-mil urethane coating shall be applied to the interior and the threads of all fittings and couplings. Conduit and fittings shall be manufactured by the same company.
4. Hubs: Hubs for connection of conduit to junction, device, or terminal boxes shall be threaded and made of zinc or copper free aluminum with a PVC coating bonded to exterior. Hubs shall be galvanized steel and have insulating bushings. The hubs shall utilize a neoprene O-ring and shall provide a watertight connection.
5. Conduit Bodies: Made of zinc or copper-free aluminum with PVC coating bonded to exterior. PVC gaskets.

## **2.03 FLEXIBLE CONDUIT AND FITTINGS**

### **A. Liquid-tight Flexible Metal Conduit and Fittings:**

1. Conduit: Comply with UL 360 standards.
  - a. Galvanized flexible steel core.
  - b. Provide outer liquid-tight, PVC sunlight resistant jacket.
2. Fittings: Comply with UL 514B and NEMA FB1 standards.

B. Liquid-tight Flexible Nonmetallic Conduit and Fittings:

1. Conduit: Comply with UL 1660 standards.
2. Fittings:
  - a. Shall comply with UL 514B and NEMA FB1 standards.
  - b. Shall be Arlington NMLT three-piece connectors.

**2.04 CONDUIT BODIES**

- A. Metallic Conduit Bodies: Comply with ANSI C80.4 and C33.84, and UL 514 standards.
1. Use hot-dipped galvanized or cadmium plated malleable iron, or copper-free aluminum material.
- B. Provide removable cover with gasket and corrosion-resistant screws.
- C. Provide PVC-coated conduit bodies where exposed to rain and washdown.

**2.05 EXPANSION FITTINGS**

- A. Expansion Fittings: Comply with UL 514 standards.
1. Provide copper grounding strap and clamps.
  2. Use Crouse-Hinds Type XJ, or equal.
- B. Expansion/Deflection Fitting:
1. Comply with UL 514 and 467 standards.
  2. Use Crouse-Hinds Type XD, or equal.

**2.06 DRAINS AND BREATHERS**

- A. Automatic Drain-Breather:
1. Use Crouse-Hinds or Appleton Type ECD, or equal.
  2. Use Appleton Type CRN (non-hazardous locations), or equal.
- B. Condensate Drain:
1. Use conduit outlet body, Type T.
    - a. Provide threaded, galvanized plug with 3/16-inch drilled hole through plug.

## 2.07 OUTLET BOXES AND JUNCTION BOXES

- A. All junction boxes shall be NEMA 4X unless specified otherwise on Drawings.
- B. Flush Mounted: Provide hot-dipped galvanized steel boxes and accessories suitable for application and type construction
- C. Surface Mounted: Provide corrosion-resistant single or multiple gang malleable iron Type FS or FD cast boxes with threaded hubs, or pressed steel boxes as permitted under Part 3 of this section.
  - 1. Aluminum FS or FD boxes are not allowed.
- D. Weatherproof Boxes: Provide gasketed covers and corrosion-proof fasteners.
- E. Cast Metal Boxes:
  - 1. Box bodies and cover shall be cast or malleable iron with a minimum wall thickness of 1/8 inch at every point, and not less than 1/4 inch at tapped holes for rigid conduit. Bosses are not acceptable.
  - 2. Mounting lugs shall be provided at the back or bottom corners of the body.
  - 3. Covers shall be secured to the box body with No. 6 or larger brass or bronze flathead screws.
  - 4. Boxes shall be provided with neoprene cover gaskets.
  - 5. Where only cast aluminum is available for certain types of fixture boxes, an epoxy finish shall be provided.
  - 6. Outlet boxes shall be of the FS types. Boxes shall conform to FS W-C-586C, UL 514A, and UL 514C.
- F. Pull Boxes and Junction Boxes:
  - 1. Boxes shall be fabricated from carbon steel per UL 50 with the following exception:
    - a. Boxes in corrosive areas shall be NEMA 4X.
    - b. Boxes specified in Drawings as NEMA 4X.
  - 2. Boxes shall be welded construction with seams or joints closed and reinforced.
  - 3. Galvanized boxes damaged during construction shall have shall be galvanized after construction.
  - 4. Boxes intended for outdoor use shall be cast metal with threaded hubs and neoprene gasketed covers. Cover retention shall be by corrosion-resistant stainless steel screws.
  - 5. Boxes for wiring operating at 601 Volts or higher shall be pad-lockable.

6. Boxes and cabinets shall be securely fastened to building structural members so as to prevent movement in any direction. Boxes shall not be supported by lighting fixtures, suspended ceiling support wires, or freely hanging rods.
  - a. Covers of boxes and cabinets mounted in horizontal plane (top or bottom) either shall weigh not more than 40 pounds or shall require not more than 40 pounds of force to open or close.
  - b. Covers of boxes and cabinets mounted in vertical plane (front, back, sides) either shall weigh not more than 60 pounds or shall require not more than 60 pounds of force to open or close. Covers over 30 pounds shall be furnished with angle support at bottom to carry weight of cover for assembly.
  - c. Covers of boxes and cabinets weighing more than 30 pounds shall be provided with lifting handles or some means of grasping other than edges.

G. Terminal Box Enclosures:

1. Provide enclosure for terminal box as follows:
  - a. NEMA 4X rated enclosure fabricated from 14-gauge type 304 stainless steel with welded seams ground smooth.
  - b. Body and door stiffeners for added rigidity.
  - c. Continuous hinged door with gasket seal.
  - d. Rolled lip around three sides of door and all sides of enclosure opening to exclude liquids and contaminants.
  - e. External door clamps.
  - f. Door sealed with polyurethane gasket.
  - g. Collar studs for mounting back panel.
  - h. External mounting feet.
  - i. Grounding provisions provided including stud located on door.
  - j. Enclosures size as shown on Drawing.
  - k. Back panel type 304 stainless steel.
  - l. Provide Aluminum DIN Rail Mounts for Terminal Blocks.

H. Terminal Blocks:

1. Provide terminal blocks for terminal box as follows:
  - a. Feed through terminal blocks, DIN Rail mounted.
  - b. Rating: 600 V, 30 A.

- c. UL Listed.
- d. Wire Size: 22-10 AWG.
- e. Provide perforated jumper bar as follows:
  - 1) Current rating 32 A.
  - 2) Perforated jumper bar rated for use terminal block.
  - 3) Cut to length.
  - 4) Provide subassembly screw and post.
- f. Provide Separator, End Sections, and End Stops as required.
- g. Acceptable Manufacturers:
  - 1) ABB Catalog number 0115 116.07.
  - 2) Or preapproved equal.

## **2.08 WIREWAYS, GUTTERS, AND TROUGHS**

- 1. Provide wireway, gutter, or trough as follows:
  - a. NEMA 3R-rated enclosure fabricated from 16- or 14-gauge galvanized steel.
  - b. Finish shall be unpainted galvanized steel.
  - c. Drip-shield top cover sides, front, and back.
  - d. Removeable cover.
  - e. Embossed mounting holes on the back of the enclosure.
  - f. No gasketing or knockouts.
  - g. UL listed.
- 2. Contractor shall determine size for the application and in compliance with NEC.

## **2.09 PULL BOXES AND SPECIAL PURPOSE OUTLET BOXES**

- A. Provide pull boxes with covers held in place by corrosion-resistant machine screws, and of type or NEMA rating suitable for installation location. Outdoor locations shall be NEMA 3R.
- B. Provide special purpose outlet boxes furnished with fixtures and devices where standard outlets are not applicable.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION – RACEWAY**

- A. Install conduit and fittings in accordance with manufacturer's recommendations.
- B. Run exposed conduits parallel to or at right angles with lines of building or structure.
- C. Route conduit runs above suspended panel ceilings so as not to interfere with panel removals.
- D. Keep conduit plugged, clean, and dry during construction.
- E. Install expansion fittings in the following locations:
  - 1. Conduit runs crossing structural expansion joint.
  - 2. Conduit runs attached to two separate structures.
  - 3. Conduit runs where movement perpendicular to axis of conduit may be encountered.
- F. Conduit runs extending through areas of different temperature or atmospheric conditions, or partly indoors and partly outdoors must be sealed, drained, and installed in a manner preventing drainage of condensed or entrapped moisture into cabinets, boxes, fixtures, motors, or equipment enclosures. The wall, ceiling and/or floor penetrations associated with these conduit runs shall be sealed using a link-seal or equivalent sealing method approved by the Engineer.
- G. Install bushings with ground lugs and integral plastic linings at equipment with open-bottom conduit entrances.
- H. Exterior Underground Conduit: Provide conduits or ducts terminating below grade with means to prevent entry of dirt or moisture.
- I. Flexible conduit shall be limited to 36 inches in length and used for vibration isolation or where equipment requires flexible connections.
- J. PVC-Coated Installation:
  - 1. PVC-coated conduits, fittings, and support shall be used where exposed to rain or washdown areas.
  - 2. PVC-coated conduit shall be supported away from the structure using PVC-coated conduit wall hangers.
  - 3. All conduit threads shall be covered by a plastic overlap which shall be coated and sealed per manufacturer's recommendations.
  - 4. Plastic-coated conduit shall be made tight with special wrenches and fittings designed for tightening PVC-coated conduit.

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

### **3.02 INSTALLATION – BOXES**

- A. Install boxes in accordance with manufacturer's recommendations.
- B. Use weatherproof boxes for interior and exterior locations exposed to weather or moisture.
- C. Do not install boxes back to back or through wall. Off set outlet boxes on opposite sides of wall minimum 12 inches.
- D. Thoroughly clean boxes prior to installing wiring devices.
- E. Maintain minimum 4-inch separation between exposed power wires and control/instrumentation wires inside electrical handholes.
- F. Provide wall mounted supports for exposed control/instrumentation wires and cables in electrical handholes as shown on the Drawings. Maintain a physical separation, minimum 1 inch, when installed in concrete.
- G. Provide wireways or troughs at locations that application and connections to the equipment. Installation shall be in accordance with the NEC.

### **3.03 RESTRICTIONS**

- A. Cross high temperature piping or ducts with 12-inch clearance.
- B. Do not route conduit over boiler, incinerator, or other high temperature equipment, piping, or ducts.
- C. Do not route exposed conduit below and parallel to, or adjacent to water piping.
- D. Do not splice power wires or control/instrumentation wires/cables in electrical handholes, except where otherwise permitted on Drawings.
- E. Do not cut into pretension cables within the existing exterior building walls.

### **3.04 EXISTING CONDUIT**

- A. The Drawings do not show the location of existing conduit as indicated by available existing records. The proposed work may require crossing, relocating, and, in some cases, connecting to the existing conduits.



- B. Expose carefully the existing conduits throughout the area of proposed work.
  - 1. Existing conduits to remain undisturbed and in uninterrupted use until such time as a change is approved by the Engineer.
- C. Where the conduits are to cross or be connected to existing conduit, make a field check to determine whether any conflict will be encountered in laying the new conduit.
  - 1. Adjust the location of new conduits, if necessary, as authorized by the Engineer, to avoid conflict with existing conduits.
- D. Where new conduits are to connect to existing conduits, provide fittings required to complete the connection, and do the work as expeditiously and carefully as possible.
  - 1. Inspect and clean existing conduit prior to installing new wire.
- E. Remove and replace existing conduits, fittings, boxes, and appurtenances as shown on the Drawings.
  - 1. Do not remove and replace existing items shown to remain unless approved by the Engineer.
- F. Provide threaded plugs for abandoned conduits. Provide threaded plugs both ends of conduit.

### **3.05 CONDUIT USAGE SCHEDULE**

- A. Install GRS in the following locations unless otherwise shown on the Drawings:
  - 1. Interior and areas not exposed to rain or washdown.
- B. Install PGRS in the following location unless otherwise shown on the Drawings:
  - 1. Exterior and areas exposed to rain or washdown.
- C. Install liquid-tight flexible conduit and fittings for connections to motors, instrumentation, and equipment subject to vibration and at locations shown on the Drawings.
  - 1. For corrosive or outdoor environments, install liquid-tight flexible nonmetallic conduit and fittings.
  - 2. Liquid-tight flexible nonmetallic conduit to be no greater than 36 inches in length in any situation unless prior written approval is provided by the Owner or Engineer.

### **3.06 EXPOSED OUTLET AND JUNCTION BOXES**

- A. Use cast boxes unless noted otherwise on the Drawings.
- B. Install weatherproof outlet, switch, and junction boxes outdoors and in any area where Drawings show weatherproof (WP) wiring devices.

### **3.07 INSTALLATION**

#### **A. Junction Boxes and Pull Boxes:**

1. Boxes shall be installed where required and where indicated on the Drawings.
2. Boxes shall be readily accessible.
3. Boxes shall not be installed in finished areas.
4. Pull boxes shall be provided at least every 150 feet on long, straight conduit runs. Spacing shall be reduced by 50 feet for each 90-degree bend.
5. Box dimensions shall be in accordance with size and quantity of conductors and conduits entering and leaving box per NEC Article 370 requirements.

**END OF SECTION**

**SECTION 26 05 53**  
**IDENTIFICATION FOR ELECTRICAL SYSTEMS**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. This section specifies products and procedures used to identify electrical system equipment and components.

**1.02 REFERENCE STANDARDS**

- A. None.

**1.03 SUBMITTALS**

- A. As specified in Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Submit under one submittal the following items:
  - 1. Nameplate Schedules.
  - 2. Raceway/Conduit Schedules.
  - 3. Wire Marker Schedules.
- C. Provide two physical samples for each marker, tag, or nameplate type per submittal.

**PART 2 – PRODUCTS**

**2.01 EQUIPMENT NAMEPLATES**

- A. Provide nameplates on equipment.
- B. Panel Nameplates: For equipment such as switchboards, panelboards, panels, motor starters, control panels, electrical equipment enclosures, disconnect switches, motors, and pumps, and other electrical items requiring nameplates shall be:
  - 1. Located on the enclosure face.
  - 2. Rectangular screw-on type with self-tapping 316 stainless steel screws.
  - 3. Laminated engraving plastic nameplate.
    - a. White letters on black backgrounds.
    - b. 2.25-inch-tall.
    - c. Length as required.

- d. 1/16-inch thick.
- e. UV and scratch resistant.
- 4. Lettering: 1/4-inch-high lettering for equipment name and tag number.
- 5. Nameplate text shall include:
  - a. Line 1: Asset number (e.g., "PANEL HB").
  - b. Line 2: Descriptive tag (e.g., "STANDBY GENERATOR PANEL").
  - c. Line 3: Voltage (e.g., "480 volts").
- C. Nameplate schedule shall be included with equipment submittals.

## **2.02 PERMANENT WIRE MARKERS**

- A. Wire markers shall be heat shrink type (Raychem, T&B, or equal), or self-laminating where conductors are not spliced or terminated. Wire numbers shall be permanently imprinted on the markers.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. Label electrical and control equipment associated within scope of work.
- B. In addition to Equipment Tag on the Backup Switchboard, provide labels for switchboard feeders that identify location/equipment tag of 480 V loads. Label spare switchboard breakers as such.
- C. Provide equipment nameplate/label with equipment ID tag for the following equipment:
  - 1. Generator "GEN-100".
  - 2. Automatic Transfer Switch "ATS-001"
  - 3. Automatic Transfer Switch "ATS-002"
  - 4. Panelboard "PANEL HB"
- D. Clean surface of dirt, grease, debris, containments prior to applying nameplate/label.
  - 1. Apply isopropyl alcohol (i.e., rubbing alcohol) to a clean cloth prior to cleaning the surface of dirt, grease, and debris.
  - 2. Ensure surface is clean and dry prior to applying nameplate/label.
- E. Update panelboard circuit directory or branch circuit label identifications with equipment identifiers.

### **3.02 LOW-VOLTAGE WIRE AND CABLE IDENTIFICATION**

- A. Except for interior lighting and receptacle circuits, identify each wire or cable at each termination and in each pull box, junction box, handhole, and manhole using numbered and lettered wire markers. Electrically common conductors shall have the same number. Each electrically different conductor shall be uniquely numbered. Identify panelboard circuits using the panelboard identification and circuit number. Identify motor control circuits using the equipment identification number assigned to the control unit by the motor control center manufacturer and the motor control unit terminal number. Identify other circuits as shown in the circuit schedule or as favorably reviewed by the Engineer.
- B. Conductors between terminals of different numbers shall have both terminal numbers shown at each conductor end. The terminal number closest to the end of the wire shall be the same as the terminal number.
- C. Provide schedule identifying various power and lighting conductors from power source to equipment or device served.
- D. Color Coding:
  - 1. Provide color coding for circuit conductors. Conductors No. 6 and smaller shall be of appropriate color for the entire length. Insulation color shall be green for grounding conductors. Current carrying conductor colors shall be as follows:
    - a. 480Y/277 V, Three-Phase, Power: (A) Brown, (B) Orange, (C) Yellow, and (N) Grey.
    - b. 208Y/120 V, Three-Phase, Power: (A) Black, (B) Red, and (C) Blue, and (N) White.
    - c. 240/120 V, Three-Phase, Power: (A) Black, (B) Orange, and (C) Blue, and (N) White.
    - d. 120/240 V, Single-Phase, Power: (A) Black and (B) Red, and (N) White.
    - e. 120 V, Control: Multi-color.
  - 2. Provide appropriate color coding electrical tape at terminations on conductors without continuous color coded insulation. Conductor colors shall be as listed above.

### **3.03 SIGNAL CABLE IDENTIFICATION**

- A. Identify each wire or cable at each termination, in each pull box, and in each handhole using numbered and lettered wire markers. Electrically common conductors shall have the same number. Each electrically different conductor shall be uniquely numbered. Identify panelboard circuits using the panelboard identification and circuit number. Identify motor control circuits using the equipment identification number assigned to the control unit by

the motor control center manufacturer and the motor control unit terminal number. Identify other circuits as shown in the circuit schedule or as favorably reviewed by the Engineer.

- B. Conductors between terminals of different numbers shall have both terminal numbers shown at each conductor end. The terminal number closest to the end of the wire shall be the same as the terminal number.

**END OF SECTION**

**SECTION 26 05 73**  
**SHORT CIRCUIT, COORDINATION, AND ARC FLASH REPORT**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. Provide the services of a recognized independent testing laboratory or coordination analysis consultant (Consultant) to provide the following power study reports:
  - 1. Short Circuit Report.
  - 2. Protective Device Coordination Report.
  - 3. Arc Flash Report.
- B. The work of the following sections is related to the work of this section. Other sections, not referenced below, may also be related to the proper performance of this work. It is the Contractor's responsibility to perform all the work required by the Contract Documents.
  - 1. Section 26 05 11, "Basic Electrical Methods and Materials."

**1.02 REFERENCE STANDARDS**

- A. Institute of Electrical and Electronic Engineers (IEEE) Publications:
  - 1. IEEE 141 – Recommended Practice for Electric Power Distribution for Industrial Plants.
  - 2. IEEE 242 – Recommended Practice for Protection and Coordination of Industrial and Commercial Power Systems.
  - 3. IEEE 1584 – IEEE Guide for Performing Arc-Flash Hazard Calculations.
  - 4. NFPA 70 – National Electric Code.
  - 5. NFPA 70E – Standard for Electrical Safety Requirements for Employee Workplaces.
  - 6. OSHA 29-CFR – Occupational Safety and Health Standards: Electrical Part 1910 Subpart S.

**1.03 SUBMITTALS**

- A. Procedures: As specified in 26 05 11, "Basic Electrical Methods and Materials."

- B. Schedule:
  - 1. Submit Short Circuit, Coordination, and Arc Flash Reports with equipment submittals.
  - 2. Approved report required prior to energizing equipment.
  - 3. Provide and install arc flash labels prior to commissioning.
- C. Submit the name and the qualifications of the laboratory or consultant for review by the Engineer. Qualifications must include professional registration of proposed personnel as electrical engineers.
- D. Certified Short Circuit, Coordination, and Arc Flash Reports:
  - 1. Preliminary Power Study Report:
    - a. Protective devices trip settings.
  - 2. Final Power Study Report:
    - a. Arc flash warning labels.
    - b. Protective devices trip settings.
    - c. Two paper copies of the of the Short Circuit, Coordination, and Arc Flash Report.
    - d. An electronic copy of the Short Circuit, Coordination, and Arc Flash Report in pdf format.
- E. Electronic copy of model, settings, and report:
  - 1. Electronic copy shall be a copy of the software format used to product the Short Circuit, Coordination, Arc Flash Report.

#### **1.04 QUALITY ASSURANCE**

- A. Qualifications:
  - 1. Prepared by recognized independent testing laboratory or coordination analysis consultant who is regularly engaged in power system studies.
- B. Consultant Certification: Short Circuit, Coordination, and Arc Flash Reports to be stamped and signed by an electrical engineer registered in the State of Washington.



## **1.05 ENGINEERING SOFTWARE**

- A. Software used to perform the following power system study shall be SKM Systems Analysis, Inc.:
  - 1. Short Circuit Report.
  - 2. Protective Device Coordination Report.
  - 3. Arc Flash Report.

## **PART 2 – PRODUCTS**

### **2.01 SHORT CIRCUIT, COORDINATION, AND ARC FLASH REPORTS**

- A. Scope of Effort:
  - 1. Perform the studies using actual equipment data.
  - 2. The reports shall include available fault current and protection (fuse) information from Electrical Utility. Contact the Electrical Utility for this information.
  - 3. For the Olympic View Transfer Station, the reports shall include all equipment shown on the one-line diagrams, including but not limited to, the following major components:
    - a. The Short Circuit, Coordination, Arc Flash modeling shall include the utility service entrance, and the equipment listed as follows:
      - a) Switchboard SWBD-MSB
      - b) Automatic transfer switch ATS-001
      - c) Automatic transfer switch ATS-002
      - d) Panelboard “Panel HB”
      - e) Panelboard “Panel HA”
      - f) Motor control center MCC-1
- B. Coordination Objective:
  - 1. The protective device on the line side closest to the fault or abnormal conditions shall isolate the problem portion of the system and minimize damage in that portion. The rest of the system shall be maintained in normal service. The coordination shall be in conformance with the recommendations of latest IEEE Standard 242.
  - 2. Use the circuit breaker manufacturer’s selective coordination tables to determine coordination in the instantaneous trip region.

C. Report Submittals:

1. Submit the analysis, which shall include impedance and short-circuit calculations, list of any assumptions made in the analysis, the recommended settings of the protective devices, and the system time/current characteristic curves. The submittal shall be made to allow time for review and resubmittal, if necessary, before the implementation of final settings and adjustments by the testing laboratory.
2. Short Circuit Report: As a minimum, include the following in the report:
  - a. Equipment manufacturer's information used to prepare the study.
  - b. Assumptions made during the study.
  - c. Short circuit calculations listing short circuit levels at each bus.
  - d. Evaluation of the electrical power system and the model numbers and settings of the protective devices associated with the system.
  - e. Time-current curves including the instrument transformer ratios, model numbers of the protective relays, and the relay settings associated with each breaker.
  - f. Comparison of short circuit duties of each bus to the interrupting capacity of the equipment connected to that bus.
3. Protective Device Coordination Report: As a minimum, include the following on 5-cycle, log-log graph paper:
  - a. Time-current curve for each protective relay or fuse showing graphically that the settings will allow protection and selectively within Industry standards. Identify each curve and specify the tap and time dial setting.
  - b. Time-current curves for each device to be positioned for maximum selectivity to minimize system disturbances during fault clearing. Where selectivity cannot be achieved, notify the Project Representative as to the cause.
  - c. Time-current curves and points for cable and equipment damage.
  - d. Circuit interrupting, device operating, and interrupting times.
  - e. Indicate maximum fault values on the graph.
  - f. Sketch of bus and breaker arrangement.
4. Arc Flash Report: As a minimum, include the following in the report:
  - a. Equipment manufacturer's information used to prepare the study.
  - b. Assumptions made during the study.
  - c. Reduced copy of the one line drawing.

- d. Arc flash evaluations summary spreadsheet including:
  - 1) Bus name.
  - 2) Upstream protective device name, type, settings.
  - 3) Bus line to line voltage.
  - 4) Bus bolted fault.
  - 5) Protective device bolted fault current.
  - 6) Arcing fault current.
  - 7) Protective device trip/delay time.
  - 8) Breaker opening time.
  - 9) Solidly grounded column.
  - 10) Equipment type.
  - 11) Gap.
  - 12) Arc flash boundary.
  - 13) Working distance.
  - 14) Incident energy.
  - 15) Required protective fire rated clothing type and class.
- e. Bus detail sheets.
- f. Arc flash warning labels printed in color on adhesive-backed labels:
  - 1) Arc flash warning labels are to be produced and attached to each piece of electrical equipment included in the scope of these reports.
  - 2) These labels must indicate approach boundaries, incident energy level, and the minimum PPE that is required when servicing the equipment within the arc flash boundary.
  - 3) Labels shall be installed by Contractor on associated equipment per the direction of the Consultant preparing the report.

## **PART 3 – EXECUTION**

### **3.01 GENERAL**

- A. Perform the power study report in accordance with:
  - 1. IEEE Standards 141, 242, and 1584.
  - 2. NFPA 70E.
  - 3. OSHA 29-CFR, Part 1910 Subpart S.
- B. Perform the power studies using actual equipment data.
- C. Provide on-site labor to collect field information and verify record information to prepare the reports.

### **3.02 PRELIMINARY AND FINAL POWER STUDY REPORTS**

- A. Contractor shall provide preliminary power study report:
  - 1. Preliminary power study report shall be provided prior to the energizing of equipment and electrical power circuits.
  - 2. Preliminary power study report shall provide trip settings to protect equipment and personnel during equipment installation, functional testing, and commissioning.
- B. Contractor shall provide final power study report:
  - 1. Final power study report shall be provided after the completion of the project construction.
  - 2. Final power study report shall include equipment in the model which matches the final installed equipment and incorporate changes made during construction.
- C. Contractor shall provide arc flash warning labels for equipment.

### **3.03 CONFIRM EXISTING CONDITIONS**

- A. Owner will provide available record information as requested by the Consultant/Contractor.
- B. Consultant preparing the report is responsible to field verify record information and collect additional information for performing the study. Provide a minimum of one 8-hour day to perform this field work.

**END OF SECTION**

**SECTION 26 24 16**  
**PANELBOARDS**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. This section specifies low-voltage electrical panelboards with circuit breakers as specified in this section and on the Drawings.

**1.02 QUALITY ASSURANCE**

- A. Comply with the following requirements:
1. Federal Specifications W-P-115C.
  2. NEMA PB1.
  3. NFPA 70 National Electrical Code (NEC).
  4. UL 50 – Cabinets and boxes.
  5. UL 67 – Panelboards.
  6. UL 98 – Fusible Switches.
  7. NETA ATS – International Electrical Testing Association Acceptance Testing Specifications.
  8. Local codes and ordinances.

**1.03 SUBMITTALS**

- A. Shop Drawings:
1. Submit product information/data shop drawings for materials in accordance with Section 26 05 11.
  2. Provide the following information for each panelboard:
    - a. Manufacturer cut sheets (product data sheet).
    - b. Panelboard type.
    - c. Main bus and terminal connection sizes.
    - d. Location of line connections.
    - e. Cabinet dimensions.

- f. Gutter space.
- g. Gauge of boxes and fronts.
- h. Finish data.
- i. Voltage and amp ratings.
- j. Panel schedule including breaker or fuse types, trip ratings, and interrupting ratings.
- k. Cable terminal sizes.
- l. Seismic Certification and equipment anchoring details.
- m. Factory Test Plan.
- n. Field Test Plan.
- o. Certified production test reports.
- p. Field Test Reports: Indicate test results compared with specified performance requirements and provide justification and resolution of differences if values do not agree.

#### **1.04 SEISMIC ANCHORAGE AND STRUCTURAL DATA**

- A. Mechanical instrumentation and control, electrical, nonstructural systems, components, and elements permanently attached to the structure shall be anchored and braced to resist seismic forces. Contractor shall design the structural components, seismic attachment, braces, and anchors to the structure for all parts or elements of the mechanical and electrical systems in accordance with Section 13 05 41.

#### **1.05 WARRANTY**

- A. In addition to the warranty specified in Division 1, the manufacturer's warranty to Owner shall in no event be for a period of less than 2 years starting from when the equipment and installation are substantially complete.
- B. Warranty shall include repair parts, labor, and travel expenses.

#### **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with pertinent provisions of Division 1 and manufacturer's requirements.

## **PART 2 – PRODUCTS**

### **2.01 PANELBOARDS**

#### **A. General:**

1. Panelboards shall be the automatic-circuit-breaker type as indicated on the Drawings unless otherwise specified. The number and arrangement of circuits, trip ratings, spares, and blank spaces for future circuit breakers or fuses shall be as shown on the Drawings.
2. Each panelboard shall have a nameplate as specified in Section 26 05 53 and giving the panel identification as shown on the Drawings.
  - a. In addition, each panelboard shall have a manufacturer's nameplate showing the voltage, bus rating, number of phases and wires, frequency, and manufactured month/year date.
3. For panelboards used in dry locations, finish of doors and trim shall be ANSI 61 or 49, in accordance with ANSI Z55.1. Boxes of such panelboards shall be galvanized and finished to match the fronts.
4. Where specified, panelboards enclosures shall be as follows:
  - a. NEMA 12 in environmentally controlled spaces such as electrical rooms.
  - b. NEMA 3R everywhere else.
5. Panelboards and enclosures shall conform to NEMA PB1 and 250, UL 50, and requirements of relevant codes. Panelboards used as service equipment shall conform to UL 869A, and panelboard shall be UL labeled.
6. Circuit breakers shall be bolt-on type, heavy duty, quick make, quick break, single- and multi-pole circuit breakers of types specified herein; shall be provided for each circuit with toggle handles that indicate when unit has tripped.

#### **B. Construction:**

1. Interiors shall be completely factory assembled. They shall be designed such that switching and protective devices can be replaced without disturbing adjacent units and without removing the main bus connectors.
2. Trims for branch circuit panelboards shall be supplied with a hinged door over all circuit breaker handles. Doors in panelboard trims shall not uncover any live parts. Doors shall have a cylinder lock and catch assembly. Door-in-door trim shall be provided. Both hinged trim and trim door shall utilize three-point latching. No tools shall be required to install or remove trim. Trim shall be equipped with a door-actuated trim locking tab. Equip locking tab with provision for a screw such that removal of trim requires a tool, at the Owner's option. Installation shall be tamper resistant with no exposed hardware on the panelboard trim.

3. Distribution panelboard trims shall cover all live parts. Switching device handles shall be accessible.
4. Surface trims shall be same height and width as box. Flush trims shall overlap the box by 3/4 of an inch on all sides.
5. A directory card with a clear plastic cover shall be supplied and mounted on the inside of each door.
6. All panelboard cylinder locks shall be keyed alike.

C. Bus:

1. Main bus bars shall be tin-plated copper sized in accordance with UL standards to limit temperature rise on any current carrying part to a maximum of 65 degrees C above an ambient of 40 degrees C maximum.
2. A system ground bus shall be included in all panels. Ground bus shall be copper.
3. Full-size (100 percent-rated) insulated stand-off neutral bus shall be included for panelboards shown with neutral. Bus bar taps for panels with single-pole branches shall be arranged for sequence phasing of the branch circuit devices. Neutral busing shall have a suitable lug for each outgoing feeder requiring a neutral connection. Two Hundred percent-rated neutrals shall be supplied for panels designated on Drawings with oversized neutral conductors. Neutral bus bar shall be copper.

D. Distribution Panelboards – Circuit Breaker Type:

1. Distribution panelboards shall be rated 480Y/277 V, four-wire, with bus ratings as shown on the Drawings. Main circuit breaker and branch circuit breakers shall have minimum interrupting ratings of 65,000 rms symmetrical amperes at 480 V unless otherwise specified on Drawings. Series rated interruption rating shall not be used.
2. Provide permanently installed lockout means for each individual circuit breaker handle for lockout/tagout procedures.
3. Current ratings, configuration of poles, and number of circuits shall be indicated on associated Drawings.

E. Lighting Panelboards – Circuit Breaker Type:

1. Lighting Panelboards shall be rated 208Y/120 V, 240Y/120 V, or 120/240 V, four-wire or three-wire, and bus ratings as shown on the Drawings. They shall meet Main and branch circuit breakers shall have a minimum interrupting rating of 22,000 rms symmetrical amperes at 240 V unless otherwise specified on Drawings. Series rated interruption rating shall not be used;
2. Provide permanently installed lockout means for each individual circuit breaker handle for lockout/tagout procedures.



3. Current ratings, configuration of poles and number of circuits shall be indicated on associated Drawings.
  4. Enclosure:
    - a. Enclosures shall be:
      - 1) Unless enclosure type is noted on the Drawing, the enclosure type shall be as follows:
        - a) NEMA 1 when mounted inside electrical rooms.
        - b) NEMA 3R when mounted outdoors in non-corrosive areas.
        - c) NEMA 4X when mounted in corrosive or process areas.
      - 2) Surface mounted.
      - 3) Secured by means of a padlock when specified on the Drawings.
    - b. Boxes shall be a nominal 20 inches wide and 5-3/4 inches deep with wire bending space per the NEC. At least four interior mounting studs with adjustable nuts shall be provided.
    - c. Panelboard trim shall be supplied with lockable door-in-door type trim covering all disconnect handles. All lock assemblies shall be keyed alike.
    - d. Panelboard trim shall be dead-front construction covering all energized parts.
- F. Acceptable Manufacturers:
1. Square D.
  2. Eaton.
  3. Or approved equal.

## **PART 3 – EXECUTION**

### **3.01 FACTORY TESTING**

- A. The standard factory tests shall be performed on the equipment provided under this section. All tests shall be in accordance with the latest version of ANSI, NEMA, and UL standards.
- B. The manufacturer shall submit three (3) certified copies of factory test reports.

### **3.02 MANUFACTURER'S CERTIFICATION**

- A. A certified test report of all standard production tests shall be submitted.

### **3.03 INSTALLATION**

- A. The Contractor shall install all equipment per the manufacturer's instructions, as indicated on the Drawings and in accordance with the NEC.
- B. Seismic anchorage and bracing as specified in Section 13 05 41.
- C. A directory card shall be typed completed, identifying every circuit. Handwritten not acceptable.

### **3.04 MOUNTING HEIGHTS**

- A. Lighting and distribution panelboards shall be mounted with the top of the box 6 feet 6 inches above the floor. Panelboards shall be plumb within 1/8 inch. The highest breaker operating handle shall not be higher than 72 inches above the floor.

### **3.05 FIELD ADJUSTMENTS**

- A. Necessary field settings of devices, adjustments, and minor modifications to equipment to accomplish conformance with an approved short circuit and protective device coordination study shall be carried out by the Contractor at no additional cost to the Owner.

### **3.06 FIELD TESTS**

- A. Contractor shall perform manufacturer-submitted Field Test Plan.
- B. Contractor shall perform Visual and Mechanical Inspection as specified in NETA ATS – Section 7.5 for switches and Section 7.6 for molded case circuit breakers.
- C. Contractor shall include the following inspections and related work:
  - 1. Inspect for defects and physical damage, labeling, and nameplate compliance with requirements of up-to-date Drawings and panelboard schedules.
  - 2. Exercise and perform operational tests of all mechanical components and other operable devices in accordance with manufacturer's instruction manual.
  - 3. Check panelboard mounting, area clearances, and alignment and fit of components.
  - 4. Check tightness of bolted electrical connections with calibrated torque wrench. Refer to manufacturer's instructions for proper torque values.
- D. Insulation-Resistance Tests: Perform insulation-resistance tests on circuits to be energized with a line-to-neutral voltage of 120 V or more. Make these tests after equipment has been connected, except that equipment that may be damaged by the test voltage shall not be connected. Test the insulation with a 500 Vdc insulation-resistance

tester with a scale reading 100 megohms. The insulation resistance shall be 20 megohms or more. Submit results for review.

- E. Continuity: Panelboard circuits shall be tested for continuity prior to energizing. Continuity tests shall be conducted using a dc device with a bell or buzzer.

**END OF SECTION**

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**SECTION 26 28 00**  
**LOW-VOLTAGE CIRCUIT PROTECTIVE DEVICES**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Provide overcurrent protective devices as shown on the Drawings, as specified herein, and as needed for a complete and proper installation.

**1.02 SUBMITTALS**

- A. Submit shop drawings in compliance with pertinent provisions of Section 01 33 00.
- B. Submit product data with electrical ratings, physical size, interrupt ratings, trip curves, I<sup>2</sup>t curves, conductor lug size, and manufacturer's detailed specifications.

**1.03 QUALITY ASSURANCE**

- A. Comply with the following requirements:
  - 1. NFPA 70 National Electrical Code (NEC).
  - 2. Local codes and ordinances.
  - 3. Provide overcurrent protective devices by same manufacturer for each type of device.

**1.04 DELIVERY, STORAGE, AND HANDLING**

- A. Comply with pertinent provisions of Division 1.

**1.05 WARRANTY**

- A. In addition to the Warranty specified in Division 1, the manufacturer's warranty to Owner shall in no event be for a period of less than 1 year starting from when the equipment and installation are substantially complete.
- B. Warranty shall include repair parts, labor, and travel expenses.

**PART 2 – PRODUCTS**

**2.01 FUSES**

- A. General purpose fuses for protection of motors, transformers, feeders, and main service:
  - 1. Use UL Class RK-1 Fuses:
    - a. Single end rejection or to fit mountings specified.
    - b. 0 to 600 A rating.

- c. 200,000 A interrupting capacity.
  - d. Dual element, time delay.
  - e. Use Bussman Low Peak LPN-RK, or equal: 250 V rating.
  - f. Use Bussman Low Peak LPS-RK, or equal: 600 V rating.
2. Use UL Class L Fuses:
- a. Bolt-in type.
  - b. 601 to 6,000 A rating.
  - c. 200,000 A interrupting capacity.
  - d. Time delay.
  - e. Use Bussman HI-CAP, KRP-C, or equal: 600 V rating.
- B. General purpose fuses for protection of motor control circuits, lighting ballasts, control transformers, and street lighting fixtures:
- 1. Use UL Class CC, fast acting, single element fuses.
  - 2. Rated for 0 to 30 A.
  - 3. Provide 200,000 A interrupting capacity.
  - 4. Use Bussman Limitron KTK-R, or equal: 600 V rating.

## **2.02 CIRCUIT BREAKERS**

- A. Provide circuit breakers that are compatible with the new panelboard:
- 1. Circuit breakers shall be from the same manufacturer as the panelboard.
  - 2. Circuit breakers shall be UL Listed and have the same interrupting rating as the panelboard.
  - 3. Provide circuit breakers amperage size and frame/trip size as specified on the Drawings.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Schedule all electrical shutdowns with Kitsap County and get Kitsap County approval prior to electrical shutdowns.
  - 1. Electrical shutdowns shall be scheduled during nonoperational hours.
  - 2. Electrical shutdowns shall not interrupt or interfere with OVTS facility operations.
- B. Electrical work shall be performed on de-energized equipment.
- C. Install overcurrent protective devices in accordance with manufacturer's recommendations including torque values.
- D. On panelboard HB deadfront, provide circuit breaker equipment identification label for existing loads. Clean switchboard surface of dirt, grease, oil, and contaminants prior to applying the new label. Provide new equipment identification label for new circuit breaker identifying the electrical load equipment tag number. Equipment identification label shall match equipment ID tag number shown on the Drawings.

### **3.02 ADJUSTMENT**

- A. Set and record adjustable settings on circuit breakers to provide selective coordination and proper operation.

**END OF SECTION**

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**SECTION 26 32 13**  
**STANDBY DIESEL ENGINE-GENERATOR SET**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. This section covers standby diesel engine-generator (hereinafter called the engine-generator) to be procured and installed for under this Contract.
1. Provide and install complete factory-assembled, diesel-fueled engine-generator set equipped with a digital (microprocessor-based) electronic generator set controls, digital governor, and digital voltage regulator.
  2. Provide a sub-base diesel fuel tank and an outdoor sound-attenuating enclosure.
  3. Responsible for equipment storage at the jobsite, installation, field testing, start-up, and operation of the equipment.
  4. Provide necessary fuel, hoses, cables, load bank, and control wiring for start-up and testing of the generator.
  5. Provide factory test, start-up by a supplier authorized by the equipment manufacturer(s), on-site testing of the system, and manufacturer's system warranty.

**1.02 REFERENCES**

- A. The generator set installation and on-site testing shall conform to the requirements of the following codes and standards, as applicable. The generator set shall include necessary features to meet the requirements of these standards.
1. IEEE 446 – Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications.
  2. NFPA 37 – Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines.
  3. NFPA 70 – National Electrical Code. Equipment shall be suitable for use in systems in compliance to Article 700, 701, and 702.
  4. NFPA 110 – Emergency and Standby Power Systems. The generator set shall meet all requirements for Level 1 systems. Level 1 prototype tests required by this standard shall have been performed on a complete and functional unit, component level type tests will not substitute for this requirement.

- B. The generator set and supplied accessories shall meet the requirements of the following standards:
1. NEMA MG1-1998, Part 32 – Alternator shall comply with the requirements of this standard.
  2. UL 142 – Subbase Tanks.
  3. UL 1236 – Battery Chargers.
  4. UL 2200 – The generator set shall be listed to UL 2200 or submit to an independent third-party certification process to verify compliance as installed.
- C. The control system for the generator set shall comply with the following requirements:
1. CSA C22.2, No. 14 – M91 Industrial Control Equipment.
  2. EN50082-2 – Electromagnetic Compatibility – Generic Immunity Requirements, Part 2: Industrial.
  3. EN55011 – Limits and Methods of Measurement of Radio Interference Characteristics of Industrial, Scientific, and Medical Equipment.
  4. FCC Part 15, Subpart B.
  5. IEC8528 Part 4 – Control Systems for Generator Sets.
  6. IEC Standards 801.2, 801.3, and 801.5 for susceptibility, conducted, and radiated electromagnetic emissions.
  7. UL 508 – The entire control system of the generator set shall be UL 508 listed and labeled.
- D. The generator set manufacturer shall be certified to ISO 9001 International Quality Standard and shall have third-party certification verifying quality assurance in design/development, production, installation, and service, in accordance with ISO 9001.
- E. National Electrical Manufacturers Association (NEMA) Publications:
1. NEMA ICS-1 – General Standards for Industrial Controls and Systems.
  2. NEMA ICS-2 – Standards for Industrial Control Devices, Controllers, and Assemblies.
  3. NEMA 250 – Enclosures for Electrical Equipment (1,000 V Maximum).
- F. National Fire Protection Association (NFPA) Publications: NFPA 30 – Flammable and Combustible Liquid Code.

### 1.03 SYSTEM DESCRIPTION

#### A. Engine-Generator assembly includes:

1. Standby engine-generator set complete with all appurtenances and enclosure. Unit shall be complete with all standard accessories in addition to those special features described.
2. Automatic starting and shutdown controls, starting batteries, battery rack, and generator controls.
3. Fuel system, including a sub-base fuel tank, pumps, all pressure regulators, strainers, and control valves.
4. Exhaust system complete with flexible connectors and silencer. All hangers, insulation, and pipe downstream of silencer will be provided and installed by installation contractor.

#### B. Engine-Generator Load (GEN-100):

1. The loads defined in this section will be the specified loads for the engine-generator. All performance specifications will apply to any combination of this load. Engine-generator shall be sized to start all listed loads in multiple steps. Contractor shall verify all loads.
  - a. Step 1:
    - 1) Transformer T2 loads (Employee Facility and Scale House), 65 kW.
  - b. Step 2:
    - 1) Panel HA, 92.5 kW.

### 1.04 SUBMITTALS

#### A. Submit material or equipment data in accordance with the "Product Information" category of the General Conditions and the submittal requirements of Section 26 05 11, "Basic Electrical Methods and Materials."

#### B. Submit with Bid:

1. Floor layout drawings for the engine-generator, including approximate base dimensions and weights. Include approximate locations for electrical, fuel, and exhaust connections.
2. Engine emission data.
3. Foundation requirements.
4. Job-site storage requirements prior to installation.
5. Certified calculations of generator sizing (Paragraph 2.02.C).

C. Submit Prior to Manufacture:

1. Product Data and Shop Drawings:

- a. Plan layout drawings for the engine-generator, with base dimensions and weights. Include locations for electrical, fuel, and exhaust connections.
- b. Composite assembly drawing of engine-generator showing location of all auxiliary equipment, dimensions, and weight.
- c. Front, rear, and both side elevations of the complete engine-generator unit assembly including radiator exhaust air duct.
- d. Foundation requirements including details for concrete pad, anchors, and vibration isolation.
- e. Specification sheets with performance data and engineering details adequate to determine compliance with Specifications, including:
  - 1) Base assembly, housing, and vibration isolation mounts.
  - 2) Engine.
  - 3) Radiator.
  - 4) Engine fuel system.
  - 5) Base fuel tank assembly.
  - 6) Governor.
  - 7) Battery system (including engine cranking amperes at 32 degrees F).
  - 8) Battery charger.
  - 9) Jacket water heater.
  - 10) Exhaust silencer.
  - 11) Generator and voltage regulator.
  - 12) Generator terminal box.
  - 13) Control panel and all other control components.
  - 14) Alarms and shutdowns.
  - 15) Weatherproof sound enclosure.
- f. Single-line and three-line generator power diagrams.
- g. Electrical schematic and wiring diagrams for all engine-generator electrical devices.

- h. Demonstrate compliance to engine-generator performance requirements as defined in the *Products* section of this Specification. Submittal shall include a description of the method used to calculate performance.
  - i. Detailed layout drawings of the generator connection box including conduit entrance, bus locations, cable lug definition, and lug-to-bus attachment details.
  - j. Surface preparation and finish data for all engine-generator surfaces.
2. Quality Control:
- a. Detailed description of factory testing program, testing equipment, reporting procedure, and pass/fail criteria.
  - b. Certification of compliance with the Zone 3 seismic anchorage requirements of the Uniform Building Code. Include a sketch of the anchorage system.
  - c. Warranty information.
- D. Submit Prior to Shipment:
- 1. Certified Factory Test Report.
  - 2. Detailed description of field-testing program, including description of tests, testing equipment, reporting procedure, and pass/fail criteria.
  - 3. Manufacturer's preliminary Operation and Maintenance Manuals.
- E. Submit Prior to Substantial Completion:
- 1. Certified Field Test Report.
  - 2. Manufacturer's Certificate of Proper Installation.
  - 3. Manufacturer's Operation and Maintenance Manuals.

## **1.05 QUALITY ASSURANCE**

- A. Qualifications:
- 1. The submitted engine-generator shall have been in production for a minimum of two years and shall have an installed base of at least 50 units.
  - 2. There shall be a factory-authorized service facility within 125 miles of the site that shall stock all commonly needed parts.
- B. Regulatory Requirements:
- 1. The engine-generator shall comply with the following standards:
    - a. NEMA ICS-1 – General Standards for Industrial Controls and Systems.
    - b. NEMA ICS-2 – Standards for Industrial Control Devices, Controllers, and Assemblies.

- c. NEMA 250 – Enclosures for Electrical Equipment (1,000 V Maximum).
  - d. NEMA MG1 – Motors and Generators.
  - e. NFPA 70 – National Electric Code (NEC).
  - f. NFPA 30 – Flammable and Combustible Liquid Code.
  - g. NFPA 37 – Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines.
  - h. UL 508 – Industrial Control Equipment.
  - i. UL 2200 – Standard for Stationary Engine Generator Assemblies.
2. The engine-generator shall be UL labeled.

#### **1.06 PROJECT/SITE CONDITIONS**

- A. Outdoor location with a temperature range of 10 degrees F to 100 degrees F.
- B. Maximum Ambient Temperature for Radiator Sizing: 100 degrees F.
- C. Altitude: 340 feet above MSL.
- D. Seismic Requirements: The equipment and major components shall be suitable for and certified to meet all applicable seismic requirements of the International Building Code (IBC) for the proposed site (see Structural Drawings for site parameters). The equipment manufacturer shall certify that the equipment can withstand, that is, function following the seismic event, including both vertical and lateral required response spectra as specified in above codes.

#### **1.07 SEISMIC ANCHORAGE AND STRUCTURAL DATA**

- A. Mechanical instrumentation and control, electrical, nonstructural systems, components, and elements permanently attached to the structure shall be anchored and braced to resist seismic forces. Contractor shall design the structural components, seismic attachment, braces, and anchors to the structure for all parts or elements of the mechanical and electrical systems in accordance with Section 13 05 41.

#### **1.08 WARRANTY**

- A. The generator set manufacturer shall warrant all equipment provided under this section, whether or not it is manufactured by the generator set manufacturer, so that there is one source for warranty and product service. Technicians specifically trained and certified by the manufacturer to support the product and employed by the generator set supplier shall service the generator sets.
- B. The sub-base fuel tank and associated equipment shall be warranted for a period of not less than 10 years from the date of commissioning against defects in materials and workmanship.
- C. Minimum warranty (labor and material) period shall be 2 years starting when equipment is substantially complete.

## **PART 2 – PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Acceptable Manufacturers:
- B. The project Drawings use an Engine-Generator set manufactured by Cummins Power Generation as the basis of design. Other manufacturers will be considered, provided the submitted product meets the requirements of this Specification.
  - 1. Engineer listing of this manufacturer and model number does not guarantee that manufacturer complies fully with Contract Documents. Comply with all requirements of the Contract Documents and demonstrate such through submittals, equipment, performance, and other requirements.

### **2.02 ENGINE-GENERATOR SET**

- A. Factory-assembled and -tested, engine-generator set.
- B. Mounting Frame: Maintain alignment of mounted components without depending on concrete foundation; and have lifting attachments.
  - 1. Rigging Information: Indicate location of each lifting attachment, generator-set center of gravity, and total package weight in submittal drawings.
- C. Capacities and Characteristics:
  - 1. Power Output Ratings: Electrical output power rating for Standby operation of not less than 200.0 kW, at 80 percent lagging power factor, 277/480, Series Wye, Three phase, 4-wire, 60 hertz.
  - 2. Alternator shall be capable of accepting maximum 251.2 kVA in a single step and be capable of recovering to a minimum of 90 percent of rated no load voltage. Following the application of the specified kVA load at near zero power factor applied to the generator set.
  - 3. Nameplates: For each major system component to identify manufacturer's name and address, and model and serial number of component. The engine-generator nameplate shall include information of the power output rating of the equipment.
- D. Generator-Set Performance:
  - 1. Steady-State Voltage Operational Bandwidth: 0.5 percent of rated output voltage from no load to full load.
  - 2. Transient Voltage Performance: Not more than 8 percent variation for 50 percent step-load increase or decrease. Voltage shall recover and remain within the steady-state operating band within 1 second. On application of a 100 percent load step the generator set shall recover to stable voltage within 10 seconds.

3. Steady-State Frequency Operational Bandwidth: 0.25 percent of rated frequency from no load to full load.
4. Steady-State Frequency Stability: When system is operating at any constant load within the rated load, there shall be no random speed variations outside the steady-state operational band and no hunting or surging of speed.
5. Transient Frequency Performance: Not more than 3 percent variation for 50 percent step-load increase or decrease. Frequency shall recover and remain within the steady-state operating band within 3 seconds. On application of a 100 percent load step the generator set shall recover to stable frequency within 10 seconds.
6. Output Waveform: At full load, harmonic content measured line to line or line to neutral shall not exceed 5 percent total and 3 percent for any single harmonic. Telephone influence factor, determined according to NEMA MG 1, shall not exceed 50.
7. Sustained Short-Circuit Current: For a 3-phase, bolted short circuit at system output terminals, system shall supply a minimum of 300 percent of rated full-load current for not less than 8 seconds without damage to generator system components. For a 1-phase, bolted short circuit at system output terminals, system shall regulate both voltage and current to prevent over-voltage conditions on the non-faulted phases.
8. Start Time: Comply with NFPA 110, Level 1, Type 10, system requirements.
9. Ambient Condition Performance: Engine generator shall be designed to allow operation at full rated load in an ambient temperature under site conditions, based on highest ambient condition. Ambient temperature shall be as measured at the air inlet to the engine generator for enclosed units, and at the control of the engine generator for machines installed in Equipment Rooms.

### **2.03 ENGINE**

- A. Fuel: ASTM D975 #2 Diesel Fuel.
- B. Rated Engine Speed: 1800 RPM.
- C. Lubrication System: The following items are mounted on engine or skid:
  1. Lube Oil Pump: shall be positive displacement, mechanical, full pressure pump.
  2. Filter and Strainer: Provided by the engine manufacturer of record to provide adequate filtration for the prime mover to be used.
  3. Crankcase Drain: Arranged for complete gravity drainage to an easily removable container with no disassembly and without use of pumps, siphons, special tools, or appliances.
- D. Engine Fuel System: The engine fuel system shall be installed in strict compliance to the engine manufacturer's instructions



- E. Main Fuel Pump: Mounted on engine. Pump ensures adequate primary fuel flow under starting and load conditions.
- F. Governor: Adjustable isochronous, with speed sensing. The governing system dynamic capabilities shall be controlled as a function of engine coolant temperature to provide fast, stable operation at varying engine operating temperature conditions. The control system shall actively control the fuel rate as appropriate to the state of the engine generator. Fuel rate shall be regulated as a function of starting, accelerating to start disconnect speed, accelerating to rated speed, and operating in various isochronous states.
- G. Cooling System: Closed loop, liquid cooled.
  - 1. The generator set manufacturer shall provide prototype test data for the specific hardware proposed demonstrating that the machine will operate at rated standby load in an outdoor ambient condition of 40 degrees C.
  - 2. Coolant: Solution of 50 percent ethylene-glycol-based antifreeze and 50 percent water, with anticorrosion additives as recommended by engine manufacturer.
  - 3. Size of Radiator overflow tank: Adequate to contain expansion of total system coolant from cold start to 110 percent load condition.
  - 4. Expansion Tank: Constructed of welded steel plate and rated to withstand maximum closed-loop coolant system pressure for engine used. Equip with gauge glass and petcock.
  - 5. Temperature Control: Self-contained, thermostatic-control valve modulates coolant flow automatically to maintain optimum constant coolant temperature as recommended by engine manufacturer.
  - 6. Duct Flange: Generator sets installed indoors shall be provided with a flexible radiator duct adapter flange.
- H. Jacket Water Heater: Operating voltage must match power supply.
- I. Muffler/Silencer: Selected with performance as required to meet sound requirements of the application, sized as recommended by engine manufacturer and selected with exhaust piping system to not exceed engine manufacturer's engine backpressure requirements. For generator sets with outdoor enclosures the silencer shall be inside the enclosure.
- J. Air-Intake Filter: Engine-mounted air cleaner with replaceable dry-filter element and restriction indicator.
- K. Starting System: 12 or 24 V, as recommended by the engine manufacturer; electric, with negative ground.
  - 1. Components: Sized so they will not be damaged during a full engine-cranking cycle with ambient temperature at maximum specified in Part 1 "Project Conditions" Article.
  - 2. Cranking Cycle: As required by NFPA 110 for level 1 systems.

3. Battery Cable: Size as recommended by engine manufacturer for cable length as required. Include required interconnecting conductors and connection accessories.
4. Battery Compartment: Factory fabricated of metal with acid-resistant finish.
5. Battery-Charging Alternator: Factory mounted on engine with solid-state voltage regulation. The battery charging alternator shall have sufficient capacity to recharge the batteries with all parasitic loads connected within 4 hours after a normal engine starting sequence.
6. Battery Chargers: Unit shall comply with UL 1236, provide fully regulated, constant voltage, current limited, battery charger for each battery bank. It will include the following features:
  - a. Rating: 120 Volts ac.
  - b. Operation: Equalizing-charging rate based on generator set manufacturer's recommendations shall be initiated automatically after battery has lost charge until an adjustable equalizing voltage is achieved at battery terminals. Unit shall then be automatically switched to a lower float-charging mode and shall continue to operate in that mode until battery is discharged again.
  - c. Automatic Temperature Compensation: Adjust float and equalize voltages for variations in ambient temperature from minus 20 deg C to plus 40 deg C to prevent overcharging at high temperatures and undercharging at low temperatures.
  - d. Automatic Voltage Regulation: Maintain constant output voltage regardless of input voltage variations up to plus or minus 10 percent.
  - e. Safety Functions: Sense abnormally low battery voltage and close contacts providing low battery voltage indication on control and monitoring panel. Sense high battery voltage and loss of ac input or dc output of battery charger. Either condition shall close contacts that provide a battery-charger malfunction indication at system control and monitoring panel.
  - f. Provide LED indication of general charger condition, including charging, faults, and modes. Provide a LCD display to indicate charge rate and battery voltage. Charger shall provide relay contacts for fault conditions as required by NFPA110.
  - g. Enclosure and Mounting: NEMA, Type 1, wall-mounted cabinet.

## **2.04 FUEL OIL STORAGE**

- A. Comply with NFPA 30.

## **2.05 CONTROL AND MONITORING**

- A. Engine generator control shall be microprocessor based and provide automatic starting, monitoring, protection and control functions for the unit.

- B. Automatic Starting System Sequence of Operation: When mode-selector switch on the control and monitoring panel is in the automatic position, remote-control contacts in one or more separate automatic transfer switches initiate starting and stopping of generator set. When mode-selector switch is switched to the on position, generator set starts. The off position of same switch initiates generator-set shutdown. (Switches with different configurations but equal functions are acceptable.) When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of the local (generator set-mounted) and/or remote emergency-stop switch also shuts down generator set.
- C. Manual Starting System Sequence of Operation: Switching on-off switch on the generator control panel to the on position starts generator set. The off position of same switch initiates generator-set shutdown. When generator set is running, specified system or equipment failures or derangements automatically shut down generator set and initiate alarms. Operation of the local (generator set-mounted) and/or remote emergency-stop switch also shuts down generator set.
- D. Configuration: Operating and safety indications, protective devices, system controls, engine gauges and associated equipment shall be grouped in a common control and monitoring panel. Mounting method shall isolate the control panel from generator-set vibration. The ac output power circuit breakers and other output power equipment shall not be mounted in the control enclosure.
- E. Indicating and Protective Devices and Controls: As required by NFPA 110 for Level 1 system, and the following:
1. AC voltmeter (3-phase, line to line and line to neutral values).
  2. AC ammeter (3-phases).
  3. AC frequency meter.
  4. AC kW output (total and for each phase). Display shall indicate power flow direction.
  5. AC kVA output (total and for each phase). Display shall indicate power flow direction.
  6. AC Power factor (total and for each phase). Display shall indicate leading or lagging condition.
  7. Ammeter-voltmeter displays shall simultaneously display conditions for all three phases.
  8. Emergency Stop Switch: Switch shall be a red "mushroom head" push-button device complete with lock-out/tag-out provisions. Depressing switch shall cause the generator set to immediately stop the generator set and prevent it from operating.
  9. Fault Reset Switch: Supply a dedicated control switch to reset/clear fault conditions.
  10. DC voltmeter (alternator battery charging).

11. Engine-coolant temperature gauge.
12. Engine lubricating-oil pressure gauge.
13. Running-time meter.
14. Generator-voltage and frequency digital raise/lower switches. Rheostats for these functions are not acceptable. The control shall adjustment of these parameters in a range of plus or minus 5 percent of the voltage and frequency operating set point (not nominal voltage and frequency values.) The voltage and frequency adjustment functions shall be disabled when the paralleling breaker is closed.
15. Fuel tank derangement alarm.
16. Fuel tank high-level shutdown of fuel supply alarm.
17. AC Protective Equipment: The control system shall include over/under voltage, reverse kVAR, reverse kW, over load (kW) short circuit, over current, loss of voltage reference, and over excitation shut down protection. There shall be a ground fault alarm for generator sets rated over 1000 amps, overload warning, and overcurrent warning alarm.
18. Status LED indicating lamps to indicate remote start signal present at the control, existing shutdown condition, existing alarm condition, not in auto, and generator set running.
19. A graphical display panel with appropriate navigation devices shall be provided to view all information noted above, as well as all engine status and alarm/shutdown conditions (including those from an integrated engine emission control system). The display shall also include integrated provisions for adjustment of the gain and stability settings for the governing and voltage regulation systems.
20. A minimum of two field programmable Form C dry contacts for interfacing with external devices.
21. Panel lighting system to allow viewing and operation of the control when the Generator Room or enclosure is not lighted.
22. Data Logging: The control system shall log the latest 20 different alarm and shut down conditions, the total number of times each alarm or shutdown has occurred, and the date and time the latest of these shutdown and fault conditions occurred.
23. DC Control Power Monitoring: The control system shall continuously monitor dc power supply to the control, and annunciate low or high voltage conditions. It shall also provide an alarm indicating imminent failure of the battery bank based on degraded voltage recover on loading (engine cranking).

## **2.06 GENERATOR OVERCURRENT AND FAULT PROTECTION**

- A. Generator Overcurrent Protection: The generator set shall be provided with a UL Listed/ CSA Certified protective device that is coordinated with the alternator provided to prevent damage to the generator set on any possible overload or overcurrent condition external to the machine. The protective device shall be listed as a utility grade protective device under UL category NRGU. The control system shall be subject to UL follow-up service at the manufacturing location to verify that the protective system is fully operational as manufactured. Protector shall perform the following functions:
1. Initiates a generator kW overload alarm when generator has operated at an overload equivalent to 110 percent of full-rated load for 60 seconds. Indication for this alarm is integrated with other generator-set malfunction alarms.
  2. Under single phase or multiple phase fault conditions, or on overload conditions, indicates an alarm conditions when the current flow is in excess of 110 percent of rated current for more than 10 seconds.
  3. Under single phase or multiple phase fault conditions, operates to switch off alternator excitation at the appropriate time to prevent damage to the alternator.
  4. The operator panel shall indicate the nature of the fault condition as either a short circuit or an overload.
  5. Senses clearing of a fault by other overcurrent devices and controls recovery of rated voltage to avoid overshoot greater than 120 percent of nominal voltage.
  6. The protective system provided shall not include an instantaneous trip function.

## **2.07 GENERATOR, EXCITER, AND VOLTAGE REGULATOR**

- A. Comply with NEMA MG 1.
- B. Drive: Generator shaft shall be directly connected to engine shaft. Exciter shall be rotated integrally with generator rotor.
- C. Electrical Insulation: Class H.
- D. Temperature Rise: 125/Class H environment.
- E. Construction shall prevent mechanical, electrical, and thermal damage due to vibration, over speed up to 125 percent of rating, and heat during operation at 110 percent of rated capacity.
- F. Permanent Magnet Generator (PMG) shall provide excitation power for optimum motor starting and short circuit performance.
- G. Enclosure: Drip-proof.

- H. Voltage Regulator: Solid-state type, separate from exciter, providing performance as specified. The voltage regulation system shall be microprocessor-controlled, 3-phase true RMS sensing, full wave rectified, and provide a pulse-width modulated signal to the exciter. No exceptions or deviations to these requirements will be permitted.
- I. Windings: Two-thirds pitch stator winding and fully linked amortisseur winding.
- J. Subtransient Reactance: 12 percent maximum, based on the rating of the engine generator set.

## **2.08 OUTDOOR GENERATOR-SET ENCLOSURE**

- A. Description: Weather Steel housing. Multiple panels shall be lockable and provide adequate access to components requiring maintenance. Instruments, control, and battery system shall be mounted within enclosure.
- B. Construction:
  - 1. Louvers: Equipped with bird screen to permit air circulation when engine is not running while excluding birds and rodents.
  - 2. Hinged Doors: With padlocking provisions. Restraint/Hold back hardware to prevent door to keep door open at 180 degrees during maintenance. Rain lips over all doors.
  - 3. Exhaust System:
    - a. Muffler Location: Within enclosure.
  - 4. Hardware: All hardware and hinges shall be stainless steel.
  - 5. Mounting Base: Suitable for mounting on sub-base fuel tank or housekeeping pad.
  - 6. A weather protective enclosure shall be provided which allows the generator set to operate at full rated load with a static pressure drop equal to or less than 0.5 inches of water.
  - 7. Inlet ducts shall include rain hoods
- C. Engine Cooling Airflow through Enclosure: Housing shall provide ample airflow for engine generator operation at rated load in an ambient temperature of 40 deg C.
  - 1. Louvers: Fixed-engine, cooling-air inlet and discharge.
- D. Sound Performance: Reduce the sound level of the engine generator while operating at full rated load to a maximum of 73 dBA measured at any location 7 m from the engine generator in a free field environment.
- E. Site Provisions:
  - 1. Lifting: Complete assembly of engine generator, enclosure, and sub base fuel tank (when used) shall be designed to be lifted into place as a single unit, using spreader bars.

## **2.09 VIBRATION ISOLATION DEVICES**

- A. Vibration Isolation: Generators installed on grade shall be provided with elastomeric isolator pads integral to the generator, unless the engine manufacturer requires use of spring isolation.

## **2.10 FINISHES**

- A. Indoor and Outdoor Enclosures and Components: Powder-coated and baked over corrosion-resistant pretreatment and compatible primer. Manufacturer's standard color or as directed on the Drawings.

## **2.11 SOURCE QUALITY CONTROL**

- A. Prototype Testing: Factory test engine-generator set using same engine model, constructed of identical or equivalent components and equipped with identical or equivalent accessories.
  - 1. Tests: Comply with NFPA 110, Level 1 Energy Converters. In addition, the equipment engine, skid, cooling system, and alternator shall have been subjected to actual prototype tests to validate the capability of the design under the abnormal conditions noted in NFPA110. Calculations and testing on similar equipment which are allowed under NFPA110 are not sufficient to meet this requirement.
- B. Project-Specific Equipment Tests: Before shipment, factory test engine-generator set manufactured specifically for this Project. Perform tests at rated load and power factor. Include the following tests:
  - 1. Test engine generator set manufactured for this Project to demonstrate compatibility and functionality.
  - 2. Full load run.
  - 3. Maximum power.
  - 4. Voltage regulation.
  - 5. Steady-state governing.
  - 6. Single-step load pickup.
  - 7. Simulated safety shutdowns.
  - 8. Provide 14 days' advance notice of tests and opportunity for observation of tests by Owner's representative.

## **PART 3 – EXECUTION**

### **3.01 ENGINE-GENERATOR INSTALLATION**

- A. General: Mount and anchor the engine-generator assemblies to their respective concrete base pads using seismically-restrained spring isolators per manufacturer's requirements. Skilled mechanics shall install all such equipment in accordance with the instructions of the manufacturer.
- B. Provide foundation as shown on Drawings and specified in other sections of this Specification.
- C. Fuel and Lubricants: During testing and prior to acceptance, furnish all fuel and lubricants necessary for the testing and proper operation of this equipment.
- D. In the vicinity of terminations, lace all power conductors to resist short-circuit forces.
- E. Ground per NEC and manufacturer's requirements. The generator's neutral conductor shall not be grounded at the generator. The generator's neutral conductor will be connected to the system neutral at the Automatic Transfer Switch.

### **3.02 FIELD TESTING**

- A. Provide minimum of one site visit and a minimum of 8 hours of services at the jobsite by a factory-trained service technician to certify installation, make final adjustments to equipment, and carry out a full operational test in the presence of the Engineer.
- B. Following installation and manufacturer's field test, perform an operations test under simulated utility power failure conditions.
- C. General: Tests shall determine proper operation and capacity of the equipment and to demonstrate compliance with the Drawings and Specifications. All equipment that fails any test will be rejected, and complete retesting will be required after the Contractor makes corrections or modifications to equipment that has previously failed any test. The Engineer shall observe all field tests.
- D. Field Tests:
  - 1. Installation of the engine-generator shall be complete; and the unit shall be serviced, test-run, adjusted, and ready for use before the field tests are scheduled.
  - 2. Provide written notice to the Engineer of the scheduled dates for the field test at least 14 days prior to the field test date. The notice shall include a written test schedule listing the tests, the test procedure, the criteria for a satisfactory test, ratings of load bank to be used, and description of special measurement equipment to be employed.
  - 3. Provide temporary load bank to simulate the initial load, 100 percent load, and motor-starting loads.



4. Make repairs and adjustments as required to achieve satisfactory performance of the Engine-Generator unit. If repairs or adjustments are made during the tests, additional testing shall be performed as required by the Engineer, at no additional cost.
5. Make written records of the tests, and within 10 days after completion of the field test, submit test records to the Engineer. The test record shall indicate the test criteria and arrangement; the time of the test; the results; and pertinent data, such as voltage, frequency, kilowatts, power factor, load current, oil pressure, water temperature, and ambient temperature. Pertinent data shall be recorded for each test and at least every 30 minutes when the test requires more than 30 minutes.

E. Alarm, Control, and Equipment Tests:

1. Demonstrate each alarm and safety shutdown provision as being caused by the abnormal condition, unless an alternative test condition has been favorably reviewed by the Engineer prior to the scheduling of the tests.
2. Operate each control circuit and device to demonstrate its proper operation.
3. Demonstrate the jacket water heater operation successfully.

F. Operational Tests:

1. Simulate a power failure in order to demonstrate the proper operation of the transfer switch and engine-generator.
2. Demonstrate motor starting capability by applying the specified initial load and then the equivalent of starting and running the specified motor loads. Voltage dip shall be measured and recorded to demonstrate conformity to the Specifications.
3. Show that phase rotation of the Engine-Generator and the utility power are compatible at the site.

G. Endurance Tests:

1. Operate the engine-generator for 1/2 hour at one-half its kW rating.
2. Operate the engine-generator for 4 hours continuously at 100 percent of its kW and kVA ratings.
3. Measure the temperature rise of the windings of the generator using the resistance method.

H. Provide load banks, fuel, test equipment, labor, materials, and all other equipment and services required for all tests.

### **3.03 TRAINING**

- A. Service technician shall provide a minimum of 4 hours of on-site training to instruct Owner's personnel in the operation, maintenance, and adjustment of the system and installation.

### **3.04 SERVICE AND SUPPORT**

- A. The generator set supplier shall maintain service parts inventory for the entire power system at a central location which is accessible to the service location 24 hours per day, 365 days per year. The manufacturer of the generator set shall maintain a central parts inventory to support the supplier, covering all the major components of the power system, including engines, alternators, control systems, paralleling electronics, and power transfer equipment.
- B. The generator set shall be serviced by a local service organization that is trained and factory certified in generator set service. The supplier shall maintain an inventory of critical power system replacement parts in the local service location. Service vehicles shall be stocked with critical replacement parts. The service organization shall be on call 24 hours per day, 365 days per year. The service organization shall be physically located within 200 miles of the site.

**END OF SECTION**

**SECTION 26 36 23**  
**LOW VOLTAGE AUTOMATIC TRANSFER SWITCHES**

**PART 1 – GENERAL**

**1.01 SECTION INCLUDES**

- A. This section specifies Automatic Transfer Switches (ATS) rated 600 Vac and less for motor, lighting, and heating loads.
- B. Furnish and install automatic delayed transition transfer with number of poles, amperage, voltage, and current ratings as shown herein.

**1.02 REFERENCE STANDARDS**

- A. Referenced Standards: This section incorporates by reference the latest revision of the following documents. These references are a part of this section as specified and modified. In case of conflict between the requirements of this section and those of a listed document, the requirements of this section shall prevail.
  - 1. UL 1008 – Standard for Transfer Switch Equipment.
  - 2. UL 1236 – Battery Chargers.
  - 3. IEC 947-6-1 – Low-Voltage Switchgear and Controlgear; Multifunction Equipment; Automatic Transfer Switching Equipment.
  - 4. NFPA 70 – National Electrical Code.
  - 5. NFPA 110 – Emergency and Standby Power Systems.
  - 6. IEEE Std 446 – IEEE Recommended Practice for Emergency and Standby Power Systems for Commercial and Industrial Applications.
  - 7. NEMA Std ICS10 – AC Automatic Transfer Switches.
- B. Transfer switch main contacts shall pass UL 1008 Temperature Rise test after both the Overload and the Endurance tests. No testing sequence that is less stringent will be accepted.

**1.03 SUBMITTALS**

- A. Submit material or equipment data in accordance with the submittal requirements of Section 26 05 11, “Basic Electrical Methods and Materials.”
- B. Procedures: Submit documentation on the following items.

- C. Elementary and internal connection diagrams. Complete wiring, panel, elementary and process/instrument diagrams for the ATS showing connection and interconnection of identified terminals and identified conductors to components of the ATS.
- D. Manufacturer's data indicating momentary, interrupting, and continuous current ratings of all relevant equipment, components, and devices.
- E. Manufacturer's catalog data indicating features of construction and information on control features and components.
- F. Certification letter stating that the Withstand and Closing Rating (WCR) is compatible with upstream and downstream circuit breakers or downstream short circuit current.
- G. Outline drawings and equipment elevation with clearance requirements.
- H. Operations and Maintenance Manuals.
- I. Manufacturer's Installation Certification Form.

#### **1.04 SEISMIC ANCHORAGE AND STRUCTURAL DATA**

- A. Mechanical instrumentation and control, electrical, nonstructural systems, components, and elements permanently attached to the structure shall be anchored and braced to resist seismic forces.

### **PART 2 – PRODUCTS**

#### **2.01 GENERAL**

- A. The project Drawings are designed around the ATS manufactured by Cummins Power Generation. Other manufacturers will be considered, provided the submitted product meets the requirements of this spec.
- B. Engineer listing of this manufacturer and model number does not guarantee that manufacturer complies fully with Contract Documents. Comply with all requirements of the Contract Documents and demonstrate such through submittals, equipment, performance, and other requirements.
- C. The transfer switch shall automatically transfer its load circuit to the standby generator system upon failure of its normal source, and return the load to the normal source when it again becomes available.
- D. All ATSs and control modules shall be the product of the same manufacturer.
- E. The ATS shall transfer the load in delayed transition (break-before-make) mode. Transfer is accomplished with a user-defined interruption period in both directions adjustable from 0 second to 5 minutes.
- F. Provide optional cable pull box as required to allow bottom entry of conduits and cables.

## **2.02 RATINGS**

- A. ATS-001: 150 Amp, 3-Pole, 4-Wire, 480 V, Utility-to-Genset application type.
- B. ATS-002: 225 Amp, 3-Pole, 4-Wire, 480 V, Utility-to-Genset application type.

## **2.03 MECHANICALLY HELD TRANSFER SWITCH**

- A. The ATS unit shall be electrically operated and mechanically held. The electrical operator shall be a single solenoid mechanism, momentarily energized. The ATS unit shall be mechanically interlocked to prevent both sets of main contacts from being closed at the same time. Main operators which include overcurrent disconnect devices, or linear motors, will not be accepted.
- B. All ATS sizes shall use only one type of main operator for ease of maintenance and commonality of parts.
- 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 A 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 800 A 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 are not acceptable. Transfer switch shall be documented by UL as having passed the UL-required main contact testing in the following sequence: Overload, then Endurance, then Temperature Rise. No sequence that is less stringent will be 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.

## **2.04 MICROPROCESSOR CONTROLLER**

- A. The 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 through an optional serial communication module.
- B. A single controller shall provide maximum application flexibility and minimal spare part requirements. Voltage sensing shall be true RMS type and shall be accurate to plus or minus 1 percent of nominal voltage. Frequency sensing shall be accurate to plus or minus 0.2 percent. The panel shall be capable of operating over a temperature range of minus 20 to plus 60 degrees C and storage from minus 55 to plus 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 panel 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. EN55011 1991: Class A Conducted and Radiated Emission.
  - 3. EN61000-4-2: Electrostatic Discharge Immunity, Direct Contact and Air Discharge.
  - 4. EN61000-4-4: Electrical Fast Transient Immunity.
  - 5. EN61000-4-5: Surge Immunity.
  - 6. EN6100-4-6: Conducted Radio-Frequency field immunity.
  - 7. ENV50140: Radiated Electro-Magnetic field immunity.

## **2.05 ENCLOSURE**

- A. The ATS shall be furnished in a NEMA Type 1 enclosure.
- B. All standard and optional door-mounted switches and pilot lights shall be integrated into a flush-mounted interface membrane or equivalent in the enclosure door for easy viewing or replacement. Door controls shall be provided on a separate removable plate, which can be supplied loose for open-type units. The panel shall include a manual locking feature to allow the user to lockout all membrane mounted control switches to prevent unauthorized tampering.
- C. Provide a 120 V heater to prevent condensation. Power to the heater shall be supplied from a fused source within the ATS enclosure. No external power shall be required for the heater.

## **2.06 CONTROLLER DISPLAY AND KEYPAD**

- A. A four-line, 20-character LCD display and keypad shall be an integral part of the controller for viewing all available data and setting desired operational parameters. Operational parameters shall also be available for viewing and limited control through the serial communications input port.
- B. All instructions and controller settings shall be easily accessible, readable and accomplished without the use of codes, calculations, or instruction manuals.

## 2.07 VOLTAGE, FREQUENCY AND PHASE ROTATION SENSING

- A. Voltage and frequency on both the normal and standby sources (as noted below) shall be continuously monitored, with the following pickup, dropout, and trip setting capabilities (values shown as percent of nominal unless otherwise specified):

<u>Parameter</u>	<u>Sources</u>	<u>Dropout/Trip</u>	<u>Pickup/Reset</u>
Undervoltage	N&S,3 $\phi$	70 to 98%	85 to 100%
Overvoltage	N&S,3 $\phi$	102 to 115%	2% below trip
Underfrequency	N&S	85 to 98%	90 to 100%
Overfrequency	N&S	102 to 110%	2% below trip
Voltage Unbalance	N&S	5 to 20%	1% below dropout

- B. Repetitive accuracy of all settings shall be within plus or minus 0.5 percent over an operating temperature range of minus 20 degrees C to 60 degrees C.
- C. Voltage and frequency settings shall be field adjustable in 1 percent increments either locally with the display and keypad or remotely via serial communications port access.
- D. The controller shall be capable (when activated by the keypad or through the serial port) of sensing the phase rotation of both the normal and standby sources. The source shall be considered unacceptable if the phase rotation is not the preferred rotation selected (ABC or CBA).
- E. Source status screens shall be provided for both normal and standby to provide digital readout of voltage on all three phases, frequency, and phase rotation.

## 2.08 TIME DELAYS

- A. All time delays shall be adjustable by using the LCD display and keypad or with a remote device connected to the serial communications port. All time delays shall be field adjustable.
- B. All time delays shall be adjustable in 1-second increments.
- C. An adjustable “engine start” 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 by providing an external 24 Vdc power supply.
- D. A time delay shall be provided on “transfer to standby,” adjustable from 0 to 60 minutes, for controlled timing of transfer of loads to standby.
- E. The controller shall include a 0 to 5 minute “delayed transition” time delay (neutral position dwell) which disconnects the load from any source during the transition period.
- F. An adjustable “standby source failure” time delay of 0 to 6 seconds to override momentary standby source outage to delay all retransfer signals during initial loading of engine generator set.

- G. Two time delay modes (which are independently adjustable) shall be provided on re-transfer to normal. One time delay shall be for actual normal power failures and the other for the test mode function. The normal source must be available continuously during the delay period. If not, the delay timer shall reset and restart the delay period. The time delays shall be adjustable from 0 to 60 minutes. Time delay shall be automatically bypassed if the standby source fails and the normal source is acceptable.
- H. A time delay shall be provided on shut down of engine generator for cool down, adjustable from 0 to 60 minutes.

## **2.09 ADDITIONAL FEATURES**

- A. Membrane-type switches shall be provided for the test and retransfer to normal functions. The test position will simulate a normal source failure. The retransfer to normal position shall bypass the time delays on either transfer to standby or retransfer to normal.
- B. A set of SPDT contacts rated 5 A, 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.
- C. Auxiliary Form C (1 N.O./1 N.C.) contacts, rated 10 A, 250 Vac shall be provided to indicate the following:
  - 1. Transfer switch in trouble.
  - 2. Transfer switch in standby position.
  - 3. Utility power available.
- D. Provide two pre-transfer signal contacts adjustable 0 to 120 seconds to permit load shedding. Contacts shall be closed when switch is in "utility position," and shall open before transfer is made to the generator.
- E. LED indicating lights shall be provided; one to indicate when the ATS is connected to the normal source (green) and one to indicate when the ATS is connected to the standby source (red).
- F. LED indicating lights shall be provided and energized by controller outputs. The lights shall provide true source availability of the normal and standby sources, as determined by the voltage sensing trip and reset settings for each source.
- G. The following features shall be built into the controller, but capable of being activated through keypad programming or the serial port when required by the user:
  - 1. Provide the ability to select "commit/no commit to transfer" to determine whether the load should be transferred to the standby generator if the normal source restores before the generator is ready to accept the load. Set for "commit."



2. Engine Exerciser: The controller shall provide an internal engine exerciser. The engine exerciser shall allow the user to program up to seven different exercise routines. For each routine, the user shall be able to:
  - a. Enable or disable the routine.
  - b. Enable or disable transfer of the load during routine.
  - c. Set the start time:
    - 1) Time of day.
    - 2) Day of week.
    - 3) Week of month (first, second, third, fourth, alternate or every).
  - d. Set the duration of the run.
  - e. At the end of the specified duration the switch shall transfer the load back to normal and run the generator for the specified cool down period. A 10-year life battery that supplies power to the real time clock in the event of a power loss shall maintain all time and date information.
- H. System Status: The controller LCD display shall include a "System Status" screen which shall be readily accessible from any point in the menu by depressing the "ESC" key a maximum of two times. This screen shall display a clear description of the active operating sequence and switch position. For example:
  1. Normal Failed.
  2. Load on Normal.
  3. Time Delay, Normal to Emergency (TDNE).
  4. Set: Two minutes, 15 seconds.
- I. Controllers that require multiple screens to determine system status or display "coded" system status messages, which must be explained by references in the operator's manual, are not permissible.
- J. 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.
- K. Communications Interface: The controller shall be capable of interfacing, through an optional serial communication module, with a network of transfer switches, locally (up to 4,000 feet) or remotely through modem serial communications.

- L. 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 standby.
- b. Date and time and reason for transfer standby to normal.
- c. Date and time and reason for engine start.
- d. Date and time engine stopped.
- e. Date and time standby source available.
- f. Date and time standby source not available.

- 2. Event Logging:

- 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 standby sources are available.

## **2.10 RATINGS**

- A. Transfer switches shall be 100 percent equipment rated for continuous duty and shall conform to the applicable standards of UL 1008 for standby total system load and shall bear the UL label.
- B. The ATS shall be rated to close on and withstand the available RMS symmetrical short circuit current at the ATS terminals with the type of overcurrent protection shown on the Plans. The close-on and withstand rating shall not be less than 65,000 A. RMS symmetrical at 480 Vac.
- C. The ATS shall be UL listed in accordance with UL 1008 and be labeled in accordance with that standard's 1-1/2- and 3-cycle, long-time ratings. ATSs which are not tested and labeled with 1-1/2- and 3-cycle (any breaker) ratings and have series, or specific breaker ratings only, are not acceptable.

## **2.11 NAMEPLATES**

- A. Identify the switch as specified.
- B. Provide nameplates in accordance with the requirements of Section 26 05 11, "Basic Electrical Methods and Materials."

## **PART 3 – EXECUTION**

### **3.01 FACTORY TESTING**

- A. The complete ATS shall be factory tested to ensure proper operation of the individual components and correct overall sequence of operation and to ensure that the operating transfer time, voltage, frequency, and time delay settings are in compliance with the specification requirements.

### **3.02 FIELD ADJUSTMENTS**

- A. Unless otherwise indicated in the Drawings, adjust the time delay relays at ATS-001 to the following values:
  - 1. Engine Start Time Delay                      1 second
  - 2. Transfer to Standby Time Delay            0 seconds
  - 3. Neutral Position Dwell                      1 second
  - 4. Standby to Normal Time Delay            30 minutes
  - 5. Engine Cool-Down                          10 minutes
  - 6. Pre-Transfer Signal                         0 seconds
- B. Refer to the Drawings for time delay adjustment information for ATS-002.

### **3.03 FIELD TESTS**

- A. Field test the ATS switches in accordance with the manufacturer's recommendations.
- B. With the support of the utility provider, simulate a single-phase condition at the utility transformer and ensure the ATS detects the single-phase condition, commands the generator to run, and the switch transfers power to the generator. Simulate the single-phase condition for each phase, one phase at a time.
- C. Performance test any ground fault protection in accordance with the NEC Article 230. Make copies of this test to the authority having jurisdiction and the Project Representative.

**END OF SECTION**

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**SECTION 26 43 00**  
**SURGE PROTECTIVE DEVICES**

**PART 1 – GENERAL**

**1.01 SUMMARY**

- A. Section Includes: Surge Protective Devices (SPD).
- B. Related Sections:
  - 1. The work of the following sections is related to the work of this section. Other sections, not referenced below, may also be related to the proper performance of this work. It is the Contractor's responsibility to perform all the work required by the Contract Documents.
    - a. Section 26 05 11, "Basic Electrical Methods and Materials."

**1.02 REFERENCE STANDARDS**

- A. ANSI/IEEE C62.41 Recommended Practice for Surge Voltages in Low-Voltage AC Power Circuits.
- B. ANSI/IEEE C62.45 Guide on Surge Testing for Equipment Connected to Low-Voltage AC Power Circuits.
- C. NEC Article 280 Surge Arresters.
- D. NFPA 70 NEC.
- E. NFPA 75 Standard for Protection of Electronic Computer Data Procedure.
- F. UL 1449 Transient Voltage Surge Suppressors.

**1.03 SUBMITTALS**

- A. As specified in Section 26 05 11, "Basic Electrical Methods and Materials."
- B. Complete drawings and documentation shall be provided by the manufacturer and shall include:
  - 1. Catalog cut sheets.
  - 2. Dimension and outline drawings.
- C. Operation and maintenance manuals.

#### **1.04 QUALITY ASSURANCE**

- A. The assembly shall be UL listed.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Contractor shall ensure electrical equipment received is stored in a dry, secured, safe location, protected from water, rain, dirt, construction debris, and traffic. Storage and handling shall be per the manufacturer's requirements.
  - 1. Contractor is responsible for electrical equipment until the equipment has been commissioned and successfully demonstrated to the Owner.

#### **1.06 WARRANTY**

- A. Provide a 2-year warranty from the Substantial Completion which includes material, shipping costs, labor, and travel.

### **PART 2 – PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. The use of a manufacturer's name, model, size, or catalog number is for the sole purpose of establishing the standard of quality and general configuration desired.
- B. Acceptable Manufacturers:
  - 1. Eaton/Cutler-Hammer/Bussmann.
  - 2. Square D.
  - 3. General Electric.
  - 4. Siemens.

#### **2.02 EQUIPMENT**

- A. General:
  - 1. Where listed in the Drawings, an externally mounted SPD system shall be included for the protection of AC circuits from the effects of lightning induced currents, substation switching transients, and internally generated transients resulting from inductive and/or capacitive load switching.
  - 2. Rated for use at service entrance.

3. Sealed unit with the following features:
  - a. Surge Current Diversion Paths:
    - 1) Provided between each phase conductor and neutral, between each phase conductor and ground and between the neutral conductor and ground.
    - 2) Do not use plug-in connections and round wire in the surge current path.
  - b. Provide UL-approved disconnect switch as a means of disconnect.
  - c. Mounted on exterior of panelboard.
  - d. Equip with LED to indicate status of protection elements.
4. Meets or exceeds the following criteria:
  - a. Maximum surge current capability of 150 kA per phase.
  - b. Maximum short-circuit current rating of 300 kA.

## **PART 3 – EXECUTION**

### **3.01 INSTALLATION**

- A. Installed per the manufacturer's specifications.

**END OF SECTION**

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