



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

FREEDOM OF INFORMATION ACT/PRIVACY PROGRAM

July 29, 2020

In reply refer to: FOIA #BPA-2020-00675-F

Kip Jackson MS, PE, PMP
Director, Engineering & Project Management
NVEnergy
6226 West Sahara Avenue
P.O. Box 98910, MS 10
Las Vegas, NV 89151-0001
Email: kjackson@nvenergy.com

Dear Mr. Jackson,

This communication is the Bonneville Power Administration (BPA) first partial response to your request for agency records made under the Freedom of Information Act, 5 U.S.C. § 552 (FOIA). Your request was received on April 6, 2020, and formally acknowledged on April 13, 2020.

Request

“[The] Engineer, Procure & Construct (EPC) contract [records] BPA holds with PAR Electrical Contractors, Inc.”

Clarification

Following email exchanges with the agency’s FOIA office personnel, on April 22, 2020, you amended your original request as follows: “NV Energy learned of BPA’s successful solicitation and execution of an EPC contract with PAR Electric. BPA’s EPC contract with PAR electric appears to be an industry best practice based upon information received. NV Energy desires to learn from BPA’s industry best practice and incorporate this information into an RFP for EPC services to execute its Natural Disaster Prevention Plan. At this time NV Energy desires only the following: Bid documents and technical specifications issued with its RFP [and the] EPC contract.”

First Partial Response

BPA has searched for and gathered records responsive to your FOIA request from the agency’s Construction Acquisition Team and Transmission Project Management offices. Those gathered records include the responsive file for Contract No. BPA-19-D-83106 (“the contract”). Also collected were the adjutant technical records, e.g., scoping materials, drawings, technical references, etc., for the issued task orders. You’ve indicated that you’re solely interested in bid records and technical specifications issued with the RFP, and the contract itself.

A review of those records by my office, and by the agency's Office of General Counsel (OGC), showed that information and records responsive to your request were subject to 5 U.S.C. § 552(b)(4) (Exemption 4), which protects third party confidential commercial information found in agency records. In compliance with the FOIA, BPA consulted with PAR Electrical Contractors Inc., (PAR) on the public release of their information contained in the contract. PAR declined to object to the public release of their commercial information found in the contract. Therefore, BPA is releasing the contract record, comprising 104 pages, with signatures redacted on 1 page under 5 U.S.C. § 552(b)(6) (Exemption 6). Exemption 6 serves to protect information belonging to individuals from public release.

In compliance with the FOIA, BPA will continue reviewing and releasing additional agency records responsive to your request. Those remainder records may be subject to 5 U.S.C. § 552(b)(3), which serves to protect information specifically exempted from disclosure by other statutes, and 5 U.S.C. § 552(b)(5), which serves to protect information showing the deliberative or decision-making processes of the agency. Those efforts are ongoing.

Certification

Pursuant to 10 C.F.R. § 1004.7(b)(2), I am the individual responsible for the partial response and records release described above.

Processing Update

Please know that for an undetermined period, related to the agency's response to the COVID-19 pandemic, BPA personnel are operating within a remote working directive. FOIA request processing is thereby slowed. BPA remains committed to meeting its FOIA obligations to you and to all its many FOIA requesters. Owing to the ongoing review efforts, and the agency's current workforce status, BPA is extending the response target date for the remainder of your request to August 26, 2020.

Questions about this communication may be directed to James King, CorSource Technology Group LLC, at jjking@bpa.gov or 503.230.7621.

Sincerely,



Candice D. Palen
Freedom of Information/Privacy Act Officer

[A partial responsive records set accompanies this communication.](#)

**U.S. DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
SOLICITATION, OFFER AND AWARD FOR CONSTRUCTION**

1. Solicitation No. 4525	2. Type of Solicitation <input type="checkbox"/> REQUEST FOR QUOTE (RFQ) <input checked="" type="checkbox"/> REQUEST FOR PROPOSAL (RFP)	3. Date Issued 03/01/2019
IMPORTANT – The "offer" section on the second page must be fully completed by offeror		
4. Contract No. BPA-19-D-83106	5. Requisition/Purchase Request No.	6. Project No(<i>if applicable</i>)
7. Issued By Bonneville Power Administration P.O. Box 3621 Portland, OR 97208-3621	8. Address Offer To Bonneville Power Administration ATTN: Christina Craig, NSSV-4400-2 RE: RFP 4525 - Fault Duty P.O. Box 491 Vancouver, WA 98666-0491	
FOR INFORMATION CALL:	9A. Name Christina M. Craig	9B. Work Telephone No. (<i>NO COLLECT CALLS</i>) 360-619-6310

SOLICITATION

10. The Government Requires Performance Of the Work Described In these Documents (*Title, identifying no., date*)
This is an indefinite-delivery indefinite-quantity (IDIQ), single award, with fixed-price task orders, contract for Bonneville Power Administration's Substation Equipment Replacement program. Work will be performed throughout Bonneville's transmission operating areas in Oregon, Washington, Idaho, Montana, Wyoming and northern California.

- This Request for Proposal (RFP) consists of the following:
- Attachment 1, Instructions and Evaluation Process
 - Attachment A, RFP4525 Schedule of Prices Workbook
 - Attachment B, Past Performance Questionnaire Summary Sheet
 - Attachment C, Past Performance Questionnaire Form
 - Attachment 2, Draft Contract
 - Unit 1 Schedule
 - Unit 2 Contract Clauses
 - Unit 3 Master Statement of Work*
 - Attachment 4, Task Order 001 - Vantage
 - Attachment 5, Task Order 002 - Chief Joe
 - Attachment 6, Task Order 003 - John Day

*Note: All technical documents, designs and references in the Statement of Work shall be retrieved from BPA's ProjectWise. All document location links are contained within the Master Statement of Work and Task Order level Statements of Work. Offerors are responsible for obtaining all documents from ProjectWise to complete proposals and during performance of work.

Offerors may submit written "Requests for Information" in writing to the Contracting Officer via email at cmcraig@bpa.gov. The last date to submit RFIs is 19 April 2019.

Offeror must be registered in Bonneville's ISN Network with a rating of "A" or "B" to be eligible for award.

11. The Contractor shall begin performance within **10** calendar days and complete it within see task orders calendar days after receiving award, notice to proceed. The performance period is mandatory, negotiable.

12A. The Contractor must furnish any required performance and payment bonds? (If "YES", indicate within how many calendar days after award in Item 12B.) <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	12B. Calendar Days 10
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13. Additional Solicitation Requirements
- A. Offers are due at the place specified in Item 8 or by email at [@cmcraig@bpg.gov](mailto:cmcraig@bpg.gov) by **10:00 AM** (*hour*) local time **06 May 2019** (*date*).
 - B. An offer guarantee is is not required.
 - C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text and by reference.
 - D. Offers providing less than **120** calendar days for government acceptance after the date offers are due will not be considered and will be rejected.

File Code: SU-12a Retention: SU-12a, contracts <\$100,000; Retain while Active* + 3 years, and then dispose.*Active period ends upon termination of contract or expiration of warranty. File Code: SU-12b; Retention: SU-12b, contracts >\$100,000; Retain while Active* + 6 years, and then dispose. *Active period ends upon termination of contract or expiration of warranty.

**U.S. DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
SOLICITATION, OFFER AND AWARD FOR CONSTRUCTION**

OFFER

(Must be fully completed by offeror)

<p>14. Name and Address of Offeror <i>(include ZIP Code)</i></p> <p>PAR Electrical Contractors, Inc. PO Box 521 2340 Industrial Ave. Hubbard, OR 97032</p>	<p>15. Work Telephone No. <i>(include area code)</i> (503) 982-4651</p> <p>16. Remittance Address <i>(Include only if different than Item 14)</i> N/A</p>
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17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms and conditions of this solicitation, if this offer is accepted by the Government in writing within ___ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirement stated in Item 130. Failure to insert any number means the offeror accepts the minimum in Item 130)*

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation-give number and date of each)

Amendment No	01	02	03	04								
Date	3/15/19	4/12/19	4/19/19	5/2/19								

<p>20A. Name and Title of Person Authorized to Sign Offer <i>(Type or Print Name and Title)</i></p> <p>Matt Susskind: Division Manager</p>	<p>(b) (6)</p>	<p>20C. OFFER DATE</p> <p>5/15/2019</p>
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AWARD (To be completed by Government)

21. Items Accepted	
Line Items 001, Base IDIQ with options	
22. Amount	23. Accounting and Appropriation Date
\$100,000.00	
24. Submit Invoices to address shown in Block 27	25. Pursuant to the BONNEVILLE PURCHASING INSTRUCTIONS (BPI) Meaningful Competition will be Performed unless This Requirement is a Unique Source.
26. Administered by	27. Payment will be made by
NSSV, Construction Acquisition Team	tecontractsupport@bpa.gov

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

<p><input checked="" type="checkbox"/> 28. RFP <i>(Contractor is required to sign this document and return ___ copies to issuing office.)</i> Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration slated in this contract. The rights and obligations of the parties to this contract shall be governed by: (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications.</p>	<p><input type="checkbox"/> 29. RFQ <i>(Contractor is not required to sign this document.)</i> Your offer on this solicitation is hereby accepted as to the items listed. This award consummates the contract, which consists of: (a) the Government solicitation and your offer, and (b) this contract award.</p>
30A. Name and Title of Contractor Person Authorized to Sign <i>(Type or print)</i>	31A. NAME OF CONTRACTING OFFICER <i>(Type or print)</i>
George Coleman - Senior VP	Christina M. Craig
30B. Signature of Offeror/Contractor	318. United States of America by <i>(Signature of Contracting Officer)</i>
(b) (6)	(b) (6)
30C. Date	31C. Date
9/13/19	

ATTACHMENT 2
SUBSTATION EQUIPMENT REPLACEMENT
INDEFINITE DELIVERY, INDEFINITE QUANTITY (IDIQ) CONTRACT

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UNIT 1 — SCHEDULE

SCHEDULE OF PRICES (22-51) (FEB 2019)

The contractor shall provide all labor and materials necessary to complete the work described in Unit 3, Statement of Work, and any subsequent task orders. For this contract, prices are set forth as follows:

Schedule A is the Indefinite-Delivery, Indefinite-Quantity (IDIQ) contract limitation and defines the effective period of the contract. Schedule A sets the minimum and maximum authorizations set for the duration of this contract (refer to clause 7-19 order limitations). Task order prices shall be reflective of the prices and rates established in this clause and the appropriate price schedule for the task(s) performed. The rates applicable to the task order are determined by the date of the task order award for engineering and design, and for construction labor and equipment rates shall be determined the date the construction option is exercised.

Schedule B is labor rates for engineering labor categories performed for all engineering and design efforts. All labor rates are fully loaded and inclusive of all profit, overhead and agreed upon subcontract rates of 12.5%. Task orders will be issued under the basis of these rates and the agreed upon level of effort and any necessary travel and other expenses necessary for the task order requirements. For task orders that are only for engineering and construction support services (no construction effort), the mark-up rate shall be reduced by 2.5% for a total of 10%.

Schedule C is labor rates for all construction labor categories. All labor rates are fully loaded and inclusive of all profit and overhead. Task orders will be issued under the basis of these rates and the agreed upon level of effort necessary for the task order requirements. All construction labor rates are exclusive of daily subsistence. Subsistence is limited to the published GSA (see <https://www.gsa.gov/travel/plan-book/per-diem-rates>) per diem rates for lodging only (meals and incidental rates are not allowable).

All prices listed in this Schedule of Prices are firm-fixed prices. All un-priced options and change orders will be priced based on the published prices listed in Schedule B - Engineering Rates and Schedule C - Construction Labor Rates herein.

The following mark-up rates shall apply for all work and change orders:

- A 12.5% mark-up rate is allowable for all additional subcontracted engineering and services efforts outside the services performed under Schedule B. For task orders that are only for engineering and construction support services, the mark-up rate shall be reduced by 2.5% for a total of 10%.
- A 12.5% mark-up is allowable for material and equipment purchases. No added mark-up is authorized for contractor owned equipment used in the performance of this contract.
- A 12.5% mark-up is allowable to cover overhead and profit on all subcontracted efforts for construction. No added mark-up is authorized for self-performed work.

SCHEDULE A					
<u>Item No.</u>	<u>Description</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit Price</u>	<u>Amount</u>
0001	Base IDIQ, Date of Award through December 31, 2020 FFP Construction FFP – Contractor shall provide all plant, labor, equipment, materials, expertise & supervision necessary for various substation equipment replacement Task Orders. Maximum contract value is \$100,000,000.00 for base and all options.			Minimum Guarantee \$100,000.00	
1001	Option Period 1 – January 1, 2021 through December 31, 2021				
2001	Option Period 2 – January 1, 2022 through December 31, 2022				
3001	Option Period 3 – January 1, 2023 through December 31, 2023				
4001	Option Period 4 – January 1, 2024 through December 31, 2024				
Maximum Contract Award Amount \$100,000,000.00					

SCHEDULE B – ENGINEERING LABOR RATES

Item Number	Description	Unit	Unit Price From The Contract Award Date Through December 31, 2020	Unit Price For The Period Of January 1, 2021 Through December 31, 2021
001	Project Manager I	HR	\$128.25	\$132.75
002	Project Manager II	HR	\$182.25	\$187.88
003	Project Manager III	HR	\$220.50	\$227.25
004	Substation Engineer I	HR	\$112.50	\$115.88
005	Substation Engineer II	HR	\$146.25	\$150.75
006	Substation Engineer III	HR	\$180.00	\$185.63
007	Substation Technician I	HR	\$87.75	\$91.13
008	Substation Technician II	HR	\$103.50	\$106.88
009	Substation Technician III	HR	\$141.75	\$146.25
010	Professional Engineer I	HR	\$157.50	\$163.13
011	Professional Engineer II	HR	\$196.88	\$203.63
012	Professional Engineer III	HR	\$229.50	\$237.38
013	QA/QC Lead	HR	\$235.13	\$243.00
014	Cad Operator I	HR	\$67.50	\$69.75

015	Cad Operator II	HR	\$78.75	\$82.13
016	Cad Operator III	HR	\$90.00	\$93.38
017	Cad Lead	HR	\$97.88	\$101.25
018	Administrator	HR	\$90.00	\$93.38
019	Project Controller	HR	\$90.00	\$93.38

SCHEDULE B – ENGINEERING LABOR RATES (continued)

Item Number	Description	Unit	Unit Price for the Period of January 1, 2022 through December 31, 2022	Unit Price for the Period of January 1, 2023 through December 31, 2023
001	Project Manager I	HR	\$136.13	\$140.63
002	Project Manager II	HR	\$193.50	\$200.25
003	Project Manager III	HR	\$234.00	\$241.88
004	Substation Engineer I	HR	\$120.38	\$123.75
005	Substation Engineer II	HR	\$155.25	\$160.88
006	Substation Engineer III	HR	\$191.25	\$196.88
007	Substation Technician I	HR	\$93.38	\$96.75
008	Substation Technician II	HR	\$110.25	\$113.63

009	Substation Technician III	HR	\$150.75	\$155.25
010	Professional Engineer I	HR	\$167.63	\$172.13
011	Professional Engineer II	HR	\$209.25	\$216.00
012	Professional Engineer III	HR	\$244.13	\$250.88
013	QA/QC Lead	HR	\$249.75	\$257.63
014	Cad Operator I	HR	\$72.00	\$74.25
015	Cad Operator II	HR	\$84.38	\$86.63
016	Cad Operator III	HR	\$95.63	\$99.00
017	Cad Lead	HR	\$104.63	\$108.00
018	Administrator	HR	\$95.63	\$99.00
019	Project Controller	HR	\$95.63	\$99.00

SCHEDULE B – ENGINEERING LABOR RATES (continued)

Item Number	Description	Unit	Unit Price for the Period of January 1, 2024 through December 31, 2024
001	Project Manager I	HR	\$145.13
002	Project Manager II	HR	\$205.88

003	Project Manager III	HR	\$248.63
004	Substation Engineer I	HR	\$127.13
005	Substation Engineer II	HR	\$165.38
006	Substation Engineer III	HR	\$203.63
007	Substation Technician I	HR	\$99.00
008	Substation Technician II	HR	\$117.00
009	Substation Technician III	HR	\$159.75
010	Professional Engineer I	HR	\$177.75
011	Professional Engineer II	HR	\$221.63
012	Professional Engineer III	HR	\$258.75
013	QA/QC Lead	HR	\$265.50
014	Cad Operator I	HR	\$76.50
015	Cad Operator II	HR	\$88.88
016	Cad Operator III	HR	\$102.38
017	Cad Lead	HR	\$110.25
018	Administrator	HR	\$102.38

019	Project Controller	HR	\$102.38
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SCHEDULE C – CONSTRUCTION LABOR RATES					
Item Number	Description	Unit	Straight Time Rate	Overtime Rate	Double Time Rate
001	Superintendent	HR	\$131.93	\$178.96	\$225.99
002	General Foreman	HR	\$131.93	\$178.96	\$225.99
003	Foreman	HR	\$129.54	\$175.37	\$221.21
004	Lineman	HR	\$117.58	\$157.44	\$197.29
005	Wireman	HR	\$117.58	\$157.44	\$197.29
006	Apprentice 1	HR	\$79.21	\$103.13	\$127.04
007	Apprentice 2	HR	\$81.60	\$106.71	\$131.82
008	Apprentice 3	HR	\$84.79	\$111.50	\$138.20
009	Apprentice 4	HR	\$88.78	\$117.47	\$146.17
010	Apprentice 5	HR	\$93.56	\$124.65	\$155.74
011	Apprentice 6	HR	\$99.94	\$134.21	\$168.49
012	Apprentice 7	HR	\$103.13	\$139.00	\$174.87
013	Heavy Equipment Operator	HR	\$117.58	\$157.44	\$197.29
014	Equipment Operator	HR	\$102.68	\$136.96	\$171.24
015	Safety Watcher	HR	\$129.54	\$175.37	\$221.21
016	Project Manager	HR	\$115.77	\$135.15	N/A
017	Quality Control Manager	HR	\$129.54	\$175.37	\$221.21
018	Material Manager	HR	\$129.54	\$175.37	\$221.21
019	Safety Manager	HR	\$129.54	\$175.37	\$221.21

*Straight Time: Defined as 8 hours of work performed within a standard work week (Monday through Friday).

**Overtime: Applies to any work performed on Saturdays up to the first 8 hours performed. In addition, any work performed after 8 hours per day during a standard work week, and is limited to two hours.

***Double Time: Applies to any work performed on Sundays and New Year's Day, Memorial Day, Fourth of July (US Independence Day), Labor Day, Thanksgiving Day, the Friday following Thanksgiving Day, and Christmas Day. In addition, any work performed after 10 hours per day during a standard work week, and all work after 8 hours performed on Saturdays.

UNIT 2 —CLAUSES

APPLICABLE REGULATIONS (1-1)

(MAR 2018)(BPI 1.4.1)

Purchases made by the Bonneville Power Administration are subject to the policies and procedures outlined in the Bonneville Purchasing Instructions. The BPI is available without charge on the Internet at <http://bpa.gov>. Copies are available from the Head of the Contracting Activity – CGP, Bonneville Power Administration, P.O. Box 3621, Portland, OR 97208. Subscriptions are not available.

ORGANIZATIONAL CONFLICTS OF INTEREST (3-2)

(MAR 2018)(BPI 3.3.3)

- (a) The offeror or contractor warrants that, to the best of its knowledge and belief, and except as otherwise disclosed, there are no relevant facts which could give rise to organizational conflicts of interest, as defined in BPI 3.4.1, and that the offeror or contractor has disclosed all relevant information to the Contracting Officer.
- (b) The offeror or contractor agrees that, if after award, an organizational conflict of interest with respect to this contract is discovered, an immediate and full disclosure in writing shall be made to the Contracting Officer which shall include a description of the action which the contractor has taken, or proposes to take, to avoid or mitigate such conflicts.
- (c) In the event that the contractor was aware of an organizational conflict of interest prior to the award of this contract and did not disclose the conflict to the Contracting Officer, Bonneville may terminate the contract for default.
- (d) The provisions of this clause shall be included in all subcontracts for work to be performed in aid of the services provided by the prime contractor, and the terms "contract," "contractor," "Contracting Officer" modified appropriately.

CERTIFICATION, DISCLOSURE, AND LIMITATION REGARDING PAYMENTS TO INFLUENCE CERTAIN FEDERAL TRANSACTIONS (3-3)

(MAR 2018)(BPI 3.4.7)

- (a) As used in this clause:

"Covered Federal action" means (1) the awarding of any Federal contract; and (2) the extension, continuation, renewal, amendment, or modification of any Federal contract.

"Indian tribe" and "tribal organization" have the meaning provided in section 4 of the Indian Self-Determination and Education Assistance Act (25 U.S.C. § 450B) and includes Alaskan Natives.

"Influencing or attempting to influence" means making, with the intent to influence, any communication to or appearance before an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with any covered Federal action.

"Local government" means a unit of government in a State and, if chartered, established, or otherwise recognized by a State for the performance of a governmental duty, includes a local public authority, a special district, an intrastate district, a council of governments, a sponsor group representative organization, and any other instrumentality of a local government.

"Person" means an individual, corporation, company, association, authority, firm, partnership, society, State, and local government, regardless of whether such entity is operated for profit or not for profit. This term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Reasonable compensation" means, with respect to a regularly employed officer or employee of any person, compensation that is consistent with the normal compensation for such officer or employee for work that is not furnished to, not funded by, or not furnished in cooperation with the Federal Government.

"Reasonable payment" means, with respect to professional and other technical services, a payment in an amount that is consistent with the amount normally paid for such services in the private sector.

"Recipient" includes all contractors and subcontractors. The term excludes an Indian tribe, tribal organization, or any other Indian organization with respect to expenditures specifically permitted by other Federal law.

"Regularly employed" means, with respect to an officer or employee of a person requesting or receiving a Federal contract, an officer or employee who is employed by such person for at least 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person for receipt of such contract. An officer or employee who is employed by such person for less than 130 working days within one year immediately preceding the date of the submission that initiates agency consideration of such person shall be considered to be regularly employed as soon as he or she is employed by such person for 130 working days.

"State" means a State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, a territory or possession of the United States, an agency or instrumentality of a State, and a multi-State, regional, or interstate entity having governmental duties and powers.

- (b) The offeror, by signing its offer, hereby certifies to the best of his or her knowledge and belief that:
- (1) No Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with the awarding of any Federal contract or the extension, continuation, renewal, amendment, or modification of any Federal contract.
 - (2) If any funds other than Federal appropriated funds (including profit or fee received under a covered Federal transaction) have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress on his or her behalf in connection with this solicitation, the offeror shall complete and submit, with its offer, Standard Form LLL, Disclosure of Lobbying Activities, to the Contracting Officer.
 - (3) He or she will include the language of this certification in all subcontract awards at any tier and that all sub-recipients of subcontract awards in excess of \$150,000 shall certify and disclose accordingly.
- (c) Submission of this certification and disclosure is a prerequisite for making or entering into this contract imposed by section 1352, title 31, U.S. Code. Any person who makes an expenditure prohibited under this provision or who fails to file or amend the disclosure form to be filed or amended by this provision, shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.
- (d) A contractor who requests or receives from an agency a Federal contract shall file with that agency a disclosure form, OMB Standard Form LLL, Disclosure of Lobbying Activities, if such person has made or has agreed to make any payment using non-appropriated funds (to include profits from any covered Federal action), which would be prohibited under this clause if paid for with appropriated funds.
- (e) The contractor shall file a disclosure form at the end of each calendar quarter in which there occurs any event that materially affects the accuracy of the information contained in any disclosure form previously filed by

such person under paragraph (b) of this clause. An event that materially affects the accuracy of the information reported includes--

- (1) A cumulative increase of \$25,000 or more in the amount paid or expected to be paid for influencing or attempting to influence a covered Federal action; or
 - (2) A change in the person(s) or individual(s) influencing or attempting to influence a covered Federal action; or
 - (3) A change in the officer(s), employee(s), or Member(s) contacted to influence or attempt to influence a covered Federal action.
- (f) The contractor shall require the submittal of a certification, and if required, a disclosure form, by any person who requests or receives any subcontract exceeding \$150,000 under the Federal contract.
- (g) All subcontractor disclosure forms (but not certifications), shall be forwarded from tier to tier until received by the prime contractor. The prime contractor shall submit all disclosure forms to the Contracting Officer at the end of the calendar quarter in which the disclosure form is submitted by the subcontractor. Each subcontractor certification shall be retained in the subcontract file of the awarding contractor.
- (h) Any person who makes an expenditure prohibited under this clause or who fails to file or amend the disclosure form to be filed or amended by this clause shall be subject to a civil penalty as provided by 31 U. S. Code 1352. An imposition of a civil penalty does not prevent the Government from seeking any other remedy that may be applicable.

CONTRACTOR EMPLOYEE WHISTLEBLOWER RIGHTS (3-10) (APR 2014)(BPI 3.6.4)

- (i) This contract and employees working on this contract will be subject to the whistleblower rights and remedies in the Contractor employee whistleblower protections established at 41 U.S.C. § 4712 by section 828 of the National Defense Authorization Act for Fiscal Year 2013 (Pub. L. 112-239).
- (j) The Contractor shall inform its employees in writing, in the predominant language of the workforce, of employee whistleblower rights and protections under 41 U.S.C. § 4712.
- (k) The Contractor shall insert the substance of this clause, including this paragraph (c), in all subcontracts that exceed \$150,000.

PRIVACY ASSURANCE (5-1) (MAR 2018)(BPI 5.1.4 (a))

The contractor acknowledges and agrees that, in the course of its contract with Bonneville, contractor may receive or access personally identifiable information (PII) belonging to Bonneville. Contractor represents and warrants that its collection, access, use, storage, disposal, and disclosure of PII will comply with all applicable privacy laws and regulations, including the Privacy Act (5 U.S.C. § 552a), the E-Government Act (44 U.S.C. § 101), and DOE regulations (10 CFR § 1008, et seq.). Contractor is responsible for the actions and omissions of its employees for the handling of PII. The contractor agrees not to share PII with any entity not explicitly authorized by the contract. The contractor agrees to report any security breach of PII within 24 hours of discovery of the breach. The contractor shall seek express consent from Bonneville before storing any PII on data servers, including redundant servers, which reside outside of the United States.

ORDERING (7-18M) (AUG 2018) (BPI 7.6.6(a))

- (a) Any services to be furnished under this contract shall be ordered by issuance of task orders designated in the Schedule. Such orders may be issued from **date of contract award** through **the effective period of the contract**.
- (b) All task orders are subject to the terms and conditions of this contract. In the event of conflict between a task order and this contract, the contract shall control.

- (c) A task order is considered “issued” when Bonneville deposits the order in the mail. Orders may be issued orally or by electronic commerce methods.
- (d) Details on Procedures for Ordering can be found in the Statement of Work section A.1.2.

ORDER LIMITATIONS (7-19)

(MAR 2018) (BPI 7.6.6(b))

- (a) Minimum order. When Bonneville requires supplies or services covered by this contract in an amount less than \$100,000.00, Bonneville is not obligated to purchase, nor is the Contractor obligated to furnish, those supplies or services under the contract.
- (b) Maximum order. The Contractor is not obligated to honor –
 - (1) Any order for a single item in excess of \$15 million;
 - (2) Any order for a combination of items in excess of \$100 million; or
 - (3) A series of orders from the same ordering office within five (5) days that together call for quantities exceeding the limitation in paragraph (b)(1) or (2) of this section.
- (c) Notwithstanding paragraph (b) of this section, the Contractor shall honor any order exceeding the maximum order limitation in paragraph (b), unless that order (or orders) is returned to the ordering office within three (3) days after issuance, with written notice stating the Contractor’s intent not to ship the item (or items) called for and the reasons. Upon receiving this notice, Bonneville may acquire the supplies or services from another source.

INDEFINITE QUANTITY (7-22)

(MAR 2018) (BPI 7.6.6(d))

- (a) This is an indefinite-quantity contract for the supplies or services specified, and effective for the period stated, in the Schedule. The quantities of supplies and services specified in the Schedule are estimates only and are not purchased by this contract.
- (b) Delivery or performance shall be made only as authorized by orders issued in accordance with the Ordering clause. The Contractor shall furnish to Bonneville, when and if ordered, the supplies or services specified in the Schedule up to and including the quantity designated in the Schedule as the “maximum.” Bonneville shall order at least the quantity of supplies or services designated in the Schedule as the “minimum.”
- (c) Except for any limitations on quantities in the Order Limitations clause or in the Schedule, there is no limit on the number of orders that may be issued. Bonneville may issue orders requiring delivery to multiple destinations or performance at multiple locations.
- (d) Any order issued during the effective period of this contract and not completed within that period shall be completed by the Contractor within the time specified in the order. The contract shall govern the Contractor’s and Government’s rights and obligations with respect to that order to the same extent as if the order were completed during the contract’s effective period; provided, that the Contractor shall not be required to make any deliveries under task orders issued against this contract after **December 31, 2026**.

OPTION FOR INCREASED QUANTITY – SEPARATELY PRICED LINE ITEM (7-38)

(MAR 2018) (BPI 7.9.8(e))

Bonneville may require the delivery of the numbered line item, identified in the Schedule as an option item, in the quantity and at the price stated in the Schedule. The Contracting Officer may exercise the option by written notice to the Contractor within to be determined on a task order basis. Delivery of added items shall continue at the same rate that like items are called for under the contract, unless the parties otherwise agree.

OPTION TO EXTEND THE TERM OF THE CONTRACT (7-40M)

(AUG 2019) (BPI 7.9.8(g))

- (a) Bonneville may extend the term of this contract by written notice to the Contractor within 30 days prior to the end date of the performance period; provided that Bonneville gives the Contractor a preliminary written notice of its intent to extend at least 60 days before the contract expires. The preliminary notice does not commit Bonneville to an extension.
- (b) If Bonneville exercises this option, the extended contract shall be considered to include this option clause.
- (c) If an option is exercised, the rate of pay for labor (including fringe benefits) or the unit prices shown in the Schedule may be adjusted by either an increase or decrease by mutual agreement of both parties.
- (d) The total duration of this contract, including the exercise of any options under this clause; shall not exceed six (6) years.

UTILIZATION OF SUPPLIER DIVERSITY PROGRAM CATEGORIES (8-3)

(MAR 2018) (BPI 8.3.1.1(b))

- (a) It is the policy of the United States that supplier diversity program categories; small businesses, HUBZone small businesses, disadvantaged small businesses, women-owned small businesses, veteran-owned small businesses, and service-disabled veteran-owned small businesses shall have the maximum practicable opportunity to participate in the performance of contracts let by any Federal agency, including contracts and subcontracts.
- (b) Prime contractors shall establish procedures to ensure the timely payment of amounts due pursuant to the terms of their subcontracts with these supplier diversity program categories.
- (c) The Contractor hereby agrees to carry out the policies in (a) and (b) in the awarding of subcontracts to the fullest extent consistent with efficient contract performance. The Contractor agrees to cooperate in any studies or surveys as may be conducted by the United States Small Business Administration or the Department of Energy as may be necessary to determine the extent of the Contractor's compliance with this clause.
- (d) As used in this contract, the terms "small business ", and "HUBZone small business", and " disadvantaged small business", "veteran owned small business", and "service-disabled veteran-owned small business" shall mean a business as defined in this BPI Part 8, pursuant to section 3 of the Small Business Act and relevant regulations promulgated pursuant thereto.

LIQUIDATED DAMAGES – SMALL BUSINESS SUBCONTRACTING PLAN (8-5)

(MAR 2018) (BPI 8.3.4.1(b))

- (a) "Failure to make a good faith effort to comply with the subcontracting plan," as used in this clause, means a willful or intentional failure to perform in accordance with the subcontracting plan approved under this contract, or willful or intentional action to frustrate the plan.
- (b) If the Contractor has failed to meet its subcontracting goals and the Contracting Officer decides that the Contractor failed to make a good faith effort to comply with its subcontracting plan, the Contractor shall pay Bonneville liquidated damages in an amount stated. The amount of damages attributable to the Contractor's failure to comply shall be an amount equal to the actual dollar amount by which the contractor failed to achieve each subcontract goal, or in the case of a commercial products plan, that portion of the dollar amount allocable to the Bonneville contract by which the Contractor failed to achieve each subcontract goal.
- (c) Before the Contracting Officer makes a final decision that the Contractor has failed to make such good faith effort, the Contracting Officer shall give the Contractor written notice specifying the failure and permitting the Contractor to demonstrate what good faith efforts have been made. Failure to respond to the notice may be taken as an admission that no valid explanation exists. If the Contracting Officer finds that the contractor failed to make a good faith effort to comply with the subcontracting plan, the Contracting Officer shall issue a final decision to that effect and require that the Contractor pay the Government liquidated damages as provided in paragraph (b) of this clause.
- (d) With respect to approved commercial products plans, i.e., company-wide or division-wide subcontracting plans, the Contracting Officer of the agency that originally approved the plan will exercise the functions of the Contracting Officer under this clause on behalf of all agencies that awarded contracts covered by that commercial products plan.

- (e) The Contractor shall have the right of appeal, under the clause in this contract entitled Disputes, from any final decision of the Contracting Officer.
- (f) Liquidated damages shall be in addition to any other remedies that the Government may have.

BUY AMERICAN ACT - CONSTRUCTION MATERIALS (9-5)
(MAR 2018) (BPI 9.2.4 (a))

- (a) Agreement. In accordance with the Buy American Act (41 U.S.C. § 8301-8305), and Executive Order 10582, (as amended), the Contractor agrees that only domestic construction material will be used (by the Contractor, subcontractors, materialmen, and suppliers) in the performance of this contract, except for nondomestic material listed in the contract. In accordance with 41 U.S.C. § 1907, the component test of the Buy American Act is waived for construction material that is a COTS item as defined in BPI subpart 2.2.
- (b) Domestic construction material. Construction material means any article, material, or supply brought to the construction site for incorporation in the building or work. An unmanufactured construction material is a "domestic construction material" if it has been mined or produced in the United States. A manufactured construction material is a "domestic construction material" if it has been manufactured in the United States and if the cost of its components which have been mined, produced, or manufactured in the United States exceeds 50 percent of the cost of all its components. Component means any article, material, or supply directly incorporated in a construction material.
- (c) Domestic component. A component shall be considered to have been "mined, produced, or manufactured in the United States" (regardless of its source in fact) if the article, material, or supply in which it is incorporated was manufactured in the United States and the component is of a class or kind determined by the Government to be not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality.
- (d) Excluded materials. The requirements of this clause do not apply to the following raw material and construction material components:
 - Antimony, as metal or oxide.
 - Asbestos, amosite, chrysolite, and crocidolite.
 - Bauxite.
 - Cadmium, ores and flue dust.
 - Calcium cyanimides.
 - Chrome ore or chromite.
 - Cobalt, in cathodes, rondelles, or other primary ore and metal forms.
 - Cork, wood or bark and waste.
 - Diamonds, industrial, stones and abrasives.
 - Fibers of the following types: jute, jute burlaps, and sisal.
 - Graphite, natural, crystalline, crucible grade.
 - Hemp.
 - Leather, sheepskin, hair type.
 - Manganese.
 - Mica.
 - Nickel, primary, in ingots, pigs, shots, cathodes, or similar forms; nickel oxide and nickel salts.
 - Platinum and related group metals.
 - Quartz crystals.
 - Rubber, crude and latex.
 - Spare and replacement parts for equipment of foreign manufacture, and for which domestic parts are not available.

RESTRICTION ON CERTAIN FOREIGN PURCHASES (9-8)
(JUL 2013) (BPI 9.3.2.1 (a)(b))

- (a) Except as authorized by the Office of Foreign Assets Control (OFAC) in the Department of the Treasury, the Contractor shall not acquire, for use in the performance of this contract, any supplies or services if any proclamation, Executive Order, or statute administered by OFAC, or if OFAC's implementing regulations at 31 CFR Chapter V, would prohibit such a transaction by a person subject to the jurisdiction of the United States.
- (b) Except as authorized by OFAC, most transactions involving Cuba, Iran, and Sudan are prohibited, as are most imports from Burma or North Korea, into the United States or its outlying areas. Lists of entities and individuals subject to economic sanctions are included in OFAC's List of Specially Designated Nationals and Blocked Persons at <http://www.treas.gov/offices/enforcement/ofac/sdn>. More information about these restrictions, as well as updates, is available in the OFAC's regulations at 31 CFR Chapter V and/or on OFAC's website at <http://www.treas.gov/offices/enforcement/ofac>.
- (c) The contractor shall insert this clause, including this paragraph (c), in all subcontracts.

EQUAL OPPORTUNITY (10-1)
(JUN 2016)(BPI 10.1.4.3(a))

As prescribed in 10.1.4.3, insert the following clause in all solicitations and contracts

- (a) Definition. As used in this clause.
 - "Gender identity" has the meaning given by the Department of Labor's Office of Federal Contract Compliance Programs, and is found at https://www.dol.gov/ofccp/LGBT/LGBT_FAQs.html.
 - "Sexual orientation" has the meaning given by the Department of Labor's Office of Federal Contract Compliance Programs, and is found at https://www.dol.gov/ofccp/LGBT/LGBT_FAQs.html
 - "United States," as used in this clause, means the 50 States, the District of Columbia, Puerto Rico, the Northern Mariana Islands, American Samoa, Guam, the U.S. Virgin Islands, and Wake Island.
- (b)
 - (1) If, during any 12-month period (including the 12 months preceding the award of this contract), the Contractor has been or is awarded nonexempt federal contracts and/or subcontracts that have an aggregate value in excess of \$10,000, the Contractor shall comply with this clause, except for work performed outside the United States by employees who were not recruited within the United States. Upon request, the Contractor shall provide information necessary to determine the applicability of this clause.
 - (2) If the Contractor is a religious corporation, association, educational institution, or society, the requirements of this clause do not apply with respect to the employment of individuals of a particular religion to perform work connected with the carrying on of the Contractor's activities (41 CFR 60-1.5).
- (c)
 - (1) The Contractor shall not discriminate against any employee or applicant for employment because of race, color, religion, sex, sexual orientation, gender identity, or national origin. However, it shall not be a violation of this clause for the Contractor to extend a publicly announced preference in employment to Indians living on or near an Indian reservation, in connection with employment opportunities on or near an Indian reservation, as permitted by 41 CFR 60-1.5.
 - (2) The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, color, religion, sex, or national origin. This shall include, but not be limited to –
 - (i) Employment;
 - (ii) Upgrading;
 - (iii) Demolition;
 - (iv) Transfer;
 - (v) Recruitment or recruitment advertising;
 - (vi) Layoff or termination;
 - (vii) Rates of pay or other forms of compensation; and (viii) Selection for training, including apprenticeship.
 - (3) The Contractor shall post in conspicuous places available to employees and applicants for employment the notices to be provided by the Contracting Officer that explain this clause.

- (4) The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, color, religion, sex, sexual orientation, gender identity, or national origin.
 - (5) The Contractor shall send, to each labor union or representative of workers with which it has a collective bargaining agreement or other contract or understanding, the notice to be provided by the Contracting Officer advising the labor union or workers' representative of the Contractor's commitments under this clause, and post copies of the notice in conspicuous places available to employees and applicants for employment.
 - (6) The Contractor shall comply with Executive Order 11246, as amended, and the rules, regulations, and orders of the Secretary of Labor.
 - (7) The Contractor shall furnish to the contracting agency all information required by Executive Order 11246, as amended, and by the rules, regulations, and orders of the Secretary of Labor. The Contractor shall also file Standard Form 100 (EEO-1), or any successor form, as prescribed in 41 CFR Part 60-1. Unless the Contractor has filed within the 12 months preceding the date of contract award, the Contractor shall, within 30 days after contract award, apply to either the regional Office of Federal Contract Compliance Programs (OFCCP) or the local office of the Equal Employment Opportunity Commission for the necessary forms.
 - (8) The Contractor shall permit access to its premises, during normal business hours, by the contracting agency or the (OFCCP) for the purpose of conducting on-site compliance evaluations and complaint investigations. The Contractor shall permit the Government to inspect and copy any books, accounts, records (including computerized records), and other material that may be relevant to the matter under investigation and pertinent to compliance with Executive Order 11246, as amended, and rules and regulations that implement the Executive Order.
 - (9) If the OFCCP determines that the Contractor is not in compliance with this clause or any rule, regulation, or order of the Secretary of Labor, this contract may be canceled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts, under the procedures authorized in Executive Order 11246, as amended. In addition, sanctions may be imposed and remedies invoked against the Contractor as provided in Executive Order 11246, as amended, in the rules, regulations, and orders of the Secretary of Labor, or as otherwise provided by law.
 - (10) The Contractor shall include the terms and conditions of this clause in every subcontract or purchase order that is not exempted by the rules, regulations, or orders of the Secretary of Labor issued under Executive Order 11246, as amended, so that these terms and conditions will be binding upon each subcontractor or vendor.
 - (11) The Contractor shall take such action with respect to any subcontract or purchase order as the contracting officer may direct as a means of enforcing these terms and conditions, including sanctions for noncompliance; provided, that if the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of any direction, the Contractor may request the United States to enter into the litigation to protect the interests of the United States.
- (d) Notwithstanding any other clause in this contract, disputes relative to this clause will be governed by the procedures in 41 CFR 60-1.1.

AFFIRMATIVE ACTION FOR WORKERS WITH DISABILITIES (10-2)

(OCT 2014)(BPI 10.1.5.3)

(a) General.

- (1) Regarding any position for which the employee or applicant for employment is qualified, the Contractor shall not discriminate against any employee or applicant because of physical or mental disability. The Contractor agrees to take affirmative action to employ, advance in employment, and otherwise treat qualified individuals with disabilities without discrimination based upon their physical or mental disability in all employment practices such as --
 - (i) Recruitment, advertising, and job application procedures;

- (ii) Hiring, upgrading, promotion, award of tenure, demotion, transfer, layoff, termination, right of return from layoff, and rehiring;
 - (iii) Rates of pay or any other form of compensation and changes in compensation;
 - (iv) Job assignments, job classifications, organizational structures, position descriptions, lines of progression, and seniority lists;
 - (v) Leaves of absence, sick leave, or any other leave;
 - (vi) Fringe benefits available by virtue of employment, whether or not administered by the Contractor;
 - (vii) Selection and financial support for training, including apprenticeships, professional meetings, conferences, and other related activities, and selection for leaves of absence to pursue training;
 - (viii) Activities sponsored by the Contractor, including social or recreational programs; and (ix) Any other term, condition, or privilege of employment.
- (2) The Contractor agrees to comply with the rules, regulations, and relevant orders of the Secretary of Labor (Secretary) issued under the Rehabilitation Act of 1973 (29 U.S.C. § 793) (the Act), as amended.
- (b) Postings.
- (1) The Contractor agrees to post employment notices stating --
 - (i) The Contractor's obligation under the law to take affirmative action to employ and advance in employment qualified individuals with disabilities; and
 - (ii) The rights of applicants and employees.
 - (2) These notices shall be posted in conspicuous places that are available to employees and applicants for employment. The Contractor shall ensure that applicants and employees with disabilities are informed of the contents of the notice (e.g., the Contractor may have the notice read to a visually disabled individual, or may lower the posted notice so that it might be read by a person in a wheelchair). The notices shall be in a form prescribed by the Deputy Assistant Secretary for Federal Contract Compliance of the U.S. Department of Labor (Deputy Assistant Secretary) and shall be provided by or through the Contracting Officer.
 - (3) The Contractor shall notify each labor union or representative of workers with which it has a collective bargaining agreement or other contract understanding, that the Contractor is bound by the terms of Section 503 of the Act and is committed to take affirmative action to employ, and advance in employment, qualified individuals with physical or mental disabilities.
- (c) Noncompliance. If the Contractor does not comply with the requirements of this clause, appropriate actions may be taken under the rules, regulations, and relevant orders of the Secretary issued pursuant to the Act.
- (d) Subcontracts. The Contractor shall include the terms of this clause in every subcontract or purchase order in excess of \$15,000 unless exempted by rules, regulations, or orders of the Secretary. The Contractor shall act as specified by the Deputy Assistant Secretary to enforce the terms, including action for noncompliance.

**NOTIFICATION OF EMPLOYEE RIGHTS UNDER THE NATIONAL LABOR RELATIONS ACT (10-6)
(OCT 2014) (BPI 10.1.7.2)**

- (a) During the term of this contract, the contractor agrees to post a notice, of such size and in such form, and containing such content as the Secretary of Labor shall prescribe, in conspicuous places in and about its plants and offices where employees covered by the National Labor Relations Act engage in activities relating to the performance of the contract, including all places where notices to employees are customarily posted both physically and electronically. The notice shall include the information contained in the notice published by the Secretary of Labor in the Federal Register (Secretary's Notice).
- (b) The contractor will comply with all provisions of the Secretary's Notice, and related rules, regulations, and orders of the Secretary of Labor.
- (c) In the event that the contractor does not comply with any of the requirements set forth in paragraphs (a) or (b) above, this contract may be cancelled, terminated, or suspended in whole or in part, and the contractor maybe declared ineligible for future Government contracts in accordance with procedures authorized in or adopted pursuant to Executive Order 13496. Such other sanctions or remedies may be imposed as are provided in Executive Order 13496, or by rule, regulation, or order of the Secretary of Labor, or as are otherwise provided by law.

- (d) The contractor will include the provisions of paragraphs (a) through (c) above in every subcontract entered into in connection with this contract (unless exempted by rules, regulations, or orders of the Secretary of Labor issued pursuant to section 3 of Executive Order 13496 of January 30, 2009), so that such provision will be binding upon each subcontractor. The contractor will take such action with respect to any such contract as may be directed by the Secretary of Labor as a means of enforcing such provisions, including the imposition of sanctions for noncompliance: Provided, however, that if the contractor becomes involved in litigation with a subcontractor, or is threatened with such involvement, as a result of such direction, the contractor may request the United States to enter into such litigation to protect the interests of the United States.

**CONSTRUCTION WAGE RATE REQUIREMENTS (10-7)
(OCT 2014)(BPI 10.3.2.3(a))**

- (a) All laborers and mechanics employed or working upon the site of the work will be paid unconditionally and not less often than once a week, and without subsequent deduction or rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3)), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at time of payment computed at rates not less than those contained in the wage determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under section 1(b)(2) of the Construction Wage Rate Requirements statute on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (d) of this clause; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period are deemed to be constructively made or incurred during such period. Such laborers and mechanics shall be paid not less than the appropriate wage rate and fringe benefits in the wage determination for the classification of work actually performed, without regard to skill, except as provided in the clause entitled "Apprentices, Trainees, and Helpers." Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein; provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classifications and wage rates conformed under paragraph (b) of this clause) and the Construction Wage Rate Requirements (Davis-Bacon Act) poster (WH-1321) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.
- (b) Additional wage classifications.
- (1) The CO shall require that any class of laborers or mechanics, including helpers, which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The CO shall approve an additional classification, and wage rate and fringe benefits therefore, only when all the following criteria have been met:
- (i) Except with respect to helpers as defined in 29 CFR 5.2(n)(4), the work to be performed by the classification requested is not performed by a classification in the wage determination.
 - (ii) The classification is utilized in the area by the construction industry.
 - (iii) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
 - (iv) With respect to helpers, such classification prevails in the area in which the work is performed.
- (2) If the Contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the CO agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the CO to the Administrator of the Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator or an authorized representative will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the CO or will notify the CO within the 30-day period that additional time is necessary.

- (3) In the event the Contractor, the laborers or mechanics to be employed in the classification, or their representatives, and the CO do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the CO shall refer the questions, including the views of all interested parties and the recommendation of the CO, to the Administrator of the Wage and Hour Division for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the CO or will notify the CO within the 30-day period that additional time is necessary.
 - (4) The wage rate (including fringe benefits, where appropriate) determined pursuant to subparagraphs (b)(2) or (b)(3) of this clause shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification. Pending approval of the wage rate classification by the Wage and Hour Division per (b)(2) or (b)(3), the CO may unilaterally modify the contract to incorporate wage rates for interim use, as determined by the CO pursuant to (b)(1) of this clause. Whenever payment of such interim wage rate is made as prescribed by the CO pursuant to (b)(1), and the paid wage rate materially differs from the wage rate approved by the Wage and Hour Division pursuant to subparagraphs (b)(2) or (b)(3) of this clause, the CO shall make an equitable adjustment (upward or downward) in the contract price. The amount of the adjustment shall be the difference between the sum of interim wage rate paid and the wage rate approved by the Wage and Hour Division.
- (c) Whenever the minimum wage rate prescribed in the contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
 - (d) If the Contractor does not make payments to a trustee or other third person, the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program; provided that the Secretary of Labor has found, upon the written request of the Contractor, that the applicable standards of the Construction Wage Rate Requirements statute have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

WITHHOLDING – LABOR VIOLATIONS (10-8)
(OCT 2014) (BPI 10.3.2.3(b))

The Contracting Officer (CO) may withhold, or cause to be withheld, from the Contractor under this contract, or any other federal contract with the same Prime Contractor, as much of the otherwise due payments, advances, or guarantee of funds, as may be considered necessary to pay laborers and mechanics, including apprentices, trainees, and helpers, employed by the Contractor or any subcontractor the full amount of wages and fringe benefits required by the contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed, or working on the site of the work, all or part of the wages required by the contract, the CO may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds until such violations have ceased.

PAYROLLS AND BASIC RECORDS (10-9)
(OCT 2014) (BPI 10.3.2.3(c))

- (a) Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of 3 years thereafter for all laborers and mechanics working at the site of the work. Such records shall contain the name, address and social security number of each such worker, his or her correct classification, hourly rates of wages paid (including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof of the types described in 40 U.S.C. 3141(2)(B) (Construction Wage Rate Requirement statute)), daily and weekly number of hours worked, deductions made, and actual wages paid. Whenever the Secretary of Labor has found under paragraph (d) of Clause 10-7 Construction Wage Rate Requirements that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in 40 U.S.C. 3141(2)(B),

the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program is financially responsible, that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices or trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

- (b) Submission of payroll records to the Contracting Officer (CO) is not required under this contract unless specifically requested by the CO. Providing the payrolls, when requested, shall be prompt, and shall not be considered a change to the contract. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under paragraph (a) of this clause for the periods identified by the CO. This information may be submitted in any form desired. Optional Form WH-347 (Federal Stock Number 029-005-00014-1) is available for this purpose and may be purchased from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. The Prime Contractor is responsible for the submission of copies of payrolls by all subcontractors.
- (1) Each payroll submitted shall be accompanied by a "Statement of Compliance," signed by the Contractor or subcontractor or his or her agent who pays or supervises the payment of the persons employed under the contract and shall certify
 - (2) That the payroll for the payroll period contains the information required to be maintained under paragraph (a) of this clause and that such information is correct and complete;
 - (i) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in the Regulations, 29 CFR Part 3; and
 - (ii) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the contract.
 - (iii) The submission of a properly executed certification set forth on the reverse side of Optional Form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (b)(2) of this clause.
 - (iv) The falsification of any of the above certifications in this clause may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 3729 of Title 31 of the United States Code.
- (c) The Contractor or subcontractor shall make the records required under paragraph (a) of this clause available for inspection, copying, or transcription by the CO or authorized representatives of the CO or the Department of Labor. The Contractor or subcontractor shall permit the CO or representatives of the CO or the Department of Labor to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit required records or to make them available, the CO may, after written notice to the Contractor, take such action as may be necessary to cause the suspension of any further payment. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR 5.12.

APPRENTICES, TRAINEES, AND HELPERS (10-10)
(OCT 2014)(BPI 10.3.2.3(d))

- (a) Apprentices. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprentice in such an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training or a State Apprenticeship Agency (where appropriate) to be eligible for

probationary employment as an apprentice. The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on a payroll at an apprentice wage rate, who is not registered or otherwise employed as stated in this paragraph, shall be paid not less than the applicable wage determination for the classification of work actually performed. In addition, any apprentice performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. Where a contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits in accordance with the provisions of the apprenticeship program. If the apprenticeship program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the DOL determines that a different practice prevails for the applicable apprentice classification, fringes shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training, or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an apprenticeship program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

(b) Trainees.

- (1) Except as provided in 29 CFR 5.16, trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidenced by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provisions of the trainee program. If the trainee program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed in the wage determination unless the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman wage rate in the wage determination which provides for less than full fringe benefits for apprentices.
- (2) Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the Employment and Training Administration shall be paid not less than the applicable wage rate in the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ratio permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- (c) Helpers. Helpers will be permitted to work on a project if the helper classification is specified on an applicable wage determination or is approved pursuant to the conformance procedures set forth in paragraph (b) of the Contract Wage Rate Requirements clause. The allowable ratio of helpers to journeymen employed by the Contractor or subcontractor on the job site shall not be greater than two helpers for every three journeymen (in other words, not more than 40% of the total number of journeymen and helpers in each contractor's, or in each subcontractor's own workforce employed on the job site). Any worker listed on a payroll at a helper wage rate, who is not a helper as defined in 29 CFR 5.2(n)(4), shall be paid not less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any helper performing work on the job site in excess of the ratio permitted shall be paid not less than the applicable journeymen's (or laborer's, where appropriate) wage rate on the wage determination for the work actually performed.

- (d) Equal employment opportunity. The utilization of apprentices, trainees, helpers and journeymen under this clause shall be in conformity with the equal employment opportunity requirements of Executive Order 11246 and 29 CFR Part 30.

SUBCONTRACTS (LABOR STANDARDS) (10-11)
(OCT 2014)(BPI 10.3.2.3(e))

The Contractor or subcontractor shall include in any subcontracts the clauses entitled: "Construction Wage Rate Requirements," "Contract Work Hours and Safety Standards-Overtime Compensation" (if the clause is included in this contract), "Apprentices, Trainees and Helpers," "Payrolls and Basic Records," "Compliance with Copeland Act Requirements," "Withholding -- Labor Violations," "Subcontracts (Labor Standards)," "Contract Termination/Debarment," "Disputes Concerning Labor Standards," "Certification of Eligibility," and "Construction Wage Determination." The Contractor shall include a clause requiring its subcontractors to include these clauses in any lower-tier subcontracts. The Prime Contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with all the contract clauses cited in this paragraph.

CERTIFICATION OF ELIGIBILITY (10-12)

(OCT 2014) (BPI 10.3.2.3(f))

- (a) By entering into this contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm ineligible to be awarded Government contracts by virtue of 40 U.S.C. 3144(b)(2) or 29 CFR 5.12(a)(1).
- (b) No part of this contract shall be subcontracted to any person or firm ineligible for award of a Government contract by virtue of 40 U.S.C. 3144(b)(2) or 29 CFR 5.12(a)(1).
- (c) The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S.C. 1001.

CONSTRUCTION WAGE DETERMINATION RATES (10-13)
(OCT 2014) (BPI 10.3.2.3(g))

The wage determination(s) referred to in Clause 10-7 Construction Wage Rate Requirements are incorporated into the contract, and are identified as follows:

Determined at the Task Order Level

AFFIRMATIVE ACTION COMPLIANCE REQUIREMENTS FOR CONSTRUCTION (10-16)
(SEP 1998) (BPI 10.1.4.3(c))

- (a) Definitions.

"Employer identification number," as used in this clause, means the Federal Social Security number used on the employer's quarterly federal tax return, U.S. Treasury Department Form 941.

"Minority," as used in this clause, means—

- (1) Black (all persons having origins in any of the black African racial groups not of Hispanic origin);
 - (2) Hispanic (all persons of Mexican, Puerto Rican, Cuban, Central or South American, or other Spanish culture or origin, regardless of race);
 - (3) Asian and Pacific Islander (all persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian Subcontinent, or the Pacific Islands); and
 - (4) American Indian or Alaskan Native (all persons having origins in any of the original peoples of North America and maintaining identifiable tribal affiliations through membership and participation or community identification).
- (b) If the Contractor, or a subcontractor at any tier, subcontracts a portion of the work involving any construction trade, each such subcontract in excess of \$10,000 shall include this clause, including the goals for minority and female participation stated herein.

- (c) The goals for minority and female participation, expressed in percentage terms for the Contractor's aggregate work force in each trade on all construction work in the covered area, are as follows:

Goals for minority participation: To Be Determined at the Task Order level Goals

for female participation: 6.9%

Compliance with the goals will be measured against the total work hours performed.

- (d) The Contractor shall provide written notification to the Office of Federal Contract Compliance Programs (OFCCP) area office within 10 working days following award of any construction subcontract in excess of \$10,000 at any tier for construction work under the contract resulting from this solicitation. The notification shall list the –
- (1) Name, address, and telephone number of the subcontractor;
 - (2) Employer identification number of the subcontractor;
 - (3) Estimated dollar amount of the subcontract;
 - (4) Estimated starting and completion dates of the subcontract; and (5) Geographical area in which the subcontract is to be performed.
- (e) The Contractor shall implement the affirmative action procedures in subparagraphs (f)(1) through (7) of this clause. The goals stated in this contract are expressed as percentages of the total hours of employment and training of minority and female utilization that the Contractor should reasonably be able to achieve in each construction trade in which it has employees in the covered area. If the contractor performs construction work in a geographical area located outside of the covered area, it shall apply the goals established for the geographical area where that work is actually performed. The Contractor is expected to make substantially uniform progress toward its goals in each craft.
- (f) The contractor shall take affirmative action steps at least as extensive as the following:
- (1) Ensure a working environment free of harassment, intimidation, and coercion at all sites, and in all facilities where the Contractor's employees are assigned to work. The Contractor, if possible, will assign two or more women to each construction project. The Contractor shall ensure that foremen, superintendents, and other onsite supervisory personnel are aware of and carry out the Contractor's obligation to maintain such a working environment, with specific attention to minority or female individuals working at these sites or facilities.
 - (2) Immediately notify the OFCCP area office when the union or unions, with which the Contractor has a collective bargaining agreement, has not referred back to the Contractor a minority or woman sent by the Contractor, or when the Contractor has other information that the union referral process has impeded the Contractor's efforts to meet its obligations.
 - (3) Develop on-the-job training opportunities and/or participate in training programs for the area that expressly include minorities and women, including upgrading programs and apprenticeship and trainee programs relevant to the Contractor's employment needs, especially those programs funded or approved by the Department of Labor. The Contractor shall provide notice of these programs to the sources compiled under subparagraph (f)(2) above.
 - (4) Review, at least annually, the Contractor's equal employment policy and affirmative action obligations with all employees having responsibility for hiring, assignment, layoff, termination, or other employment decisions. Conduct reviews of this policy with all onsite supervisory personnel prior to initiation of construction work at a job site. A written record shall be made and maintained identifying the time and place of these meetings, persons attending, subject matter discussed, and disposition of the subject matter.
 - (5) Disseminate the Contractor's equal employment policy externally by including it in any advertising in the news media, specifically including minority and female news media. Provide written notification to, and discuss this policy with, other Contractors and subcontractors with which the Contractor does or anticipates doing business.

- (6) Conduct, at least annually, an inventory and evaluation at least of all minority and female personnel for promotional opportunities. Encourage these employees to seek or to prepare for, through appropriate training, etc., opportunities for promotion.
- (7) Maintain a record of solicitations for subcontracts for minority and female construction contractors and suppliers, including circulation of solicitations to minority and female contractor associations and other business associations.
- (g) The Contractor is encouraged to participate in voluntary associations that may assist in fulfilling one or more of the affirmative action obligations contained in subparagraphs (f)(1) through (7). The efforts of a contractor association, joint contractor-union, contractor-community, or similar group of which the contractor is a member and participant, may be useful in achieving one or more of its obligations under subparagraphs (f)(1) through (7).
- (h) A single goal for minorities and a separate single goal for women shall be established. The Contractor is required to provide equal employment opportunity and to take affirmative action for all minority groups, both male and female, and all women, both minority and non-minority. Consequently, the Contractor may be in violation of Executive Order 11246, as amended, if a particular group is employed in a substantially disparate manner.
- (i) The Contractor shall not use goals or affirmative action standards to discriminate against any person because of race, color, religion, sex, or national origin.
- (j) The Contractor shall not enter into any subcontract with any person or firm debarred from Government contracts under Executive Order 11246, as amended.
- (k) The Contractor shall carry out such sanctions and penalties for violation of this clause and of the Equal Opportunity clause, including suspension, termination, and cancellation of existing subcontracts, as may be imposed or ordered under Executive Order 11246, as amended, and its implementing regulations, by the OFCCP. Any failure to carry out these sanctions and penalties as ordered shall be a violation of this clause and Executive Order 11246, as amended.
- (l) Nothing contained herein shall be construed as a limitation upon the application of other laws that establish different standards of compliance.

**EQUAL OPPORTUNITY PREAWARD CLEARANCE OF SUBCONTRACTS (10-17)
(SEP 1998)(BPI 10.1.4.3(d))**

Notwithstanding the clause of this contract entitled "Subcontracts," the Contractor shall not enter into a first-tier subcontract for an estimated or actual amount of \$10 million or more without obtaining in writing from the CO a clearance that the proposed subcontractor is in compliance with equal opportunity requirements and therefore is eligible for award.

**EMPLOYMENT ELIGIBILITY VERIFICATION (10-18)
(OCT 2014) (BPI 10.1.8.3)**

- (a) "Employee assigned to the contract," as used in this clause, means an employee who was hired after November 6, 1986, who is directly performing work, in the United States, under a contract that is required to include the clause as prescribed by 10.7.3. An employee is not considered to be directly performing work under a contract if the employee—
 - (1) Normally performs support work, such as indirect or overhead functions; and
 - (2) Does not perform any substantial duties applicable to the contract.
- (b) E-Verify enrollment and verification requirements.
 - (1) If the Contractor is not enrolled as a Federal Contractor in E-Verify at the time of the contract award, the Contractor shall:
 - (i) Enroll. Enroll as a Federal Contractor in the E-Verify program within 30 calendar days of contract award;
 - (ii) Verify all new employees. Within 90 calendar days of enrollment in the E-Verify program, begin to use E-Verify to initiate verification of employment eligibility of all new hires of the Contractor, who are

working in the United States, whether or not assigned to the contract, within 3 business days after the date of hire (but see paragraph (1)(iii) of this section); and

- (iii) Verify employees assigned to the contract. For each employee assigned to the contract, initiate verification within 90 calendar days after date of enrollment or within 30 calendar days of the employee's assignment to the contract, whichever date is later (but see paragraph (4) of this section).
- (2) If the Contractor is enrolled as a Federal Contractor in E-Verify at time of contract award, the Contractor shall use E-Verify to initiate verification of employment eligibility of—
 - (i) All new employees.
 - (A) Enrolled 90 calendar days or more. The Contractor shall initiate verification of all new hires of the Contractor, who are working in the United States, whether or not assigned to the contract within 3 business days after the date of hire (but see paragraph (C) of this section); or
 - (B) Enrolled less than 90 calendar days. Within 90 calendar days after enrollment as a Federal Contractor in E-Verify, the Contractor shall initiate verification of all new hires of the Contractor, who are working in the United States, whether or not assigned to the contract, within 3 business days after the date of hire (but see paragraph (C) of this section); or
 - (ii) Employees assigned to the contract. For each employee assigned to the contract, the Contractor shall initiate verification within 90 calendar days after date of contract award or within 30 days after assignment to the contract, whichever date is later (but see paragraph (4) of this section).
- (3) If the Contractor is an institution of higher education; a state or local government, or the government of a federally recognized Indian tribe; or a surety performing under a takeover agreement entered into with a federal agency pursuant to a performance bond, the Contractor may choose to verify only employees assigned to the contract. The Contractor shall follow the applicable verification requirements at (a)(1) or (a)(2), respectively, except that any requirement for verification of new employees applies only to new employees assigned to the contract.
- (4) Option to verify employment eligibility of all employees. The Contractor may elect to verify all existing employees hired after November 6, 1986, rather than just those employees assigned to the contract. The Contractor shall initiate verification for each existing employee working in the United States who was hired after November 6, 1986, within 180 calendar days of—
 - (i) Enrollment in the E-Verify program; or
 - (ii) Notification to E-Verify Operations of the Contractor's decision to exercise this option, using the contact information provided in the E-Verify program Memorandum of Understanding (MOU).
- (5) The Contractor shall comply, for the period of performance of this contract, with the requirement of the E-Verify program MOU.
 - (i) The Department of Homeland Security (DHS) or the Social Security Administration (SSA) may terminate the Contractor's MOU and deny access to the E-Verify system in accordance with the terms of the MOU. In such case, the Contractor will be referred to a Department of Energy suspension or debarment official.
 - (ii) During the period between termination of the MOU and a decision by the suspension or debarment official whether to suspend or debar, the Contractor is excused from its obligations under paragraph (b) of this clause. If the suspension or debarment official determines not to suspend or debar the Contractor, then the Contractor must reenroll in E-Verify.
- (c) Web site. Information on registration for and use of the E-Verify program can be obtained via the Internet at the Department of Homeland Security Web site: <http://www.dhs.gov/E-Verify>.
- (d) Individuals previously verified. The Contractor is not required by this clause to perform additional employment verification using E-Verify for any employee—
 - (1) Whose employment eligibility was previously verified by the Contractor through the E-Verify program;
 - (2) Who has been granted and holds an active U.S. Government security clearance for access to confidential, secret, or top secret information in accordance with the National Industrial Security Program Operating Manual; or
 - (3) Who has undergone a completed background investigation and been issued credentials pursuant to Homeland Security Presidential Directive (HSPD) -12, Policy for a Common Identification Standard for Federal Employees and Contractors.
- (e) Subcontracts. The contractor shall include the requirements of this clause, including this paragraph (d) (appropriately modified for identification of the parties), in each subcontract that— (1) Is for:

- (i) Services other than commercial services that are part of the purchase of a commercial-off-the-shelf (COTS) item, performed by the COTS provider and are normally provided for that COTS item; (ii) Construction.
- (2) Has a value of more than \$3,000; and (3) Includes work performed in the United States.

EQUAL OPPORTUNITY FOR VETERANS (10-19)
(JUN 2016) (BPI 10.1.9.4(a))

- (a) Definitions. As used in this clause –
“Active duty wartime or campaign badge veteran,” “Armed Forces service medal veteran,” “disabled veteran,” “protected veteran,” “qualified disabled veteran,” and “recently separated veteran” have the meanings given at BPI 10.1.9.1.
- (b) Equal Opportunity clause. The Contractor shall abide by the requirements of the equal opportunity clause at 41 CFR 60-300.5(a), as of March 24, 2014. This clause prohibits discrimination against qualified protected veterans, and requires affirmative action by the Contractor to employ and advance in employment qualified protected veterans.
- (c) Subcontracts. The Contractor shall insert the terms of this clause in subcontracts of \$150,000 or more unless exempted by rules, regulations, or orders of the Secretary of Labor. The Contractor shall act as specified by the Director, Office of Federal Contract Compliance Programs, to enforce the terms, including action for noncompliance. Such necessary changes in language may be made as shall be appropriate to identify properly the parties and their undertakings.

EMPLOYMENT REPORTS ON VETERANS (10-20)
(JUN 2016) (BPI 10.1.9.4(b))

- (a) Definitions. As used in this clause –
“Active duty wartime or campaign badge veteran,” “Armed Forces service medal veteran,” “disabled veteran,” “protected veteran,” “qualified disabled veteran,” and “recently separated veteran” have the meanings given at BPI 10.1.9.1.
- (b) The Contractor shall report annually, as required by the Secretary of Labor, on—
 - (1) The total number of employees in the contractor’s workforce, by job category and hiring location, who are disabled veterans, other protected veterans, Armed Forces service medal veterans, and recently separated veterans.
 - (2) The total number of new employees hired during the period covered by the report, and of the total, the number of disabled veterans, other protected veterans, Armed Forces service medal veterans, and recently separated veterans; and
 - (3) The maximum number and minimum number of employees of the Contractor or subcontractor at each hiring location during the period covered by the report.
- (c) The Contractor shall report the above items by filing the VETS-4212 “Federal Contractor Veterans’ Employment Report (see “VETS-4212 Federal Contractor Reporting” and “Filing Your VETS-4212 Report” at <http://www.dol.gov/vets/vets4212.htm>).”
- (d) The Contractor shall submit VETS-4212 Reports no later than September 30 of each year.
- (e) The employment activity report required by paragraphs (b)(2) and (b)(3) of this clause shall reflect total new hires, and maximum and minimum number of employees, during the most the most recent 12-month period preceding the ending date selected for the report. Contractors may select an ending date— (1) As of the end of any pay period between July 1 and August 31 of the year the report is due; or (2) As of December 31, if the Contractor has prior written approval from the Equal Employment Opportunity Commission to do so for purposes of submitting the Employer Information Report EEO-1 (Standard Form 100).

- (f) The number of veterans reported must be based on data known to the contractor when completing the VETS4212. The contractor's knowledge of veterans status may be obtained in a variety of ways, including an invitation to applicants to self-identify (in accordance with 41 CFR 60-300.42), voluntary self-disclosure by employees, or actual knowledge of veteran status by the contractor. This paragraph does not relieve an employer of liability for discrimination under 38 U.S.C. § 4212.
- (g) The Contractor shall insert the terms of this clause in subcontracts of \$150,000 or more unless exempted by rules, regulations, or orders of the Secretary of Labor.

**CONTRACT WORK HOURS & SAFETY STANDARDS ACT-OVERTIME COMPENSATION (10-21)
(OCT 2014) (BPI 10.2.3.2.3)**

- (a) Overtime requirements. No Contractor or subcontractor employing laborers or mechanics shall require or permit them to work over 40 hours in any workweek unless they are paid at least 1 and 1/2 times the basic rate of pay for each hour worked over 40 hours.
- (b) Violation; liability for unpaid wages; liquidated damages. The responsible Contractor and subcontractor are liable for unpaid wages if they violate the terms in paragraph (a) of this clause. In addition, the Contractor and subcontractor are liable for liquidated damages payable to the Government. The Contracting Officer will assess liquidated damages at the rate of \$10 per affected employee for each calendar day on which the employer required or permitted the employee to work in excess of the standard workweek of 40 hours without payment of the overtime wages required by the Contract Work Hours and Safety Standards statute (found at 40 U.S.C. chapter 37).
- (c) Withholding for unpaid wages and liquidated damages. The Contracting Officer will withhold from payments due under the contract sufficient funds required to satisfy any Contractor or subcontractor liabilities for unpaid wages and liquidated damages. If amounts withheld under the contract are insufficient to satisfy Contractor or subcontractor liabilities, the Contracting Officer will withhold payments from other federal or federally assisted contracts held by the same Contractor that are subject to the Contract Work Hours and Safety Standards statute.
- (d) Payrolls and basic records.
 - (1) The Contractor and its subcontractors shall maintain payrolls and basic payroll records for all laborers and mechanics working on the contract during the contract and shall make them available to the Government until 3 years after contract completion. The records shall contain the name and address of each employee, social security number, labor classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. The records need not duplicate those required for construction work by Department of Labor regulations at 29 CFR 5.5(a)(3) implementing the Construction Wage Rate Requirements statute.
 - (2) The Contractor and its subcontractors shall allow authorized representatives of the Contracting Officer or the Department of Labor to inspect, copy, or transcribe records maintained under paragraph (d)(1) of this clause. The Contractor or subcontractor also shall allow authorized representatives of the Contracting Officer or Department of Labor to interview employees in the workplace during working hours.
- (e) Subcontracts. The Contractor shall insert the provisions set forth in paragraphs (a) through (d) of this clause in subcontracts may require or involve the employment of laborers and mechanics and require subcontractors to include these provisions in any such lower-tier subcontracts. The Contractor shall be responsible for compliance by any subcontractor or lower-tier subcontractor with the provisions set forth in paragraphs (a) through (d) of this clause.

**PAID SICK LEAVE UNDER EXECUTIVE ORDER 13706 (10-22)
(MAR 2018) (BPI 10.1.12.9)**

- (a) Definitions. As used in this clause (in accordance with 29 CFR 13.2) –
 - “Child”, “domestic partner”, and “domestic violence” have the meaning given in 29 CFR 13.2.
 - “Employee” –

- (1)
 - (i) Means any person engaged in performing work on or in connection with a contract covered by Executive Order (E.O.) 13706, and
 - (A) Whose wages under such contract are governed by the Service Contract Labor Standards statute (41 U.S.C. chapter 67), the Wage Rate Requirements (Construction) statute (40 U.S.C. chapter 31, subchapter IV), or the Fair Labor Standards Act (29 U.S.C. chapter 8),
 - (B) Including employees who qualify for an exemption from the Fair Labor Standards Act's minimum wage and overtime provisions,
 - (C) Regardless of the contractual relationship alleged to exist between the individual and the employer; and
 - (ii) Includes any person performing work on or in connection with the contract and individually registered in a bona fide apprenticeship or training program registered with the Department of Labor's Employment and Training Administration, Office of Apprenticeship, or with a State Apprenticeship Agency recognized by the Office of Apprenticeship.

(2)

- (i) An employee performs "on" a contract if the employee directly performs the specific services called for by the contract; and
- (ii) An employee performs "in connection with" a contract if the employee's work activities are necessary to the performance of a contract but are not the specific services called for by the contract.

"Individual related by blood or affinity whose close association with the employees is the equivalent of a family relationship" has the meaning given in 29 CFR 13.2.

"Multiemployer" plan means a plan to which more than one employer is required to contribute and which is maintained pursuant to one or more collective bargaining agreements between one or more employee organizations and more than one employer.

"Paid sick leave" means compensated absence from employment that is required by E.O. 13706 and 29 CFR 13.

"Parent", "sexual assault", "spouse", and "stalking" have the meaning given in 29 CFR 13.2.

"United States" means the 50 States and the District of Columbia.

(b) Executive Order 13706.

- (1) This contract is subject to E.O. 13706 and the regulations issued by the Secretary of Labor in 29 CFR part 13 pursuant to the E.O.
- (2) If this contract is not performed wholly within the United States, this clause only applies with respect to that part of the contract that is performed within the United States.

(c) *Paid sick leave.* The Contractor shall –

- (1) Permit each employee engaged in performing work on or in connection with this contract to earn not less than 1 hour of paid sick leave for every 30 hours worked;
- (2) Allow accrual and use of paid sick leave as required by E.O. 13706 and 29 CFR part 13;
- (3) Comply with the accrual, use, and other requirements set forth in 29 CFR 13.5 and 13.6, which are incorporated by reference in this contract;
- (4) Provide paid sick leave to all employees when due free and clear and without subsequent deduction (except as otherwise provided by 29 CFR 13.24), rebate, or kickback on any account;
- (5) Provide pay and benefits for paid sick leave used no later than one pay period following the end of the regular pay period in which the paid sick leave was taken; and
- (6) Be responsible for the compliance by any subcontractor with the requirements of E.O. 13706, 29 CFR part 13, and this clause.

(d) Contractors may fulfill their obligations under E.O. 13706 and 29 CFR part 13 jointly with other contractors through a multiemployer plan, or may fulfill their obligations through an individual fund, plan, or program (see 29 CFR 13.8).

- (e) *Withholding.* The Contracting Officer will, upon his or her own action or upon written request of an authorized representative of the Department of Labor, withhold or cause to be withheld from the Contractor under this or any other Federal contract with the same Contractor, so much of the accrued payments or advances as may be considered necessary to pay employees the full amount owed to compensate for any violation of the requirements of E.O. 13706, 29 CFR part 13, or this clause, including – (1) Any pay and/or benefits denied or lost by reason of the violation;
 - (2) Other actual monetary losses sustained as a direct result of the violation; and
 - (3) Liquidated damages.
- (f) Payment suspicion/contract termination/contractor debarment.
 - (1) In the event of a failure to comply with E.O. 13706, 29 CFR part 13, or this clause, Bonneville may, on its own action or after authorization or by direction of the Department of Labor and written notification to the Contractor take action to cause suspension of any further payment, advance, or guarantee of funds until such violations have ceased.
 - (2) Any failure to comply with the requirements of this clause may be grounds for termination for default or cause.
 - (3) A breach of the contract clause may be grounds for debarment as a contractor and subcontractor as provided in 29 CFR 13.52.
- (g) The paid sick leave required by E.O. 13706, 29 CFR part 13, and this clause is in addition to the Contractor's obligations under the Service Contract Labor Standards statute and Wage Rate Requirements (Construction) statute, and the Contractor may not receive credit toward its prevailing wage or fringe benefit obligations under those Acts for any paid sick leave provided in satisfaction of the requirements of E.O. 13706 and 29 CFR part 13.
- (h) Nothing in E.O. 13706 or 29 CFR part 13 shall excuse noncompliance with or supersede any applicable Federal or State law, any applicable law or municipal ordinance, or a collective bargaining agreement requiring greater paid sick leave or leave rights than those established under E.O. 13706 and 29 CFR part 13.
- (i) Recordkeeping.
 - (1) The Contractor shall make and maintain, for no less than three (3) years from the completion of the work on the contract, records containing the following information for each employee, which the Contractor shall make available upon request for inspection, copying, and transcription by authorized representatives of the Administrator of the Wage and Hour Division of the Department of Labor:
 - (i) Name, address, and social security number of each employee.
 - (ii) The employee's occupation(s) or classification(s).
 - (iii) The rate or rates of wages paid (including all pay and benefits provided).
 - (iv) The number of daily and weekly hours worked.
 - (v) Any deductions made.
 - (vi) The total wages paid (including all pay and benefits provided) each pay period.
 - (vii) A copy of notifications to employees of the amount of paid sick leave the employee has accrued, as required under 29 CFR 13.5(a)(2).
 - (viii) A copy of employees' requests to use paid sick leave, if in writing, or, if not in writing, any other records reflecting such employee requests.
 - (ix) Dates and amounts of paid sick leave taken by employees (unless the Contractor's paid time off policy satisfies the requirements of E.O. 13706 and 29 CFR part 13 described in 29 CFR 13.5(f)(5), leave shall be designated in records as paid sick leave pursuant to E.O. 13706(d)(3).
 - (x) A copy of any written responses to employees' requests to use paid sick leave, including explanations for any denials of such requests, as required under 29 CFR 13.5(d)(3).
 - (xi) Any records reflecting the certification and documentation the Contractor may require an employee to provide under 29 CFR 13.5(e), including copies of any certification or documentation provided by an employee.
 - (xii) Any other records showing any tracking of or calculations related to an employee's accrual or use of paid sick leave.
 - (xiii) The relevant contract.
 - (xiv) The regular pay and benefits provided to an employee for each use of paid sick leave.

- (xv) Any financial payment made for unused paid sick leave upon a separation from employment intended, pursuant to 29 CFR 13.5(b)(5), to relieve the Contractor from the obligation to reinstate such paid sick leave as otherwise required by 29 CFR 13.5(b)(4).
- (2)
 - (i) If the Contractor wishes to distinguish between an employees' covered and noncovered work, the Contractor shall keep records or other proof reflecting such distinctions. Only if the Contractor adequately segregates the employee's time will time spent on noncovered work be excluded from hours worked counted toward the accrual of paid sick leave. Similarly, only if the Contractor adequately segregates the employee's time may the Contractor properly refuse an employee's request to use paid sick leave on the ground that the employee was scheduled to perform noncovered work during the time he or she asked to use paid sick leave.
 - (ii) If the Contractor estimates covered hours worked by an employee who performs work in connection with contracts covered by the E.O. pursuant to 29 CFR 13.5(a)(i) or (iii), the Contractor shall keep records or other proof of the verifiable information on which such estimates are reasonably based. Only if the Contractor relies on an estimate that is reasonable and based on verifiable information will an employee's time spent in connection with noncovered work be excluded from hours worked counted toward the accrual of paid sick leave. If the Contractor estimates the amount of time an employee spends performing in connection with contracts covered by the E.O., the Contractor shall permit the employee to use his or her paid sick leave during any work time the Contractor.
 - (3) In the event the Contractor is not obligated by the Service Contract Labor Standards statute, the Wage Rate Requirements (Construction) statute, or the Fair Labor Standards Act to keep records of an employee's hours worked, such as because the employee is exempt from the Fair Labor Standards Act's minimum wage and overtime requirements, and the Contractor chooses to use the assumption permitted by 29 CFR 13.5(a)(1)(iii), the Contractor is excused from the requirement in paragraph (i)(1)(iv) of this clause and 29 CFR 13.25(a)(4) to keep records of the employee's number of daily and weekly hours worked.
 - (4)
 - (i) Records relating to medical histories or domestic violence, sexual assault, or stalking, created for purposes of E.O. 13706, whether of an employee or an employee's child, parent, spouse, domestic partner, or other individual related by blood or affinity whose close association with the employee is the equivalent of a family relationship, shall be maintained as confidential records in separate files/records from the usual personnel files.
 - (ii) If the confidentiality requirements of the Genetic Information Nondiscrimination Act of 2008 (GINA), section 503 of the Rehabilitation Act of 1973, and/or the Americans with Disabilities Act (ADA) apply to records or documents created to comply with the recordkeeping requirements in this contract clause, the records and documents shall also be maintained in compliance with the confidentiality requirements of the GINA, section 503 of the Rehabilitation Act of 1973, and/or ADA as described in 29 CFR 1635.9, 41 CFR 60-741.23(d), and 29 CFR 1630.14(c)(1), respectively.
 - (iii) The Contractor shall not disclose any documentation used to verify the need to use 3 or more consecutive days of paid sick leave for the purposes listed in 29 CFR 13.5(c)(1)(iv) (as described in 29 CFR 13.5(e)(1)(ii) and shall maintain confidentiality about any domestic abuse, sexual assault, or stalking, unless the employee consents or when disclosure is required by law.
 - (5) The Contractor shall permit authorized representatives of the Wage and Hour Division to conduct interviews with employees at the worksite during normal working hours.
 - (6) Nothing in this contract clause limits or otherwise modifies the Contractor's recordkeeping obligations, if any, under the Service Contract Labor Standards statute, the Wage Rate Requirements (Construction) statute, the Fair Labor Standards Act, the Family and Medical Leave Act, E.O. 13658, their respective implementing regulations, or any other applicable law.
 - (j) Interference/discrimination.
 - (1) The Contractor shall not in any manner interfere with an employee's accrual or use of paid sick leave as required by E.O. 13706 or 29 CFR part 13. Interference includes, but is not limited to – (i) Miscalculating the amount of paid sick leave an employee has accrued;

- (ii) Denying or unreasonably delaying a response to a proper request to use paid sick leave;
- (iii) Discouraging an employee from using paid sick leave;
- (iv) Reducing an employee's accrued paid sick leave by more than the amount of such leave used;
- (v) Transferring an employee to work on contracts not covered by the E.O. to prevent the accrual or use of paid sick leave;
- (vi) Disclosing confidential information contained in certification or other documentation provided to verify the need to use paid sick leave; or
- (vii) Making the use of paid sick leave contingent on the employee's finding a replacement worker or the fulfillment of the Contractor's operational needs.
- (2) The Contractor shall not discharge or in any other manner discriminate against any employee for –
 - (i) Using, or attempting to use, paid sick leave as provided for under E.O. 13706 and 29 CFR part 13; (ii) Filing any complaint, initiating any proceeding, or otherwise asserting any right or claim under E.O. 13706 and 29 CFR part 13;
 - (iii) Cooperating in any investigation or testifying in any proceeding under E.O. 13706 and 29 CFR part 13; or
 - (iv) Informing any other person about his or her rights under E.O. 13706 and 29 CFR part 13.
- (k) *Notice.* The Contractor shall notify all employees performing work on or in connection with a contract covered by the E.O. of the paid sick leave requirements of E.O. 13706, 29 CFR part 13, and this clause by posting a notice provided by the Department of Labor in a prominent and accessible place at the worksite so it may be readily seen by employees. Contractors that customarily post notices to employees electronically may post the notice electronically, provided such electronic posting is displayed prominently on any website that is maintained by the Contractor, whether external or internal, and customarily used for notices to employees about terms and conditions of employment.
- (l) *Disputes concerning labor standards.* Disputes related to the application of E.O. 13706 to this contract shall not be subject to the general disputes clause of the contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR part 13. Disputes within the meaning of this contract clause include disputes between the Contractor (or any of its subcontractors) and Bonneville Power Administration, the Department of Labor, or the employees or their representatives.
- (m) *Subcontracts.* The Contractor shall insert the substance of this clause, including this paragraph (m), in all subcontracts, regardless of the dollar value, that are subject to the Service Contract labor Standards statute or the Wage Rate Requirements (Construction) statute, and are to be performed in whole or in part in the United States.

**COMPLIANCE WITH COPELAND ACT REQUIREMENTS (10-23)
(OCT 2014) (BPI 10.3.3.3)**

The Contractor shall comply with the requirements of the Copeland (“Anti-Kickback”) Act, as amended (18 U.S.C. 874 and 40 U.S.C. 3145) and its implementing regulations (29 CFR Part 3), which require reasonable procedures in place to prevent and detect unlawful practices to induce or intimidate employees to accept lesser compensation than they are entitled to under a contract of employment. Contractor shall submit the prepared weekly statements required per 29 CFR Part 3 to the contracting officer only upon written request.

**COMBATING TRAFFICKING IN PERSONS (10-25)
(OCT 2014) (BPI 10.1.10.4)**

(a) Definitions. As used in this clause:

“Coercion” means:

- (1) Threats of serious harm to or physical restraint against any person;
- (2) Any scheme, plan, or pattern intended to cause a person to believe that failure to perform an act would result in serious harm to or physical restraint against any person; or
- (3) The abuse or threatened abuse of the legal process.

“Commercial sex act” means any sex act on account of which anything of value is given to or received by any person.

“Commercial sex act” means any sex act on account of which anything of value is given to or received by any person.

“Debt bondage” means the status or condition of a debtor arising from a pledge by the debtor of his or her personal services or of those of a person under his or her control as a security for debt, if the value of those services as reasonably assessed is not applied toward the liquidation of the debt or the length and nature of those services are not respectively limited and defined.

“Employee” means an employee of the Contractor directly engaged in the performance of work under the contract who has other than a minimal impact or involvement in contract performance.

“Forced labor” means knowingly providing or obtaining the labor or services of a person:

- (1) By threats of serious harm to, or physical restraint against, that person or another person;
- (2) By means of any scheme, plan, or pattern intended to cause the person to believe that, if the person did not perform such labor or services, that person or another person would suffer serious harm or physical restraint; or
- (3) By means of the abuse or threatened abuse of law or the legal process.

“Involuntary servitude” includes a condition of servitude induced by means of:

- (1) Any scheme, plan, or pattern intended to cause a person to believe that, if the person did not enter into or continue in such conditions, that person or another person would suffer serious harm or physical restraint; or
- (2) The abuse or threatened abuse of the legal process.

“Severe forms of trafficking in persons” means:

- (1) Sex trafficking in which a commercial sex act is induced by force, fraud, or coercion, or in which the person induced to perform such act has not attained 18 years of age; or
- (2) The recruitment, harboring, transportation, provision, or obtaining of a person for labor or services, through the use of force, fraud, or coercion for the purpose of subjection to involuntary servitude, peonage, debt bondage, or slavery.

“Sex trafficking” means the recruitment, harboring, transportation, provision, or obtaining of a person for the purpose of a commercial sex act.

- (b) Policy. The United States Government has adopted a zero tolerance policy regarding trafficking in persons. Contractors and contractor employees shall not:
 - (1) Engage in severe forms of trafficking in persons during the period of performance of the contract;
 - (2) Procure commercial sex acts during the period of performance of the contract; or
 - (3) Use forced labor in the performance of the contract.
- (c) Contractor requirements. The Contractor shall:
 - (1) Notify its employees of:
 - (i) The United States Government's zero tolerance policy described in paragraph (b) of this clause; and
 - (ii) The actions that will be taken against employees for violations of this policy. Such actions may include, but are not limited to, removal from the contract, reduction in benefits, or termination of employment; and
 - (2) Take appropriate action, up to and including termination, against employees or subcontractors that violate the policy in paragraph (b) of this clause.
- (d) Notification. The Contractor shall inform the Contracting Officer immediately of:

- (1) Any information it receives from any source (including host country law enforcement) that alleges a Contractor employee, subcontractor, or subcontractor employee has engaged in conduct that violates this policy; and
 - (2) Any actions taken against Contractor employees, subcontractors, or subcontractor employees pursuant to this clause.
- (e) Remedies. In addition to other remedies available to the Government, the Contractor's failure to comply with the requirements of paragraphs (c), (d), or (f) of this clause may result in:
- (1) Requiring the Contractor to remove a Contractor employee or employees from the performance of the contract;
 - (2) Requiring the Contractor to terminate a subcontract;
 - (3) Suspension of contract payments;
 - (4) Loss of award fee, consistent with the award fee plan, for the performance period in which the Government determined Contractor non-compliance;
 - (5) Termination of the contract for default or cause, in accordance with the termination clause of this contract; or
 - (6) Suspension or debarment.
- (f) Subcontracts. The Contractor shall include the substance of this clause, including this paragraph (f), in all subcontracts.
- (g) Mitigating Factor. The Contracting Officer may consider whether the Contractor had a Trafficking in Persons awareness program at the time of the violation as a mitigating factor when determining remedies. Additional information about Trafficking in Persons and examples of awareness programs can be found at the website for the Department of State's Office to Monitor and Combat Trafficking in Persons at <http://www.state.gov/g/tip>.

CONTRACT TERMINATION – DEBARMENT (10-26)
(OCT 2014) (BPI 10.3.5.3)

Breach of the following clauses may be grounds for termination of the contract and debarment as a contractor and subcontractor as provided in 29 CFR 5.12: Clause 10-7 Construction Wage Rates Requirements; Clause 10-9 Payrolls and Basic Records; Clause 10-10 Apprentices, Trainees and Helpers; Clause 10-11 Subcontract (Labor Standards); Clause 10-12 Certification of Eligibility; Clause 10-21 Contract Work Hours and Safety Standards Act Overtime Compensation; and Clause 10-23 Compliance with Copeland Act Requirements.

DISPUTES CONCERNING LABOR STANDARDS (10-27)
(MAR 2018)(BPI 10.3.6.3)

The United States Department of Labor has set forth in 29 CFR Parts 5, 6, and 7 procedures for resolving disputes concerning labor standards requirements. Such disputes shall be resolved in accordance with those procedures and not the Disputes clause of this contract. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and Bonneville, the U.S. Department of Labor, or the employees or their representatives.

MINIMUM WAGE FOR FEDERAL CONTRACTS (10-28)
(OCT 2014)(BPI 10.2.3.1.3)

This clause implements Executive Order 13658, Establishing a Minimum Wage for Contractors, dated February 12, 2014, and OMB Policy Memorandum M-14-09, dated June 12, 2014.

- (a) Each service employee, laborer, or mechanic employed in the United States (the 50 States and the District of Columbia) in the performance of this contract by the prime Contractor or any subcontractor, regardless of any contractual relationship which may be alleged to exist between the Contractor and service employee, laborer, or mechanic, shall be paid not less than the applicable minimum wage under Executive Order 13658. The

minimum wage required to be paid to each service employee, laborer, or mechanic performing work on this contract between January 1, 2015, and December 31, 2015, shall be \$10.10 per hour.

- (b) The Contractor shall adjust the minimum wage paid under this contract each time the Secretary of Labor's annual determination of the applicable minimum wage under section 2(a)(ii) of Executive Order 13658 results in a higher minimum wage. Adjustments to the Executive Order minimum wage under section 2(a)(ii) of Executive Order 13658 will be effective for all service employees, laborers, or mechanics subject to the Executive Order beginning January 1 of the following year. The Secretary of Labor will publish annual determinations in the Federal Register no later than 90 days before such new wage is to take effect. The Secretary will also publish the applicable minimum wage on www.wdol.gov (or any successor website). The applicable published minimum wage is incorporated by reference into this contract.
- (c) The Contracting Officer will adjust the contract price or contract unit price under this clause only for the increase in labor costs resulting from the annual inflation increases in the Executive Order 13658 minimum wage beginning on January 1, 2016. The Contracting Officer shall consider documentation as to the specific costs and workers impacted in determining the amount of the adjustment.
- (d) The Contracting Officer will not adjust the contract price under this clause for any costs other than those identified in paragraph (c) of this clause, and will not provide price adjustments under this clause that result in duplicate price adjustments with the respective clause of this contract implementing the Service Contract Labor Standards statute (formerly known as the Service Contract Act) or the Wage Rate Requirements (Construction) statute (formerly known as the Davis Bacon Act).
- (e) The Contractor shall include the substance of this clause, including this paragraph (e) in all subcontracts.

**CONSTRUCTION WAGE DETERMINATION – PRICE ADJUSTMENT (ACTUAL METHOD) (10-31)
(OCT 2014)(BPI 10.3.4.3.3(c))**

- (a) The wage determination issued under the Construction Wage Rate Requirements statute by the Administrator, Wage and Hour Division, Employment Standards Administration, U.S. Department of Labor, that is effective for an option to extend the term of the contract, will apply to that option period.
- (b)
 - (1) The Contractor states that if the prices in this contract contain an allowance for wage or benefit increases, such allowance will not be included in any request for contract price adjustment submitted under this clause.
 - (2) The Contractor shall provide with each request for contract price adjustment under this clause a statement that the prices in the contract do not include any allowance for any increased cost for which adjustment is being requested.
- (c) The Contracting Officer will adjust the contract price or contract unit price labor rates to reflect the Contractor's actual increase or decrease in wages and fringe benefits to the extent that the increase is made to comply with, or the decrease is voluntarily made by the Contractor as a result of—
 - (1) Incorporation of the Department of Labor's Construction Wage Rate Requirements wage determination applicable at the exercise of an option to extend the term of the contract; or
 - (2) Incorporation of a Construction Wage Rate Requirements wage determination otherwise applied to the contract by operation of law.
- (d) Any adjustment will be limited to increases or decreases in wages and fringe benefits as described in paragraph (c) of this clause, and the accompanying increases or decreases in social security and unemployment taxes and workers' compensation insurance, but will not otherwise include any amount for general and administrative costs, overhead, or profit.
 - (1) The Contractor shall notify the Contracting Officer of any increase claimed under this clause within 30 days after receiving a revised wage determination unless this notification period is extended in writing by the Contracting Officer. The Contractor shall notify the Contracting Officer promptly of any decrease under this clause, but nothing in this clause precludes the Government from asserting a claim within the period permitted by law. The notice shall contain a statement of the amount claimed and any relevant supporting data, including payroll records that the Contracting Officer may reasonably require. Upon agreement of the parties, the Contracting Officer will modify the contract price or contract unit price in

writing. The Contractor shall continue performance pending agreement on or determination of any such adjustment and its effective date.

(2) Contract price adjustment computation shall be computed as follows:

- (i) Computation for contract unit price per single craft hour for schedule of indefinite-quantity work. For each labor classification, the difference between the actual wage and benefit rates (combined) paid and the wage and benefit rates (combined) required by the new wage determination shall be added to the original contract unit price if the difference results in a combined increase. If the difference computed results in a combined decrease, the contract unit price shall be decreased by that amount if the Contractor provides notification as provided in paragraph (e) of this clause.
- (ii) Computation for contract unit price containing multiple craft hours for schedule of indefinite-quantity work. For each labor classification, the difference between the actual wage and benefit rates (combined) paid and the wage and benefit rates (combined) required by the new wage determination shall be multiplied by the actual number of hours expended for each craft involved in accomplishing the unit-priced work item. The product of this computation will then be divided by the actual number of units ordered in the preceding contract period. The total of these computations for each craft will be added to the current contract unit price to obtain the new contract unit price. The extended amount for the contract line item will be obtained by multiplying the new unit price by the estimated quantity. If actual hours are not available from the preceding contract period for computation of the adjustment for a specific contract unit of work, the Contractor, in agreement with the Contracting Officer, shall estimate the total hours per craft per contract unit of work.

Example: Asphalt Paving – Current Price \$3.38 per Square Yard

DBA Craft	New WD		Hourly Rate Paid		Diff		Actual Hours	Actual Units (sq. yd.)		Increase/sq. yd.
Equip Opr	\$18.50	-	\$18.00	=	\$0.50	X	600	3,000	=	\$0.10
Truck Driver	\$19.00	-	\$18.25	=	\$0.75	X	525	3,000	=	\$0.13
Laborer	\$11.50	-	\$11.25	=	\$0.25	X	750	3,000	=	\$0.06

Total increase per square yard = \$0.29*

*Note: Adjustment for labor rate increases or decreases may be accompanied by social security and unemployment taxes and workers' compensation insurance.

Current unit price = \$3.38 per square yard

Add DBA price adj. +.29

New unit price \$3.67 per square yard

**SUBCONTRACTING WITH DEBARRED OR SUSPENDED ENTITIES (11-7)
(JUL 2013) (BPI 11.10.1)**

- (a) "Commercially available off-the-shelf (COTS) item," as used in this clause means any item of supply (including construction material) that is:
 - (1) A commercial item (as defined in BPI 1.8);
 - (2) Sold in substantial quantities in the commercial marketplace; and
 - (3) Offered to the Government, under a contract or subcontract at any tier, without modification, in the same form in which it is sold in the commercial marketplace.
- (b) The Government suspends or debar Contractors to protect the Government's interests. Other than a subcontract for a commercially available off-the-shelf item, the Contractor shall not enter into any subcontract in excess of \$30,000 with a Contractor that is debarred or suspended by any executive agency unless there is a compelling reason to do so.
- (c) The Contractor shall require each proposed subcontractor whose subcontract will exceed \$30,000, other than a subcontractor providing a commercially available off-the-shelf item, to disclose to the Contractor, in writing,

whether as of the time of award of the subcontract, the subcontractor, or its principals, is or is not debarred or suspended by the Federal Government.

- (d) Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party (other than a subcontractor providing a commercially available off-the-shelf item) that is debarred or suspended (see www.sam.gov).
- (e) Subcontracts. Unless this is a contract for the acquisition of commercial items, the Contractor shall include the requirements of this clause, including this paragraph (e) (appropriately modified for the identification of the parties), in each subcontract that exceed \$30,000 in value and is not a subcontract for commercially available off-the-shelf items.

PRINTING (11-9)
(MAR 2018) (BPI 11.1.4.1)

The contractor shall not engage in, nor subcontract for, any printing (as that term is defined in Title I of the U.S. Government Printing and Binding Regulations in effect on the effective date of this contract) in connection with the performance of work under this contract: Provided, however, that performance of a requirement under this contract involving the duplication of less than 5,000 copies of a single unit, or no more than 25,000 units in the aggregate of multiple units, will not be deemed to be printing. A unit is defined as one sheet, size 8-1/2 by 11 inches, one side only, and one color.

- (a) The term "printing" includes the following processes: composition, plate making, presswork, binding, microform publishing, silk screening, or the end items produced by such processes.
- (b) If fulfillment of the contract will necessitate reproduction in excess of the limits set forth above, the contractor shall notify the Contracting Officer in writing and obtain the contracting officer's approval prior to acquiring on Bonneville's behalf production, purchase, and dissemination of printed matter.
- (c) Printing services not obtained in compliance with this guidance may result in the cost of such printing being disallowed.
- (d) The Contractor shall include in each subcontract hereunder a provision substantially the same as this clause including this paragraph (d).

PRICE REDUCTION FOR INACCURATE COST OR PRICING INFORMATION (12-2)

(MAR 2018)(BPI 12.5.4.1)

Bonneville retains the right to reduce the contract price, including profit or fee, if the cost or pricing information submitted by the contractor was not complete, accurate, and current at the time of final price agreement. This right applies to the contract as awarded, to any subsequent modifications, and to any data submitted by subcontractors.

EXAMINATION OF RECORDS (12-3)

(MAR 2018)(BPI 12.8.6.1)

- (a) The contractor shall keep accurate and complete accounting records in support of all cost-based billings to Bonneville in accordance with generally accepted accounting principles and practices. The Comptroller General of the United States, the Contracting Officer, or their representatives, shall have the right to examine, audit, and reproduce any of the Contractor's pertinent records involving transactions related to this contract or any subcontract hereunder. Records includes, but is not limited to, books, documents, and other information regardless of form (e.g., machine readable data) or type (e.g. data bases, applications software, data base management software, utilities, etc.) including computations and projections related to proposing, negotiating, pricing, subcontracting, modifying or performing the contract. The purpose of such examination shall be to determine the accuracy, completeness, and currency of costs charged under the contract and/or to verify cost or pricing information submitted to Bonneville.

- (b) Such documents shall be available for three (3) years after final payment or, in the case of termination, three (3) years from the date of any final termination settlement. Records relating to appeals under the Disputes clause or to litigation or the settlement of claims arising under or relating to this contract shall be made available until such appeals, litigation, or claims have been disposed of.
- (c) The contractor shall insert a clause containing all the terms of this clause, including this paragraph (c), in other than fixed price subcontracts over \$100,000, altering the clause as necessary to identify the contracting parties and the Contracting Officer under the prime contract.

CONTRACTING OFFICER'S REPRESENTATIVES - CONSTRUCTION CONTRACTS (14-1)
(MAR 2018)(BPI 14.1.5(a))

- (a) The Field Inspector is an authorized representative of the Contracting Officer's Representative (COR) for technical oversight of contract performance. This includes the functions of inspection and review of work performed.
- (b) The COR is responsible for all technical oversight of the contract. The functions of the COR include interpretation of specifications and drawings, and processing of payments.
- (c) These representatives are authorized to act for the Contracting Officer in all matters pertaining to the contract, except: (1) contract modifications that change the contract price, technical requirements or time for performance, unless delegated field modification authority (see clause 24-25); (2) suspension or termination of the Contractor's right to proceed, either for default or for convenience of Bonneville; and (3) final decisions on any matters subject to appeal, as provided in the disputes clause. In addition, the COR may not make final acceptance under the contract.

ORDER OF PRECEDENCE (14-3)

(JUL 2013)(BPI 14.4.3)

Any inconsistency in this solicitation or contract shall be resolved by giving precedence in the following order: (a) the Schedule (excluding the specifications or statement of work); (b) the specifications or statement of work; (c) contract clauses; and (d) other documents, exhibits, and attachments.

OTHER RIGHTS AT LAW (14-4)
(JUL 2013)(BPI 14.4.3)

BPA, as an independent agency in the Department of Energy, reserves any other rights it may have at law, unless superseded specifically by this contract.

CHANGES – FIXED-PRICE (14-8)

(MAR 2018)(BPI 14.10.5.1.2)

- (a) The Contracting Officer may at any time, by written order, and without notice to the sureties, if any, make changes within the general scope of this contract to any one or more of the following:
 - (1) Drawings, designs, or specifications when the supplies to be furnished are to be specially manufactured for Bonneville in accordance with the drawings, designs, or specifications.
 - (2) Method of shipment or packing.
 - (3) Place of delivery or performance.
 - (4) Description of services to be performed.
 - (5) Time of performance (i.e., hours of the day, days of the week, etc.).
 - (6) Bonneville-furnished property.
 - (7) Place of inspection or acceptance.
- (b) If any such change causes an increase or decrease in the cost of, or the time required for, performance of any part of the work under this contract, whether or not changed by the order, the Contracting Officer shall

make an equitable adjustment in the contract price, the delivery schedule, or both, and shall modify the contract.

- (c) The Contractor must assert its right to an adjustment under this clause within 30 days from the date of receipt of the written order, but not later than final payment.
- (d) Failure to agree to any adjustment shall be a dispute under a disputes clause if one is included in this contract. However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.
- (e) Constructive Changes. If the Contractor considers that a Bonneville action or inaction constitutes a change to the contract (constructive change), and the change is not identified as such in writing and signed by the CO, the Contractor shall promptly notify the CO in writing. No equitable adjustment will be made for costs incurred more than 20 days before the Contractor gives written notice of the constructive change.
- (f) Notwithstanding other provisions herein, only the Contracting Officer, or persons specifically delegated authority to do so by the Contracting Officer, are authorized to orally modify or affect the terms of this contract. Contractor response to oral direction from any other source is at its own risk of liability.

CHANGES AND CHANGED CONDITIONS - CONSTRUCTION CONTRACTS (14-11)
(JUL 2013)(BPI 14.10.5.1.2)

- (a) The Contracting Officer may, in writing, order changes in the drawings and specifications within the general scope of the contract.
- (b) The Contractor shall promptly notify the Contracting Officer, in writing, of subsurface or latent physical conditions differing materially from those indicated in this contract or unknown unusual physical conditions at the site before proceeding with the work.
- (c) If changes under paragraph (a) or conditions under paragraph (b) increase or decrease the cost of, or time required for performing the work, the Contracting Officer shall make an equitable adjustment (see paragraph (d)) upon assertion of a claim by the Contractor before final payment under the contract.
- (d) The Contracting Officer shall not make an equitable adjustment under paragraph (b) unless—
 - (1) The Contractor has submitted and the Contracting Officer has received the required written notice; or
 - (2) The Contracting Officer waives the requirement for the written notice.
- (e) Failure to agree to any adjustment shall be a dispute under a disputes clause, if one is included in this contract.

PRICING OF ADJUSTMENTS (14-12)

(JUL 2013)(BPI 14.10.5.1.2)

When costs are a factor in any determination of a contract price adjustment pursuant to the Changes clause or any other modification in connection with this contract, such costs shall be in accordance with the contract cost principles and procedures in Part 13 of the Bonneville Purchasing Instructions which are in effect on the date of this contract.

MODIFICATION COST PROPOSAL - PRICE BREAKDOWN (14-13)

(JUL 2013)(BPI 14.10.5.1.2)

- (a) The contractor, in connection with any proposal it makes for a contract modification, shall furnish a price breakdown, itemized as required by the Contracting Officer. The breakdown shall be in enough detail to permit an analysis of all material, labor, equipment, subcontract, and overhead costs, as well as profit, and shall cover all work involved in the modification, whether such work was deleted, added or changed. Any amount claimed for subcontracts shall be supported by similar price breakdowns from those subcontractors.
- (b) In addition, if the proposal includes a time extension, a justification thereof shall also be furnished. Notwithstanding any other provisions of this contract, it is mutually understood that the time extension for changes in the work will depend upon the extent, if any, by which the changes cause delay in the completion

of the various elements of work. The contract completion dates will be extended only for those specific elements so delayed and the remaining contract completion dates for all other portions of the work will not be altered.

- (c) The proposal, together with the price breakdown and time extension justification, shall be furnished by the date specified by the Contracting Officer.

STOP WORK ORDER (14-14)

(JUL 2013)(BPI 14.12.7)

- (a) The Contracting Officer may order the Contractor to suspend all or any part of the work of this contract for the period of time that the Contracting Officer determines appropriate for the convenience of BPA.
- (b) The contractor shall immediately comply with the Contracting Officer's order and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order.
- (c) If a stop work order is issued for the convenience of BPA, the Contracting Officer shall make an equitable adjustment in the delivery schedule or contract price, or both, if the order results in a change in the time required for, or the costs properly allocable to, the performance of any part of this contract.
- (d) A claim under this clause shall not be allowed (1) for any cost incurred more than 20 days before the Contractor notified the Contracting Officer of the basis of the claim in writing, and (2) unless the claim stating the amount of time or money requested, is asserted in writing as soon as practicable after the termination of the delay or interruption, but not later than the day of final payment under the contract.

BANKRUPTCY (14-18)

(OCT 2005)(BPI 14.19.3)

In the event the Contractor enters into proceedings relating to bankruptcy, whether voluntary or involuntary, the Contractor agrees to furnish written notification of the bankruptcy to the Contracting Officer responsible for administering the contract. This notification shall be furnished within five days of the initiation of the proceedings relating to bankruptcy filing. This notification shall include the date on which the bankruptcy petition was filed, the identity of the court in which the bankruptcy petition was filed, and a listing of Government contract numbers and contracting officers for all Government contracts against final payment has not been made. This obligation remains in effect until final payment under this contract.

POST AWARD ORIENTATION (14-19)

(SEP 2007)(BPI 14.5.3.3)

The successful offeror will be required to participate in a post award orientation as designated by the Contracting Officer.

CLEAN AIR AND WATER (15-1)

(JUL 2013)(BPI 15.1.3)

Facilities listed on the Environmental Protection Agency List of Violating Facilities shall not be used in the performance of this contract. The contractor agrees to meet Clean Air and Water standards as identified in 42 U.S.C. 7401 et seq., Executive Order 11738, and any implementation plan described in 42 U.S.C. 1342 as well as local government with pretreatment regulations (33 U.S.C. 1317). The contractor shall comply with all requirements of the Clean Air Act (42 U.S.C. 7414) and the Clean Water Act (33 U.S.C. 1318) relating to inspection, monitoring, entry, reports and information, and all regulations and guidelines.

DRUG-FREE WORKPLACE (15-2)
(FEB 2016)(BPI 15.2.3.1)

- (a) The contractor agrees that with respect to all employees to be employed under this contract it will provide a drug-free workplace as described in this clause.
- (b) Definitions. As used in this clause "Controlled substance" means a controlled substance in schedules I through V of section 202 of the Controlled Substances Act (21 U.S.C. § 812), as from time to time amended, and as further defined in regulation at 21 CFR 1308.11-1308.15, as amended.
- "Conviction" means a finding of guilt (including a plea of nolo contendere) or imposition of sentence, or both, by any judicial body charged with the responsibility to determine violations of the Federal or State criminal drug statutes.
- "Criminal drug statute" means a Federal or non-Federal criminal statute involving the manufacture, distribution, dispensing, possession or use of any controlled substance.
- "Drug-free workplace" means the site(s) for the performance of work done by the contractor in connection with a specific contract at which employees of the contractor are prohibited from engaging in the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance.
- "Employee" means an employee of a contractor directly engaged in the performance of work under a Government contract. "Directly engaged" is defined to include all direct cost employees and any other contractor employees who have other than a minimal impact or involvement in contract performance.
- "Individual" means an offeror/contractor that has no more than one employee including the offeror/contractor.
- (c) The Contractor, if other than an individual, shall -- within 30 calendar days after award (unless a longer period is agreed to in writing for contracts of 30 calendar days or more performance duration); or as soon as possible for contracts of less than 30 calendar days performance duration--
- (1) Publish a statement notifying its employees that the unlawful manufacture, distribution, dispensing, possession, or use of a controlled substance is prohibited in the contractor's workplace and specifying the actions that will be taken against employees for violations of such prohibition;
 - (2) Establish an on-going drug-free awareness program to inform such employees about—
 - (i) The dangers of drug abuse in the workplace;
 - (ii) The contractor's policy of maintaining a drug-free workplace;
 - (iii) Any available drug counseling, rehabilitation, and employee assistance programs; and
 - (iv) The penalties that may be imposed upon employees for drug abuse violations occurring in the workplace.
 - (3) Provide all employees engaged in performance of the contract with a copy of the statement required by subparagraph (c)(1) of this clause;
 - (4) Notify such employees in writing in the statement required by subparagraph (c)(1) of this clause that, as a condition of continued employment on this contract, the employee will—
 - (i) Abide by the terms of the statement; and
 - (ii) Notify the employer in writing of the employee's conviction under a criminal drug statute for a violation occurring in the workplace no later than five (5) days after such conviction.
 - (5) Notify the Contracting Officer in writing within ten (10) days after receiving notice under subdivision (c)(4)(ii) of this clause, from an employee, or otherwise receiving actual notice of such conviction. The notice shall include the position title of the employee;
 - (6) Within 30 days after receiving notice under subparagraph (c)(4)(ii) of this clause of a conviction, take one of the following actions with respect to any employee who is convicted of a drug abuse violation occurring in the workplace:
 - (i) Taking appropriate personnel action against such employee, up to and including termination; and/or
 - (ii) Require such employee to satisfactorily participate in a drug abuse assistance or rehabilitation program approved for such purposes by a Federal, State, or local health, law enforcement, or other appropriate agency.

- (7) Make a good faith effort to maintain a drug-free workplace through implementation of subparagraphs (c)(1) through (c)(6) of this clause.
- (d) In addition to other remedies available to the Government, the Contractor's failure to comply with the requirements of paragraph (c) of this clause may, pursuant to BPI 3.6.3 render the contractor subject to suspension of contract payments, termination of the contract for default, and suspension or debarment.
- (e) The requirements of this clause shall not apply to:
 - (1) Solicitations and contracts for the acquisition of commercial items and services.
 - (2) Subcontracts at any tier for the acquisition of commercial items or commercial components at any tier.

**PROPERTY PROTECTION (15-3.1) ALTERNATE I
(MAR 2018)(BPI 15.6.4.1(c))**

- (a) The Contractor shall construct and maintain such temporary fences, gates and other facilities as shall be necessary for preservation of crops, control of livestock, and protection of property. Before cutting a fence, the Contractor shall take necessary precautions to prevent the straying of livestock and shall prevent the loss of tension in or damage to adjacent portions of the fence. The Contractor shall immediately replace all fencing and gates that it cuts, removes, damages, or destroys with new materials to the original standard, with the exception that undamaged gates may be reused.
- (b) The Contractor shall comply with the request of the property owner relative to leaving gates open or closed.
- (c) The Contractor shall use all necessary precautions to avoid the destruction of surveying markers such as section corners, witness trees, property corners, mining claim markers, bench markers, triangulation stations, and the like. If any such marker must be destroyed, the Contractor shall first notify the agency responsible for the marker, as well as the CSR, and assume all responsibility for replacing markers.
- (d) The Contractor shall use care to prevent unnecessary damage caused by performance of its work to property in or near the work area. Unnecessary damage is that which can be avoided through efficient and careful performance of the work in a careful manner, taking into account the land rights which have been secured. If the Contractor damages any property, the contractor shall at once notify the owner or custodian and shall make or arrange to make prompt and full restitution.
- (e) Maps and specifications provided by Bonneville may not give the location of all water supply, drainage, irrigation, and other underground facilities. Prior to entering a tract of land for contract purposes, the Contractor shall ascertain from the property owner or other reasonably available source the location of any irrigation system, domestic water system, source of water, and drainage system existing on the property, whether serving that property or other property. The Contractor shall avoid damaging or obstructing these facilities or polluting water supplies.
- (f) The Contractor shall hold Bonneville harmless from any and all suits, actions, and claims for damages, including environmental impairment, to property arising from any act or omission of the contractor, its subcontractors, or any employee of the Contractor or subcontractors, in any way related to the work or operations under this contract.
- (g) The Contractor shall indemnify and hold harmless the property owners or parties lawfully in possession against all claims or liabilities asserted by third parties, including all governmental agencies, resulting directly or indirectly from the Contractor's wrongful or negligent acts or omissions.
- (h) The management and disposal of hazardous wastes and materials exposes the contractor and Bonneville to short- and long-term liabilities. In order to reduce these potential liabilities it is critical that the contractor be fully aware of the hazards and regulatory requirements associated with the hazardous materials involved in this project. Only qualified personnel shall be used in their handling and transportation.
- (i) Before commencing work, the Contractor shall:
 - (1) Perform an environmental assessment of the work required under the contract identifying tasks which involve the use, handling or transportation of hazardous materials or wastes. The following items of work are known to involve such substances: (i) Contaminated soils,
 - (ii) SF6 gas; and
 - (iii) Others may be identified at the Task Order level

- (2) Submit an environmental plan to the CO identifying and dealing with each specific task involving the wastes. The plan must be specific enough to demonstrate a thorough understanding of the environmental risks and the appropriate methodology for dealing with them. The plan shall also list the required permits and reference the relevant regulations which govern the activities involved in dealing with the materials or wastes.
- (3) Meet with representatives of the Contracting Officer during the preconstruction conference to discuss and to develop a mutual understanding on implementation of the plan.
- (4) The CO, or his or her representatives, may require other tasks to be added to the plan. If planned methodologies for dealing with the risks are deemed insufficient, the CO, or a designated representative may require revision. Work involving hazardous materials or wastes shall not commence until adequate plans have been submitted and reviewed. Bonneville's review of the contractor's plan shall in no way relieve the contractor of its liability for environmental law and regulatory compliance.

CONTRACTOR COMPLIANCE WITH BONNEVILLE POLICIES (15-4)

(MAR 2018)(BPI 15.3.1.1(a))

- (a) The contractor shall comply with all Bonneville policies affecting the Bonneville workplace environment. Examples of specific policies are:
 - (1) Bonneville Smoking Policy (Bonneville Policy 440-1),
 - (2) Use of Alcoholic Beverages, Narcotics, or Illegal Drug Substances on Bonneville Property or When in Duty Station (BPAM 400/792C),
 - (3) Firearms and Other Weapons (BPAM 1086),
 - (4) Standards of conduct regarding transmission information (BPI 3.2),
 - (5) Identification Badge Program (Bonneville Security Standards Manual, Chapter 200-3)
 - (6) Information Protection (Bonneville Policy 433-1),
 - (7) Safeguards and Security Program (Bonneville Policy 430-1);
 - (8) Managing Access and Access Revocation for NERC CIP Compliance (Bonneville Policy 430-2);
 - (9) Cyber Security Program(Bonneville Policy 434-1),
 - (10)Business Use of Bonneville Technology Services (BPAM Chapter 1110),
 - (11)Prohibition on soliciting or receiving donations for a political campaign while on federal property (18 U.S.C. § 607),
 - (12)Guidance on Violence and Threatening Behavior in the Workplace (DOE G 444-1-1),
 - (13)Inspection of persons, personal property and vehicles (41 CFR § 102-74.370),
 - (14)Preservation of property (41 CFR § 102-74.380),
 - (15)Compliance with Signs and Directions (41 CFR § 102-74.385),
 - (16)Disturbances (41 CFR § 102-74.390),
 - (17)Gambling Prohibited (41 CFR § 102-74.395),
 - (18)Soliciting, Vending and Debt Collection Prohibited (41 CFR § 102-74.410),
 - (19)Posting and Distributing Materials (41 CFR § 102-74.415)
 - (20)Photographs for News, Advertising or Commercial Purposes (41 CFR § 102-74.420), and
 - (21)Dogs and Other Animals Prohibited (41 CFR § 102-74.425).
- (b) The contractor shall obtain from the CO information describing the policy requirements. A contractor who fails to enforce workplace policies is subject to suspension or default termination of the contract.

PROTECTION OF EXISTING VEGETATION, STRUCTURES, AND IMPROVEMENTS (15-5)

(SEP 1998)(BPI 15.6.4.1(d))

- (a) The Contractor shall preserve and protect all structures, equipment, utilities, other improvements, and vegetation (such as trees, shrubs, and grass) on or adjacent to the work site, which are not to be removed and which do not unreasonably interfere with the work required under this contract. The Contractor shall only remove trees when specifically authorized to do so, and shall avoid damaging vegetation that will remain in

place. If any limbs or branches of trees are broken during contract performance, or by the careless operation of equipment, or by workers, the Contractor shall trim those limbs or branches with a clean cut and paint the cut with a tree-pruning compound as directed by the CO's representative.

- (b) If the Contractor fails or refuses to repair the damage promptly, the Contracting Officer may have the necessary work performed and charge the cost to the Contractor.

HAZARDOUS MATERIAL IDENTIFICATION AND MATERIAL SAFETY DATA (15-6)

(MAR 2018)(BPI 15.4.2)

- (a) The Contractor agrees to submit a Material Safety Data Sheet (Department of Labor Form OSHA-20), as prescribed in Federal Standard No. 313C, for all hazardous material 5 days before delivery of the material whether or not it is listed in Appendix A of the Standard. This obligation applies to all materials delivered under this contract which will involve exposure to hazardous materials or items containing these materials.
- (b) "Hazardous material," as used in this clause, is as defined in Federal Standard, No. 313C, in effect on the date of this contract.
- (c) Neither the requirements of this clause nor any act or failure to act by Bonneville shall relieve the Contractor of any responsibility or liability for the safety of Bonneville, Contractor, or subcontractor personnel or property.
- (d) The Contractor shall comply with applicable Federal, state, and local laws, codes, ordinances, and with regulations (including the obtaining of licenses and permits) in connection with hazardous material.
- (e) The Contractor shall insert this clause, including this paragraph (e), with appropriate changes in the designation of the parties, in subcontracts at any tier (including purchase orders) under this contract involving hazardous material.

OZONE DEPLETING SUBSTANCES (15-7)

(JUL 2013)(BPI 15.5.2.3(a))

- (a) In the performance of this contract, the Contractor shall advance the use of non-ozone depleting products that are Environmental Protection Agency (EPA)-designated items unless the product cannot be acquired— (1) Competitively within a time frame providing for compliance with the contract performance schedule; (2) Meeting contract performance requirements; or (3) At a reasonable price.
- (b) "Ozone-depleting substance," as used in this clause, means any substance the Environmental Protection Agency designates in 40 CFR Part 82 as—
- (1) Class I, including, but not limited to, chlorofluorocarbons, halons, carbon tetrachloride, and methyl chloroform; or
- (2) Class II, including, but not limited to, hydrochlorofluorocarbons.
- (c) The Contractor shall label products which contain, or are manufactured with, ozone-depleting substances in the manner and to the extent required by 42 U.S.C. § 7671j (b), (c), and (d) and 40 CFR Part 82, Subpart E, as follows:

Warning

Contains (or manufactured with, if applicable) * _____, a substance(s) which harm(s) public health and environment by destroying ozone in the upper atmosphere. *The Contractor shall insert the name of the substance(s).

ENERGY EFFICIENCY IN ENERGY CONSUMING PRODUCTS (15-9)

(MAR 2018)(BPI 15.5.3.3)

- (a) "Energy-Efficient Product" means a product that meets Department of Energy and Environmental Protection Agency criteria for use of the Energy Star trademark label; or is in the upper 25 percent of efficiency for all similar products as designated by the Department of Energy's Federal Energy Management Program.

- (b) Unless otherwise approved in writing by the CO, the Contractor and its subcontractors shall make every effort to ensure that energy-consuming products are Energy-Efficient Products at the time of contract award, for products that are—
 - (1) Delivered; or acquired by the Contractor for Bonneville use or for performing services at a Bonneville facility; or
 - (2) Specified in the design of a building or work, or incorporated during its construction, renovation, or maintenance.
- (c) Information about these products is available for—
 - (1) ENERGY STAR® at <http://www.energystar.gov/products>; and
 - (2) FEMP at <http://www.energy.gov/eere/femp/energy-efficient-products-and-energy-saving-technologies>.

RECOVERED MATERIALS (15-10)
(JUL 2013)(BPI 15.5.4.2(a))

- (a) In the performance of this contract, the Contractor shall advance the use of products containing recovered materials as designated by the EPA's Comprehensive Procurement Guideline (CPG) program unless the product cannot be acquired—
- (b) Competitively within a timeframe providing for compliance with the contract performance schedule;
 - (1) Meeting contract performance requirements; or
 - (2) At a reasonable price.
- (c) Information about this requirement is available at EPA's Comprehensive Procurement Guidelines web site, <http://www.epa.gov/wastes/consERVE/tools/cpg/index.htm>. The list of EPA designated items is available at <http://www.epa.gov/osw/consERVE/tools/cpg/index.htm>.

BIO-BASED PRODUCTS (15-11)

(JUL 2013)(BPI 15.5.4.2(b))

- (a) In the performance of this contract, the Contractor shall advance the use of bio-based products that are United States Department of Agriculture (USDA)-designated items unless the product cannot be acquired—
 - (1) Competitively within a time frame providing for compliance with the contract performance schedule;
 - (2) Meeting contract performance requirements; or
 - (3) At a reasonable price.
- (b) Information about this requirement and these products is available at www.biopreferred.gov.

CONTRACTOR SAFETY AND HEALTH (15-12)
(MAR 2018)(BPI 15.6.4.1(a))

- (a) The Contractor shall furnish a place of employment that is free from recognized hazards that cause or have the potential to cause death or serious physical harm to employees; and shall comply with occupational safety and health standards promulgated under the Occupational Safety and Health Act of 1970 (Public Law 91598). Contractor employees shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to their own actions and conduct.
 - (1) All construction contractors working on contracts in excess of \$100,000 shall comply with Department of Labor Contract Work Hours and Safety Standards (40 U.S.C. § 3701 et seq.).
 - (2) The Contractor shall comply with:
 - (i) National Fire Protection Association (NFPA) National Fire Codes for fire prevention and protection applicable to the work or facility being occupied or constructed;
 - (ii) NFPA 70E, *Standard for Electrical Safety in the Workplace*;
 - (iii) American Conference of Governmental Industrial Hygiene *Threshold Limit Values for Chemical Substances and Physical Agents* and Biological Exposure Indices; and,
 - (iv) Any additional safety and health measures identified by the Contracting Officer.

This clause does not relieve the Contractor from complying with any additional specific or corporate safety and health requirements that it determines to be necessary to protect the safety and health of employees.

- (b) The Contractor bears sole responsibility for ensuring that all contractor's workers performing contract work possess the necessary knowledge and skills to perform the work correctly and safely. The Contractor shall make any training and certification records necessary to demonstrate compliance with this requirement available for review upon request by Bonneville.
- (c) The Contractor shall hold Bonneville and any other owners of the site of work harmless from any and all suits, actions, and claims for injuries to or death of persons arising from any act or omission of the Contractor, its subcontractors, or any employee of the Contractor or subcontractors, in any way related to the work under this contract.
- (d) The Contractor shall immediately notify the Contracting Officer (CO), the Contracting Officer's Representative (COR), and the Safety Office by telephone at (360) 418-2397 of any death, injury, occupational disease or near miss arising from or incident to performance of work under this contract.
 - (1) The Bonneville Safety Office business hours are 7:00 AM to 4:00 PM Pacific Time. If the Safety Office Officials are not available to take the phone call the contractor shall leave a voicemail that includes the details of the event, and the Contractor's contact information. The Contractor shall periodically repeat the phone call to the Safety Office until the Contractor is able to speak directly with a Bonneville Safety Official.
 - (2) The Contractor shall follow up each phone call notification with an email to SafetyNotification@bpa.gov immediately for any fatality or within 24 hours for non-fatal events.
 - (3) The Contractor shall complete Bonneville form 6410.15e Contractor's Report of Personal Injury, Illness, or Property Damage Accident and submit the form to the CO, COR, and Safety Office within five (5) working days of such an occurrence. The Contractor shall include photographs and witness statements with the report.
 - (4) In the case of a Near Miss Incident that does not involve injury, illness, or property damage, the Contractor shall complete Bonneville Form 6410.18e Contractor's Report of Incident/Near Miss and submit the form to the CO, COR, and Safety Office within five (5) working days of such an occurrence. The Contractor shall include photographs and witness statements with the report.
- (e) Notification of Imminent Danger and Workers Right to Decline Work
 - (1) All workers, including contractors and Bonneville employees, are responsible for identifying and notifying other workers in the affected area of imminent danger at the site of work. Imminent danger is any condition or practice that poses a danger that could reasonably be expected to cause death or severe physical hardship before the imminence of such danger could be eliminated through normal procedures.
 - (2) A contract worker has the right to ask, without reprisal, their onsite management and other workers to review safe work procedures and consider other alternatives before proceeding with a work procedure. Reprisal means any action taken against an employee in response to, or in revenge for, the employee having raised, in good faith, reasonable concerns about a safety and health aspect of the work required by the contract.
 - (3) A contract worker has the right to decline to perform tasks, without reprisal, that will endanger the safety and health of themselves or of other workers.
 - (4) The Contractor shall establish procedures that allow workers to cease or decline work that may threaten the safety and health of the worker or other workers.
- (f) Bonneville encourages all contractor workers to raise safety and health concerns as a way to identify and control safety hazards. The Contractor shall develop and communicate a formal procedure for submittal, resolution, and communication of resolution and corrective action to the worker submitting the concern. The procedure shall (1) encourage workers to identify safety and health concerns directly to their supervisor and employer using the employer's reporting process; and (2) inform workers that they may raise safety concerns to Bonneville or the State OSHA. Workers may notify the Safety Office at (360) 418-2397 if the employer's work process does not resolve the worker's safety and health concern. Bonneville may coordinate the response to a contractor worker's safety and health concerns with the State OSHA when necessary to facilitate resolution.

- (g) Bonneville employees may direct the contractor to stop a work activity due to safety and health concerns. The Bonneville employee shall notify the Contractor orally with written confirmation, and request immediate initiation of corrective action. After receipt of the notice the Contractor shall immediately take corrective action to eliminate or mitigate the safety and health concern. When a Bonneville employee stops a work activity due to a safety and health concern the Contractor shall immediately notify the CO, provide a description of the event, and identify the Bonneville employee that halted the work activity. The Contractor shall not resume the stopped work activity until authorization to resume work is issued by a Bonneville Safety Official. The Contractor shall not be entitled to any equitable adjustment of the contract price or extension of the performance schedule when Bonneville stops a work activity due to safety and health concerns that occurred under the Contractor's control.
- (h) The Contractor shall keep a record of total monthly labor hours worked at the site of work. The Contractor shall include a separate calculation of the monthly total labor hours for each subcontractor in the contractor's monthly data. Upon request by the CO, COR or Bonneville Safety Office, the Contractor shall provide the total labor hours for a completed month to Bonneville no later than the 15th calendar day of the following month. The requestor shall identify the required reporting format and procedures.
- (i) The Contractor shall include this clause, including paragraph (i) in subcontracts. The Contractor may make appropriate changes in the designation of the parties to reflect the prime contractor--subcontractor arrangement. The Contractor is responsible for enforcing subcontractor compliance with this clause.

**CONTRACTOR SAFETY AND HEALTH REQUIREMENTS (15-13)
(MAR 2018)(BPI 15.6.4.1(b))**

- (a) The Contractor shall prepare a site specific safety plan (SSSP) and submit the SSSP to the Contracting Officer (CO) or the CO's designee. The Contractor is prohibited from performing on site work without written authorization from the CO. The CO is prohibited from issuing an authorization to proceed with on-site work until the Bonneville Safety Office has reviewed the SSSP and any concerns are resolved.
- (b) The Contractor shall follow the work procedures provided in the *Contractor Safety and Health Requirements for Prime and Subcontractors*. The full text of the *Contractor Safety and Health Requirements for Prime and Subcontractors* is available at <http://www.bpa.gov/Doing%20Business/purchase/Pages/default.aspx>. (c) The Contractor shall include this clause in all subcontracts.

**CONTRACTOR POLICY TO BAN TEXT MESSAGING WHILE DRIVING (15-14)
(FEB 2016) (BPI 15.3.1.1(b))**

- (a) Definitions. As used in this clause—

“Driving”—(1) Means operating a motor vehicle on an active roadway with the motor running, including while temporarily stationary because of traffic, a traffic light, stop sign, or otherwise. (2) Does not include operating a motor vehicle with or without the motor running when one has pulled over to the side of, or off, an active roadway and has halted in a location where one can safely remain stationary.

“Text messaging” means reading from or entering data into any handheld or other electronic device, including for the purpose of short message service texting, e-mailing, instant messaging, obtaining navigational information, or engaging in any other form of electronic data retrieval or electronic data communication. The term does not include glancing at or listening to a navigational device that is secured in a commercially designed holder affixed to the vehicle, provided that the destination and route are programmed into the device either before driving or while stopped in a location off the roadway where it is safe and legal to park.

- (b) This clause implements Executive Order 13513, Federal Leadership on Reducing Text Messaging while driving, dated October 1, 2009.

- (c) The Contractor should adopt and enforce policies that ban text messaging while driving —(1) Companyowned or -rented vehicles or Government-owned vehicles; or (2) Privately-owned vehicles when on official Government business or when performing any work for or on behalf of the Government.
- (d) Subcontracts. The Contractor shall insert the substance of this clause, including this paragraph (d), in all subcontracts that exceed \$10,000.

**SCREENING REQUIREMENTS FOR PERSONNEL HAVING ACCESS TO BONNEVILLE FACILITIES (15-15)
(MAR 2018) (BPI 15.7.2.1)**

- (a) The following definitions shall apply to this contract:
 - (1) "Access" means the ability to enter Bonneville facilities as a direct or indirect result of the work required under this contract.
 - (2) "Sensitive unclassified information" means information requiring a degree of protection due to the risk and magnitude of loss or harm that could result from inadvertent or deliberate disclosures, alteration, or restriction. Sensitive unclassified information may include, but is not limited to: personnel data maintained in systems or records subject to the Privacy Act of 1974, Pub. L. 93-579 (5 U.S.C. 552a); proprietary business data (18 U.S.C. 1905) and the Freedom of Information Act (5 U.S.C. 552); unclassified controlled information (42 U.S.C. 2168, DOE Order 471.3), and critical infrastructure information, energy supply data; economic forecasts; and financial data.
- (b) Bonneville personnel screening activities are based on the Homeland Security Presidential Directive 12 (HSPD-12), and DOE rules and guidance as implemented at Bonneville. The background screening process to be conducted by the Office of Personnel Management is called a National Agency Check with Inquiries (NACI). The results of the NACI process will provide Bonneville with information to determine an individual's initial eligibility or continued eligibility for access to Bonneville facilities including IT access. Such a determination shall not be construed as a substitute for determining whether an individual is technically suitable for employment.
- (c) The contractor is responsible for protecting Bonneville property during contract performance, including sensitive unclassified data. Effective October 27, 2005, all new-hire contract employees expected to work at federal facilities for six or more consecutive months must be screened according to HSPD-12. To initiate the federal screening process discussed in paragraph (b) above, the contractor shall ensure that all prospective contract employees present the required forms of personal identification and complete SF85 - Questionnaire for Non Sensitive Positions and submit it to Bonneville for processing. All contract employees on board prior to that date will be screened in phases according to length of service. Rescreenings of longer term contract employees will occur at periodic intervals, generally of five years.
- (d) As part of the NACI, the government's determination of approval for an individual's access shall be at least based upon criteria listed below. However, the contractor also has a responsibility to affirm that permitting the individual access to Bonneville facilities and/or computer systems is an acceptable risk which will not lead to improper use, manipulation, alteration, or destruction of Bonneville property or data, including unauthorized disclosure. Positive findings in any of these areas shall be sufficient grounds to deny access.
 - (1) Any behavior, activities, or associations which may show the individual is not reliable or trustworthy;
 - (2) Any deliberate misrepresentations, falsifications, or omissions of material facts;
 - (3) Any criminal, dishonest or immoral conduct (as defined by local Law), or substance abuse; or
 - (4) Any illness, including any mental condition, of a nature which, in the opinion of competent medical authority, may cause significant defect in the judgment or reliability of the employee, with due regard to the transient or continuing effect of the illness and the medical findings in such case.
- (e) If the NACI screening process described above prompts a determination to disapprove access, Bonneville shall notify the contractor, who will then inform the individual of the determination and the reasons therefor. The contractor shall afford the individual an opportunity to refute or rebut the information that has formed the basis for the initial determination, according to the appeal process prescribed by HSPD-12 and supplemental implementing guidance.
- (f) If the individual is granted access, the individual's employment records or personnel file shall contain a copy of the final determination as described in paragraph (e) above and the basis for the determination. The

contractor shall conduct periodic reviews of the individual's employment records or personnel file to reaffirm the individual's continued suitability for access. The reviews should occur annually, or more often as appropriate or necessary. If the contractor becomes aware of any new information that could alter the individuals' continued eligibility for approved access, the contractor shall notify the COR immediately.

- (g) If a security clearance is required, then the applicant's job qualifications and suitability must be established prior to the submission of a security clearance request to DOE. In the event that an applicant is specifically hired for a position that requires a security clearance, then the applicant shall not be placed in that position until a security clearance is granted by DOE.
- (h) In addition to the requirements described elsewhere in this clause, all contractor employees who may be accessing any of Bonneville's information resources must participate annually in a Bonneville-furnished information resources security training course.
- (i) The contractor is responsible for obtaining from its employees any Bonneville-issued identification and/or access cards immediately upon termination of an employee's employment with the contractor, and for returning it to the COR, who will forward it to Security Management.
- (j) The substance of this clause shall be included in any subcontracts in which the subcontractor employees will have access to Bonneville facilities and/ or computer systems.

ACCESS TO BONNEVILLE FACILITIES AND COMPUTER SYSTEMS (15-16)

(MAR 2018)(BPI 15.8.3)

- (a) Contract workers with unescorted physical access to a Bonneville facility and/ or computer system shall follow the applicable procedures and requirements: (1) Bonneville Policy 434-1: Cyber Security Program; (2) Bonneville Policy 430-2: Managing Access and Access Revocation for NERC CIP Compliance; (3) Bonneville Policy 433-1: Information Security; (4) Bonneville Control Center document, Dittmer Control Center Access – Frequently Asked Questions; (5) If unescorted access to energized facilities, Bonneville Substation Operations Rules of Conduct Handbook: Policies and Procedures, Permits, Energized Access, and Clearance Certifications; and (6) Additional requirements and procedures may be included in the statement of work and the technical specifications.
- (b) Notifying Bonneville of Contractor Personnel Changes:
 - (1) The Contractor shall notify Bonneville within four (4) hours when a worker with unescorted physical access to a Bonneville facility or computer system is re-assigned to non-Bonneville work, terminates their employment with the contractor, or is removed for cause.
 - (2) The Contractor shall send notification to Bonneville Security Services by email to Revoke@bpa.gov or call (503) 230-3779 to provide notification.
 - (3) The Contractor shall provide written notification to the Contracting Officer, and if assigned the Contracting Officer's Representative, confirming that notification required in the above subsection (2) occurred and surrender the physical badge and computer access assets within 24 hours.
- (c) The provisions of this clause shall be included in all subcontracts where workers have unescorted access to Bonneville facilities or computer system access.

HOMELAND SECURITY (15-18)

(MAR 2018) (BPI 15.10.3)

- (a) If any portion of the Contractor's maintenance or support service is located in a foreign country, then the Contractor will disclose those foreign countries to Bonneville to determine if the foreign country is on the Sensitive Country List or is a Terrorist Country as determined by the United States Department of State. Bonneville will notify the Contractor in writing whether or not it can allow an intangible export of Bonneville's Critical Information or if a Deemed Export License is required.

- (b) The Contractor shall notify the CO in writing in advance of any consultation with a foreign national or other third party that would expose them to Bonneville Critical Information. Bonneville will approve or reject consultation with the third party.
- (c) Notification of Security Incident. The Contractor shall immediately notify Bonneville's Office of the Chief Information Officer (OCIO) Chief Information Security Officer (CISO) of any security incident and cooperate with Bonneville in investigating and resolving the security incident. In the event of a security incident, the Contractor shall notify the CISO by telephone at 503-230-5088 and ask for a Cyber Security Officer. Bonneville may also provide in writing to the Contractor alternate phone numbers for contacting Cyber Security Officers. A call back voice message may be left but not the details of the Security Incident.

**SAFETY VERIFICATION SUBSCRIPTION (15-52)
(MAR 2018)**

The Contractor agrees to maintain, a subscription with Bonneville's third party safety verification provider for the duration of this Contract. For subscription information, please visit <http://www.bpa.gov/Doing%20Business/Pages/Contractor-Safety.aspx>. The information requested will assist Bonneville in evaluation of the health, safety and environmental performance of the Contractor.

A minimum safety rating of "C" is required for performing the services requested in this contract. Depending on the size of this contract action and other scope-specific factors, contractors with a rating of "C" may be required by Bonneville to provide safety risk mitigation at no cost. This mitigation may include a requirement to have a full time safety professional at the contract location during the performance of the work.

In the event that the Contractor's safety rating falls below a "C" rating, Contractor shall promptly take all steps necessary to improve the rating to maintain a rating of "C" or better during the performance of the Contract. If the Contractor does not improve such rating within 30 days after the issuance of the rating, Contractor shall be considered to have an unacceptable safety performance rating and the Contracting Officer shall determine the course of action, up to and including contract termination.

Bonneville makes no representation about the quality of services being performed by the third party safety verification provider. The use of information obtained from the third party safety verification provider in connection with this contract shall not constitute, nor be construed as, an assumption of responsibility or liability for safety under the Contract by Bonneville. Use of information obtained by Bonneville does not relieve Contractor from its legal and contractual obligations. The third party safety verification provider is an independent contractor and is not an agent of Bonneville. Any acts or omissions by the third party safety verification provider shall not be considered an act or omission of Bonneville.

**PERFORMANCE AND PAYMENT BONDS (16-1)
(MAR 2018)(BPI 16.2.3.3)**

- (a) Definition. "Original contract price," as used in this clause, means the award price of the contract, or, for indefinite-delivery contracts, the price payable for the specified minimum quantity. Original contract price does not include the price of any options, except those options exercised at the time of contract award.
- (b) Amount of required bonds. Unless the resulting contract price is \$150,000 or less, the successful offeror shall furnish performance and payment bonds to the Contracting Officer as follows:
 - (1) Performance bonds (Standard Form 25). The penal amount of performance bonds at the time of contract award shall be 100 percent of the original contract price.
 - (2) Payment bonds (Standard Form 25A). The penal amount of payment bonds at the time of contract award shall be 100 percent of the original contract price.
 - (3) Additional bond protection.
 - (i) The Government may require additional performance and payment bond protection if the contract price is increased. The increase in protection generally will equal 100 percent of the increase in contract price.

- (ii) The Government may secure the additional protection by directing the Contractor to increase the penal amount of the existing bond or to obtain an additional bond.
- (c) Furnishing executed bonds. The Contractor shall furnish all executed bonds, including any necessary reinsurance agreements, to the Contracting Officer, within 14 calendar days of task order award, but in any event, before starting work.
- (d) Surety or other security for bonds. The bonds shall be in the form of firm commitment, supported by corporate sureties whose names appear on the list contained in Treasury Department Circular 570, individual sureties, or by other acceptable security such as postal money order, certified check, cashier's check, irrevocable letter of credit, or in accordance with Treasury Department regulations, certain bonds or notes of the United States. Treasury Circular 570 is published in the *Federal Register* or may be obtained from the:

U.S. Department of Treasury
Financial Management Service
Surety Bond Branch
3700 East West Highway, Room 6F0`
Hyattsville, MD 20782
Or via the internet at <http://www.fms.treas.gov/c570/>.

ADDITIONAL BOND SECURITY (16-3)

(MAR 2018) (BPI 16.2.7.4(a))

The Contractor shall promptly furnish additional security required to protect the Government and persons supplying labor or materials under this contract if –

- (a) Any surety upon any bond, or issuing financial institution for other security, furnished with this contract becomes unacceptable to the Government;
- (b) Any surety fails to furnish reports on its financial conditions as required by the Government;
- (c) The contract price is increased so that the penal amount of any bond becomes inadequate in the opinion of the Contracting Officer; or
- (d) An irrevocable letter of credit (ILC) used as security will expire before the end of the period of required security. If the Contractor does not furnish an acceptable extension or replacement ILC, or other acceptable substitute, at least 30 days before an ILC's scheduled expiration, the Contracting Officer has the right to immediately draw on the ILC.

PROSPECTIVE SUBCONTRACTOR REQUESTS FOR BONDS (16-4)

(MAR 2018) (BPI 16.2.7.4(b))

In accordance with section 806(a)(3) of Pub L. 102-190, as amended by sections 2091 and 8105 of Pub L. 103355 (10 U.S.C. § 2302 note), upon the request of a prospective subcontractor or supplier offering to furnish labor or material for the performance of this contract for which a payment bond has been furnished to the Government pursuant to 40 U.S.C. chapter 31, subchapter III, Bonds, the Contractor shall promptly provide a copy of such payment bond to the requester.

WORK ON A GOVERNMENT INSTALLATION (16-7)

(MAR 2018) (BPI 16.4.8.1)

- (a) The Contractor shall, at its own expense, provide and maintain during the entire performance of this contract, at least the kinds and minimum amounts of insurance required in the Schedule or elsewhere in this contract.
- (b) Before commencing work under this contract, the Contractor shall notify the Contracting Officer in writing that the required insurance has been obtained. The policies evidencing required insurance shall contain an endorsement to the effect that any cancellation or any material change adversely affecting the Government's interest shall not be effective –
 - (1) For such period as the laws of the State in which this contract is performed prescribe; or

- (2) Until 30 days after the insurer or the Contractor gives written notice to the Contracting Officer, whichever period is longer.
- (c) Each insurance policy required under this contract, other than workers' compensation insurance, shall contain an endorsement naming the United States as an additional insured with respect to operations performed under this contract. The insurance carrier is required to waive all subrogation rights against any of the named insured.
- (d) The Contractor shall insert the substance of this clause, including this paragraph (c), in subcontracts under this contract that require work on a Government installation and shall require subcontractors to provide and maintain the insurance required in the Schedule or elsewhere in the contract. The Contractor shall maintain a copy of all subcontractors' proofs of required insurance, and shall make copies available to the Contracting Officer upon request.

**MINIMUM INSURANCE COVERAGE (16-8M)
(JUL 2019) (BPI 16.4.8.2)**

The Contractor shall obtain and maintain insurance coverage as follows for the performance of this contract.

- (a) Workers' compensation and employer's liability. Worker's compensation and employer's liability insurance as required by applicable Federal and State workers' compensation and occupational disease statutes. If occupational diseases are not compensable under those statutes, they shall be covered under the employer's liability section of the insurance policy, except when contract operations are so commingled with the Contractor's commercial operations that it would not be practical to require this coverage. The employer's liability coverage shall be \$1,000,000, except in States with exclusive or monopolistic funds that do not permit workers' compensation to be written by private carriers.
- (b) Commercial general liability. Comprehensive general (bodily injury) liability insurance of \$1,000,000 per occurrence and \$2,000,000 general aggregate.
- (c) Automobile liability. Motor vehicle liability insurance written on the comprehensive form of policy which provides for bodily injury and property damage liability covering the operation of all motor vehicles used in connection with performing the contract. Policies covering motor vehicles operated in the United States shall provide coverage of \$2,000,000 per accident. The amount of liability coverage on other policies shall be commensurate with any legal requirements of the locality and sufficient to meet normal and customary claims.
- (d) Pollution liability. The Contractor shall provide environmental impairment liability insurance of \$5,000,000 per occurrence. Such insurance will include coverage for the clean-up, removal, storage, disposal, transportation and/or use of pollutants. The insurance policy shall name BPA, its officials, officers, employees and agents as additional insureds. The contractor's policy shall be primary and shall not seek any contribution from any insurance or self-insurance programs of Bonneville.
- (e) Professional liability. The Contractor shall provide professional liability insurance. Coverage shall be \$1,000,000 per occurrence for claims arising out of negligent acts, errors or omissions.
- (f) The Contractor's policy shall be primary and shall not seek any contribution from any insurance or selfinsurance programs of Bonneville. The Contractor's insurance certificate shall contain a waiver of subrogation in favor of Bonneville. Where allowable, Contractor's insurance will name Bonneville and its agents, officers, directors and employees as additional insured's.

**INSPECTION AND ACCEPTANCE - CONSTRUCTION (18-5)
(MAR 2018)(BPI 18.3.1(c))**

- (a) Definition. "Work" includes, but is not limited to, materials, workmanship, and manufacture and fabrication of components.
- (b) The Contractor shall maintain an adequate inspection system and perform such inspections as will ensure that the work performed under the contract conforms to contract requirements. The Contractor shall maintain complete inspection records and make them available to Bonneville. All work shall be conducted under the

general direction of the Contracting Officer and is subject to Bonneville inspection and test at all places and at all reasonable times before acceptance to ensure strict compliance with the terms of the contract.

- (c) Bonneville inspections and tests are for the sole benefit of Bonneville and do not—
 - (1) Relieve the Contractor of responsibility for providing adequate quality control measures;
 - (2) Relieve the Contractor of responsibility for damage to or loss of the material before acceptance;
 - (3) Constitute or imply acceptance; or
 - (4) Affect the continuing rights of Bonneville after acceptance of the completed work under paragraph (i) below.
- (d) The presence or absence of a Bonneville inspector does not relieve the Contractor from any contract requirement, nor is the inspector authorized to change any term or condition of the specification without the Contracting Officer's written authorization.
- (e) The Contractor shall promptly furnish, without additional charge, all facilities, labor, and material reasonably needed for performing such safe and convenient inspections and tests as may be required by the Contracting Officer. Bonneville may charge to the Contractor any additional cost of inspection or test when work is not ready at the time specified by the Contractor for inspection or test, or when prior rejection makes reinspection or retest necessary. Bonneville shall perform all inspections and tests in a manner that will not unnecessarily delay the work. Special, full size, and performance tests shall be performed as described in the contract.
- (f) The Contractor shall, without charge, replace or correct work found by Bonneville not to conform to contract requirements, unless in the public interest Bonneville consents to accept the work with an appropriate adjustment in contract price. The Contractor shall promptly segregate and remove rejected material from Bonneville property.
- (g) If the Contractor does not promptly replace or correct rejected work, Bonneville may (1) by contract or otherwise, replace or correct the work and charge the cost to the Contractor, and may (2) terminate for default the Contractor's right to proceed.
- (h) If, before acceptance of the entire work, Bonneville decides to examine already completed work by removing it or tearing it out, the Contractor, on request, shall promptly furnish all necessary facilities, labor, and material. If the work is found to be defective or nonconforming in any material respect due to the fault of the Contractor or its subcontractors, the Contractor shall defray the expenses of the examination and of satisfactory reconstruction. However, if the work is found to meet contract requirements, the Contracting Officer shall make an equitable adjustment for the additional services involved in the examination and reconstruction, including, if completion of the work was thereby delayed, an extension of time.
- (i) Unless otherwise specified in the contract, acceptance by Bonneville will be in writing and shall be made as promptly as practicable after completion and inspection of all work required by the contract or that portion of the work the Contracting Officer determines can be accepted separately. Acceptance shall be final and conclusive except for latent defects, fraud, gross mistakes amounting to fraud, or Bonneville's rights under any warranty or guarantee.

RESPONSIBILITY FOR DAMAGE OR LOSS OF SUPPLIES (18-6)

(MAR 2018)(BPI 18.4.2)

- (a) The Contractor shall be responsible for the supplies covered by this contract until acceptance, at the designated site, regardless of the point of inspection.
- (b) After delivery and installation at the designated site and prior to acceptance or rejection, Bonneville shall be responsible for the loss, destruction, or damage to the supplies only if such loss, destruction, or damage results from the negligence of officers, agents, or employees of Bonneville acting within the scope of their employment.
- (c) The Contractor shall bear all risks as to rejected supplies after notice of rejection, except that Bonneville shall be responsible for the loss, or destruction of, or damage to the supplies only if such loss, destruction or damage results from the gross negligence of officers, agents, or employees of Bonneville acting within the scope of their employment.

WARRANTY – SUPPLIES (18-8M)

(FEB 2019)(BPI 18.5.1(a))

- (a) The Contractor warrants that the supplies ("supplies" includes equipment, fabrication processes, raw or finished materials, and intermediate assemblies) conform to contract requirements. The Contractor also warrants that supplies are free of design defects (except defects in Bonneville-provided final designs) and defects in materials or workmanship.
- (b) The Contractor shall replace or repair any supplies which fail in operation within 12 months from the date of final acceptance. The Contracting Officer will give written notice of any defect or nonconformance to the Contractor within a reasonable period of time after discovery. Replacements of contract items shall be made promptly and on an FOB destination basis. Bonneville will install replacements at no expense to the Contractor.
- (c) Supplies replaced under the provisions of this warranty shall remain the property of Bonneville unless the Contractor wishes to obtain ownership. In this case, the Contractor shall notify Bonneville of such in writing not later than the date final acceptance by Bonneville of the replacement supplies. The Contractor is responsible for packaging and shipping costs.
- (d) The rights and remedies of Bonneville provided in this clause are in addition to and do not limit any rights afforded to Bonneville by any other clause of this contract or under applicable Federal or State law, including the Uniform Commercial Code.

WARRANTY - CONSTRUCTION (18-12M)

(FEB 2019)(BPI 18.5.1(e))

- (a) In addition to any other warranties in this contract, the Contractor warrants, except as provided in paragraph (i) of this clause, that work performed under this contract conforms to the contract requirements and is free of any defect in equipment, material, or design furnished, or workmanship performed by the Contractor or any subcontractor or supplier at any tier.
- (b) This warranty shall continue for a period of two (2) years from the date of final acceptance of the work. If Bonneville takes possession of any part of the work before final acceptance, this warranty shall continue for a period of 1 year from the date Bonneville takes possession.
- (c) The Contractor shall remedy at the Contractor's expense any failure to conform, or any defect. In addition, the Contractor shall remedy at the Contractor's expense any damage to Government-owned or controlled real or personal property, when that damage is the result of –
 - (1) The Contractor's failure to conform to contract requirements; or
 - (2) Any defect of equipment, material, workmanship, or design furnished by the Contractor.
- (d) The Contractor shall restore any work damaged in fulfilling the terms and conditions of this clause. The Contractor's warranty with respect to work repaired or replaced will run for 1 year from the date of repair or replacement.
- (e) The Contracting Officer shall notify the Contractor, in writing, within a reasonable time after the discovery of any failure, defect, or damage.
- (f) If the Contractor fails to remedy any failure, defect, or damage within a reasonable time after receipt of notice, Bonneville shall have the right to replace, repair, or otherwise remedy the failure, defect, or damage at the Contractor's expense.
- (g) With respect to all warranties, express or implied, from subcontractors, manufacturers, or suppliers for work performed and materials furnished under this contract, the Contractor shall—
 - (1) Obtain all warranties that would be given in normal commercial practice;
 - (2) Require all warranties to be executed, in writing, for the benefit of Bonneville, if directed by the Contracting Officer; and
 - (3) Enforce all warranties for the benefit of Bonneville, if directed by the Contracting Officer.
- (h) Unless a defect is caused by the negligence of the Contractor or subcontractor or supplier at any tier, the Contractor shall not be liable for the repair of any defects of material or design furnished by Bonneville nor for the repair of any damage that results from any defect in Government-furnished material or design.

- (i) This warranty shall not limit Bonneville's rights under the Inspection and Acceptance clause of this contract with respect to latent defects, gross mistakes, or fraud.

**LIMITATION OF LIABILITY FOR CONSEQUENTIAL DAMAGES (18-15M)
(JUL 2019)(BPI 18.6.4)**

- (a) In no event shall either party be liable to the other party for any indirect, special, exemplary, or consequential damages, whether liability is based on contract, warranty, negligence, strict liability, or otherwise.
- (b) Except for and excluding payments made pursuant to insurance coverage required by this contract under Clause 16-8, the total liability of the contractor to BPA for any claims arising under this contract shall not exceed the lesser of \$15,000,000 for any single task order or the aggregate contract total value of the contract, including all options and task orders.

BONNEVILLE-FURNISHED/CONTRACTOR-ACQUIRED PROPERTY (19-1)

(MAR 2018)(BPI 19.4)

- (a) The Contractor shall manage Bonneville-furnished, contractor-acquired property in accordance with BPI Appendix 19 if that appendix is made a part of this contract. If Appendix 19 is not made a part of this contract, property should be managed in accordance with ASTM Property Management Standards and/or sound industry practices. All contractors shall use government furnished and contractor acquired property for official business use only.
- (b) Bonneville shall deliver to the Contractor, at the time and locations stated in this contract, Bonnevillefurnished property described in the Schedule, statement of work, or specifications. If that property, suitable for its intended use, is not delivered to the Contractor, the Contracting Officer shall equitably adjust affected provisions of this contract in accordance with the Changes clause of the contract when— (1) The Contractor submits a timely written request for an equitable adjustment; and (2) The facts warrant an equitable adjustment.
- (c) Title to Bonneville-furnished property shall remain with Bonneville, unless specifically identified elsewhere in this contract. The Contractor shall use Bonneville-furnished property, except as provided for in BPI subpart 19.3, only in connection with this contract. The Contractor shall maintain adequate property control records in accordance with sound industry practices and will make such records available for Bonneville inspection at all reasonable times.
- (d) Upon delivery of Bonneville-furnished property to the Contractor, the Contractor assumes the risk and responsibility for its loss or damage, except- (1) For reasonable wear and tear; (2) To the extent property is consumed in the performance of this contract; or (3) As otherwise provided for by the provisions of this contract.
- (e) Unless specified elsewhere in this contract, title to all property purchased by the Contractor for which the Contractor is entitled to be reimbursed as a direct item of cost under this contract shall pass to and vest in Bonneville upon the supplier's delivery of such property to the contractor.
- (f) Title to Bonneville property shall not be affected by its incorporation into or attachment to any property not owned by Bonneville, nor shall Bonneville property become a fixture or lose its identity as personal property by being attached to any real property.
- (g) Upon completion of this contract, the Contractor shall follow the instructions of the Contracting Officer regarding the disposition of all property, title to which is held by Bonneville, which was not consumed in the performance of this contract or previously delivered to Bonneville. For the disposal of electronic property, the Contractor is required to follow all Federal, State, and local laws and regulations. The Contractor shall prepare for shipment, deliver f.o.b. origin, or dispose of Bonneville property, as may be directed or authorized by the Contracting Officer. The net proceeds of any such disposal shall be credited to the contract price or shall be paid to Bonneville as directed by the Contracting Officer.

TERMINATION FOR THE CONVENIENCE OF BONNEVILLE (20-2)

(MAR 2018)(BPI 20.4.1)

- (a) Bonneville may terminate all or any part of this contract, at any time, upon written notice to the contractor. Upon receipt of the termination notice, the contractor shall stop work on the terminated portion of the contract.
- (b) The contract amount shall be revised as a result of termination under this clause. On fixed-price contracts the revised amount shall not exceed the pre-termination contract price, excluding payments already received, plus reasonable termination expenses. On cost-reimbursement contracts it will not exceed the total of allowable and allocable costs of performance prior to termination, excluding payments already received, plus reasonable termination expenses, plus an adjustment of the fee on the terminated portion of the contract. No payment will be made for anticipated profits on the terminated portion, or consequential damages, of the contract. The contractor shall submit a settlement proposal within 30 days of the notice of termination.
- (c) The Contracting Officer may direct the disposition of material produced or acquired for the work terminated, or any completed or partially completed items.

TERMINATION FOR DEFAULT – ALTERNATE I (20-3)

(MAR 2018)(BPI 20.5.1(a))

- (a) Bonneville reserves the right to terminate any or all of any undelivered or unexecuted portion of this contract for cause if the contractor fails to make any delivery, fails to prosecute the work, or to perform as scheduled, or if any of the contract terms are breached. However, the contractor shall not be terminated for default if the failure to perform arises from unforeseeable causes beyond the control and without the fault or negligence of the Contractor, provided that the Contractor provides notice to the Contracting Officer that a force majeure event has occurred within a reasonable period of time after occurrence. Examples of those events are: (1) acts of God or of the public enemy, (2) acts of the Government in its sovereign or Bonneville in its contractual capacity, (3) fires, (4) floods, (5) epidemics, (6) quarantine restrictions, (7) strikes, (8) freight embargoes, and (9) unusually severe weather.
- (b) The Contracting Officer may direct the disposition of material produced or acquired for the work terminated, and the disposition of any completed or partially completed items.
- (c) Bonneville may acquire, under the terms and in the manner the Contracting Officer considers appropriate, supplies or services similar to those terminated, and the Contractor will be liable to Bonneville for any excess costs for those supplies or services, including administrative costs.

EXCUSABLE DELAYS (20-4)

(MAR 2018) (BPI 20.5.1(b))

- (a) Except for defaults of subcontractors at any tier, the Contractor shall not be in default because of any failure to perform this contract under its terms if the failure arises from causes beyond the control and without the fault or negligence of the Contractor. Examples of these causes are (1) acts of God or of the public enemy, (2) acts of the Government in either its sovereign or contractual capacity, (3) fires, (4) floods, (5) epidemics, (6) quarantine restrictions, (7) strikes, (8) freight embargoes, and (9) unusually severe weather. In each instance, the failure to perform must be beyond the control and without the fault or negligence of the Contractor. "Default" includes failure to make progress in the work so as to endanger performance.
- (b) If the failure to perform is caused by the failure of a subcontractor at any tier to perform or make progress, and if the cause of the failure was beyond the control of both the Contractor and subcontractor, and without the fault or negligence of either, the Contractor shall not be deemed to be in default, unless – (1) The subcontracted supplies or services were obtainable from other sources;
(2) The Contracting Officer ordered the Contractor in writing to purchase these supplies or services from other sources; and
(3) The Contractor failed to comply reasonably with this order.

- (c) Upon request of the Contractor, the Contracting Officer shall ascertain the facts and extent of the failure. If the Contracting Officer determines that any failure to perform results from one or more of the causes above, the delivery schedule shall be revised, subject to the rights of the Government under the termination clause of this contract.

DISPUTES (21-2)
(MAR 2018)(BPI 21.3.15.1)

- (a) This contract is subject to the Contract Disputes Act of 1978, as amended (41 U.S.C. § 7101-7109).
- (b) Except as provided in the Act, all disputes arising under or relating to this contract shall be resolved under this clause.
- (c) "Claim," as used in this clause, means a written demand or written assertion by one of the contracting parties seeking, as a matter of right, the payment of money in a sum certain, the adjustment or interpretation of contract terms, or other relief arising under or relating to this contract. However, a written demand or written assertion by the Contractor seeking the payment of money exceeding \$100,000 is not a claim under the Act until certified. A voucher, invoice, or other routine request for payment that is not in dispute when submitted is not a claim under the Act. The submission may be converted to a claim under the Act, by complying with the submission and certification requirements of this clause, if it is disputed either as to liability or amount or is not acted upon in a reasonable time. (d)
- (1) A claim by the Contractor shall be made in writing and, unless otherwise stated in this contract, submitted within six years after accrual of the claim to the Contracting Officer for a written decision. A claim by Bonneville against the Contractor shall be subject to a written decision by the Contracting Officer.
- (2)
- (i) The Contractor shall provide the certification specified in paragraph (d)(2)(iii) of this clause when submitting any claim exceeding \$100,000.
- (ii) The certification requirement does not apply to issues in controversy that have not been submitted as all or part of a claim.
- (iii) The certification shall state as follows: "*I certify that the claim is made in good faith; that the supporting data are accurate and complete to the best of my knowledge and belief; that the amount requested accurately reflects the contract adjustment for which the Contractor believes Bonneville is liable; and that I am duly authorized to certify the claim on behalf of the Contractor.*"
- (iv) The certification may be executed by any person duly authorized to bind the Contractor with respect to the claim.
- (e) For Contractor claims of \$100,000 or less, the Contracting Officer must, if requested in writing by the Contractor, render a decision within 60 days of the request. For contractor-certified claims over \$100,000, the Contracting Officer must, within 60 days, decide the claim or notify the Contractor of the date by which the decision will be made.
- (f) The Contracting Officer's decision shall be final unless the Contractor appeals or files suit as provided in the Act.
- (g) If the claim by the Contractor is submitted to the Contracting Officer or a claim by Bonneville is presented to the Contractor, the parties, by mutual consent, may agree to use alternative dispute resolution (ADR). If the Contractor refuses an offer for ADR, the Contractor shall inform the Contracting Officer, in writing, of the Contractor's specific reasons for rejecting the offer.
- (h) Bonneville shall pay interest on the amount found due and unpaid from (1) the date that the Contracting Officer receives the claim (certified, if required); or (2) the date that payment otherwise would be due, if the date is later, until the date of payment. With regard to claims having defective certifications, as defined in BPI 21.3.1, interest shall be paid from the date that the Contracting Officer initially receives the claim. Simple interest on claims shall be paid at the rate, fixed by the Secretary of the Treasury as provided in the Act, which is applicable to the period during which the Contracting Officer receives the claim and then at the rate applicable for each 6-month period as fixed by the Secretary of the Treasury during the pendency of the claim.

- (i) The Contractor shall proceed diligently with performance of this contract, pending final resolution of any request for relief, claim, appeal, or action arising under or relating to the contract, and comply with any decision of the Contracting Officer.

RELEASE OF CLAIMS (21-4)
(MAR 2018)(BPI 21.3.10.1)

After completion of work, and prior to final payment, the Contracting Officer may, at his or her option, require the Contractor to furnish a release of claims against Bonneville arising out of the contract, other than claims specifically excepted from the operation of the release.

APPLICABLE LAW (21-5)
(JUL 2013)(BPI 21.1.3)

United States law will apply to resolve any claim of breach of this contract.

BASIS OF PAYMENT – CONSTRUCTION (22-2)
(MAR 2018)(BPI 22.1.3(a))

- (a) Progress payments. Bonneville shall make progress payments as the work proceeds based on its assessment of the stage or percentage of work accomplished. Bonneville may include in the calculation of progress, 75 percent of the cost of material delivered to the site but not yet installed. The Contractor shall submit supplier invoices to verify such cost of material. The Contractor shall furnish a breakdown of the work as a percentage of total contract price, in such detail as required by the CO. (See the clause 24-10, Price Data Sheet).
- (b) Interest on unearned amounts. After making a request for progress payment, if all or a portion of the request constitutes a payment for performance by the Contractor (or any subcontractors or suppliers) that fails to conform to the requirements of the contract, the Contractor shall (1) notify the CO of the performance deficiency and (2) pay Bonneville an amount equal to interest on the unearned amount from the date of receipt of the unearned amount until the date that the performance deficiency has been corrected or until the contractor reduces the amount of any subsequent request for progress payments by the unearned amount.
- (c) Title to all material and work covered by progress payments made shall pass to Bonneville at the time of payment. This shall not be construed as—
 - (1) Relieving the Contractor from the sole responsibility for all material and work upon which payments have been made or the restoration of any damaged work; or
 - (2) Waiving the right of Bonneville to require the fulfillment of all of the terms of the contract.
- (d) Performance and payment bond premiums paid by the Contractor will be reimbursed by Bonneville after the Contractor has furnished evidence of full payment to the surety.
- (e) Partial Payments. Unless otherwise specified, payment shall be made after acceptance of any portion of the work delivered or rendered for which a price is separately stated in the contract.
- (f) Final Payment. Bonneville shall pay the amount due the Contractor under this contract after completion and acceptance of all work and after presentation of a release of all claims against Bonneville arising by virtue of this contract, other than claims, in stated amounts, that the Contractor has specifically excepted from the operation of the release. A release may also be required of any assignee if the Contractor's claim to amounts payable under this contract has been assigned. The release forms will be provided by Bonneville.

WITHHOLDING (22-9)
(MAR 1995)(BPI 22.1.5.1)

- (a) The CO reserves the right to withhold an amount not to exceed ten percent (10%) of the contract price if determined necessary to protect Bonneville's interests.
- (b) Upon completion and acceptance of each severable item of work for which the price is stated separately in the contract, payment shall be made for the completed work, less liquidated damages (if any), without withholding of a percentage.

DISCOUNTS FOR PROMPT PAYMENT (22-10)
(MAR 2018)(BPI 22.2.7(a))

In connection with any discount offered for prompt payment, time shall be computed from the date shown on the invoice or if no date is shown then from the date Bonneville receives the invoice. For the purpose of computing the discount earned, payment shall be considered to have been made on the date which appears on the payment check or the date on which an electronic funds transfer was made.

PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS (22-11)
(MAR 2018)(BPI 22.2.7(b))

- (a) Prompt Payment Act. This contract is subject to the provisions of the Prompt Payment Act (31 U.S.C. § 3901 et seq.) and the regulations at 5 CFR Part 1315. All payments will be made in accordance with the regulations at 5 CFR Part 13154.
- (b) Payment Due Dates: For purposes of determining interest penalty only, work will be deemed accepted not later than 30 calendar days after the contractor has completed the work or services. According to the Prompt Payment Act, a proper invoice to a Federal Agency must include bank account information requisite to enable Electronic Funds Transfer (EFT) as the method of payment.
 - (1) Progress payments shall be due not later than fourteen (14) calendar days after receipt of the payment request by the Bonneville designated billing office. Bonneville shall make progress payments monthly as the work proceeds, or at more frequent intervals as may be agreed to by the CO, on estimates of work accomplished which meets the standards of quality established under the contract.
 - (2) Payment of any withholding shall be due not later than 30 days after approval for release to the Contractor by the CO.
 - (3) Partial payments and final payments shall be due not later than thirty (30) calendar days after the later of the date on which Bonneville actually receives a proper invoice or the date of Bonneville acceptance of the work or services completed by the Contractor.
- (c) Billing Instructions.
 - (1) Invoices must include the contractor's name and address, invoice date, contract number, task order number (if applicable), contract line item number, description of products delivered or work performed, price and quantity of item(s) actually delivered or rendered (amounts billed for work performed under a task order must be separately identified by task order number), and the name and address of the person to whom payment will be made, and name (where practicable), title, phone number, mailing address of person to be notified in event of a defective invoice and bank account information requisite to enable Electronic Funds Transfer (EFT) as method of payment (Invoices will not require banking information if the contractor has that information on file at Bonneville). Failure to submit a proper invoice may result in a delay in payment including a rejection of invoice pending receipt of a properly amended invoice.
 - (2) Contractors may bill monthly, or at more frequent intervals as may be agreed to by the CO. The contractor may submit invoices electronically (e-mail, fax, etc.).
- (d) Payment Method. Payments under this contract will be made by electronic funds transfer whenever possible, or by check in very limited circumstances, at the option of Bonneville.
- (e) Interest Penalty Payments. If interest penalty payments are determined due under the provisions of the Prompt Payment Act, payment shall be made at the rates determined by the U.S. Treasury Section 611 of the Contract Disputes Act of 1978 (PL 95-563, 41 U.S.C. § 7109).
- (f) Subcontract Requirements.
 - (1) The Contractor shall include in each subcontract:

- (i) A payment clause which obligates the Contractor to pay the subcontractor for satisfactory performance under its subcontract not later than 7 days from receipt of payment by Bonneville under this contract.
 - (ii) An interest penalty clause which obligates the Contractor to pay to the subcontractor an interest penalty for each payment not made in accordance with the payment clause.
 - (iii) A clause requiring each subcontractor to include a payment clause and an interest penalty clause in each of its subcontracts, and to require each of its subcontractors to include such clauses in their subcontracts with each lower-tier subcontractor or supplier.
- (2) If a Contractor, after making a request for payment to Bonneville, discovers that all or a portion of the payment otherwise due a subcontractor is subject to withholding from the subcontractor in accordance with the subcontract agreement, then the Contractor shall—
- (i) Furnish a notice to the subcontractor specifying (1) the amount to be withheld; (2) the specific cause for the withholding; and (3) the remedial actions to be taken by the subcontractor in order to receive payment of the amount withheld;
 - (ii) Give the CO a copy of the notice furnished to the subcontractor;
 - (iii) Notify the CO of the beginning and end dates of any withholding of subcontractor payments;
 - (iv) Pay the subcontractor as soon as practicable after the correction of the identified subcontract performance deficiency; and
 - (v) Pay interest to Bonneville from the 8th day funds are held by the Contractor to the date the funds are either paid to the subcontractor or are returned to Bonneville.
- (3) The Contractor may not request payment from Bonneville of any amount withheld or retained from a subcontractor until such time as the Contractor has determined the subcontractor is entitled to the payment of such amount.

INTEREST ON AMOUNTS DUE BONNEVILLE (22-13)
(MAR 2018)(BPI 22.3.1)

- (a) Notwithstanding any other clause of this contract, all amounts that become payable by the Contractor to Bonneville under this contract (net of any applicable tax credit under the Internal Revenue Code (26 U.S.C. 1481)) shall bear simple interest from the date due until paid unless paid within 30 days of becoming due. The interest rate shall be the interest rate established by the Secretary of the Treasury as provided in Section 12 of the Contract Disputes Act of 1978 (Pub. L. 95-563), which is applicable to the period in which the amount becomes due, as provided in paragraph (b) of this clause, and then at the rate applicable for each six-month period as fixed by the Secretary until the amount is paid.
- (b) Amounts shall be due at the earliest of the following dates:
 - (1) The date fixed under this contract;
 - (2) The date of the first written demand for payment consistent with this contract, including any demand resulting from a default termination;
 - (3) The date Bonneville transmits to the Contractor a proposed supplemental agreement to confirm completed negotiations establishing the amount of debt; and
 - (4) If this contract provides for revision of prices, the date of written notice to the Contractor stating the amount of refund payable in connection with a pricing proposal or a negotiated pricing agreement not confirmed by contract modification;
- (c) Payment will be due within 30 days of the date of the invoice. The collection actions available under the Debt Collection Act of 1982 (Pub. L. 97-365), as amended, and the revised Federal Claims Collections Standards (4 CFR 102), will be utilized. Administrative charges and penalties will be charged in accordance with 31 U.S.C. 3717, except where prohibited or explicitly provided for by statute or regulation required by statute.

FEDERAL, STATE, AND LOCAL TAXES (22-15)
(JUL 2013)(BPI 22.5.6(b))

- (a) The contract price shall include all applicable Federal, State, and local taxes and duties.
- (b) The contract price shall be increased by the amount of any after-imposed Federal excise tax or duty, provided the Contractor warrants in writing that no amount for such newly imposed Federal excise tax or duty or rate increase was included in the contract price.
- (c) The contract price shall be decreased by the amount of any after-relieved Federal excise tax or duty.
- (d) The contract price shall be decreased by the amount of any Federal excise tax or duty, except social security or other employment taxes, that the Contractor is required to pay or bear, or does not obtain a refund of, through the Contractor's fault, negligence, or failure to follow instructions of the Contracting Officer.
- (e) No adjustment shall be made in the contract price under this clause unless the amount of the adjustment exceeds \$250.
- (f) Notwithstanding any of the above provisions for adjustment of the contract price in the event of a change in a Federal excise tax or duty after the contract date, no increase in the contract price shall be made for any duty imposed under the Tariff Act of 1930, as amended, (19 U.S.C. 1303) or the Anti-dumping Act of 1921, as amended (19 U.S.C. 160-171).

WASHINGTON STATE SALES AND USE TAXES (22-17)

(MAR 2018)(BPI 22.5.6(c))

- (a) The Supreme Court has ruled that the Washington State Sales and Use Taxes apply to Federal contracts. Therefore, it is the responsibility of the offerors to take Washington State Tax Statutes into account when preparing their offers.
- (b) Offerors should not take into account or include a factor for the State of Washington Sales or Use Tax which may be levied on Government-furnished materials or equipment in connection with performance of this contract. Any assessment by the State of Washington against the contractor shall be reported immediately to the CO. The contractor shall be reimbursed by Bonneville for payment of any tax authorized to be paid by the CO by an appropriate contract modification. The reimbursement shall be limited to the actual tax amount assessed by the State of Washington. The contractor hereby authorizes Bonneville to enter into such negotiations and arrangements with the State of Washington as it may deem appropriate in resolving the amount of applicable tax(es).

STATE OF IDAHO USE TAX (22-18)

(MAR 2018)(BPI 22.5.6(d))

The State of Idaho may endeavor to impose a use tax on the value of Government-furnished materials on this contract. Offerors should not include in their offers any factor for this tax. In the event the State of Idaho purports to assess or levy such a tax, the Contractor shall immediately submit copies of any documents reflecting such assessment or levy to the CO. Any inquiries from the State of Idaho relating to the value of equipment or materials furnished by Bonneville shall be referred to the CO. The Contractor shall not make any payments to the State of Idaho on account of such taxes unless authorized by the CO.

ELECTRONIC FUNDS TRANSFER PAYMENT (22-20)

(MAR 2018)(BPI 22.6.2)

- (a) Payment Method. Payments under this contract, including invoice and contract financing payments, will be made by electronic funds transfer (EFT). Contractors are required to provide its taxpayer identification number (TIN) and other necessary banking information as per paragraph (c) of this clause to receive EFT payment.
- (b) Contractor EFT arrangement with a financial institution or authorized payment agent. The Contractor shall designate to Bonneville, as per paragraph (c) of this clause, and maintain at its own expense, a single financial institution or authorized payment agent capable of receiving and processing EFT using the Automated Clearing House (ACH) transfer method. The most current designation and EFT information will be used for all payments under all Bonneville contracts, unless the Bonneville Vendor File Maintenance Team is

notified of a change as per paragraph (d) of this clause. An initial designation should be submitted after award, but no later than three weeks before an invoice or contract financing request is submitted for payment.

- (c) Submission of EFT banking information to Bonneville. The Contractor shall submit EFT enrollment banking information directly to Bonneville Vendor File Maintenance Team, using Substitute IRS Form w9e, Request for Taxpayer Identification Number and Certification. This form is available either from the Contracting Officer (CO) or from the Vendor File Maintenance Team. Submit completed enrollment form to the Vendor Team. Contact and mailing information:

Bonneville Power Administration
PO Box 61409
Vancouver, WA 98666-1409
ATTN: NSTS -4400-LL Vendor Maint.
E-mail Address:
VendorMaintenance@bpa.gov Phone: (360)
418-2800 Fax: (360) 418-8904

- (d) Change in EFT information. In the event that EFT information changes or the Contractor elects to designate a different financial institution for the receipt of any payment made using EFT procedures, the Contractor shall be responsible for providing the changed information to the Bonneville Vendor File Maintenance Team office. The Vendor File Maintenance Team must be notified 30 days prior to the date such change is to become effective.
- (e) Suspension of Payment. Bonneville is not required to make any payment under this contract until receipt of the correct EFT payment information from the Contractor.
- (f) EFT and prompt payment. Bonneville shall pay no penalty on delay of payment resulting from defective EFT information. Bonneville will notify the Contractor within 7 days of its receipt of EFT information which it determines to be defective.
- (g) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the Assignment of Claims clause of this contract, the assignee shall provide the assignee's EFT information required by paragraph (c) of this clause.

**ACCELERATION OF PAYMENTS TO SMALL BUSINESS SUBCONTRACTORS (22-21)
(MAR 2018)(BPI 22.7.2)**

- (a) Upon receipt of accelerated payments from Bonneville, the Contractor shall make accelerated payments to its small business subcontractors under this contract, to the maximum extent practicable and prior to when such payment is otherwise required under the applicable contract or subcontract, after receipt of a proper invoice and all other required documentation from the small business subcontractor.
- (b) The acceleration of payments under this clause does not provide any new rights under the Prompt Payment Act.
- (c) Include the substance of this clause, including this paragraph (c), in all subcontracts with small business concerns, including subcontracts with small business concerns for the acquisition of commercial items.

**KEY PERSONNEL (23-2)
(SEP 1998)(BPI 23.1.7(b))**

The personnel listed below are considered to be essential to the work being performed hereunder. No diversion shall be made by the Contractor without the written consent of the Contracting Officer.

Matt Susskind, Program Manager

Don Sunde, Construction Manager

**CONTRACTOR ACCESS TO SUBSTATIONS (23-51)
(MAR 2018)**

- (a) The contractor shall have the necessary Bonneville access permissions to complete work within an energized facility. All the contractor's employees entering Bonneville energized facilities must obtain the appropriate level of permitting (Electrical Worker, Non-Electrical Worker, Restricted Electrical Worker or Access) OR be escorted by an appropriately permitted, qualified worker at all times. The permit requirements are outlined in "Bonneville Rules of Conduct Handbook: Policies and Procedures for Energized Access, Permits and Clearance Certification (Green Cross for Safety)" and require Bonneville badging (see contract clause "Access to Bonneville Facilities and Computer Systems (15-16)").
- (b) The contractor shall have an adequate number of permitted employees to complete the work, to escort unpermitted workers, and for safety watch. If the contractor cannot provide an adequate number of permitted employees, Bonneville may provide the service at Contractor's expense. If Bonneville is required to provide the service, the Contractor will be charged a daily rate based upon average cost for Bonneville to provide the service. However, Bonneville's inability to provide escorts and safety watchers does not constitute an excusable Delay of Work. The contractor is responsible for providing qualified, permitted workers.
- (c) Contractors are authorized to be only at locations and for purposes identified on the release.
- (d) Permitting Requirements: To obtain a permit, the contractor employee must complete a multiple step process that includes: submitting background information forms and fingerprints for badging; reading the Bonneville Rules of Conduct Handbook and passing an exam.
- (e) Additional Security Requirements: Primary on-site personnel (such as the job superintendents) shall obtain a Bonneville badge. The contractor shall adhere to all rules applicable to reporting security incidents, access to energized facilities, access to NERC CIP facilities and maintaining sensitive and classified information.
- (f) If work is to be performed in an energized substation, the Contractor's job superintendent and/or qualified electrical worker shall check in with the Substation Operator at the site pre-work meeting or during the prework phase of the contract to discuss scope of work and to review specific characteristics of each substation. (g) Energized Facility Keys (substation keys) shall be managed and protected in accordance with Bonneville Rules of Conduct Handbook. Contractor shall return all substation keys at the end of the work. If a key is lost, the Contractor must complete the appropriate Bonneville forms and will be charged \$1000. Bonneville Identification badges shall also be returned unless the contractor employee is immediately moving to a new Bonneville work location. The contractor will be charged \$1000 for lost badges. Charges for lost keys and/or lost badges will be deducted from the next or final payment due Contractor.
- (h) The substance of this clause shall be included in any subcontracts in which the subcontractor employees will require unescorted access to Bonneville facilities.

SITE INVESTIGATION AND CONDITIONS AFFECTING THE WORK (24-3)

(MAR 2018)(BPI 24.5.3)

- (a) The Contractor acknowledges that it has taken steps reasonably necessary to ascertain the nature and location of the work, and that it has investigated and satisfied itself as to the general and local conditions which can affect the work or its cost, including but not limited to (1) conditions bearing upon transportation, disposal, handling, and storage of materials; (2) the availability of labor, water, electric power, and roads; (3) uncertainties of weather, river stages, tides, or similar physical conditions at the site; (4) the conformation and conditions of the ground; and (5) the character of equipment and facilities needed preliminary to and during work performance. The Contractor also acknowledges that it has satisfied itself as to the character, quality, and quantity of surface and subsurface materials or obstacles to be encountered insofar as this information is reasonably ascertainable from an inspection of the site, including all exploratory work done by Bonneville, information available to the public from local government agencies, as well as from the drawings and specifications made a part of this contract. Any failure of the Contractor to take the actions described and acknowledged in this paragraph will not relieve the Contractor from responsibility for properly estimating the

difficulty and cost of successfully performing the work, or for proceeding to successfully perform the work without additional expense to Bonneville.

- (b) Bonneville assumes no responsibility for any conclusions or interpretations made by the Contractor based on the information made available by Bonneville. Nor does Bonneville assume responsibility for any understanding reached or representation made concerning conditions which can affect the work by any of its officers or agents before the execution of this contract, unless that understanding or representation is expressly stated in this contract.

PRECONSTRUCTION CONFERENCE (24-5)
(MAR 2018)(BPI 24.5.5)

The successful offeror will be required to attend a pre-construction conference at a site. If the Contracting Officer decides to conduct a preconstruction conference, the successful offeror will be notified and will be required to attend. The Contracting Officer's notification will include specific details regarding the date, time, and location of the conference, any need for attendance by subcontractors, and information regarding the items to be discussed.

SCHEDULES FOR CONSTRUCTION CONTRACTS (24-6)
(SEP 1998)(BPI 24.5.6)

- (a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer (CO), prepare and submit to the CO three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring materials, plant, and equipment). The schedule shall be in the form of a progress chart of suitable scale to indicate appropriately the percentage of work scheduled for completion each week during the contract period. If the Contractor fails to submit a schedule within the time prescribed, Bonneville may withhold approval of progress payments until the Contractor submits the required schedule.
- (b) With each payment request the Contractor shall submit a copy of the last submitted schedule annotated to indicate actual progress made to date. If at any time, in the opinion of the CO, the Contractor has fallen behind the approved schedule, the Contractor shall take the steps necessary to improve its progress, including those that may be required by the CO, without additional cost to Bonneville. In this circumstance, the CO may require the Contractor to implement such things as increasing the number of shifts, overtime, days of work, and/or the amount of construction plant and to submit for approval any supplementary schedule or schedules in chart form as the CO deems necessary to demonstrate how the rate of progress will be regained.
- (c) Failure of the Contractor to comply with the requirements of the CO under this clause shall be grounds for a determination by the CO that the Contractor is not prosecuting the work with sufficient diligence to ensure completion within the time specified in the contract. Upon making this determination, the CO may terminate the Contractor's right to proceed with the work, or any separable part of it, in accordance with the default terms of this contract.

DIFFERING SITE CONDITIONS (24-7)

(MAR 2018)(BPI 24.5.7(b))

- (a) The Contractor shall promptly, and before the conditions are disturbed, give a written notice to the Contracting Officer (CO) of (1) subsurface or latent physical conditions at the site which differ materially from those indicated in this contract, or (2) unknown physical conditions at the site, of an unusual nature, which differ materially from those ordinarily encountered and generally recognized as inherent to the type of work provided for in the contract. Unless specifically identified in the contract, discoveries of archaeological or historical remains such as graves, fossils, skeletal materials and artifacts protected by the Archaeological Resources Protection Act (36 CFR 1214) are considered Type 2 conditions.
- (b) Bonneville shall investigate the site conditions promptly after receiving the notice. If the CO determines that the conditions do materially so differ and cause an increase or decrease in the Contractor's cost of, or the

time required for, performing any part of the work under this contract, whether or not changed as a result of the conditions, an equitable adjustment shall be made under this clause and the contract modified in writing accordingly.

- (c) No request by the Contractor for an equitable adjustment to the contract under this clause shall be allowed, unless the Contractor has given the written notice required; provided, that the time prescribed in paragraph (a) of this clause for giving written notice may be extended by the CO.
- (d) No request by the Contractor for an equitable adjustment to the contract for differing site conditions shall be allowed if made after final payment under this contract.

**SPECIFICATIONS, DRAWINGS, AND MATERIAL SUBMITTALS FOR CONSTRUCTION (24-9.1)
ALTERNATE I
(MAR 2018)(BPI 24.5.9)**

- (a) The Contractor shall keep on the work site a copy of the drawings and specifications and shall at all times give the Contracting Officer (CO) access thereto. Anything mentioned in the specifications and not shown on the drawings, or shown on the drawings and not mentioned in the specifications, shall be of like effect as if shown or mentioned in both. In case of difference between drawings and specifications, the specifications shall govern. In case of discrepancy in the figures, in the drawings, or in the specifications, the matter shall be promptly submitted to the CO, who shall promptly make a determination in writing. Any adjustment by the Contractor without such a determination shall be at its own risk and expense. The CO shall furnish from time to time such detailed drawings and other information as considered necessary, unless otherwise provided.
- (b) Wherever in the specifications or upon the drawings the words "directed", "required", "ordered", "designated", "prescribed", or words of like import are used, it shall be understood that the "direction", "requirement", "order", "designation", or "prescription", of the Contracting Officer is intended, and similarly the words "approved", "acceptable", "satisfactory", or words of like import shall mean "approved by", or "acceptable to", or "satisfactory to" the Contracting Officer, unless otherwise expressly stated.
- (c) Where "as shown", "as indicated", "as detailed", or words of similar import are used, it shall be understood that the reference is made to the drawings accompanying this contract, unless stated otherwise. The word "provided" as used herein shall be understood to mean "provide complete in place" that is "furnished and installed".
- (d) Standard Details or Specification Drawings are applicable when listed, bound with the specifications, noted on the drawings or referenced elsewhere in the specification. Where the notes on the drawings indicate modifications, such modifications shall govern. In the case of difference between Standard Details or Specification Drawings and the specifications, the specifications will govern. In case of difference between the Standard Details or Specification Drawings and the drawings prepared specifically for this contract, the later shall govern.
- (e) Omissions from the drawings and specifications or the misdescription of details of work which are manifestly necessary to carry out the intent of the drawings and specifications, or which are customarily performed, shall not relieve the Contractor from performing such omitted or misdescribed details of the work. They shall be performed as if fully and correctly set forth and described in the drawings and specifications.
- (f) The Contractor shall check all drawings furnished by Bonneville prior to starting work and shall promptly notify the CO of any discrepancies. Figures marked on drawings shall in general be followed in preference to scale measurements. Large scale drawings shall in general govern small scale drawings. Schedules on any contract drawing shall take precedence over conflicting information on that or any other contract drawing. On any of the drawings where a portion of the work is detailed or drawn out and the remainder is shown in outline, the parts detailed or drawn out shall apply also to other like portions of the work. The Contractor shall compare all drawings and verify the figures before laying out the work, and will be responsible for any errors which might have been avoided thereby.
- (g) Shop drawings means drawings submitted to Bonneville by the Contractor, Subcontractor, or any lower tier subcontractor pursuant to a construction contract, showing in detail (1) the proposed fabrication and assembly of structural elements and (2) the installation (i.e., form, fit, and attachment details) of materials or equipment. It includes drawings, diagrams, layouts, schematics, descriptive literature, illustrations, schedules,

performance and test data, and similar materials furnished by the Contractor to explain in detail specific portions of the work required by the contract. Bonneville may duplicate, use, and disclose in any manner and for any purpose shop drawings delivered under this contract.

- (h) If this contract requires material submittals (e.g., shop drawings, catalog cuts, certificates of conformance, etc.), the Contractor shall coordinate all such submittals, and review them for accuracy, completeness, and compliance with contract requirements and shall indicate its approval thereon as evidence of such coordination and review. Submittals sent to the CO without evidence of the Contractor's approval may be returned for resubmission. The Contracting Officer's Representative will indicate an approval or disapproval of the submittal, and if not approved as submitted, shall indicate Bonneville's reasons therefor. Any work done before such approval shall be at the Contractor's risk. Approval by the CO, or by his or her representative, shall not relieve the Contractor from responsibility for any errors or omissions in such submittals, nor from responsibility for complying with the requirements of this contract, except with respect to variations described and approved in accordance with paragraph (i) below.
- (i) If submittals show variations from the contract requirements, the Contractor shall describe such variations in writing, separate from the submittal, at the time of submission. If the CO approves any such variation, the CO shall issue an appropriate contract modification, except that, if the variation is minor or does not involve a change in price or in time of performance, a modification need not be issued. Upon completing the work under this contract, the Contractor shall furnish a complete reproducible set of all shop drawings as finally approved. These drawings shall show all changes and revisions made up to the time the work is completed and accepted.
- (j) Unless otherwise provided in this contract, or otherwise directed by the CO, shop drawings, coordination drawings and schedules shall be submitted to the CO, with a transmittal letter, sufficiently in advance of construction requirements to permit no less than 10 working days for checking and appropriate action.
- (k) The Contractor shall submit to the CO for approval four (4) copies (unless otherwise indicated) of all submittals as called for under the various headings of these specifications. Three sets (unless otherwise indicated) of all submittals, will be retained by the CO and one set will be returned to the Contractor.
- (l) This clause shall be included in all subcontracts at any tier.

**WORKING HOURS – CONSTRUCTION (24-11M)
(AUG 2019)(BPI 24.5.11)**

- (a) All site work (except work during outages which may be required to be performed after normal working hours) shall be performed between 7 AM and 5:30 PM, Monday through Friday. No on-site work shall be permitted outside that workweek or on Federal Holiday observances, except as authorized in writing by the Contracting Officer (CO).
- (b) Application for varying working hours shall be submitted sufficiently in advance to enable the CO to determine the desirability of allowing such performance, to determine if equitable adjustment to the contract must be made (to reimburse Bonneville for additional inspection or other costs) and to enable arrangements to be made for inspecting the work during those times.
- (c) If the contractor works outside the hours shown in paragraph (a) above, and the Government incurs additional inspection costs as a result, the contractor shall reimburse the Government as follows:
 - (1) Outside normal hours, during the normal work week, \$158.00 per hour, per inspector.
 - (2) Outside normal work week (except Federal Holidays), \$158.00 per hour, plus per diem rate (if applicable) of \$145.00 for each additional day, per inspector.
 - (3) Federal Holidays \$172.00 per hour, plus per diem (if applicable) of \$145.00, per inspector.

**MATERIAL AND WORKMANSHIP (24-13.1) ALTERNATE I
(MAR 2018)(BPI 24.5.13)**

- (a) All equipment, material, and articles incorporated into the work covered by this contract shall be new and of the most suitable grade for the purpose intended, unless otherwise specifically provided in this contract. Use of sustainable materials for the manufacture of such products is encouraged. Equipment, material, or articles

specified by trade name, make, or catalog number, shall be provided. Equivalent items are not acceptable unless specifically authorized in the specification.

- (b) The Contractor shall obtain the CO's approval of the machinery and mechanical and other equipment to be incorporated into the work. When requesting approval, the Contractor shall furnish to the CO the name of the manufacturer, the model number, and other information concerning the performance, capacity, nature, and rating of the machinery and mechanical and other equipment. When required by this contract or by the CO, the Contractor shall also obtain the CO's approval of the material or articles which the Contractor contemplates incorporating into the work. When requesting approval, the Contractor shall provide full information concerning the material or articles. When directed to do so, the Contractor shall submit samples for approval at the Contractor's expense, with all shipping charges prepaid. Machinery, equipment, material, and articles that do not have the required approval shall be installed or used at the risk of subsequent rejection.
- (c) All work under this contract shall be performed in a skillful and workmanlike manner. The CO may require, in writing, that the Contractor remove from the work any employee the CO deems incompetent, unsafe, or otherwise objectionable.

SUPERINTENDENCE BY THE CONTRACTOR (24-14)
(MAR 2018)(BPI 24.5.14)

- (a) At all times during performance of this contract, and until the work is completed and accepted, the Contractor shall directly superintend the work or assign and have on the worksite a competent superintendent who is satisfactory to the Contracting Officer and has authority to act for the Contractor.
- (b) If the Contractor's crew consists primarily of individuals whose primary language is other than English, the superintendent must be able to communicate effectively and efficiently in the English language and the language(s) of the crew. In addition, there shall be at least one other person on the crew who is fluent in both English and the primary language of the crew.

PERMITS AND RESPONSIBILITIES (24-15)
(MAR 2018)(BPI 24.5.15)

The Contractor shall, without additional expense to Bonneville, be responsible for obtaining any necessary licenses and permits, and for complying with any Federal, state, and municipal laws, codes, and regulations applicable to the performance of the work. The Contractor shall also be responsible for all damages to persons or property that occur as a result of the Contractor's fault or negligence. The Contractor is responsible for proper safety and health precautions to protect the work, the workers, the public, and the property of others. The Contractor shall also be responsible for all materials delivered and work performed until completion and acceptance of the entire work, except for any completed unit of work which may have been accepted under the contract.

OTHER CONTRACTS (24-16)
(MAR 2018)(BPI 24.5.16)

Bonneville may undertake or award other contracts for additional work, or may utilize in-house construction forces, at or near the site of the work under this contract. The Contractor shall fully cooperate with the other contractors and with Bonneville employees, and shall carefully adapt scheduling and performance of the work under this contract to accommodate simultaneous performance, heeding any direction that may be provided by the Contracting Officer. The Contractor shall not commit or permit any act which will interfere with the performance of work by any other contractors or by Bonneville employees.

OPERATIONS AND STORAGE AREAS (24-17)
(MAR 2018)(BPI 24.5.17)

- (a) The Contractor shall confine all operations (including storage of materials) on Bonneville premises to areas authorized or approved by the Contracting Officer (CO) or his or her representative. The Contractor shall hold and save the Government, its officers and agents, free and harmless from liability of any nature occasioned by the Contractor's performance.
- (b) Temporary buildings (e.g., storage sheds, shops, offices) and utilities may be erected by the Contractor only with the approval of the CO, and shall be built with labor and materials furnished by the Contractor without expense to Bonneville. The temporary buildings and utilities shall remain the property of the Contractor and shall be removed by the Contractor at its expense upon completion of the work. With the written consent of the CO, the buildings and utilities may be abandoned and need not be removed.
- (c) The Contractor shall use only established roadways, or use temporary roadways constructed by the Contractor when and as authorized by the CO. When materials are transported in prosecuting the work, vehicles shall not be loaded beyond the loading capacity recommended by the manufacturer of the vehicle or prescribed by any Federal, State, or local law or regulation. When it is necessary to cross curbs or sidewalks, the Contractor shall protect them from damage. The Contractor shall repair or pay for the repair of any damaged curbs, sidewalks, or roads.

USE AND POSSESSION PRIOR TO COMPLETION (24-18)
(MAR 2018)(BPI 24.5.18)

- (a) Bonneville shall have the right to take possession of or use any completed or partially completed part of the work. Before taking possession of or using any work, the Contracting Officer (CO) shall furnish the Contractor a list of items of work remaining to be performed or corrected on those portions of the work that Bonneville intends to take possession of or use. However, failure of the CO to list any item of work shall not relieve the Contractor of responsibility for complying with the terms of the contract. Bonneville's possession or use shall not be deemed an acceptance of any work under the contract.
- (b) While Bonneville has such possession or use, the Contractor shall be relieved of the responsibility for the loss or damage to the work resulting from Bonneville's possession or use, notwithstanding the terms of the clause in this contract entitled "Permits and Responsibilities". If prior possession or use by Bonneville delays the progress of the work or causes additional expense to the Contractor, an equitable adjustment will be made in the contract price or the time of completion and the contract will be modified in writing accordingly.

CLEANING UP (24-19)
(MAR 2018)(BPI 24.5.19)

- (a) The Contractor shall at all times keep the work area, including storage areas, free from accumulations of waste materials. Before completing the work, the Contractor shall remove from the work and premises any rubbish, tools, scaffolding, equipment, and materials that are not the property of Bonneville. Upon completing the work, the Contractor shall leave the work area in a clean, neat, and orderly condition satisfactory to the Contracting Officer.
- (b) Unless specifically set forth in the contract, the Contractor shall not burn any material on site, on the right-of-way, or on the access roads to the sites. All material and debris shall be hauled to an appropriate recycler or disposal site.

ROAD MAINTENANCE (24-21)
(SEP 1998)(BPI 24.5.21)

The Contractor shall maintain all roads used by it, and upon completion of the job shall leave them in as good a condition as when first used. A road grading machine - not a bulldozer - shall be used for maintenance and final grading. In no event shall the Contractor interfere with the property owner's use of roads existing prior to the Contractor's entry.

FIELD CONTRACT MODIFICATIONS (24-25M)
(FEB 2019)(BPI 24.5.25)

- (a) The purpose of this clause is to establish a procedure whereby one contract modification will be used both to direct field changes of the type specified in the changes clause herein and to settle any question of equitable adjustments that might arise. This procedure shall apply only to those changes having less than \$ 10,000.00 impact to the contract price, but no time extension.
- (b) When either party desires a change which falls within the category of changes defined in paragraph (a), a field modification form shall be executed by both parties which shall constitute a full, complete, and final settlement for the change directed. The Bonneville individuals, besides the Contracting Officer, authorized to execute such modifications is the Contracting Officer's Representative.
- (c) The Contractor's job superintendent, or other specified representative, shall be authorized to execute said document on behalf of the Contractor thereby legally binding their company. This person shall be on the job site at all times during performance of the contract.

ORAL MODIFICATION (24-26)
(SEP 1998)(BPI 24.5.26)

Notwithstanding other provisions herein, only the Contracting Officer is authorized to orally modify or affect the terms of this contract. Contractor response to oral contract changes from any other source is at its own risk of liability.

EQUIPMENT COST ALLOWANCES (24-27)
(MAR 2018)(BPI 24.5.27)

When equipment costs are a factor in any determination of contract price adjustment pursuant to the Changes clause or any other provision of the contract, such adjustments shall be calculated in accordance with this clause. Chart No. 1, at the end of the clause, summarizes the allowable equipment costs.

- (a) Contractor-Owned Equipment:
 - (1) Operated Equipment:
 - (i) For operated equipment, the Total Allowable Cost per hour actually worked will consist of the hourly ownership cost, hourly overhaul cost, and the hourly operating cost (field repair and fuel expense) listed in the Cost Reference Guide (CRG), published by PRIMEDIA Information Inc. current as of the date the piece(s) of equipment were operated. Adjustments to the CRG listed average figures will not be allowed.
 - (ii) If, for any reason, the exact piece of equipment is not included in the CRG, costs for a similar item may be used, if reasonable. Determination of the appropriate "similar" item will be a joint determination of the Contractor and the Contracting Officer and will be based first on the work application of the piece of equipment and then on the equipment specifications as contained in the CRG.
 - (iii) Costs for specialized equipment not included in the CRG (such as tensioners and pullers used in stringing conductor) will be negotiated with the Contracting Officer. The cost components included in such negotiated costs will be the same as those contained in the CRG rates.
 - (iv) If the equipment is used in excess of forty (40) hours per week, the ownership and overhaul costs will be allowed at fifty percent (50%) of the listed costs for those excess hours. Operating costs will be allowed at the full rate.
 - (2) Standby Equipment:
 - (i) For equipment on standby, the Total Allowable Cost will consist of the total of one-half of the hourly ownership cost plus one-half of the hourly overhaul cost listed in the CRG, published by PRIMEDIA Information Inc. current as of the date the piece(s) of equipment were on standby. No operating costs will be allowed. Adjustments from the CRG listed average figures will not be allowed.
 - (ii) If, for any reason, the exact piece of equipment is not included in the CRG, costs for a similar item may be used, if reasonable. Determination of the appropriate "similar" item will be a joint

determination of the Contractor and the Contracting Officer, and will be based first on the work application of the piece of equipment and then on the equipment specifications as contained in the CRG.

(iii) Standby costs for specialized equipment not included in the CRG (such as tensioners and pullers used in stringing conductor) will be negotiated with the Contracting Officer. The cost components included in such negotiated costs will be the same as those contained in the CRG ownership and overhaul rates.

(iv) Payment for equipment placed on standby will be limited to forty (40) hours per week (combined operated and standby hours).

(b) Rented Equipment:

(1) Operated Equipment:

(i) For operated rental equipment, the Total Allowable Cost will consist of the additional actual, reasonable, and allocable rental costs as evidenced by the rental agreement and invoices. Rental costs will be converted to a "per hour" basis by dividing the rental (invoice) amount by the number of normal contractor working hours during the period of rental (i.e., If working five 8-hour days per week, divide weekly rentals by 40 hours and monthly rentals by 176 hours. If working six 10-hour days per week, divide weekly rentals by 60 hours and monthly rentals by 260 hours.) See attached Chart No. 1 for these examples.

(ii) If no operating costs are included in the rental charge, the total operating cost per hour for that piece of equipment, as contained in the CRG, will be allowed. If some operating costs are included in the rental charge, duplicated charges will be deleted from the CRG-listed operating cost. In any case, the total operating cost shall not exceed the CRG amount.

(iii) Unless additional actual, reasonable, and allocable rental costs are incurred, payment for hours in excess of the normal contractor working hours per day will be limited to operating costs only.

(2) Standby Equipment:

(i) For rented equipment on standby, the Total Allowable Cost will consist of the additional actual, reasonable, and allocable rental costs as evidenced by the rental agreement and invoices. No operating costs will be allowed unless they are included in the original rental agreement amount and actually incurred by the Contractor.

(ii) Payment for rental equipment placed on standby will be limited to normal contractor working hours.

(c) Intra-Company Rentals: Costs of equipment rented from any division, subsidiary, or organization under common control of the Contractor shall be allowable to the extent that they do not exceed the CRG hourly ownership and overhaul costs. Hourly operating costs will be allowed, subject to the same provisions as contained in paragraph (b)(1)(ii) above.

(d) Equipment Identification: Within two weeks after the issuance of the Notice to Proceed, the Contractor shall furnish the Contracting Officer with a master list of all contractor-owned and rented equipment initially assigned to the project. The list shall include the manufacturer, year of manufacture, equipment model, rating or capacity, and other information pertinent to proper identification. The manufacturer's identification plates will be used to determine ratings or capacities and model designations whenever possible. The list shall be updated periodically as new equipment is employed on the contract work.

(e) Elimination of Duplicate Charges: The Contractor shall review all equipment costs that are included in the cost allowances provided by the CRG or are negotiated with the Contracting Officer and either (a) eliminate them from all other direct and indirect costs charged to the contract and/or the extra work or (b) reduce the allowable cost by that component of cost specified in the CRG or negotiated rate.

(f) Cost Reference Guide Updates: In the event CRG rates are updated during the period of extra work or standby, rates applicable to the days actually involved will be used. The CRG will be deemed to have been updated as of the first day of the month of the revision. For cost contracts, the costs allowed as of the first day the equipment is assigned to the project will be maintained throughout the term of the contract.

(g) Condition of Equipment: Rates determined in accordance with this clause are for equipment of modern design, in sound workable condition, and used in the manner originally intended. Payment for equipment not meeting these criteria will be at rates negotiated with the Contracting Officer.

Chart No. 1 – Summary of Allowable Costs			
	Normal Working Hours	Excess Working Hours	Standby Hours
Owned Equipment	Ownership Cost plus Overhaul Cost plus Operating Costs	½ Ownership Cost plus ½ Overhaul Cost plus Operating Costs	½ Ownership Cost plus ½ Overhaul Cost, but No Operating Costs
Rented Equipment	Hourly Rental Cost* plus Operating Costs	Operating Costs Only	Hourly Rental Cost* Only
*Hourly Rental Cost = Invoice Cost divided by Normal Contractor Working Hours** in the Period			
**Normal Contractor Working Hours			
	Working five 8-hour days	Working six 10-hour days	
Weekly Rental	Divide by 40 hours	Divide by 60 hours	
Monthly Rental	Divide by 176 hours	Divide by 260 hours	

**SUBCONTRACTS – CONSTRUCTION (24-34.1) ALTERNATE I
(MAR 2018) (BPI 24.5.34)**

- (a) Nothing contained in the contract shall be construed as creating any contractual relationship between any subcontractor and Bonneville. The divisions or sections of the specifications are not intended to control the Contractor in dividing the work among subcontractors, or to limit the work performed by any trade.
- (b) The Contractor shall be responsible to Bonneville for acts and omissions of his own employees and of subcontractors and their employees. He shall also be responsible for the coordination of the work of the trades, subcontractors and suppliers.
- (c) Bonneville will not undertake to settle any differences between or among the Contractor, subcontractors, or suppliers.
- (d) If the subcontract is for the management or handling or management of –
 - (1) Hazardous or toxic wastes, before work may begin, Bonneville must receive:
 - (i) A copy of EPA Notification of Hazardous Waste Activity (EPA form 8700-12) or equivalent); and (ii) An acknowledgment of the notification filing (EPA form 8700-12A or equivalent).
 - (2) PCBs, before work may begin, Bonneville must receive:
 - (i) A copy of EPA Notification of PCB Activity (EPA form 7710-53 or equivalent), and
 - (ii) An acknowledgment of the filing (a letter from EPA). The acknowledgment from EPA will include the EPA identification number assigned.

**RESPONSIBILITY OF THE ARCHITECT-ENGINEER CONTRACTOR (24-37)
(MAR 2018) (BPI 24.6.8.1)**

- (a) The Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all designs, drawings, specifications, and other services furnished by the Contractor under this contract. The Contractor shall, without additional compensation, correct or revise any errors or deficiencies in its designs, drawings, specifications, and other services.
- (b) Neither Bonneville's review, approval or acceptance of, nor payment for, the services required under this contract shall be construed to operate as a waiver of any rights under this contract or of any cause of action arising out of the performance of this contract, and the Contractor shall be and remain liable to Bonneville in accordance with applicable law for all damages to Bonneville caused by the Contractor's negligent performance of any of the services furnished under this contract.
- (c) The rights and remedies of Bonneville provided for under this contract are in addition to any other rights and remedies provided by law.
- (d) If the Contractor is comprised of more than one legal entity, each such entity shall be jointly and severally liable hereunder.

REQUIREMENTS FOR REGISTRATION OF DESIGNERS (24-39)
(MAR 2018) (BPI 24.6.8.3)

Architects or engineers registered to practice in the particular professional field involved in a State, the District of Columbia, or an outlying area of the United States shall prepare or review and approve the design of architectural, structural, mechanical, electrical, civil, or other engineering features of the work.

SUBCONTRACTOR – ARCHITECT-ENGINEER SERVICES (24-41)
(MAR 2018) (BPI 24.6.8.5)

Any subcontractors and outside associates or consultants required by the Contractor in connection with the services covered by the contract will be limited to individuals or firms that were specifically identified and agreed to during negotiations. The Contractor shall obtain the Contracting Officer's written consent before making any substitution for these subcontractors, associates, or consultants.

UNIT 3 — STATEMENT OF WORK

STATEMENT OF WORK

*ENGINEER PROCURE AND CONSTRUCT CONTRACT FOR
SUBSTATION EQUIPMENT REPLACEMENT PROGRAM*

*Bonneville Power Administration
Vancouver, WA*

Revision 3 Date 09/05/2019

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PART A – GENERAL

A.1 Objective

This contract is for the engineering, procurement, construction and replacement of high voltage equipment within existing Bonneville Power Administration (BPA) substations. Work executed under this contract is limited to infrastructure improvements and/or additions and equipment replacements and/or additions necessary to replace end-of-life equipment and equipment identified as exceeding or about to exceed their fault duty ratings.

The Contractor shall provide all labor, materials, supplies, equipment, and related services (except when specified as Government furnished), to perform the work as specified. The work may consist of Architect-Engineer services to include any necessary electrical, civil, structural, engineering and design is required. The work may consist of construction activities such as substation outdoor equipment installation, foundation and carpentry work, electrical cabling and trench work, indoor wiring, relay and controls work, battery installation, fall protection systems, access road work, control house modifications, demolition of improvements and retirement of existing electrical equipment, per the scope of work provided in each task order (also referred to as a "Release").

The Contractor's work and responsibility shall include all contract planning, administration and management necessary to provide all work as specified. The Contractor shall conduct all work in strict accordance with the contract and all applicable Federal, State, and local laws, regulations, codes or directives. The Contractor shall provide related services such as preparing and submitting required reports, performing administrative work, and submitting necessary information as specified under this contract. The Contractor shall ensure that all work provided meets the scope of work and any specifications included or in any applicable documents.

A.1.1 Contract Format

An Indefinite Delivery Indefinite Quantity contracting model shall be used, with Task Orders (or Releases) awarded throughout the period of performance. Additional contract options may be introduced at each Task Order. The Contractor shall receive Task Order Statements of Works throughout the period of performance. The Contractor must submit a quote to meet the deliverables of each Task Order, as identified below in A.1.2. All quotes shall be developed and submitted based on the Labor Rates and authorized subcontractor mark-ups in the Schedule (refer to Unit 1).

A.1.2 Procedures for Ordering

1. To initiate all Task Orders, BPA will issue a Request for Quote (RFQ) to the contractor, to submit a proposal to BPA within 45 business days. The RFQ will be for design milestones (fixed design price), with Construction options unpriced. However, for each Task Order the Contractor shall submit pricing for all unpriced options (Construction and any related material procurement) within 14 calendar days of receipt of BPA's 50% design milestone review comments. The final construction price shall be negotiated after the 50% design milestone submittal date and finalized no later than the date of IFC design submission. BPA reserves the right to not exercise any options. The Contractor shall include for BPA's analysis the Contractor's Construction Take Off Estimate.
2. BPA will evaluate and determine issuance of task orders within 30 business days of the date BPA receives the Contractor's quote, in accordance with the evaluation procedures identified below in A.1.3.
3. During the design phase, the Contractor shall seek to develop subcontractor interest in the work, as necessary. Upon request, furnish to the Contracting Officer a list of potential qualified subcontractors from whom the Contractor is using for any of the work.
4. Unless the Contractor is self-performing the work, the Contractor shall obtain a minimum of two subcontractor bids for construction of the work, unless BPA waives the two-bid-minimum requirement after reviewing the Contractors good faith efforts to obtain bids or the estimate for the work is less than \$25,000.00. If the Contractor is selfperforming the work, the Contractor will provide a detailed level of effort (all labor, equipment and materials) to complete the work. The format of this price proposal shall be developed the Contractor and updated to include additional information as necessary.
 - a. Upon request, all subcontractor bids shall be submitted electronically to the Contracting Officer via email using a bid summary document, developed by the Contractor.
 - b. After evaluation, upon request, the Contractor shall share the results of their evaluation with BPA, and recommend or propose the final construction price, utilizing the pre-negotiated overhead/profit rate. Upon completion of BPA's review, and negotiation, the Contractor shall then award the contract to the selected subcontractor. See additional requirements below in A.1.4.

A.1.3 Evaluation of Task Orders

1. RFQ submittals will be evaluated upon the submittal of both the firm fixed price amount indicated in the applicable Task Schedule of Prices (to be outlined in the RFQ), a level of effort breakdown, itemized by labor category rates and hours associated with design, and the Engineering Support during Construction (if an Option is included).
2. Each RFQ response should include a proposed schedule, inclusive of any options identified in the SOW.
3. If the Task Order allows for an Option for Construction. Options will be evaluated during the design phase, as indicated in A.1.2.

A.1.4 Exercising Options

Prior to exercising Options for Construction, the Contractor should visit the site where the work is to be performed to ascertain the nature and location of services to be performed and the conditions which can affect the services or safe performance or the cost thereof. The Contractor is urged and expected to inspect the site where the work will be performed, prior to exercising the Option. Land rights obtained by Bonneville do not include permission to enter the property prior to the start of work, therefore the Contractor shall work with the COR and Project Manager to determine site access and allowances, prior to submitting the Construction bid.

The Contractor shall provide a detailed schedule for Construction. Additionally, the Contractor shall identify all Key Personnel, Subcontractors, the work they perform, the percentage of work expected to be performed by each proposed subcontractor, and contact information. A subcontracting plan shall be submitted. This may be submitted with the construction bids identified in A.1.2 above. The Contractor shall also submit a Site Specific Safety Plan, prior to NTP and assume a 10-day review window.

A.2 Program Background

BPA's Program Management organizations have identified a recurring and repetitive need to replace existing high voltage equipment. Each year, BPA's Transmission Planning performs system studies to analyze equipment performance. Through these studies, BPA identifies specific equipment that have exceeded, or are about to exceed their fault duty ratings. Combined with the system studies, BPA identifies high voltage equipment requiring replacement due to increasing maintenance needs, or end-of-lifecycle needs. All equipment replacements have been confirmed as needed replacement, or retirement, by BPA's High Voltage and Outdoor Design and are all part of BPA's sustain program.

The expectation is BPA Sustain Program Management will issue "phases" of High Voltage Equipment replacements annually to be executed through issued task orders under this contract..

Task orders will require engineering and design services, material and equipment procurement, construction services, or a combination of any of the three.

BPA anticipates selected sites will require BPA-internal construction due to overlapping work requirements, site restrictions, or outage considerations. In these cases, the Contractor will only provide engineering and engineering support during construction.

A.3 Schedule

The Contractor shall complete all work within the stated schedule at the task order level, but will not exceed more than 24 months from date of issuance of a task order.

A.4 Location of Project

The Contractor shall perform work in existing substations on the BPA grid, and includes work in the states of Oregon, Washington, Idaho, Montana, Wyoming and California.

A.5 BPA-Furnished Property or Services

BPA has created and published standards applicable to the engineering effort of this contract. The Contractor shall obtain these documents from BPA's ProjectWise location as follow:

Description	Point of Delivery	Date to be Delivered

Design Standards	ProjectWise	pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Transmission Facilities\Standards & Resource\Design Standards\
Outdoor Design Standards		pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Transmission Facilities\Standards & Resource\Design Standards\ELEC\Outdoor\
Data Systems Design Standards		pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Transmission Facilities\Standards & Resource\Design Standards\ELEC\DATA Standards\
Protective Relay Design Standards		pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Transmission Facilities\Standards & Resource\Design Standards\ELEC\Protective Relay\
Structural Design Standards		pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Transmission Facilities\Standards & Resource\Design Standards\Structural Substation Standards\
Civil Design Standards		pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Transmission Facilities\Standards & Resource\Design Standards\Civil Standards\
Site Specific Scoping Documents		**PW folder location will be determined upon award**

- Industrial Hygiene reports. Contractor shall submit sampling requests to ProjectSafety@bpa.gov.
- All equipment, materials and other items are identified at the individual task order (release) level.
- The Contractor shall receive and store equipment and materials as necessary to complete the work.
- The contractor shall provide all equipment and personnel to receive, issue, secure, handle and inventory material.

A.6 Contractor-Furnished Property or Service

The contractor shall provide all labor, equipment, materials, and services to perform the work of this contract, except the items mentioned under A.5 above.

Installed equipment and materials shall conform to Bonneville requirements and specifications and be purchased and identified in accordance with Bonneville's materials catalog numbers and descriptions. The Contractor shall identify items using the Bonneville catalog name and description on drawings, reports and other documents.

A.6.1 Contractor-Acquired Materials Using Bonneville Approved Material Suppliers

The contractor may procure materials, as identified at the Task Order level, under the equipment supplier's Ordering Agent clause of Bonneville Master Contracts or using required Bonneville approved material suppliers.

Professional Conduct: Contractor will at all times conduct themselves in compliance with all federal, state and local laws, regulations, standards of professional ethics, and the reasonable rules and regulations of its employer. Contractor will at all times (a) conduct business in a manner that reflects favorably on Bonneville Power Administration, (b) avoid deceptive, misleading or unethical practices that are detrimental to Bonneville Power Administration or its' Manufacturer or the public and (c) refrain from making false or misleading representations, advertisements or claims with regard to any of the abovementioned representatives.

The purchase methods listed are: Contractor buy, Contractor buy off Bonneville Contract, Contractor buy from Bonneville approved source.

SPECIFICATION NAME	FUNCTION	PURCHASE METHOD
Cable, Annunciator	Substation	Contractor buy from approved source
Cable, Communications, #19 AWG Copper Shielded	Substation	Contractor buy from approved source
Cable, Communications, Indoor, Shielded	Substation	Contractor buy from approved source

Air Switches, 15kV Thru 230kV, Outdoor Group-Operated and Load Break	Substation	Contractor buy off master or approved source
Air Switches, 500kV, Outdoor ThreePole Electrically Group-Operated	Substation	Contractor buy off master or from approved source
Bushing, Apparatus	Substation	Bonneville Purchase
Cable, Control, Copper, Shielded	Substation	Contractor buy off master or from approved source
Capacitor Equipment, Shunt - Fuseless - Outdoor Type	Substation	Bonneville Purchase
Capacitor Equipment, Shunt-Outdoor Type	Substation	Bonneville Purchase
Circuit Switchers, Non-Disconnect Style, 115kV thru 230kV	Substation	Contractor buy off master or from approved source
Insulators, Apparatus, Outdoor	Substation	Contractor buy off master or from approved source
Power Circuit Breakers, 500kV	Substation	Contractor buy off master or from approved source
Power Circuit Breakers, 72,5kV thru 245kV	Substation	Contractor buy off master or from approved source
Power Transformers	Substation	Bonneville Purchase
Reactors, Shunt – Large	Substation	Bonneville Purchase
Surge Arresters, Gapless Metal-Oxide	Substation	Contractor buy off master or from approved source
Transformer, Instrument, Outdoor Type	Substation	Contractor buy off master or from approved source
Transformer, Voltage, CouplingCapacitor-Type, 525kV	Substation	Contractor buy off master or from approved source
Accessories, Compression Type for ACSR and ACSR/TW Conductors	Substation and Transmission	Contractor buy from approved source Contractor buy off Bonneville Master
Accessories, Compression Type for Aluminum-Clad and Zinc-Coated Steel Conductors	Substation and Transmission	Contractor buy from approved source Contractor buy off Bonneville Master
Anchorage, Substation	Transmission	Contractor purchase from an approved source Contractor buy off Bonneville Master
ASTM A325 Tower Bolts and Nuts	Transmission	Contractor purchase from an approved source Contractor buy off Bonneville Master
Formed Tubular Steel, Transmission Towers and Substation Structures	Substation and Transmission	Contractor buy off master or from approved source
Gate and Cattle Guard, Access Road	Substation and Transmission	Contractor buy
Signs, Reflective, Embossed and Painted, Extruded and Injection Molded	Transmission	Contractor buy from Bonneville approved source Contractor buy off Bonneville Master
Structures, Steel, Substation	Substation	Contractor purchase from an approved source Contractor buy off Bonneville Master
Structures, Steel, Substation Multiple Dead-End	Substation	Contractor purchase from an approved source Contractor buy off Bonneville Master
Structures, Steel, Tubular and Welded Wide Flange	Substation and Transmission	Contractor purchase from an approved source Contractor buy off Bonneville Master
Relay and Control Racks	Substation	BPA Fabricated or Contractor purchase from an approved source

Telecom Racks	Substation	BPA Fabricated or Contractor purchase from an approved source
Power Control Assembly (PCA)	Substation	BPA purchase or Contractor purchase from an approved source

A.7 Professional Disciplines

The Contractor shall perform work through professional engineers, architects, technicians, and other support personnel practiced in design of facilities in high voltage environments as well as non-energized environments, licensed in the State of Oregon, Washington, Idaho, California, Montana and Wyoming.

A.8 Definitions

BPA: Bonneville Power Administration
CDD: Concept Design Document
CO: Contracting Officer
COR: Contract Officer’s Representative
EC: Environmental Compliance
EPC: Engineer, Procure, Construct
GFM: Government Furnished Materials
IH: Industrial Hygiene
PE: Project Engineer
PM: BPA Project Manager
PRD: Project Requirement Diagram
QAR: Quality Assurance Representative
RE: Resident Engineer
SME: Subject Matter Expert
SSSP: Site Specific Safety Plan
TECD: BPA Data Systems Design
TECC: BPA Protection & Control Design
TESD: BPA Outdoor Design
TELD: BPA Structural Design
TELF: BPA Civil Design

A.9 Documentation

All design submittals will be completed in accordance with the BPA design organization checklists referenced in this Statement of Work.

The contractor shall follow the “Fault Duty EPC IFS Construction Specifications” as incorporated into this Master Statement of Work (see Reference 1). The contractor is required to develop specific construction specifications for each specific site using BPA’s standard construction specifications located in the following ProjectWise directory location:
(pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\~Transmission Services Standards\Energy Delivery Facility Construction Specs\Current\)

The Contractor shall follow the below listed procedural documents for design submittals as published on the date of contract award. Any updates to these procedures will be made through modification of this SOW after award and only through contract modification. Location of these documents is:

pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A-E Contract Administration\

A.10 Methods to be Used

All work shall be performed in accordance with all Federal and State safety and health rules and regulations applicable to the work described in the contract. The methods and means of performing the work shall comply with BPA published standards and work practices.

Contractor shall perform work in accordance with most recent published standards and policies as of the proposal due date, including:

- Design Organization Checklists (pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A-E Contract Administration\C.5 Design Submittals\)
- Design standards and policies (pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\~Transmission Services Standards\)
- Material and equipment specifications (pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\~Transmission Services Standards\Material Specs\)
- Standard drawings and design templates
(pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Transmission Facilities\Standards & Resource\Design Standards\)
- Standard hardware and hardware assemblies
- Standard Bills of Material
- Standard construction specifications (pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\~Transmission Services Standards\Energy Delivery Facility Construction Specs\Current\)
- Maintenance and Work Standards
(pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\~Transmission Services Standards\Applicable BPA Work_Std & Subs_Maint_Std & Guides\)

The Contractor shall follow and work in accordance to Section 4.10 of STD-D-000001-00-02 and perform back circling and revision clouding. The Contractor shall also perform clouding when multiple work orders are associated with the same revision, on the same drawing. Location: pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\~Transmission Services Standards\General Design Standards\Drawing Criteria and Revision Practices

Upon commencement of work, the contractor shall determine standards applicable to the project based on BPA and CSI prescriptions for standards use.

Unless the criteria of Section 6 of STD-P-000002 Standard Compliance and Exception policy applies, Contractor shall design projects using the approved standard in place at proposal due date. Refer to section B.9.3 of this document for exception to standards requirements.

Contractor shall provide markups for any design standards used during the design which need to be revised and submit with final design.

A.11 Project Coordination

A.11.1 Administrative Coordination

Ensure the following during the performance of the work.

1. Coordinate project work with the BPA Team and members of the BPA project team.
2. Participate in project meetings.
3. Develop and maintain a scoping schedule (when applicable)
4. Develop and maintain a design schedule.
5. Implement a project cost accounting system to track and document project costs.
6. Implement effective communication practices.
7. Ensure Contractor's employees follow BPA protocol for physical and logical access.

A.11.2 Design Coordination

Verify consistency and compatibility within the entire design while maintaining project cost, schedules and quality. Maintain a design log throughout the performance period to track design decisions. Provide the log at all design milestone review meetings and upon BPA request. Log must include the following:

1. Information and decisions that influence the design outcome such as: undocumented site conditions, environmental restrictions, property restrictions, results of site studies, etc.
2. Construction constraints.
3. Verification of coordination of project stakeholders.
4. Design assumptions.
5. Standards exceptions requested and status.
6. Correspondence documenting pertinent design decisions and changes.

A.12 Meetings

A.12.1 Requirements General

The Contractor shall refer to the project management and coordination requirements in specifications section 01 31 00 for construction progress meeting requirements. For design purposes assume the following:

1. Participate, either by telephone or in person, with BPA-hosted Project Meetings.
2. A Project Kick-off meeting will commence upon award, or shortly thereafter.
3. Monthly design meetings will be scheduled and led by the Contractor in coordination with the BPA project team.
 - a. Agendas and design schedules will be distributed 24 hours in advance.
 - b. Minutes will be documented in ProCore, including attendance.
 - c. Open Items/Action Items will be identified and tracked by the Contractor.
 - d. Any Design item that is a contract change shall be sent as an RFIs and Change Orders through ProCore.
4. Contractor shall assume 50% and 90% page-turn Design Review meetings will be required.
5. Material review at 50% submittal.
6. Construction and Material pricing review meeting after 50% submittal.
7. Step plan review meeting at 50% and 90%, after submittal comments are received.
8. Site visits: As agreed to between BPA and the Contractor per each task order.
9. Annual lessons learned meeting.

A.12.2 Locations

Design meetings will occur at BPA's facilities in Vancouver, WA. On-Site meetings will occur at the respective substations or nearby facility secured and reserved by the Contractor.

A.13 Work Plans

A.13.1 Project Work Schedule – See Specification Section 01 32 16 CONSTRUCTION PROGRESS SCHEDULE

1. Develop a project work schedule incorporating project and design milestone dates into the period of performance. Scheduled items shall include at the minimum:
 - a. Deliverable dates
 - b. BPA Comment Periods
 - c. Issue for Construction submission
2. Contractor shall provide a three week look ahead for design and construction, prior to each progress meeting.
3. The project work schedule should include both design and construction activities as defined by the resource matrix for engineering, procurement, and construction activities listed in the site-specific statement of work documentation.

A.14 Monthly Report and Design Log

Contractor shall provide a monthly report to the BPA COR on the last day of each month. Report must include:

1. Updated project schedule and milestone spreadsheet
2. Trip reports/meeting notes documenting site visits, and
3. UTC/NERC CIP tag information (BPA-supplied spreadsheet).

Contractor shall maintain a design log throughout the Contract Performance Period for tracking design decisions. Contractor shall provide the log for all and available during the Design Milestone Review Meetings and to BPA upon request. Log must include the following:

1. Information and decisions that influence the design outcome such as undocumented site conditions, environmental restrictions, property restrictions, results of site studies, etc.,
2. Construction constraints,
3. Verification of coordination of project stakeholders,
4. Design assumptions,
5. Standards exceptions requested and status, and
6. Correspondence documenting pertinent design decisions

A.15 Cost Allocation

A.15.1 Cost Reporting

Throughout the period of performance, develop and maintain cost accounting reports that include Earned Value data. Present these reports monthly and make the reports available to BPA at all times. These reports shall include a Performance and Cost Report.

The Performance and cost report provides the current status and projected requirements for funds, man-hours, and work completion relative to the negotiated budget. CORs may request monthly cost reports. Performance and cost report must include:

1. Original Contract value.
2. Project billing schedule.
3. Invoiced values to Contract.
4. Forecasted values to pay (typically three month forecasted spend).

A.15.2 Change Orders

Refer to construction specifications section 01 26 63 for change order processing requirements.

A.16 Information Management

BPA uses the ProjectWise (PW) system to store libraries of projects, drawings, documents, data, and standards. Access will be in accordance with the ProjectWise Access Policy maintained by the Asset Management and Engineering Applications Group. Each prime Contractor is required to file a Memorandum of Understanding (MOU) with BPA in order to access PW.

For Construction Administration activities such as RFIs, meeting minutes, submittals, inspections, daily reports, and quality reports the ProCore software will be utilized. See specification section 01 32 35 for requirements.

A.17 Computer Systems and Uses

A.17.1 Accessing BPA ProjectWise Drawing Management System

Comply with the requirements for ProjectWise access in A.15.1 Applying for BPA Physical and Logical Access.

A.17.2 BPA Software Requirements

Provide tools and software that complies with the following table:

Software Data Files Requirements	System
External access to drawing files, project files, work standards, procedures manuals, standards drawings, and other pertinent technical information	Bentley ProjectWise Explorer V8i with RSA Token provided by BPA CAD Support group
Internal access to drawing files, project files, work standards, procedures manuals, standards drawings, and other pertinent technical information	Bentley ProjectWise V8i ProjectWise Interplot Organizer ProjectWise Explorer
Title block, seed files, cells, template information and drawing content in digital form for new drawings, and revisions to existing BPA drawings (dgn) that are generated with a Bentley MicroStation CAD system.	Bentley MicroStation V8i BPA CAD Workspace
Plotter Drivers: To allow the Contractor and BPA to have a "common denominator" print driver to work within each other's networks as an interim step.	Bentley/Adobe plot driver
Standard documentation: <ul style="list-style-type: none"> • Project specifications • Forms (e.g., bills of materials, material requests, structure lists, drawing lists, etc.). • Presentations. • Documents for Construction Package. • Email 	Microsoft Office products: <ul style="list-style-type: none"> • Word • Excel • Power point • Adobe Acrobat Writer • Adobe Pro • Outlook
Hardware Requirements	

A.18 Contractor Security and Clearance

BPA requires the Contractor's staff to obtain security permissions via "badging" to gain physical access to BPA facilities and to access the BPA computer network.

Additional documentation regarding Contractor Security and Clearance can be found here:

ProjectWise Folder Link: pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A&E Contract Administration\B.8 Contractor Security and Clearance\

A.18.1 Applying for BPA Physical and Logical Access

Prior to beginning work on a BPA project, the Contractor shall identify key personnel requiring badged access to BPA sites or network. Contractors shall ensure all procedures and required training are adhered to. Contractor direction is given in the Working Level Standard "Contractor Access to BPA".

Determine the number of employees requiring badging and the types of access needed. Apply for only the level of badging required for each employee. Types of badges are described below:

1. General Physical Access "LSSO Badge": Contract workers requiring unescorted physical access to authorized BPA facilities/sites (e.g., headquarters, Ross Complex, CSB, TPP, Regional Offices, etc.) for the duration of a project or a period of up to 5 years will be issued a Local Site Specific Only (LSSO) badge for general gate and office building access. This badge may be activated for general or site specific access.
2. General Physical Access and Logical Access "Smart Badge": Contract workers requiring unescorted physical access to authorized BPA facilities/sites and logical access to BPA Computer Network will be issued a USAccess DOE Security badge "Smart Badge" (aka "Smart Credential", "DOE Security Badge"). Note: This is not a commonly requested credential for contract workers as typically only physical access is required. The CO will determine the number of badges each firm will receive.
3. Energized Facility/Site Access "Permit": Contract workers requiring unescorted physical access to authorized BPA energized facilities/sites (e.g., substation, telecommunication) must obtain a "Permit" ensuring they understand their safety and security responsibilities. LSSO or Smart badges are activated to allow electronic access to sites with electronic access some sites require a physical hard key.
 - In addition to the requirements to obtain the LSSO and Smart Badges is the passing of exams verifying Contractor has knowledge and understanding of the *BPA Rules of Conduct Handbook (ROCH) Policies and Procedures for Permits, Energized Access, and Clearance Certifications*.
 - These permits expire every odd year on May 31st. Reissuance of the permits is based off of continual passing of the exams. The Contractors are responsible for notifying the COR, or indicated BPA representative, of expiring badges.
 - There are many procedures required for this level of badging. Refer to the badging procedure contained in the referenced standard.
 - If being escorted, work can be accomplished at or below the level of permitting of the person doing the escorting.
4. ProjectWise Access: In addition to the Contractor having a memorandum of understanding on file with the BPA CAD support team, BPA requires a Technology Resource Request form be submitted as well. All contractors with access will need to complete NERC/CIP security training and Information Protection training in a timely manner to maintain their access.

Note: If the paperwork is not followed precisely it may delay the badging process. Badges may be denied by BPA or revoked by BPA at any time, without notification to the Contractor.

A.18.2 Contractor Use of Badge

When Contractor employees no longer have a need for BPA badges (e.g., separation, resignation, firing, scope complete for individual worker even if prior to end of agreement, on call, awaiting new work, changing employers with active contract, etc.):

1. Email "revoke@bpa.gov" within 4 hours of separation. Include a courtesy copy to the COR.

2. Return badges and tokens to BPA within 24 hours of termination of contractor personnel to the COR.

A.18.3 DOE Security Badge Access and Training Expectations

BPA shall furnish a RSA token or card reader and access to the BPA information network for required personnel. Access will be completed through the MyPC environment. This interface requires multiple authentications that include the RSA token or card reader, account and password.

The following shall apply:

1. The Contractor personnel handling the information shall be issued an RSA token or a card reader, which shall be requested and managed by the COR, unless otherwise specified by the CO.
2. The COR and Contractor shall be responsible for coordinating account activation and permissions to shared folders on the BPA network.
3. All information associated with the work performed under this contract shall be maintained in the BPA network environment. No BPA information shall be allowed to be transmitted, stored, and created, etc., on the Contractor's personal devices, unless permitted by the CO and in accordance with Cyber Security regulations.
4. The Contractor shall abide by Bonneville Power Administration Manual 1110 (BPAM 1110) Business use of BPA Information Technology Services Policy whenever using BPA equipment BPAM 1110 is available by request or at the following internal site, <http://internal.bpa.gov/Policy/Pages/BPAManual.aspx>. Failure to abide by these rules may result in termination of the contract and possible legal action by BPA.
5. The Contractor personnel shall be required to take information security training to qualify for using the BPA provided RSA Token or card reader and BPA network access. Arrangements shall be made for taking the courses online by accessing the following internal site (<http://internal.bpa.gov/EmployeeCenter/Training/Pages/RequiredTraining.aspx>), or through printed copies of the training materials.

The following will need to be completed on an annual basis (this list is subject to change):

- BPA Course 008403—Cyber Security/NERC CIP/Field Sites
 - BPA Course 004217—Annual Security Refresher
 - BPA Course 008865—Privacy Awareness Course
 - BPA Course 013115—DISA Phishing Awareness
 - BPA Course 012448—Information Governance Lifecycle Management
6. The COR and Contractor are responsible for tracking completed training and ensuring completion.
 7. Upon completion of the contract, the COR shall be responsible for suspending account access of the consultant to BPA networks. The Contractor personnel shall mail the and/or card reader to the following address or return it to the COR if onsite:

Bonneville Power Administration
ATTN: Jeff Flansburg, TFHQ-TPP-3
P.O. Box 3621
Portland, OR 97208-3621
 8. The Contractor personnel shall be responsible for the safe-keeping of the BPA issued RSA Token at all times. If the RSA Token is lost or compromised, the Contractor personnel shall immediately contact the COR.
 9. The Contractor personnel shall only utilize the RSA token when conducting work directly related to the Statement of Work. Any other work is unauthorized.

A.19 Site Access and Restrictions

A.19.1 Restricted Access

All BPA sites and facilities have restricted access which requires a badged escort at all times. For the performance and duration of this contract, the Contractor shall assume BPA will not provide escorts. The Contractor may elect to badge and permit their employees under the Bonneville permit program (see A.20.1 above), or obtain a list of approved sources BPA has for BPA badged escorts. Any requests by the Contractor for BPA to provide escorts for site(s) access must be coordinated no less than 30 days prior to site visits or access needs and will be a direct reimbursable cost by BPA.

A.19.2 Substation Access

Entry into the Substations requires a BPA badged escort for all persons performing work in and around the facility at all times.

A.19.3 Security

Promptly report to the COR and BPA security at (360) 418-2080 all cases of criminal activity that occur in the work area. Should circumstances warrant immediate police, fire, or medical response, call 911 emergency.

A. 19.4 Arc Flash Clothing

The Contractor shall adhere to BPA policies regarding Arc Flash protective clothing, approved footwear, and other personal protection equipment (PPE) when visiting energized facilities.

A.20 Field Work

While making the site visits comply with the following:

1. Site Visit Preparation

Prior to making site visits coordinate with COR and PM and regional personnel to ensure dates of visit, purpose, and absence of conflict with BPA operations. If ground disturbing activities are planned during site visits, coordinate and obtain approval by the COR and PM prior to the site visit.

2. Entering Private Property.

- a. Only enter property when required by the task order and for which BPA has acquired the rights.
- b. Prior to field visits, notify the COR and the PM of the properties to be visited and date of visit.
- c. BPA will provide verification of the permission to enter the property and provide any landowner special requirements.
- d. Where no Permission to Enter Property (PEP) exists, BPA will obtain the PEP.
- e. Prior to making contact notify COR of location of property and landowner name.

3. Land Owner Contact

- a. Whenever there is landowner contact by phone, written, or in person; maintain an ongoing Landowner Conversation Record of encounters with the landowners.
- b. Maintain this record as part of the project files. For each site visit record and compare the conversation record to other BPA records regarding the property and landowner. Where there are differences in landowner information notify the COR and PE by submitting the conversation record to COR and PE.
- c. Submit Landowner Conversation Record to BPA COR and Project Engineer within 24 hours after any contact with landowners.
- d. Landowner conflict:
 - When there is indication of potential landowner conflict, desist from contact attempts, immediately leave the property, and notify the COR and Project Engineer.
 - If an incident or altercation with the Landowner occurs immediately notify the COR and document the incident/altercation on the Landowner Conversation Record. The COR will notify the Realty Specialist and CO and provide further instructions to the Contractor.

4. Procedures While Accessing Private Property

- a. When visiting property and upon leaving ensure the property is in as good as condition as when first entered.
- b. Leave gates open or closed as found when entering property.

Additional documentation regarding Field Work can be found here: Project

Wise Folder Link: B.9 Field Work

A.21 Personnel Qualifications, Responsibilities, and Approvals

A.21.1 Project Manager.

Project Manager shall be an individual with a recognized four-year college degree in engineering or related technical field or business/management and a minimum experience of 7 years in managing and supervising construction projects similar in scope, complexity and magnitude to this contract, or an individual with a minimum of 10 years' experience managing and supervising construction projects similar in scope, complexity and magnitude to the contract. The Project Manager shall be familiar and conversant with the various codes and standards applicable to the tasks covered by the statement of work. The Project Manager shall oversee work accomplishment, administer all instructions, and answer all questions from the CO pertaining to the work during the life of the contract. The Project Manager shall be designated in writing (listing name, address, and phone number). The Project Manager shall be responsible for the complete coordination of all work. The Project Manager shall be responsible for ensuring that adequate internal controls and review procedures are following in order to eliminate conflicts, errors and omissions, and for ensuring that all technical requirements are met.

A.21.2. Project Engineer.

The chief Project Engineer shall be responsible for the overall engineer and designs for each site. The Project Engineer shall be familiar with the overall design requirements and can troubleshoot, and resolve, any design related issues which occur under this contract. The Project Engineer shall be a registered professional engineer with a minimum of 10 years design experience in his/her respective discipline.

A.21.3. Architect/Engineer.

The architect and engineers shall be a registered professional architect or registered professional engineer with a minimum of 5 years design experience in his/her respective discipline.

A.21.4. Construction Project Superintendent.

Construction Project Superintendent shall have a recognized four-year or higher college degree in architecture, engineering, or construction management and 5 years of experience as a project superintendent, or have at least 10 years construction experience in which 5 years were experience as a project superintendent for similar projects.

A.21.5. Quality Control Management.

Project Quality Control (QC) Manager shall meet the requirements of Section G of this Master Statement of Work and specification section 01 43 27. The Project QC Manager is required to ensure testing is performed, and prepare QC certifications and documentation required in this contract. The QC Manager will be responsible for the quality of work on the job and is subject to removal by the CO or designated representative for non-compliance with quality requirements specified in the contract.

A.22 Staffing Approvals

Prior to making changes in management staff, the Contractor shall request the Contracting Officer in writing of changes in proposed management staff as set forth in the Contractor's technical proposal.

A.22.1. Staff Changes

The Contractor shall maintain a management staff with comparable ability and experience to the staff listed in the management proposal. The Contracting Officer must approve any changes from the proposed and accepted management staff. A request for a change to the approved staff must be submitted in writing. A current qualification statement and reason for changing the personnel shall be included in the request for approval.

A.22.2 Staffing Limitations

Federal employees, military or civilian, shall not be employed by the Contractor in performance of any work under the Contract, e.g., during off-duty hours, regular hours, or while on annual leave.

PART B – ENGINEERING AND DESIGN

B.1 Scoping

The Contractor is not expected to perform design scoping efforts under this contract. BPA will perform scoping and present findings in Concept Design Documents (CDD) provided at the task order level.

B.2 Design Submittals

The Contractor shall submit design packages for 50%, 90%, and IFC and Lists/Bills of Materials for 50%, 90% and IFC on bonded paper and electronically to BPASubmit@bpa.gov. The Contractor shall assume 21 business days for the 50%, 90% and IFC reviews.

The Contractor shall follow the design submittal checklists in ProjectWise here:
pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A-E Contract Administration\C.5 Design Submittals\

Milestone Checklist: BPA will provide a milestone checklist to indicate action items, the design deliverables, responsible party, and required completion date. For each milestone design review, complete the checklist with completion dates and the forecasted schedule for any uncompleted items. Revise project schedules to accommodate uncompleted items and describe these items in the next Design Milestone Review meeting.

B.3 General Requirements

The Contractor is responsible for the following:

- Outdoor design
- Structural design
- Civil design
- Control and Protection design
- Data Systems design
- RAS design
- Architectural design
- Construction Specification package for review by BPA.
- Construction sequencing step plan. See Template in PW referenced below.
pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A-E Contract Administration\~Template\Construction Sequencing Step Plan
- Bills of Materials and Material Requests submitted in accordance with the guidance outlined in section B.7.2 of this document.
- Construction Services
- Use ProCore for coordination and project documentation during construction.

Contractor shall complete the designs specified for the sites described in the site specific scoping documents. Contractor shall provide all design drawings, specifications, reference drawings, and demolition plans needed for the construction activities described in this SOW. Contractor shall provide construction specification in both PDF and MS Word version.

The Contractor shall provide a 90% Construction Specifications for review by BPA with the 90% design submittal.

For designs requiring an Arc Flash Study, contractor shall submit completed report to the BPA COR. Arc Flash studies will be reviewed by TESD (low voltage) and TESM (High Voltage). The standards also have where this study is to be located, labeling, and other requirements.

B.4 Scoping Tasks

The Contractor is not expected to perform design scoping tasks under this contract.

B.5 Engineering Studies

Typical Engineering studies that may be required see yearly addendum for site specific requirements.

Yes	No	Study Analysis
X		Bus Design Calculations
X		DC Battery Sizing
X		AC Load Study
X		Lighting Study
X		Lightning Study

X		Relay Coordination Study (By BPA)
X		Arc Flash (Two arc flash studies are required, Low Voltage and High Voltage. A coordination study is required for the low voltage circuit breakers)
X		Grounding Analysis
X		Geotechnical Analysis
X		Oil Spill Containment Calculations
X		Storm Drainage System Design

B.6 Design Tasks

B.6.1 Environmental Design

For the purpose of this contract, there is no work associated with environmental designs under this contract.

B.6.2 Site/Civil Design and Installation

Civil design services are required for the design revisions of existing substation sites. Tasks include:

1. Perform the civil engineering design in accordance with the BPA Civil Engineering Design Manual and design standards:
2. Provide design calculations as required.
3. Provide drawing lists for all civil design.
4. Plan set submittal package shall include but not be limited to Existing Conditions, Demolition Plan, Site Development Plan, Storm Drainage System Plan, Erosion Control Plan, and Details.
5. Provide footing plans identifying new foundations, foundations to be removed and foundations to be modified.
6. Site plan shall show location of conduits, equipment and footings, to verify and address underground conflicts.
7. Storm Drainage System Plan shall include drainage for electrical vaults and trenches.
8. Repairs or upgrades to existing access roads to accommodate access or construction.
9. Provide civil construction specifications.
10. Contractor shall follow the Task Order statement of work and reference the CDD for each site.

B.6.3 Structural Design and Installation

Structural design services are required for the design revisions of existing substations, and new and existing support structures and foundations (e.g. footings, foundations). Facility designs include, but are not limited to, buildings, nonbuilding structures, towers, support structures, equipment supports, and foundations. Structural analyses, reports, drawings, calculations, and all final documentation shall be stamped by a professional engineer.

1. Perform the structural engineering design per BPA design standards.
2. Provide designs for modification of, or new, footings and support structures for the new equipment.
3. Ensure new foundations and support structures meet BPA design standards.
4. Provide detail drawings of modifications, or new, foundations and support structures.
5. Provide calculations in accordance with BPA's design standards, which support the submitted design.
6. Provide structural hardware bill of material and footing bill of material, as required.
7. Provide closeout documents for all structural design.
8. Provide drawing lists for all structural design.
9. Provide structural construction specifications, as required for completing each release scope of work.
10. Existing Building Analysis/Designs
 - a. All alterations and modifications to buildings, non-building structures, foundations, anchorage, equipment, or equipment support shall be in accordance with BPA standards and building code requirements.
 - b. Building analysis/design shall be in accordance with BPA Seismic Policy (STD-DS-000001) and International Building Code (IBC), International Existing Building Code (IEBC), or American Society of Civil Engineers (ASCE) 41, as required.
 - c. Provide structural analysis/design of foundations in accordance with the Geotechnical Investigation.
 - d. Provide structural drawings for all alterations and modifications including structural notes, special inspection program, structural plans, elevations, sections and details.
 - e. Provide structural calculations.
 - f. Provide structural specifications, as required.

- g. Provide construction administration services including submittal review, responding to RFI's, structural observations, and site visits as required.
- h. Provide final inspection, project closeout, and as-built drawings.
- i. Engineer of Record to provide final certification letter to COR.

11. Contractor shall follow the Task Order statement of work and reference the CDD for each site.

B.6.4 Substation Outdoor Design and Installation

Outdoor design services are required for the replacement and retirement of existing substation equipment (e.g. power circuit breakers, disconnect switches, station service, instrument transformers).

1. The contractor shall follow BPA Substation (Outdoor) design standards and policies.
2. The contractor shall assume replacement of all existing outdoor power, control, alarm, and RAS cables to equipment are being replaced.
3. The contractor shall create/modify all one line diagrams, schematics, wiring, details, bills of materials (BOMs).
4. The contractor shall update Plot Plan.
5. The contractor shall create/modify grounding design and grounding study of yard.
6. The contractor shall create/modify the conduit and trench layouts
7. The contractor shall create/modify all necessary connection diagrams for outdoor equipment.
8. The contractor shall provide necessary designs for the station service also including a full arc flash analysis.
9. All work shall be in accordance with the NEC unless otherwise directed by BPA standards.
10. Contractor shall follow the Task Order statement of work and reference the CDD for each site.

B.6.5 Control & Protection Systems Design and Installation

The contractor shall modify all one line diagrams, relaying schematics, panel layout, wiring and any DC panel schemes associated to incorporate changes for equipment being replaced, per latest BPA standards.

B.6.6 Data Systems Design and Installation

1. The contractor shall follow the current BPA Alarm Criteria.
2. The contractor shall create/update all SER/SCADA points lists, schematics and wiring drawings to incorporate changes associated with equipment being replaced, per latest BPA design standards.

B.6.7 Telecommunication Design and Installation

The contractor shall modify all schematics, panel layout, wiring drawings to incorporate changes for equipment being replaced, per latest BPA standards.

B.6.8 Engineering Services during Construction

Services during construction are primarily requests for information to support personnel in administering the construction contract; onsite verification of the commissioning of systems; and in the finalization of post construction documents and records. Services during construction may include, but are not limited to responding to RFIs, providing redlines, onsite review participation, etc. Specific effort will be identified in the task order level SOW.

B.7 Design Deliverables

B.7.1 Inspection and Acceptance

1. BPA will inspect submittals and deliverables for promptness, completeness and accuracy. BPA may reject deliverables that do not satisfy these qualities or the criteria listed for each milestone above.
2. Upon rejection of any deliverable, contractor shall provide rework at no additional cost to BPA. Contractor shall not invoice BPA for any work prior to BPA acceptance of all deliverables of the relevant task or milestone for milestone payment.

B.7.2 Bills of Materials and Material Requests

1. The Contractor shall provide a Bill of Materials, complete with Catalog numbers to ensure constructability. Bills of Material Guidelines can be found in the ProjectWise here:

pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A-E Contract Administration\C.5 Design Submittals\.

2. If the task order identifies BPA will provide any equipment or materials, the Contractor is responsible for coordination the ordering and entering Material Requests for BPA-provided material/equipment per design discipline. Additional documentation regarding Material Requests can be found in ProjectWise here:
pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A-E Contract Administration\C.5 Design Submittals\.

B.7.3 Field Engineering

1. Over the course of performance, there may be instances where work is being conducted on site. In the case where drawings are being redlined in the field, BPA may require the Contractor to “pick-up” the redlines and incorporate the redlines (as built) into their current design. This will be communicated to the Contractor if needed.
2. As work is being constantly performed, Records Revision may request the Contractors “pick up” redlines, on a case by case basis. This will be communicated to the Contractor if needed.
3. In emergency situations, BPA may require the Contractor to immediately check drawings back into Project Wise for our internal design teams to redline for the field work. This will be communicated to the Contractor as needed.
4. For all above options, equitable adjustment will be negotiated with the Contracting Officer. Payment will be on a redline price per sheet option. The Contractor shall submit incorporated redline drawings to BPA Submit, for immediate disbursement to BPA Record Revision. Record Revision will accommodate a five business day review of completion. Additional documentation regarding redline modifications can be found in PW under the “Policy and Specifications” folder.

B.8 Design Milestone Reviews

Design milestone reviews will be conducted on a regular basis throughout the design process. The purpose of the review is for the Contractor to submit milestone deliverables of the Design Package, for BPA to determine design acceptability, and for BPA to rate the Contractor's performance.

The Design Milestone Review includes:

- BPA review of the milestone deliverables.
- Design Milestone Review meeting between BPA and the Contractor.
- Evaluation of Contractor performance.

B.8.1 BPA Review of Milestone Deliverables

1. BPA will review and comment on submittals prior to the Design Milestone Review meeting.
2. BPA will review the design only for general compliance with requirements stated in this SOW. BPA will not review the design calculations, dimensions, and other engineering details for technical accuracy. BPA oversight of technical errors or deficiencies during reviews does not constitute acceptance of the deficiency by the Contractor and is not a basis for future change orders.

B.8.2 Design Milestone Review Meeting

A Design Milestone Review Meeting will be convened for each milestone. The typical agenda of this meeting may include the following:

1. Round table comments and discussion between BPA stakeholders and Contractor on review of milestone deliverables.
2. Contractor update on project progress. During this portion of the meeting the Contractor is to submit and report on the following:
 - a. Project Check Sheets
 - b. Design log to discuss design decisions, verify coordination actions, updates on standards exceptions, and construction constraints.
 - c. Updated Project Work Schedule.
 - d. Cost updates (Performance Cost Report and Funds, Man-Hours Expenditure Report, change order status and status of invoicing).
3. Contractor's Report Card: Based on the BPA Design Milestone Review and Contractor updates the COR will evaluate Contractor's performance and determine scores.

B.8.3 Design Milestone Review Follow-up

After the Design Milestone Review is complete, the Contractor shall:

1. If the Design Milestone Review meeting is Contractor-led, disburse meeting minutes to attendees.
2. Evaluate and incorporate BPA design reviews. Maintain a log of comments received with a description of how the comments are incorporated into the design. Where Contractor disagrees with BPA commenter, prepare a memo stating and justifying Contractor's position.

B.9 BPA Design and Policy Standards

B.9.1 Standards and References

BPA develops and maintains design standards and policies on which designs are based and construction performed. These standards will be made available to the Contractor on ProjectWise. Types of standards maintained by BPA include:

- Design standards and policies.
- Material and equipment specifications.

The Contractor is expected to adhere to all Design Standards in effect at the time of Award. Should BPA design engineers note an error in the design standard, the Contractor shall bring it to the attention of the COR, and make a recommendation to ensure functionality of design.

B.9.2 Use of BPA Standards

1. The current approved standards are located in ProjectWise.
2. Upon commencement of work determine standards applicable to the project. As part of the 50% Milestone Design Deliverable submit a list for BPA review of all of the proposed design standards to be used by the Contractor. If significant design standard issues could effect design timeline or constructability it is the responsibility of the contractor to bring this to BPA's attention at the earliest possible time. Change orders will not be entertained later in the project for not communicating these types of issues. Revise the list as needed to include any additional standards determined as necessary by the COR.
3. The Contractor shall ensure the ability to retrieve and work in the identified libraries as of the date of award.
4. Unless a standards exception is approved in accordance with STD-P-000002 Standard Compliance and Exception policy, design projects using the approved standard in place at the time of award. 5. Mandatory Compliance Standards and Codes
6. BPA designs are also based off of mandatory compliance standards and codes such as governmental regulations, BPA policy, and industry standards and codes. Many of these codes are incorporated into the design standards.

B.9.3 Design Standards Exception

1. Comply with BPA Standard STD-P-000002 Standard Compliance and Exception Policy. If it is found that the Contractor cannot follow the standard due to a) site conditions b) project requirements fall outside the intent or scope of the standard c) alternative requirements the Contractor feels is in the best interest of BPA d) errors or omissions in the standards e) other submit a standards exception.
2. To submit a request for an exception to a standard; submit documentation to the COR or Project Engineer who will process the exception through BPA management. Submit and maintain a log of standard exceptions requested and status.
3. Revise project schedule to allow BPA to assess and make a determination of the exception.
4. Beginning with the 10% Milestone Design Deliverable submit a list of exceptions requested. Maintain this list throughout the design of the project updating it and reporting on exception status and application with each milestone deliverable.

Additional documents regarding BPA Design and Policy Standards can be found here:

pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A&E Contract Administration\C.6 BPA Design and Policy Standards\

B.10 BPA Standards and Work Expectations

B.10.1 Compatibility of Design to Site Conditions

1. Site conditions pertain to the features of the natural environment (e.g., rivers, wetlands, rock, environmental resources, etc.) for green field designs and "as-built" conditions and features for existing sites.
2. As-built and design accuracy from site visits: The purpose of site visits is to ascertain site conditions pertaining to the design and for verification purposes during design:
 - a. Maintain site visit diaries when applicable that include photos, measurements, survey, site assessments (e.g., geotechnical, environmental resource, vegetation, etc.), and analysis of site conditions that determine design parameters.
 - b. Contact the COR where conditions require additional BPA analysis, permitting, or consideration. Verify these conditions are addressed in the final design drawings and specifications.

B.10.2 BPA Working Level Standards

BPA design organizations develop, use, and maintain templates, instructions, software applications, checklists and drawings. These will be made available to the Contractor on ProjectWise upon Award. Adherence to working standards shall supplement design standards. Working Standards can be found in ProjectWise here:
pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A-E Contract Administration\C.7 Methods to be Used\.

B.10.3 DGN and CIT Document Management

BPA's CAD Support Team will run a process to automatically re-attach CIT files to the DGN files for hybrid drawings. This will eliminate the need to check the files back out once they've been imported back into BPA's PW to re-attach the .cit. Further guidance can be found in ProjectWise here: pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A-E Contract Administration\C.7 Methods to be Used\.

B.10.4 Redline Procedure

The Contractor is required to provide redlines and/or as-built drawings. Redline procedures can be found in ProjectWise here: pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A-E Contract Administration\C.7 Methods to be Used\.

Additional documentation regarding methods to be used can be found here:

pw:\pwapp1.bpa.gov:BPA_ProjectWise_Production\Documents\Policy & Specifications Library\A&E Contract Administration\C.7 Methods to be Used\

B.11 Outage Constraints

Outage and work permits constraints will be determined per site. The Contractor shall coordinate and schedule outages and work permits through various BPA District Operations, BPA Project Team (PM, CO, COR), and BPA Outage Coordinator.

B.12 Sequence of Construction

The contractor shall prepare a detailed construction step plan, outlining the sequence of construction activities, for each site. Activities shall be coordinated with the BPA Project Manager, Construction Manager, District Chief Operator, and District Maintenance staff.

PART C – CONSTRUCTION

The contractor shall install all equipment per the design. The Contractor shall install and test all equipment in compliance with Bonneville's published work practices and standards referenced in this document, as well as the ProjectWise Policy & Specifications Library (see section A.10) . The contractor is responsible coordinating a retirement plan with BPA for all equipment retirement from each site. These tasks shall follow the steps provided in the step plan.

C.1 Construction Reports

1. Weekly Status Reports. The Contractor shall prepare weekly progress reports for the work performed during the previous week. The reports will be submitted in a format agreed upon between BPA and the Contractor. The purpose of these reports will be to inform BPA of the status of the individual projects and the overall program and to call attention to any departures from the applicable management and work plans. The technical sections shall provide baseline schedules for performing work and monitoring progress, number and type of rental equipment on site, and shall document the work that has been accomplished at a site. The financial sections shall provide a baseline for planned expenditures for the total project and for each individual Project Authorization, and monitor actual expenditures against the baseline to assess the financial status of the project. The report will be posted and made available to BPA using a web page established by the Contractor. (see specification section 01 31 00)
2. Monthly Summary Progress Report. The Contractor shall submit a monthly summary progress report that consists of the pertinent technical and financial information for the previous monthly performance period. The reports will be submitted in a format agreed upon between BPA and the Contractor. Its focus shall be the Contractor's overall effort on all project authorizations, highlighting key activities and any deviations from planned schedules and budgets.
 - a. Technical. This section shall consist of a concise summary of all technical activities performed under the contract during the reporting period. A summary showing planned and actual start and completion dates for each project, percent complete, and schedule variances shall be provided. Schedule variances shall be highlighted in the narrative with options for correcting problems as appropriate. Specific areas of interest shall include difficulties encountered during the reporting period and corrective actions taken, a statement of activity anticipated during the subsequent reporting period, and a schedule showing accomplishments versus planned activities. The report shall include any changes of key personnel concerned with the project.
 1. Financial. This section shall provide the following information:
 - a. Contract:
 - i. Original Value
 - ii. Approved change order value
 - iii. Current contract value
 - iv. Pending change order value
 - v. Description of upcoming potential change orders
 - b. Invoicing
 - i. Previously invoiced
 - ii. Current invoice
 - iii. Remaining to be invoiced
 - iv. Forecasted expenditure by month through contract end
 - c. Projected monthly invoice amounts and planned date of submittal.
 2. Energization notification
 - a. The contractor shall notify the BPA Project Manager, PSC District Engineer, Design COR, Construction COR, and Project Manager upon the completion of work at each site as a submittal through Procore within 7 calendar days of energization. (Energization is defined as construction is completed and the equipment has been released to operations for service.) b. The information includes:
 - c. Status of construction
 - d. Date of energization
 - e. Summary of work completed
 - f. Status of station drawings
 - g. Status of as-built drawings
 - h. Status of retired equipment
3. Materials and Equipment Reports. The contractor shall provide a list of critical equipment and materials they plan to install before construction begins. The contractor shall provide a list of installed critical equipment and materials after installation that includes equipment description, BPA catalog number, SER number (if applicable), location, quantity, price.

C.2 As-Built Records

Contractor shall maintain at the job site, one set of contract documents with all drawings marked to show any deviations which have been made from the drawings. Contractor will record buried or concealed construction or utility features revealed

during construction. Contractor will record the horizontal and vertical locations of buried utilities that differ from drawings. During work hours, make these as-built drawings available to the COR or other designated BPA employees upon request.

Upon completion of construction, a set of as-built drawings shall be delivered to the construction COR and to District staff. This shall include all as-built markups from construction. The as built drawings shall be reviewed by BPA and then the design contractor shall be responsible for providing fully drafted design drawings within 14 business days of construction completion in order for acceptance of the work at the site.

C.3 Existing Work

The disassembling, disconnecting, cutting, removing, or altering in any way of existing work shall be carried out in such a manner as to prevent injury or damage to any portions of existing work, whether they remain in place, used in new work, or salvaged and stored.

The contractor shall submit an RFI and receive a response to it prior to performing any unforeseen repair or replacement taking place that was not outlined by the task order SOW. Portions of existing work which have been cut, damaged, or altered in any way during construction operations shall be repaired or replaced in kind and in an approved manner to match the existing or adjoining work and unless specified as part of the scope of work issued with an appropriate notice to proceed issued by the Contracting Officer, at no cost to BPA. Existing work and work site shall, at time of completion of operations, be left in as good a condition as existed before the new work started, including access roads.

C.4 Sanitation

The Contractor will provide adequate sanitary conveniences of a type approved by OSHA. Upon completion of the work, the conveniences shall be removed by the Contractor from the work location(s) leaving the location(s) clean and free from nuisances.

C.5 Site Security Requirements

Identification badges, vehicle passes, and gate keys will be furnished without charge, if required. Contractor is responsible for reporting to the CO lost or stolen badges, passes, or keys within 24 hours.

Contractor is responsible for site security such as fencing, guard service, etc. Contractor, at a minimum, must maintain the site and other Contractor controlled areas in such a manner as to minimize the risk of injury or accidents to site personnel or others who may be in the area. Contractor must mark work on or near roadways with lights and barricades complying with OSHA, State, and local regulations, or where such regulations are not applicable, provide adequate lights and barricades to minimize the risk of an accident or injury. Contractor shall fence open excavations which might pose a danger to site personnel or others to prevent accidental entry. Equipment, when not in operation, shall be left in a safe manner so as not to pose a potential threat to personnel on the job sight.

C.6 Testing and Energization Requirements

The Contractor shall provide support to BPA Testing and Energization (T&E) for substation equipment replacements and testing. This may include but is not limited to shorting of CT's, continuity checks, and rewiring when determined necessary during testing. This is after physical equipment installation is complete.

For bidding purposes assume the following levels of wireman time and construction support for T&E during the testing phase of the project:

115kV – 230 kV Breakers

- One week of T&E support, one electrician per site. (Includes outdoor testing with man lift to hang test leads as well as indoor wiring.)

500kV Breakers

- Two weeks of T&E support, one electrician per site. (Includes outdoor testing with man lift to hang test leads as well as indoor wiring.)

MODs All voltage Classes

- One week of T&E support, one electrician per site.

PART D – INSPECTION AND ACCEPTANCE

Refer to construction specifications for these requirements.

PART E – ENVIRONMENTAL AND NATURAL RESOURCE PROTECTION

E.1 General

The requirements stated herein provide requirements or guidance for the general protection of natural resources and the environment during execution the work. The Contractor shall comply with Federal, State, and local environmental laws and regulations including, pertinent Occupational Safety and Health Administration and Department of Transportation requirements, National Environmental Policy Act, Clean Water Act, Clean Air Act, Endangered Species Act, Safe Drinking Water Act, Toxic Substance Control Act, Resource Conservation and Recovery Act as amended by the Hazardous and Solid Waste Act, Comprehensive Environmental Response, and Emergency Planning and Community Right-to-Know Act of 1986. The Contractor shall ensure that activities performed by their personnel, subcontractors, and suppliers are executed as required by these laws and regulations.

E.2 Environmental Protection Requirements

Provide and maintain protection of the natural resources and environment during the life of the project. Plan for and provide environmental protective measures to control pollution that develops during operations. Plan for and provide environmental protective measures required to correct conditions that develop during site work associated with the project.

Environmental Protection: Meet with the CO or BPA Environmental Lead to discuss the proposed environmental protection plan and to develop mutual understanding relative to the details of environmental protection, including measures for protecting natural resources, required reports, and other measures to be taken.

Environmental Conditions: Perform a survey of the project site with the CO or designated representative prior to starting work. Take photographs where possible showing existing environmental conditions in and adjacent to the site.

E.3 Protection of Natural Resources

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine activities to within the limits of the work specified in the authorization.

E.4 Stormwater Pollution Prevention Plan (SWPPP)

The Contractor shall provide and implement a non-regulatory erosion control plan (ECP) or regulatory SWPPP based on the disturbance area of the site. BPA will provide the framework for the non-regulatory ECP. The contractor is responsible for determining if a regulatory SWPPP will be required. The contractor must have the ECP or SWPPP prepared by a Certified Erosion and Sediment Control Lead (CESCL).

Implementation will include the design, installation, inspection, and maintenance of the erosion and sediment control BMPs. The contractor's responsibilities also include maintaining and keeping the non-regulatory ECP or regulatory SWPP Plan upto-date and making it available for inspection by BPA.

E.5 Historical and Archaeological Resources

Carefully preserve and report immediately to the CO or designated representative historical or archaeological items, or human skeletal remains discovered in the course of work. Stop work in the immediate area of the discovery until directed by the CO or designated representative to resume work. Protect monuments, markers, and works of art.

For the purpose of this contract, there is no requirement for archaeological monitoring under this contract.

PART F – SAFETY AND HEALTH

The Contractor shall prepare, implement, and enforce for each site described, a Site Specific Safety Plan (SSSP). The Contractor shall ensure that safety and health provisions are followed by their subcontractors, suppliers, and support personnel. Site work cannot commence until an acceptable SSSP has been submitted, reviewed, and approved by the CO.

In addition to the requirements in the contract terms and conditions and adhere to the BPA Safety Requirements in specification section 01 35 26.

PART G – QUALITY CONTROL

Refer to technical specifications section 01 43 27 for these requirements.

PART H – MATERIAL TAGGING REQUIREMENTS

The contractor will tag some equipment with unique identifiers, called System Equipment Record numbers.

Prior to substantial completion of individual site(s) or at the time of shipment of equipment, the Contractor shall furnish a list of the major electrical equipment to the Contracting Officer (CO) and the Project Manager (PM). The list shall contain the following information for each piece of equipment supplied under this contract:

- Manufacturer Model
- Serial Number
- Price
- Item Description
- Name Plate Data
- Contractor Purchase Order

Upon receipt of this information, BPA will issue SER (Sequential Equipment Record) tags for each piece of equipment. These SER tags will be sent to the Site Superintendent for attachment to each specific piece of equipment. The tags must be affixed using rivets and/or weatherproof epoxy.

System Equipment Record (SER) Tags are required for:

B	Battery Chargers/Station Batteries, (\geq to 48V substation batteries)
C	Cooling Equipment
D	Disconnect Switches
F	Fuse mountings
G	Engine Generators
GC	Grounding Cell
H	Valve, Air Cooled
I	Reactors
ID	Circuit Switcher
L	Capacitors
LD	Load Break Disconnects
M	Filter, High Frequency
MC	Motor Control Center
N	Metal Clad Switch Gear
O	Power Circuit Breakers
OT	Oil Tanks
P	Potential Transformers
R	Communications Equipment
T	Power Transformers
TS	Station Service Transformer
V	Voltage Regulators
W	Bushing-Wall Entrance Bushing

X	DC special equipment installed at Celilo
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PART I – REFERENCES

<u>Number</u>	<u>Description</u>	<u>Filename</u>
1	Fault Duty EPC IFS Construction Specifications dated 02/25/2019	Combined Fault Duty EPC IFS Specs Rev 1.pdf
2	BPA Maintenance and District Maps	BPA Maintenance and District Maps.pdf



Department of Energy

Bonneville Power Administration
P.O. Box 3621
Portland, Oregon 97208-3621

FREEDOM OF INFORMATION ACT/PRIVACY PROGRAM

March 16, 2021

In reply refer to: FOIA #BPA-2020-00675-F

Kip Jackson MS, PE, PMP
Director, Engineering & Project Management
Jim Saavedra, P.E.
Director Natural Disaster Protection Plan
NVEnergy
6226 West Sahara Avenue
P.O. Box 98910, MS 10
Las Vegas, NV 89151-0001
Email: kjackson@nvenergy.com; James.Saavedra@nvenergy.com

Dear Mr. Jackson and Mr. Saavedra,

This communication is the Bonneville Power Administration's (BPA) second and final response to your request for agency records made under the Freedom of Information Act, 5 U.S.C. § 552 (FOIA). Your request was received on April 6, 2020, and formally acknowledged on April 13, 2020. A first partial records response was provided to you on July 29, 2020.

Request

“[The] Engineer, Procure & Construct (EPC) contract [records] BPA holds with PAR Electrical Contractors, Inc.”

Clarifications

Following email exchanges with agency FOIA office personnel, on April 22, 2020, you amended your original request as follows: “NV Energy learned of BPA’s successful solicitation and execution of an EPC contract with PAR Electric. BPA’s EPC contract with PAR electric appears to be an industry best practice based upon information received. NV Energy desires to learn from BPA’s industry best practice and incorporate this information into an RFP for EPC services to execute its Natural Disaster Prevention Plan. At this time NV Energy desires only the following: Bid documents and technical specifications issued with its RFP [and the] EPC contract.” Following further email exchanges with the agency on March 2, 2021, Mr. Saavedra further amended your original request to: “...the Master Statement of Work (SOW) and associated construction specifications.”

First Partial Response

BPA searched for and gathered records responsive to your FOIA request from the agency's Construction Acquisition Team and Transmission Project Management offices. Those gathered records included the responsive file for Contract No. BPA-19-D-83106 ("the contract"). Also collected were the SOW and adjuvant construction specifications. BPA released the contract record and the SOW to you on July 29, 2020.

Second Partial & Final Response

In compliance with the FOIA, BPA is herein releasing the additional agency records responsive to your request. Those remainder construction specification records comprise 280 pages. Those 280 pages accompany this communication, with minor redactions applied to three pages, made under 5 U.S.C. § 552(b)(6) (Exemption 6). A more detailed explanation of the applied exemptions follows.

Explanation of Exemptions

The FOIA generally requires the release of all agency records upon request. However, the FOIA permits or requires withholding certain limited information that falls under one or more of nine statutory exemptions (5 U.S.C. §§ 552(b)(1-9)). Further, section (b) of the FOIA, which contains the FOIA's nine statutory exemptions, also directs agencies to publicly release any reasonably segregable, non-exempt information that is contained in those records.

Exemption 6

Exemption 6 serves to protect Personally Identifiable Information (PII) contained in agency records when no overriding public interest in the information exists. BPA does not find an overriding public interest in a release of the information redacted under Exemption 6—specifically, signatures found on the accompanying construction specification records. This information sheds no light on the executive functions of the agency and BPA finds no overriding public interest in its release. BPA cannot waive these redactions, as the protections afforded by Exemption 6 belong to individuals and not to the agency.

Lastly, as required by 5 U.S.C. § 552(a)(8)(A), information has been withheld only in instances where, (1) disclosure is prohibited by statute, or (2) BPA foresees that disclosure would harm an interest protected by the exemption cited for the record. When full disclosure of a record is not possible, the FOIA statute further requires that BPA take reasonable steps to segregate and release nonexempt information. The agency has determined that in certain instances partial disclosure is possible, and has accordingly segregated the records into exempt and non-exempt portions.

Fees

There are no fees associated with processing your FOIA request.

Certification

Pursuant to 10 C.F.R. § 1004.7(b)(2), I am the individual responsible for the records search and exemption determinations and the records release described above. Your FOIA request BPA-2020-00675-F is now closed with all responsive agency records provided.

Appeal

The adequacy of the search may be appealed within 90 calendar days from your receipt of this letter pursuant to 10 C.F.R. § 1004.8. Appeals should be addressed to:

Director, Office of Hearings and Appeals
HG-1, L'Enfant Plaza
U.S. Department of Energy
1000 Independence Avenue, S.W.
Washington, D.C. 20585-1615

The written appeal, including the envelope, must clearly indicate that a FOIA appeal is being made. You may also submit your appeal by e-mail to OHA.filings@hq.doe.gov, including the phrase "Freedom of Information Appeal" in the subject line. (The Office of Hearings and Appeals prefers to receive appeals by email.) The appeal must contain all the elements required by 10 C.F.R. § 1004.8, including a copy of the determination letter. Thereafter, judicial review will be available to you in the Federal District Court either (1) in the district where you reside, (2) where you have your principal place of business, (3) where DOE's records are situated, or (4) in the District of Columbia.

You may contact BPA's FOIA Public Liaison, Jason Taylor, at 503-230-3537, jetaylor@bpa.gov, or the address on this letter header for any further assistance and to discuss any aspect of your request. Additionally, you may contact the Office of Government Information Services (OGIS) at the National Archives and Records Administration to inquire about the FOIA mediation services they offer. The contact information for OGIS is as follows:

Office of Government Information Services
National Archives and Records Administration
8601 Adelphi Road-OGIS
College Park, Maryland 20740-6001
E-mail: ogis@nara.gov
Phone: 202-741-5770
Toll-free: 1-877-684-6448
Fax: 202-741-5769

Thank you for your noted patience as the agency worked to respond to your FOIA request. Questions about this communication or the status of your FOIA request may be directed to the agency's FOIA Public Liaison, Jason Taylor, at jetaylor@bpa.gov or 503-230-3537. Questions

may also be directed to James King, CorSource Technology Group LLC, at jjking@bpa.gov or 503-230-7621.

Sincerely,

A handwritten signature in black ink, appearing to read "Candice D. Palen".

Candice D. Palen
Freedom of Information/Privacy Act Officer

[Responsive agency records accompany this communication.](#)

SUBSTATION EQUIPMENT REPLACEMENT EPC PROGRAM

BONNEVILLE POWER ADMINISTRATION

*COMBINED CONSTRUCTION SPECIFICATION:
ISSUE FOR SOLICITATION*

FEBRUARY 25, 2019

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SECTION 01 25 13

PRODUCT SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Procedures for substituting products specified or shown in Contract documents.

1.2 QUALITY ASSURANCE

- A. Contracts are based on products and standards established in Contract Documents without consideration of proposed substitutions.
- B. Substitution Proposals: Permitted for specified products except where specified otherwise. Do not substitute products unless substitution has been accepted and approved in writing by COTR.

1.3 PRODUCT OPTIONS

- A. See Section 01 60 00 - Product Requirements for additional requirements.

1.4 PRODUCT SUBSTITUTION PROCEDURES

- A. BPA will consider requests for substitutions only within 15 business days after Notice to Proceed.
- B. Substitutions may be considered at a later date if a product becomes unavailable through no fault of Contractor.
- C. Document each request with complete data, substantiating compliance of proposed substitution with Contract Documents, including:
 - 1. Manufacturer's name and address, product, trade name, model, or catalog number, performance and test data, and reference standards.
 - 2. Itemized point-by-point comparison of proposed substitution with specified product, listing variations in quality, performance, and other pertinent characteristics.
 - 3. Reference to Article and Paragraph numbers in Specification Section.
 - 4. Cost data comparing proposed substitution with specified product and amount of net change to Contract Sum.
 - 5. Changes required in other Work.
 - 6. Certified test data to show compliance with performance characteristics specified.
 - 7. Samples when applicable or requested.
 - 8. Other information as necessary to assist COTR's evaluation.
- D. A substitution request constitutes a representation that Contractor:
 - 1. Has investigated proposed product and determined that it meets or exceeds quality level of specified product.
 - 2. Will provide same warranty for substitution as for specified product.

3. Will coordinate installation and make changes to other Work that may be required for the Work to be complete with no additional cost to BPA.
 4. Waives claims for additional costs or time extension that may subsequently become apparent.
 5. Will coordinate installation of the accepted substitute, making such changes as may be required for the Work to be completed at no additional cost to BPA.
 6. Will reimburse BPA for review or redesign services associated with reapproval by authorities having jurisdiction.
- E. Substitutions will not be considered when they are indicated or implied on Shop Drawings or Product Data submittals without separate written request or when acceptance will require revision to Contract Documents.
- F. The evaluation and acceptance or rejection of proposed substitution shall not be grounds for an increase in contract performance period or contract price.
- G. Substitution Submittal Procedure:
1. Submit Substitution Request for review as an RFI via CAIS. Limit each request to one proposed substitution.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 26 14

REQUESTS FOR INFORMATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Request for Information (RFI) process.

1.2 REQUEST FOR INFORMATION PROCEDURES

- A. Designate two members of Contractor's staff to submit and coordinate formal RFIs throughout Project for all Contractor representatives including subcontractors, manufacturers, and suppliers.
- B. Prior to submitting a formal RFI, contact the appropriate BPA representative to determine if questions can be easily answered based on content of Contract documents.
- C. Submit RFI via CAIS.
 - 1. Limit each RFI to only one question/inquiry.
 - 2. Once entered in CAIS, RFI is automatically logged and delivered electronically to COTR, who will route it to appropriate party. Based on level of review required, RFI may be routed to numerous individuals.
- D. BPA will respond via CAIS within 7 days of submittal.
- E. An RFI response is not a contract modification. If RFI response will result in a change to contract price or schedule, submit Change Order Request in accordance with Section 01 26 63 - Change Orders.

PART 2 - PRODUCTS – Not Used

PART 3 - EXECUTION – Not Used

END OF SECTION

SECTION 01 26 63

CHANGE ORDERS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Change order requests.

1.2 DEFINITIONS

- A. Potential Change Order (PCO): Notification to BPA identifying potential problem or issue discovered by Contractor that requires BPA involvement to remedy issues, findings, or both. Approval of PCO does not constitute commitment or formal approval of change order.
- B. Committed Change Order (CCO): Formal request for change order as defined in Contract. Approval of CCO does not constitute commitment or formal approval of change order until CO has fully executed contract modification or COR has fully executed a field modification in accordance with Contract clauses.

1.3 CHANGE ORDER PROCEDURES

- A. Designate one member of Contractor's staff to submit and coordinate change order requests throughout the project for all Contractor representatives, including subcontractors, manufacturers, and suppliers.
- B. Ensure validity of change order requests prior to submittal to BPA. Submit RFI in accordance with Section 01 26 14 - Requests for Information to verify applicability of proposed change order if unsure.
- C. Submit PCO via CAIS for review and approval by BPA prior to submitting CCO.
 - 1. PCO must identify issue and if there are impacts to cost, schedule, or both.
 - 2. Submittal does not require documentation outlined in CHANGE ORDER DOCUMENTATION Article below.
- D. Submit CCO via CAIS. Include documentation outlined in CHANGE ORDER DOCUMENTATION Article below
- E. BPA will review change order request. If accepted, additional information will be requested for impacts related to material and labor costs, and schedule.
- F. If change order request is approved, a contract modification will be processed by the CO.

1.4 CHANGE ORDER DOCUMENTATION

- A. Change order requests must demonstrate adequate justification that proposed contract modification is fair and reasonable. At a minimum, provide the following:
 - 1. Detailed description of change and why it is necessary.
 - 2. List of drawings, details, and specifications involved in change.

3. Correspondence relevant to change (e.g., field instructions, RFIs, etc.).
4. Detailed cost and pricing for material, labor, and equipment involved in change.
5. Copies of signed time sheets, if applicable.
6. Copies of invoices or quotes on material and any equipment rentals associated with change.
7. Documentation of standby personnel and/or equipment on Daily Reports, verified by COR or COR designated representative.

B. Schedule Impact:

1. If there are project delays and a time extension is required, submit written justification to COR. At a minimum, provide the following:
 - a. Sufficient detail to clearly define impact of each change or delay to current accepted Progress Schedule.
 - b. Written narrative of impact of such delays, and schedule that depicts how changed or delayed work affects other activities in current accepted Progress Schedule.
 - c. Mitigation plan that reduces or eliminates claimed delay. Include specific BPA and Contractor actions, as well as additional costs to Contractor to proceed with mitigation.
2. If time extension is requested, clearly show work items directly impacted by change in updated Progress Schedule.
3. Copy of written justification accepted by BPA will be incorporated into change order. After BPA acceptance of change, incorporate changes into next update of Progress Schedule.
4. Adjustments to approved schedule are subject to BPA approval. When there may be schedule impact, provide BPA with detailed explanation that includes the following:
 - a. Identify areas of schedule affected and duration increases or decreases.
 - b. If critical path or completion date is impacted, explain why impact cannot be avoided.
 - c. Plan to recover lost time.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 31 00

PROJECT MANAGEMENT AND COORDINATION

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Coordination and project conditions.
 - 2. Preconstruction meeting.
 - 3. Preinstallation meetings.
 - 4. Daily job briefings.
 - 5. Weekly project coordination meetings.
 - 6. Special meetings.

1.2 COORDINATION AND PROJECT CONDITIONS

- A. Coordinate scheduling, submittals, and Work to ensure efficient and orderly sequence of installation of interdependent construction elements, with provisions for accommodating any items to be installed later.
- B. Coordination Meetings: In addition to other meetings specified in this Section, or other Sections, hold coordination meetings with personnel and Subcontractors to ensure coordination of Work.
- C. Coordinate Work with BPA crews and allow access by BPA. Notify COTR one week prior to starting construction.
- D. Coordination with Third Parties: Coordination for outages effective third-parties, such as line and equipment outage shall be coordinated with BPA Substation Operations a minimum (60) days in advance.
- E. Coordinate completion and clean-up of Work in preparation for Substantial Completion.
- F. Ensure anyone supervising personnel has a copy of the Project Specification and other Contract Documents on-site.

1.3 MEETINGS – GENERAL

- A. Contractor personnel attending project meetings must have authority to commit Contractor to agreements made during meetings.

1.4 PRECONSTRUCTION MEETING

- A. BPA representatives will schedule and preside over meeting prior to, or on, Notice to Proceed date.
- B. Location: To be announced by CO or COTR.

- C. Required Attendees:
 - 1. BPA Representatives:
 - a. CO, COTR, and other BPA representatives (e.g., Project Manager (PM), Construction Management, Safety personnel, District Maintenance personnel, Operations personnel, etc.).
 - b. Inspection representatives.
 - c. Professional consultants for mechanical, electrical, civil, architectural, and structural designs, if applicable.
 - 2. Contractor Representatives:
 - a. Key Personnel identified in Project proposal.
 - b. Major subcontractors.
 - c. Major suppliers, as required.

- D. Typical Agenda:
 - 1. Team introduction, roles, and responsibilities.
 - a. Key personnel.
 - b. COTR delegation.
 - c. Designation of Contractor personnel with representative authority.
 - d. Communication procedures and emergency contacts.
 - 2. Project overview.
 - a. Scope of work.
 - b. Performance period.
 - c. Work hours.
 - 3. Review of Contract Documents, verification that correct documents are being used.
 - 4. Submittal and review of:
 - a. List of major Subcontractors and suppliers.
 - b. Preliminary Progress Schedule.
 - c. Contractor acquired permits.
 - d. Pre-NTP submittals.
 - e. Aggregate material submittals.
 - 5. Critical Work sequencing.
 - 6. Outages and work permits.
 - 7. Major equipment deliveries and priorities, including materials being furnished by BPA.
 - 8. BPA furnished material.
 - a. Material pickup and return processes.
 - b. Status of material.
 - 9. Status of permits.
 - 10. BPA workplace policies.
 - 11. Safety:
 - a. Accident reporting.
 - b. Site Specific Safety Plan.
 - c. Daily tailboard briefings.
 - 12. Security procedures.
 - 13. Work inspection roles:
 - a. Contractor Quality Control Program.
 - b. BPA quality assurance and quality surveillance.
 - c. Weekly project coordination meetings.
 - 14. CAIS:
 - a. Daily reports.
 - b. Field decisions.
 - c. Requests for Information (RFIs).

- d. Change Order Requests (CORs).
- e. Submittals.
- f. Substitutions.
- g. Applications for Payment.
- h. Contract closeout procedures.
- i. Schedules and reports.
15. Project coordination.
16. Special site conditions and constraints.
17. Environmental requirements:
 - a. Access restrictions.
 - b. Allowed proximity of work.
 - c. Allowed truck turnaround, stockpile, and storage area locations.
 - d. Restrictions on timing of Work activities.
 - e. Inadvertent discovery procedures.
 - f. Marking of sensitive areas.
18. Use of premises/site:
 - a. Office, work, and storage areas.
 - b. BPA requirements.
19. Parking, staging, and lay down requirements.
20. Construction facilities, controls, and construction aids.
 - a. Restroom requirements.
21. Temporary utilities and utility shut-downs.
22. Inspection and testing.
23. Housekeeping procedures.
24. Closeout.
25. Warranty requirements.

E. Minutes:

1. The COTR or COTR designated representative will compile minutes, unless otherwise agreed on, and upload to CAIS within 4 business days after meeting. COTR will email copies to attendees and interested parties that do not have access to CAIS.
2. Minutes compiled by BPA will be the official record minutes.
3. Notify COTR of any clarifications or corrections to minutes within 14 days of date of receipt, or during next scheduled meeting, whichever is sooner.

1.5 PREINSTALLATION MEETINGS

- A. When required in individual Specification Sections or by Contractor quality control program, convene preinstallation meetings before starting Work of specific Sections.
- B. Require attendance of parties directly affecting, or affected by, Work of specific Section.
- C. Notify COTR or COTR designated representative at least 48 hours in advance of meeting.
- D. Prepare agenda and preside over meeting:
 1. Submit meeting agenda items to COTR or COTR designated representative at least 24 hours in advance of project meeting.
 2. Review conditions of installation, preparation, and installation procedures.
 3. Review coordination with related Work.
 4. Discuss safety issues.

- E. Record minutes and distribute copies to participants within 4 business days after meeting, with copies to COTR and parties affected by decisions made.

1.6 INITIAL JOB BRIEFING

- A. Environmental Representative, Safety Representative, and Quality Control Manager to conduct initial job briefing with supervisors and construction personnel, including subcontractors and delivery drivers, to discuss environmental, safety, and quality control requirements.

1.7 DAILY JOB BRIEFING

- A. The superintendent and Environmental Representative to conduct daily job briefings on-site.
- B. Hold daily job briefings before starting work each day to review the following:
 - 1. Work scheduled for day.
 - 2. Required procedures.
 - 3. Safety.
 - 4. Sensitive Areas near planned daily activities, and special actions required to avoid impacting sensitive areas.
 - 5. Incidents or changed work conditions.
 - 6. Brief new on-site personnel, including pit drivers and other delivery drivers, of Sensitive Area restrictions and requirements.
- C. Required Attendees:
 - 1. All on-site construction personnel, including pit or other delivery drivers.
 - 2. New construction personnel or drivers arriving on-site to be briefed on applicable safety and sensitive area requirements prior to starting work.
- D. Record minutes and distribute copies to participants by next business day after meeting. Distribute electronic copies to COTR and parties affected by decisions made at meeting.
 - 1. Minutes to include, at a minimum:
 - a. Date and time of meeting.
 - b. Topics discussed.
 - c. Attendees.

1.8 WEEKLY PROJECT COORDINATION MEETINGS

- A. The COTR or COTR designated representative will conduct weekly conference call meetings to coordinate work, answer questions, and resolve problems.
- B. Required Attendees:
 - 1. BPA Representatives:
 - a. COTR or COTR designated representative.
 - b. Inspection representatives.
 - c. Professional consultants for mechanical, electrical, civil, architectural, and structural designs, if applicable.
 - d. Others as required.
 - 2. Contractor Representatives:
 - a. Project manager and superintendent.
 - b. Major subcontractors, if applicable.

- c. Others as required.
- C. Agenda: Prepared by COTR or COTR designated representative and distributed prior to meeting.
 - 1. Attendees to familiarize themselves with agenda prior to meeting, and be prepared to discuss topics at appropriate time.
 - 2. Typical Agenda:
 - a. Safety.
 - b. Outstanding action items.
 - c. Technical concerns.
 - d. Structural, mechanical, electrical, architectural, and civil issues.
 - e. As-built review.
 - f. Submittals.
 - g. Materials.
 - h. Fabrication.
 - i. Requests for Information (RFIs).
 - j. Change Order Requests (CORs).
 - k. Schedule.
 - l. Projection of Work.
 - m. Procurement.
 - n. Job concerns.
 - o. Environmental issues.
 - p. Land issues.
 - q. New action items.
 - r. Summary.
- D. Minutes:
 - 1. The COTR or COTR designated representative will compile minutes, unless otherwise agreed on, and upload to CAIS within 4 business days after meeting. COTR will email copies to attendees and interested parties that do not have access to CAIS.
 - 2. Minutes compiled by BPA will be the official record minutes.
 - 3. Notify COTR of any clarifications or corrections to minutes within 14 days of date of receipt, or during next scheduled meeting, whichever is sooner.

1.9 SPECIAL MEETINGS

- A. The COTR or Contractor may call special meetings to coordinate work, answer questions, and resolve problems.
- B. A minimum of 48 hours notice to be provided to all required attendees.

PART 2 - PRODUCTS – Not Used

PART 3 - EXECUTION – Not Used

END OF SECTION

SECTION 01 31 25

CONSTRUCTION ADMINISTRATION AND INFORMATION SYSTEM (CAIS)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Description of the Construction Administration and Information System (CAIS)/Procore.
 - 2. Requirements for Contractor use of system.

1.2 SUBMITTALS

- A. CAIS Users: Submit names and contact information of personnel who will be utilizing system.
 - 1. Contact information includes:
 - a. First and last name.
 - b. Company name.
 - c. Company address.
 - d. Job title.
 - 2. The following personnel are required at a minimum:
 - a. Project Manager.
 - b. Site Superintendent.
 - c. Quality Control Manager.
 - d. Quality Control Alternate.
 - 3. Contacts can be changed by notifying COR.
- B. Certifications: Submit copies of self-certifications for all CAIS users prior to BPA-provided training.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. Computer Hardware:
 - 1. IBM-compatible PC with Pentium processor or higher OR iOS-based system
 - 2. 4 GB of RAM, minimum.
 - 3. HD ready (1280 x 720) or higher-resolution monitor.
 - 4. DSL connection to Internet, minimum.
- B. Software:
 - 1. Web Browser, PC:
 - a. Internet Explorer 10, or newer version, OR
 - b. Google Chrome.
 - 2. Web Browser, iOS:
 - a. Apple Safari.
 - b. Google Chrome.
 - 3. Adobe Acrobat Reader DC or newer version.

- a. For viewing only.
4. Microsoft Office 2010, minimum
5. Optional: Smartphone and tablet compatible app.

2.2 DESCRIPTION

- A. The Construction Administration and Information System (CAIS) is a cloud-based system for managing and storing construction and quality management documents.
 1. Access to CAIS will be provided at no cost. Purchase of hardware and software necessary to access CAIS is at Contractor expense.
 2. Each project has a dashboard with project description and status.
 3. Automated forms are used to manage Requests for Information (RFIs), submittals, and Change Order Requests (Potential Change Orders (PCO) and Committed Change Orders (CCO)), including creation of tracking logs.
 4. Daily field reporting from Contractor and BPA inspectors is handled through CAIS.
 5. There are dedicated storage areas for uploading meeting minutes from weekly, monthly, and progress meetings, photographs, and quality management documents.
 6. There are protected areas with limited access for proprietary and business sensitive documents, facilitating payments, and providing contract change pricing information.
- B. Terms of Use:
 1. Use and Protection of Passwords.
 - a. Use CAIS only to conduct work related to the Contract.
 - b. Protect passwords in secure manner to prevent unauthorized use.
 2. Restrictions on Use:
 - a. Make every reasonable effort to avoid uploading computer codes, files, and programs that may interrupt, destroy, or cause damage to CAIS.
 3. Revocation of Use:
 - a. BPA may revoke CAIS privileges at any time based on misuse, misconduct, or termination of Contract.
 - b. Revocation may occur with or without prior notice to user(s).
- C. Downtime and System Availability:
 1. BPA will not pay additional compensation for interruptions of service based on user connectivity issues.
 2. BPA will not be liable for unavailability of system for reasonable periods of time for maintenance, repairs, or replacement.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Access:
 1. Request usernames and temporary passwords for all CAIS users through COR.
 2. At initial login all users must agree to CAIS support and maintenance service level agreement.
 3. All users must log into CAIS and establish personal password prior to training.
 4. Permission-based access to CAIS modules will be determined by project role.
- B. Training:

1. Self-Certification: All users must complete online training and obtain certifications on use of system prior to BPA provided training.
 - a. Required Training Modules by Role:
 - 1) Project Manager:
 - a) Project Manager (Core Tools).
 - b) Project Manager (Project Management).
 - c) Project Manager (Construction Financials).
 - d) Project Manager (Quality and Safety).
 - 2) Superintendent:
 - a) Superintendent.
 - b) Project Manager (Quality and Safety).
 - 3) QC Manager and Alternate QC Manager:
 - a) Superintendent.
 - b) Project Manager (Quality and Safety).
 - 4) Subcontractor (if prime contractor is not performing CAIS functions for subcontractor):
 - a) Subcontractor.
 - 5) Other Users: As directed by COR.
 - b. Certification required prior to construction start date.
2. BPA will provide four hours of training for relevant key personnel. Coordinate date and time of training with COR.
3. Additional training may be requested by Contractor to cover topics or information not included in initial training session, or to include more Contractor personnel.
 - a. Requests will be considered by BPA based on availability of training personnel.
 - b. BPA may use online technologies for training purposes.

3.2 SYSTEM USE

- A. Use CAIS for all project correspondence.
 1. The CO may allow exceptions for extenuating circumstances.
 2. Copies of contract documents (e.g. contracts, field modifications, change orders, release of claims, etc.) may be stored on CAIS for reference. Official documents will be maintained by the CO.
- B. The Contractor may request that additional forms or reports be incorporated into system for use in fulfilling their own requirements. Upon approval, BPA will make reasonable efforts to prepare additional form(s) or report(s) based on Contractor's requirements.
 1. Development of new forms, templates, and reports will be at Contractor expense.
- C. Responsibility Matrix: The matrix below outlines expectations for use and maintenance of project records within CAIS. Matrix provides overview of responsibilities for most common tools within system. Perform work as described in matrix unless approved otherwise in writing by COR.

Tool and Task	Responsible Party
Project Setup	
Initial Project Setup and Configuration	BPA

RFIs	
RFI Creation and Assign to RFI Manager	Contractor
Link to Drawing Markup (Required for Design Questions)	Contractor
RFI Routing, Response and Closing	BPA
Submittals	
Providing Procore Submittal Register Template	BPA
Submittal of completed Submittal Register Template	Contractor
Generation of Submittal Register in Procore	BPA
Completion of Submittals after Register is established in Procore	Contractor
Routing, Response, and Closing	BPA
Submittal of Revision (if needed)	Contractor
Inspections	
Creation of New Inspection Templates (if needed)	BPA
Daily QAR and Weekly QAR Inspection Reports	BPA
Review and Comment on QAR Inspections	Contractor
Observations (Open Items)	
Generation of an observation	All Project Team Members
Review of observations	All Project Team Members
Complete Task	Contractor
Close Observation	BPA
Meetings	
Creating Agenda and Meeting Minutes for Weekly Coordination Meetings	BPA
Review of Weekly Meeting Minutes	Contractor
Additional Meetings (DFOWs, Morning Tailboards, etc.)	Use of Meeting Module at Contractor's Option.
Punchlist	
Create new punchlist items	All Project Team Members
Close punchlist items	BPA
Schedule	
Download Procore Drive and Upload Initial Schedule	Contractor
Updating Schedule Weekly (Monthly if approved by CM)	Contractor
Review and Comment on Schedule	BPA

Incidents	
Uploading incidents and near hits through the incidents tool	Contractor
Attaching standard BPA incident report to the incident	Contractor
Reviewing Incident and attached BPA form	BPA
Daily Log	
Daily Log is only used for recording weather (automatically done by Procore)	No responsible party
Photos	
Creation of Initial Folder Structure	BPA
Ongoing Folder Management	All Project Team Members
Upload Minimum of 2 Photos Per Day	Contractor
Drawings	
Initial IFC Drawing Upload	BPA
Posting Revisions to ProjectWise or Other Approved BPA Directory	A/E
Maintaining Current Drawing Set in Procore (capture all revisions)	Contractor
Maintain Project As-Built in Procore	Contractor
Specifications	
Initial Specification Upload	BPA
Posting Revisions to ProjectWise or Other Approved BPA Directory	A/E
Maintaining Current Specifications in Procore (capture all revisions)	Contractor
Documents	
Initial Folder Setup and Modifications Needed	BPA
Upload New Documents	All Project Team Members
Directory	
Adding people to the directory	BPA
Providing needed contact information to add a person to the directory	Contractor

Commitments and Change Orders	
Setup of the Commitment (Prime Contract) in Procore	BPA
Creation of Potential Change Order for any event that may impact cost or schedule	Contractor
Review and Response to Potential Change Order	BPA
Creation of Commitment Change Order (Pending Approval of Potential Change Order)	BPA
Review and Response to Commitment Change Order	BPA
Contractor's Daily Report	
Submittal of Daily Report to Inspector through Procore Forms Tool	Contractor
Review and Comment on Daily Report to Inspector	BPA

END OF SECTION

SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Preparation, submitting, and updating project, look-ahead, and as-built schedules.

1.2 SUBMITTALS

- A. See Section 01 33 00 - Submittal Procedures for additional requirements.
- B. Schedules: Submit the following:
 - 1. Progress Schedule.
 - a. Submit to COTR with 5 days after commencing Work.
 - 2. Three week "Look-Ahead" Schedule.
 - a. Submit to COTR at weekly project coordination meetings.
 - 3. Recovery Schedule.
 - a. Submit to COTR within 5 calendar days of event that causes schedule to be in jeopardy.
 - 4. As-Built Schedule.
 - a. Submit prior to request for Final Payment.

1.3 SCHEDULES - GENERAL

- A. Format: Gantt chart, to include the following at a minimum:
 - 1. Horizontal lines or bars for work activities plotted on daily time scale in chronological order. Organize chart to identify proposed Work sequence to meet contract milestone and completion dates.
 - 2. Indication of start and finish dates and total time for performance of each work activity, predecessor and successor activities, and activities with start-to-start and finish-to-finish relationships.
 - 3. Additional detail as requested by BPA.

1.4 PROGRESS SCHEDULE

- A. General:
 - 1. Submit a written list of potential problems or constraints related to the implementation of the construction plan to COTR.
 - 2. Consider and include foreseeable delays to activities, such as those caused by normal seasonal weather, in planning and scheduling work.
 - 3. In assigning logical ties between activities, maximize start-to-start and finish-to-finish activity relationships.
 - 4. Contractor imposed completion dates and artificial constraints for events are not permitted.

5. If Contractor desires or intends to complete Work earlier than any required critical or completion date, BPA is not liable for any costs or other damages if Contractor is unable to complete Work before the earlier date.
 - a. The duties and obligations of BPA to Contractor will be consistent with, and applicable only to, the completion of the work on the milestone and completion dates specified in the Contract, unless BPA and Contractor agree otherwise in writing.

B. Content: Include the following activities at a minimum:

1. Critical Procurement Activities:
 - a. Mobilization.
 - b. Shop drawings and other submittals.
 - c. BPA review of submittals.
 - d. Fabrication.
 - e. Delivery of key and long-lead equipment and materials.
2. Contract Administration Activities:
 - a. Award.
 - b. Construction Notice to Proceed.
 - c. Testing and Energization notification.
 - d. Phasing milestones.
 - e. Construction/Erection activities.
 - f. Project Outages.
3. Quality Control Activities:
 - a. Testing activities; hold and witness points in construction.
 - b. Pre-Final inspection.
 - c. Final inspection.
 - d. Substantial completion.
 - e. Notice of completion.
4. Offsite activities, including interfaces with Work of outside contractors, e.g., utilities, power, or any separate contractor.
5. Phased completion dates, if specified.
6. Activities for project closeout.

C. Identify the following in the schedule:

1. Beginning and end of each activity to be readily verifiable, and progress quantifiable.
 - a. Do not preface activity descriptions with "Begin" or "Complete."
2. The critical path.
3. Area of work and specific type of work.
 - a. Boundaries to be easily measurable.
 - b. Work descriptions to be clear and concise.
4. Main performing organization responsible for each activity.
5. Activity duration in work days.

1.5 THREE WEEK LOOK-AHEAD SCHEDULE

- A. Throughout progress of work, prepare and maintain a three week look-ahead schedule.
- B. Show work activities completed during previous week and work scheduled for upcoming three weeks.
 1. Include the following construction activities in schedule:
 - a. Tasks related to mobilization or demobilization.

- b. Installation of temporary or permanent work.
 - c. Testing and inspections of installed work.
 - d. Start-up and testing of equipment.
 - e. Commissioning of building and related systems.
 - f. Scheduling of manufacturer's representatives.
 - g. Pre-Final inspection and Final Acceptance inspection.
 - h. Final clean-up.
 - i. Training.
 - j. Administrative tasks necessary to start, proceed with, accomplish, or finalize the Contract.
 - k. Project Outages.
2. Include Preparatory and Initial Phase activities for each Definable Feature of Work identified in Quality Control Plan.

- C. If look-ahead schedule is not taken from Progress Schedule, include key Progress Schedule milestones.
- D. Base schedule on standard working hours as indicated in the Contract clauses.
- E. Update schedule within 14 days of approval. Subsequent updates to be made weekly.
- F. Present look-ahead schedule at weekly project coordination meetings.

1.6 RECOVERY SCHEDULE

- A. If activities fall behind schedule so any mandatory critical dates or completion dates are in jeopardy, prepare and submit to COTR, at no cost to BPA, a supplementary recovery schedule. Include sufficient detail to explain delay and indicate how activities will be rescheduled to regain compliance with Progress Schedule.
- B. Recovery Schedule must represent Contractor's best judgment of how to reorganize Work to return to the approved Construction Schedule.
- C. Prepare Recovery Schedule to a similar level of detail as Progress Schedule.
- D. Five calendar days prior to end adjustment period identified in Recovery Schedule, meet with COTR at job site to determine whether Contractor has regained compliance with Construction Schedule.
 1. If COTR determines Contractor is still behind schedule, prepare another Recovery Schedule that will take effect during the immediate subsequent pay period.
 2. If COTR determines Contractor is back in compliance with Progress Schedule, use of the Progress Schedule will be resumed.

1.7 FLOAT

- A. Schedule float is not for exclusive use or benefit of either Contractor or BPA.
- B. Neither BPA nor Contractor "owns" the float. The Project or Work "owns" the float.
- C. Liability for delay of Contract or milestone dates rests with party whose action, or inaction, caused delay beyond float that was available at time of delaying action.

- D. See Section 01 26 63 - Change Orders for time extensions.

1.8 APPROVAL

- A. Include narrative with initial Progress Schedule explaining basis for schedule and any constraints.
- B. Indicate completion dates on Progress Schedule that are sooner, but not later, than Project's required completion dates.
- C. BPA Review:
 - 1. COTR will review Progress Schedule.
 - 2. If required, a meeting will be held between BPA and Contractor to resolve conflicts between Contractor's schedule and overall project construction.
 - 3. Revise schedule as requested by BPA to support the project construction and submit a revised schedule to BPA within 5 days for final review.
- D. Approval of the Progress Schedule by BPA is advisory only and does not release Contractor from responsibility for accomplishing work by each contract-required milestone date and completion date.

1.9 UPDATING PROGRESS SCHEDULE

- A. Progress Schedule is intended to accurately reflect status of project construction and projected activities at all times.
 - 1. Update schedule on daily basis.
 - 2. Make task additions or deletions in fashion that does not impact schedule variance tracking.
 - 3. Updating schedule is independent from updating the cost for progress payment purposes.
- B. Format:
 - 1. Include dual line entry in progress schedule for each activity.
 - a. Top Bar: Indicate original, baseline, and planned start/finish requirements.
 - b. Bottom Bar: Indicate actual start and finish of activity.
 - 2. For activities in progress, forecast earliest date and time activity can be completed based upon current project status.
 - 3. Show activity and project float time with dashed lines.

PART 2 - PRODUCTS – Not Used

PART 3 - EXECUTION – Not Used

END OF SECTION

SECTION 01 33 00
PROJECT SUBMITTALS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Required submittals.
2. Designs by a Professional Engineer.
3. Submittal procedures.
4. Submittal approval process.
5. Manufacturer's instructions.
6. Substitutions.
7. Shop drawings.
8. Product data.
9. Samples.
10. Mockups.
11. Erection drawings.
12. Certificates.
13. Manufacturer's field reports.
14. FERC Asset Report

B. Related Sections:

1. Section 01 25 13 - Product Substitution Procedures

1.2 REFERENCES

- A. Appendix P, FERC Asset Report and Asset Report Instructions

1.3 DEFINITIONS (RESERVED)

1.4 SYSTEM DESCRIPTION (RESERVED)

1.5 REQUIRED SUBMITTALS

- A. Required Submittal List: Within 15 days after contract award (or sooner for specific contract requirements), submit to the COTR a list of submittals required by the contract. Items include the following:
1. Compliance plans (e.g., Site Specific Safety Plan, Quality Control Plan, Erosion and Sediment Control Plan, etc.).
 2. Designs (indicate the name of each design firm).
 3. As-Built drawings.
 4. Shop drawings (indicate name of the supplier).
 5. Named products, including the manufacturer name, trade name, and model number of each product.
 6. Products specified only by reference standards, manufacturer, trade name, model or catalog designation, and reference standards.
 7. Test reports, the name of the agency.
 8. Certificates and warranties.
 9. Operation and maintenance manuals (indicate title of each manual).
 10. Samples and mockups, as specified in Steps 4 and 5 above.
 11. FERC Asset Report.

1.6 DESIGNS BY A PROFESSIONAL ENGINEER

- A. The technical specifications may require the Contractor or manufacturer to have a Professional Engineer design part of the work.
1. Submit the engineer's design (e.g., calculations, drawings, and whatever else may be specified) in the same manner as a "Hard copy" submittal procedure.
 2. On at least one set of design documents, include the engineer's original seal with signature. BPA will retain this set.
- B. BPA will accept the Professional Engineer's seal as sufficient evidence that the design meets professional and technical standards. BPA will:
1. Review the design only for general compliance with requirements of the contract.

2. Not review the technical accuracy of design calculations, dimensions, and other engineering details.

C. One set will be returned to the Contractor marked with BPA review comments.

1.7 ELECTRONIC SUBMITTAL PROCEDURES

A. Use the Construction Administration and Information System (CAIS) for electronic submittal entry. Complete the required text fields and attach additional supporting documentation in PDF format.

B. Prepare a separate submittal for each specification section or drawing that requires submitted items.

C. Include a statement that the proposed item conforms to contract requirements and will fit in the physical space shown in the drawings.

D. If more than one item is included in the submittal:

1. Include a list of submitted items by specification paragraph in ascending order.
2. List items specified only on the drawings by drawing number in ascending order.
3. Assemble electronic PDF documents accordingly.

E. Mark each item with its specification paragraph number. For an item specified on the drawings but not in the specifications, mark the following for each item:

1. Drawing number.
2. The numbers or letters used on the drawing to identify or label the item.

F. For specific item submittal requirements, refer to subsequent articles in this section.

G. For items requiring physical submittal, follow the requirements for hard copy submission.

1.8 SAMPLE SUBMITTAL PROCEDURES

A. Submit samples that are large enough to be inspected for quality. BPA will retain samples.

B. Label each sample. On the label, include contract number and title; names of the Contractor and manufacturer; brand, grade, and quality of the material; and applicable specification section and paragraph number.

1.9 SUBMITTAL REVIEW PROCESS

A. For each submittal, allow BPA 15 days (after receipt) for review.

1. Notify the COTR of submittals that require expedited review.

2. BPA will attempt to expedite reviews for items in which delay may be detrimental to successful performance of completed work.
- B. BPA will reject incomplete submittals.
 - C. BPA will not respond to submittals that were not requested.
 - D. Submittals will be returned marked as “Accepted,” “Accepted as Noted,” or “Revise and Resubmit.”
 - E. BPA Acceptance:
 1. BPA performs limited reviews for the purpose of checking contract conformance to stated requirements and design concepts.
 2. BPA acceptance of a specific item does not indicate acceptance of an assembly of which the item is a component.
 3. BPA acceptance does not constitute a waiver of the Contractor compliance requirement and is not an approval.
 - F. Re-submittals:
 1. If a submittal is rejected or changes are required, submit a new or corrected submittal in the same manner as specified for original submittals.
 2. Identify changes that were made since the previous submittal.
 3. Each time a re-submittal is made, allow BPA 15 days (after receipt) for review.
 - G. For each submittal, BPA will review one original and up to one follow-up (if submitted) at no additional cost to the Contractor. BPA has the right to recover any additional costs that may result from the review of subsequent re-submittals.
 - H. BPA has final say on acceptance or denial for all design, material, and equipment submittals.

1.10 MANUFACTURER'S INSTRUCTIONS

- A. Ensure the submitted instructions correspond to the products being installed.
- B. Include on the submittal the section number and title; as well as the article number and title for the work to be done.
- C. Clearly delineate on the instructions the performance requirement of the work to be inspected.

1.11 SUBSTITUTIONS

- A. Comply with the requirements of Section 01 25 13 - Product Substitutions.

1.12 DESIGN AND SHOP DRAWINGS

- A. When required by authorities having jurisdiction, provide approved drawings, specifications, and calculations signed by the professional engineer responsible for the design.
- B. Prepare electronic drawings to scale or diagrammatically sufficient to indicate all pertinent features of the products and the method of fabrication, connection, erection, or assembly.
- C. Prepare borders for printing large drawings in 22-inch by 34-inch sheets, and small drawings in 11-inch by 17-inch sheets.

1.13 NAMED AND SPECIFIED PRODUCT DATA

- A. Identify the project facility (e.g., line name, control house, relay house, etc.), installer, and supplier applicable to the submittal.
- B. Indicate location and size of special utility connection requirements (e.g., venting, plumbing, wiring, etc.).
- C. Product data, catalog cuts, and brochures shall show the type, size ratings, style, color, manufacturer, and catalog number of each item and be complete enough to provide for positive and rapid identification in the field. Clearly mark specific items.
- D. SER Tag Report shall be submitted as soon as tagged equipment is purchased. Contact the COTR to obtain the necessary tags.

1.14 SAMPLES

- A. Submit samples to illustrate functional and aesthetic characteristics of products. Include integral parts and accessories. Coordinate sample submittals for interfacing work.
- B. Submit a full range of the manufacturers' standard colors.
- C. Include identification on each sample, with full project information.
- D. Submit the number of samples specified in individual specification sections. BPA will retain one sample.
- E. Reviewed samples that may be used in the work are indicated in individual specification sections.

1.15 MOCKUPS

- A. Submit mockups to demonstrate workmanship, functional characteristics, and aesthetic characteristics of products. Include integral parts and accessories. Coordinate mockups to demonstrate interfacing work.
- B. Allow adequate time for review prior to scheduled construction.

1.16 CERTIFICATES

- A. Certificates may be recent or previous test results, but must be acceptable to BPA.

1.17 MANUFACTURER'S FIELD REPORTS

- A. Submit report within 5 days of observation of Work as specified.

1.18 FERC ASSET REPORTS

- A. FERC Asset Report shall be maintained throughout the progress of the work and submitted within 15 days of Final Acceptance. The total amount on the bottom of the FERC Asset Report Form shall total the final contract amount. See Appendix P, FERC Asset Report and Instructions.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 35 26

BPA SAFETY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section includes safety requirements for:

1. Energized facilities.
2. Hazards.
3. Traffic.
4. Fire Prevention and Suppression.
5. Aircraft communications.

1.2 REFERENCES

A. American National Standards Institute (ANSI)

1. D6.1 - Manual on Uniform Traffic Control Device

1.3 DEFINITIONS (RESERVED)

1.4 SYSTEM DESCRIPTION (RESERVED)

1.5 SUBMITTALS

A. Submit the following to BPA for approval:

1. Site Specific Safety Plan (SSSP).

B. Allow BPA up to 10 business days to review the SSSP.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 CAUTION

- A. Energized Facilities: The work may be in close proximity to energized high-voltage transmission lines and equipment.
- B. The Contractor shall follow the work procedures provided in the *Contractor Safety and Health Requirements For Prime and Subcontractors*. The full text of the *Contractor Safety and Health Requirements for Prime and Subcontractors* is available at <https://www.bpa.gov/Doing%20Business/purchase/BPI/Contractor-Safety-Health-Requirements.pdf>

3.2 TRAFFIC SAFETY

- A. Prior to the commencement of work in an area, provide temporary safety signs on routes of travel to advise motorists of construction equipment.
- B. For sign placement, comply with the ANSI D6.1 - Manual on Uniform Traffic Control Device.
- C. For states that have their own regulations, comply with state requirements.
- D. Prior to activities taking place near or crossing roads, contact Federal, state, or local officials to identify appropriate timing and other restrictions or safety measures required.

3.3 FIRE PREVENTION AND SUPPRESSION

- A. Unauthorized Fires: Immediately extinguish unauthorized fires.
- B. Fire Season:
 - 1. State fire seasons are placed in effect whenever fire danger conditions reach the level at which there is a danger of fire or when additional control of authorized fire is necessary.
 - 2. When agencies issue reports on conditions and work restrictions, on a daily basis obtain the reports and comply with required closures and equipment restrictions.
 - 3. Communicate fire precaution safety level to BPA and record restrictions on the Daily Field Report.
- C. Other Agencies:
 - 1. Prior to starting work, contact fire agencies that have jurisdiction over the project area..
 - 2. In addition to the specified requirements, comply with the rules and regulations of the fire agencies that have jurisdiction over the project area.
 - 3. Notify the Construction Manager prior to scheduled meetings with an agency. Send copies of correspondence and promptly report to BPA the results of meetings with agencies.
- D. Equipment Requirements:

1. Install spark arrestors, mufflers, and other types of devices to inhibit sparks and safely disperse heat.
2. Equip motorized vehicles, heavy machinery, and crews with a fire kit consisting of the following:
 - a. Hand Shovel: Round point; 26-inch to 28-inch "D" Handle; blade 12 inches long and 10 inches wide.
 - b. Axe: Pulaski (3-3/4 pound head) or double bitted type.
 - c. Fire Extinguisher: Dry chemical, 2.5 or 2.8 pound, 1A-10B: C U/L rating, properly mounted or secured.
 - d. Pail: 5 gallon capacity.

E. Fire Plans:

1. Prepare fire plans for areas crossed by the project.
2. In areas where there is a fire control agency having jurisdiction, coordinate plan approval with the agency. Submit the plan to BPA and obtain approval.
3. In areas where no specific plans are required by an agency, submit to BPA plans for approval that include:
 - a. A description of the lands covered by each plan, such as forest land, brush land, range land, or cultivated land.
 - b. A list of the tools and equipment each crew will have available to suppress fires.
 - c. The smoking policy.
 - d. A list of the fire fighting agencies that will be contacted in case of fire, and the method of contacting each agency.
4. At all times, have a legible copy of the approved fire plan with each crew.

F. Fire Suppression:

1. Immediately notify the fire control agency, property owners, and the Inspector of unauthorized fires on or near BPA rights-of-way.
2. Take necessary steps to suppress a fire until the local fire control agency arrives. At that time, the responsibility for fire suppression transfers to the local agency.

G. Liability:

1. Pay the agency and property owners for costs and damages resulting from fires caused by the Contractor.
2. Providing crews, tools, and equipment to suppress a fire will not reduce the Contractor's liability.

H. Fire Watchers:

1. Where fire danger is high, provide fire watchers in areas where work activities have the potential for starting fires:
 - a. Equipment operation during fire season:
 - 1) During fire season, place watchers at work areas where power-driven equipment has been operating during the day.
 - 2) The duty time of the watchers is from the time equipment is shut down until 8 P.M., or a minimum of three hours after the equipment is shut down.
2. Qualifications:
 - a. Ensure each watcher is physically able, vigilant, and suitably trained to detect and suppress fires, and able to operate bulldozers, fire-fighting equipment, and radios.
3. Areas Covered:
 - a. Ensure each watcher is able to cover the areas assigned to watch within 5 minutes travel time, using available equipment.

3.4 AIRCRAFT COMMUNICATION PROCEDURES

- A. Prior to work that requires aircraft (e.g., helicopter, fixed wing), review the Safety and Health - Line Construction Clause (15-50).
- B. Flight Plan:
 1. Each day prior to using an aircraft, submit a flight plan in writing to the BPA Inspector.
 2. Submit the same plan verbally to the BPA Dispatcher via telephone (Note: The conversation will be recorded).
 3. In the flight plan, provide the following information:
 - a. Contractor name.
 - b. Pilot name and contact telephone number.
 - c. Craft identification number.

- d. Destination (Line name, e.g. Ross-Lexington 230 kV line).
 - e. Route (Line segment, e.g. ahead-on-line of structure 33/9).
 - f. Estimated time of arrival or completion of work.
 - g. Purpose of the flight (pull sock line, support crews, etc.).
 - h. BPA Inspector name and phone number.
4. At the end of flight operations, contact the BPA Dispatcher to close out the plan. Notify the BPA Inspector of closeout communication.
- C. BPA Dispatch:
1. On receipt of the Flight Plan, the BPA Dispatcher will enter the information into the Helicopter Patrol Record.

END OF SECTION

SECTION 01 43 26

TESTING AND INSPECTION SERVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section includes:

1. Testing and inspection services.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. E 543 Standard Specification for Agencies Performing Nondestructive Testing.

1.3 DEFINITIONS (RESERVED)

1.4 SYSTEM DESCRIPTION (RESERVED)

1.5 SUBMITTALS

A. Agency qualifications: Prior to the start of work, submit the following:

1. Agency name, address, and telephone number, and names of full-time registered Engineer and responsible officer.
2. Copy of the report of Agency facilities inspection made by Materials Reference Laboratory of National Bureau of Standards during most the recent inspection, with memorandum of remedies of deficiencies reported by inspection.

1.6 QUALITY ASSURANCE

A. Independent Inspection and Testing Agency (herein referred to as the Agency).

B. Qualifications: An Agency with the experience and capability to conduct testing and inspecting indicated, as documented by ASTM E-543, and that specializes in types of tests and inspections to be performed.

1.7 TESTING AND INSPECTION SERVICES

A. Employ and pay for services of an Agency acceptable to BPA to perform specified testing.

1. Agency staff: Maintain full time registered Engineer on staff to review services.
2. Testing equipment: Calibrated at reasonable intervals with devices of an accuracy traceable to National Bureau of Standards or accepted values of natural physical constants.

- B. Inspection of testing laboratories: Prior to approving a laboratory, BPA may conduct an inspection of the proposed testing laboratory facilities and records. Records subject to inspection include:
1. Equipment inventory.
 2. Equipment calibration dates and procedures.
 3. Library of test procedures.
 4. Laboratory technician's procedures, techniques, and other items pertinent to testing.
 5. Audit and inspection reports by agencies conducting laboratory evaluations and certifications.
 6. Testing and management personnel qualifications.
 7. Test report forms.
 8. Internal quality control procedures.

1.8 TESTING AGENCY RESPONSIBILITIES

- A. The Agency will perform tests, inspections, and other services specified in individual specification sections and as required by BPA.
- B. Testing, inspections, and source quality control may occur on or off the project site.
- C. Participate in Pre-Construction and Progress Meetings.
- D. Furnish signed reports, certifications, and other documentation to the BPA representative via the QC Manager.
- E. Agency test results and reports: After each test, promptly post the report to the Construction Administration and Information System (CAIS). When requested by BPA, provide interpretation of test results. Include the following in each report:
 1. Date issued.
 2. Project title and number.
 3. Name of Agency inspector.
 4. Date and time of sampling or inspection.
 5. Identification of product and specifications section.
 6. Location in project.
 7. Agency test and results:

- a. Type of inspection or test.
 - b. Date of test.
 - c. Cite applicable contract requirements, tests, or analytical procedures used.
 - d. Provide test results. Include a statement that the item tested or analyzed conforms to or fails specified requirements. If the item fails to conform, notify the BPA representative immediately.
 - e. Conspicuously mark the cover sheet for each report in large red letters "CONFORMS" or "DOES NOT CONFORM" to the specifications and contract requirements. Indicate the applicable specification section.
 - f. The authorized testing laboratory representative shall sign and certify the test results and reports.
- F. Test reports and monthly Summary Report of tests: The COTR will furnish the signed reports, certifications, and a monthly summary report of field tests. Attach a copy of the summary report to the last daily Contractor Quality Control Report for each month.
- G. Authority limits on Agency:
1. May not release, revoke, alter, or add to requirements of contract documents.
 2. May not approve or accept any portion of the work.
 3. May not assume responsibilities of the Contractor.
 4. Has no authority to stop the work.

1.9 CONTRACTOR RESPONSIBILITIES

- A. Cooperate with the testing Agency; furnish samples of materials, design mix, equipment, tools, storage, safe access, and assistance by incidental labor as requested.
1. Notify BPA and the Agency 2 business days prior to expected time for operations requiring services.
 2. Make arrangements with the Agency and pay for additional samples and tests required for the Contractor's use.
- B. Employment of the Agency does not relieve Contractor of the obligation to perform work in accordance with requirements of contract documents.
- C. Re-testing and re-inspection:
1. Use the same Agency when re-testing or re-inspection is required due to non-conformance to specified requirements.
 2. Make payment for re-testing or re-inspection.

END OF SECTION

SECTION 01 43 27

QUALITY CONTROL PROGRAM

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Quality Control Program established and managed by Contractor

1.2 DEFINITIONS

- A. Definable Feature of Work (DFOW): A task that is separate and distinct from other tasks, and has separate quality control requirements.
- B. QC Manager: Quality Control Manager. Person responsible for implementation and management of QC Program.
- C. QC Organization: Quality Control Organization.
- D. QC Plan: Quality Control Plan.
- E. QC Program: Quality Control Program. QC Program consists of the following:
 - 1. QC Plan.
 - 2. QC Organization:
 - a. QC Manager.
 - b. Alternate QC Manager.
 - c. Outside organizations (e.g., testing and inspection services, manufacturer's field representatives, etc.).

1.3 QC PLAN REQUIREMENTS

- A. Assemble plan in MS Word or PDF format for electronic submittal.
 - 1. Official documents will be electronic versions submitted to BPA.
 - 2. Store unofficial hardcopy of QC Plan in 3-ring binder for use at site.
 - 3. Number pages sequentially.
- B. Organization (Main Sections):
 - 1. Table of Contents (TOC): List sections of Plan.
 - 2. QC Organization: Chart showing QC organizational structure.
 - 3. Names and Qualifications:
 - a. Include resumes documenting length and types of experience of proposed QC Manager and alternate QC Manager.
 - b. Resumes for each person in QC Organization.
 - 4. Duties, Responsibilities, and Authority of QC Personnel: List duties, responsibilities, and authorities of each person in QC organization.
 - 5. Outside Organizations: List outside organizations (such as architectural and consulting engineering firms) employed by Contractor, and describe services these firms will provide.

6. Submittal Procedures:
 - a. Required Submittal List.
 - b. Submittal Log.
7. Verification Testing, Plan and Log: List of tests required by Contract, in sequence of construction activity.
8. Definable Features of Work (DFOWs):
 - a. List of all DFOWs for Project.
 - b. DFOW Tracking log.
9. Preparatory Phase: Preparatory Phase checklist for each DFOW.
10. Initial Phase: Initial Phase checklist for each DFOW.
11. Follow-Up Phase:
 - a. Follow-up Phase checklist for each DFOW.
 - b. Rework Items List for each DFOW.
12. Inspections: Show milestone inspections for each DFOW, arranged by activity number and construction sequence.

1.4 QUALITY CONTROL MEETINGS

- A. QC Program Kick-Off Meeting: Prior to start of construction, and prior to resuming work after work stoppage in excess of one month, convene kick-off meeting to present full details of QC Program.
 1. Required Attendees:
 - a. On-site superintendent.
 - b. On-site safety representative.
 - c. On-site QC manager.
 - d. BPA representative.
 - e. General foreman.
 - f. Foreman.
 - g. Work crews.
 - h. Subcontractors.
 - i. Other attendees as required by COR.
 2. Review quality control requirements, including:
 - a. Documentation.
 - b. Administration for on-site and off-site work.
 - c. Coordination of Contractor's management, production, and quality control personnel.
- B. Project Coordination Meetings: During Project Coordination Meetings review QC Program and any issues.

1.5 SEQUENCING

- A. Unless otherwise directed by COR, the only work authorized to proceed prior to BPA review, and applicable revision, of QC Plan is mobilization of storage and office trailers, mobilization of temporary utilities, and surveying.

1.6 SCHEDULING

- A. Notify COR designated representative and inspection or testing agencies at least 48 hours prior to beginning work requiring testing or inspecting.

1.7 SUBMITTALS

- A. See Section 01 33 00 - Submittal Procedures for additional requirements.
- B. QC Plan:
 - 1. Submit within three calendar days of Contract award.
 - 2. BPA has 10 business days to review and make comments on QC Plan prior to start of construction.
 - 3. The CO may require changes in QC Plan and operations as necessary, including removal or replacement of personnel at any time, to ensure specified quality of work is achieved.
- C. Upload the following progress submittals to CAIS at the frequency indicated
 - 1. Contractor Production Report: By 10:00 AM next working day after day of work is performed.
 - 2. Contractor Quality Control Report: By 10:00 AM next working day after day of work is performed.
 - 3. Field Test Reports: Within two working days after testing is performed.
 - 4. Summary Report of Tests: At end of each month.
 - 5. Testing Plan and Log: At end of each month.
 - 6. Rework Items List: By last working day of month.
 - 7. Pre-Final Inspection Report: Within two working days after inspection is performed.
 - 8. Final Inspection Report: Within two working days after inspection is performed.

1.8 QC MANAGER QUALIFICATIONS

- A. Minimum of three years' experience as superintendent, inspector, QC Manager, Project Manager, or Construction Manager on similar size and type construction contracts that included major trades involved in this Contract.
- B. Experience in areas of hazard identification and safety compliance.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 QC MANAGER DUTIES

- A. The QC Manager's sole duties related to Contract shall be in role of on-site QC Manager.
 - 1. Alternate QC Manager can perform other duties related to Contract, but when serving as QC Manager, his or her only duties can be those of QC Manager.
 - 2. Alternate QC Manager is only required to act as QC Manager when QC Manager is off-site.
- B. Meetings:
 - 1. Coordinate and facilitate QC Program Kick-Off Meeting, Preparatory phase meetings, and Initial phase meetings.
 - 2. Participate in weekly Project Coordination Meetings. See Section 01 31 00 - Project Management and Coordination.

- C. Implement QC Plan:
1. Product Substitutions: Prepare, submit, and manage product substitution requests. See Section 01 25 13 - Product Substitution Procedures.
 2. As-Built Documents: Ensure as-built Drawings and job site record sets are kept current, including incorporation of Contract modifications, and are available for BPA review at all times. See Section 01 78 39 - Project Record Documents.
 3. Submittals: See Section 01 33 00 - Submittal Procedures.
 - a. Review submittal procedures and documentation.
 - b. Submit Proposed Products List.
 - c. Establish Submittal Log in CAIS.
 - d. Manage Submittal Process:
 - 1) Verify proposed equipment and material is in compliance with Contract documents and can be installed in allocated spaces.
 - 2) Prepare submittal and re-submittal documents.
 - 3) Prepare, certify, and submit certification documents.
 - 4) Submit, track, and coordinate with BPA to maintain Submittal Log.
 - e. Inspect received materials to ensure materials comply with approved submittals.
 4. Requests for Information (RFIs): Review RFI log on weekly basis to stay apprised of clarifications, and be prepared to discuss during weekly progress meeting. See Section 01 26 14 – Requests for Information.
 5. Testing Program: See Section 01 43 26 - Testing and Inspection Services for additional requirements.
 - a. Testing includes:
 - 1) Operational tests.
 - 2) Earthwork Testing and Inspection Plan.
 - b. Ensure:
 - 1) Appropriate control procedures are used when performing tests.
 - 2) Test procedures comply with Contract requirements.
 - 3) Facilities and testing equipment to be used are available and comply with applicable testing standards.
 - 4) Recording forms, test identification control number system, and test documentation requirements, have been correctly prepared.
 - 5) Record results of test taken, both passing and failing, in Contractor Quality Control Report for that date.
 - a) Test results should indicate applicable specification section and paragraph numbers, location of test, and sequential control number identifying test.
 - 6) Copies of test results from commercial testing laboratories are attached to Contractor Production Report and Contractor Quality Control Report.
 - 7) Test results are maintained in Testing Plan and Log.
 - 8) Test reports are uploaded to CAIS.
 6. Implement Three-Phase Quality Control System.
 7. Oversight of Repairs: Oversee repair and restoration of exterior improvements, substrates, and finishes in accordance with applicable requirements.
 - a. Ensure construction exposed for QC activities is protected.
 8. Inspections:
 - a. Pre-Final Inspection:
 - 1) Near completion of work or any incremental work, conduct inspection to identify items that do not conform to Contract requirements.
 - 2) Include any remaining items on “Rework Items List” which were not corrected.
 - 3) Make follow-up inspections to determine whether all deficiencies have been corrected.

- b. Final Inspection:
 - 1) Verify work is substantially complete and ready for final inspection.
 - 2) Ensure all deficient items are corrected prior to notifying BPA representative for final inspection.
- 9. Coordinate with BPA representative.

3.2 THREE-PHASE QUALITY CONTROL SYSTEM

- A. Document phase actions for each phase in Contractor QC Report utilizing appropriate forms.
- B. Preparatory Phase: For each DFOW, QC Manager to facilitate DFOW Meeting attended by superintendent, foreman responsible for DFOW, and BPA on-site representative for reviewing the following:
 - 1. Review Contract Drawings and each paragraph of applicable specification sections.
 - 2. Verify shop drawings and submittals for materials and equipment are submitted and approved.
 - 3. Verify receipt of approved factory test results, when required.
 - 4. Review testing plan. Ensure required quality control testing provisions are made.
 - 5. Examine and ensure required materials, equipment, and sample work conforms to approved shop drawings and submitted data. Ensure materials and equipment are available at job site.
 - 6. Discuss construction methods, construction tolerances, workmanship standards, and approach that will be used to provide quality construction.
 - 7. Review Safety Plan for each DFOW.
 - 8. Plan ahead and identify potential problems for subsequent DFOWs.
 - 9. Upload meeting documentation to CAIS.
- C. Initial Phase:
 - 1. At start of construction of DFOW, QC Manager to meet with superintendent, foreman responsible for DFOW, and BPA on-site representative to:
 - a. Examine work area to ensure required preliminary work is completed.
 - b. Observe initial segment of DFOW to ensure work complies with Contract requirements.
 - 2. For Each DFOW:
 - a. Establish quality of workmanship required.
 - b. Resolve conflicts.
 - c. Ensure specified testing is performed by approved laboratory.
 - d. Check work procedures for compliance with Site Specific Safety Plan and appropriate activity hazard analysis to ensure safety requirements are met.
 - e. Manufacturer's Field Services: Where specified in individual sections, provide factory-authorized service representative to inspect field-assembled components and equipment installation, including service connections. Report results in writing.
 - 3. Repeat initial phase for each new crew to work on-site, or when acceptable levels of specified quality are not being met.
 - 4. Upload meeting documentation to CAIS.
- D. Follow-Up Phase: For ongoing work, perform following activities daily, or more frequently if necessary, until completion of each DFOW.
 - 1. Ensure work is in compliance with Contract requirements.
 - 2. Maintain quality of workmanship.
 - 3. Perform safety inspections.

4. Rework Items: For items not in compliance with Contract requirements, coordinate with foreman for DFWO to make corrective actions.
 - a. Complete and file Rework Items List that includes:
 - 1) Each deficient item.
 - 2) Date item was found.
 - 3) Corrective action necessary.
 - 4) Date corrective action was performed.
 - 5) Name of person verifying work has been satisfactorily completed.
 - b. Maintain Rework Items List and discuss progress at each weekly Project Coordination Meeting.
 - c. Follow-up actions on discrepancies that cannot be corrected at time of discovery are responsibility of QC Manager.
 - d. Inspect work activity while work is in progress until completion of DFWO.
 - e. Record results of all quality control inspections, including deficiencies noted and corrected immediately.
 - f. Post report of results and corrective actions on CAIS. File copy of report at job site trailer and make available to BPA.
- E. Conduct additional Preparatory and Initial Phases on DFWO:
 1. If quality of on-going work is unacceptable.
 2. If there are changes in applicable QC Organization.
 3. If work on DFWO is resumed after substantial period of inactivity, or if other problems develop.
- F. Off-Site Work: Notify BPA representative at least two weeks prior to start of Preparatory and Initial Phases.

END OF SECTION

SECTION 01 51 00

TEMPORARY FACILITIES - SUBSTATION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Temporary Utilities
 - a. Temporary electricity.
 - b. Temporary lighting for construction purposes.
 - c. Temporary heating.
 - d. Temporary cooling.
 - e. Temporary ventilation.
 - f. Temporary water service.
 - g. Temporary sanitary facilities.
2. Temporary Construction Facilities
 - a. Field offices and sheds.
 - b. Vehicular access.
 - c. Progress cleaning and waste removal.
 - d. Fire prevention facilities.
3. Removal of utilities, facilities, and controls.

B. Related Sections:

1. Section 01 66 00 - Product Storage and Handling.

1.2 TEMPORARY ELECTRICITY

- A. Provide and pay for power service required from source as needed for construction operation.
- B. Provide "eartha-kit" extension cords for power sources within the energized substation. BPA will provide pictures and recommended parts list for the "eartha-kit" (See Appendix E, BPA Work Standards and Substation Maintenance Work Standards and Guides).

1.3 TEMPORARY LIGHTING FOR CONSTRUCTION PURPOSES

- A. Provide and maintain lighting for construction operations.
- B. Maintain lighting and provide routine repairs.
- C. Permanent building lighting may be utilized during construction.

1.4 TEMPORARY HEATING

- A. Provide and pay for heating devices and heat as needed to maintain specified conditions for construction operations.
- B. Prior to operation of permanent equipment for temporary heating purposes, verify installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.5 TEMPORARY COOLING

- A. Provide and pay for cooling devices and cooling as needed to maintain specified conditions for construction operations.
- B. Prior to operation of permanent equipment for temporary cooling purposes, verify installation is approved for operation, equipment is lubricated and filters are in place. Provide and pay for operation, maintenance, and regular replacement of filters and worn or consumed parts.

1.6 TEMPORARY VENTILATION

- A. Ventilate enclosed areas to achieve curing of materials, to dissipate humidity, and to prevent accumulation of dust, fumes, vapors, or gases.

1.7 TEMPORARY WATER SERVICE

- A. Provide and pay for suitable quality water service as needed to maintain specified conditions for construction operations.

1.8 TEMPORARY SANITARY FACILITIES

- A. Provide and pay for temporary portable enclosed sanitary facilities to accommodate Contractor and BPA personnel. Service as needed to maintain specified conditions for construction operations. Provide facilities at time of project mobilization.

1.9 TEMPORARY COMMUNICATION SERVICES

- A. Provide internet or equipment to boost cell and internet signals when necessary.

1.10 FIELD OFFICES AND SHEDS

- A. Field Inspector's Office: When required to set up the Field Inspector's office, perform the following:
 - 1. Site Work and Utilities: Within 15 days after the Notice-to-Proceed date (or within a longer time frame established by the COTR):
 - a. Locate a site for the BPA Field trailer that is in the vicinity of the Contractor field offices.
 - b. Obtain the COTR's approval of the site.
 - c. Clear the site in preparation for installation of the BPA Field Trailer. BPA will furnish and install the trailer.
 - d. Provide a sufficient area of 4-inch deep crushed rock base:
 - 1) To go beneath the trailer.
 - 2) For parking at least five BPA vehicles.
 - 3) For walkways to toilet and Contractor field offices.
- B. Storage Areas and Sheds: Size to storage requirements for products of individual sections, allowing for access and orderly provision for maintenance and for inspection of products to requirements of Section 01 66 00 - Product Storage and Handling.
- C. Preparation: Fill and grade sites for temporary structures sloped for drainage away from buildings.

1.11 VEHICULAR ACCESS

- A. Where access is from the unfinished grade of the site directly onto a paved road; provide means of removing mud from vehicle wheels before entering approved roads.
- B. Do not use existing on-site streets and driveways for construction traffic. Tracked vehicles not allowed on paved areas.
- C. Use existing on-site roads for construction traffic.

1.12 PARKING

- A. Use designated areas of existing parking facilities for construction personnel parking. When site space is not available or adequate, provide additional off-site parking at a location approved by BPA. Construct temporary gravel surface parking areas. Do not allow heavy vehicles or construction equipment in parking areas.
- B. Maintenance:
 - 1. Maintain traffic and parking areas in sound condition free of excavated material, construction equipment, products, mud, snow, and ice.

C. Removal, Repair:

1. Remove temporary materials and construction at Substantial Completion.

D. Mud From Site Vehicles: Provide means of removing mud from vehicle wheels before entering approved roads.

1.13 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

B. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing spaces.

C. Broom and vacuum clean interior areas prior to start of surface finishing, and continue cleaning to eliminate dust.

D. Collect and remove waste materials, debris, and rubbish from site and dispose off-site.

1.14 FIRE PREVENTION FACILITIES

A. Portable Fire Extinguishers: National Fire Protection Association (NFPA) 10; 10 pound capacity, 4A-60B; C Underwriter's Laboratories (UL) rating.

1. Provide minimum 1 fire extinguisher in every construction trailer and storage shed.

2. Provide minimum 1 fire extinguisher on roof during roofing operations using heat producing equipment.

3. Additional facilities as required by other sections.

1.15 REMOVAL OF UTILITIES, FACILITIES, AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, prior to Final Application for Payment inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore existing and permanent facilities used during construction to original condition. Restore permanent facilities used during construction to specified condition.

END OF SECTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Products.
 - 2. Product delivery requirements.
 - 3. Product storage and handling requirements.
 - 4. Product options.

1.2 PRODUCTS

- A. At minimum, comply with specified requirements and reference standards.
- B. Specified products define standard of quality, type, function, dimension, appearance, and performance required.
- C. Furnish products of qualified manufacturers that are suitable for intended use.
- D. Furnish products of each type by single manufacturer unless specified otherwise. Confirm that manufacturer's production capacity can provide sufficient product, on time, to meet Project requirements.

1.3 PRODUCT DELIVERY REQUIREMENTS

- A. Transport and handle products according to manufacturer's instructions.
- B. Promptly inspect shipments to ensure that products comply with requirements, quantities are correct, and products are undamaged.
- C. Provide equipment and personnel to handle products. Use methods to prevent soiling or damage.

1.4 PRODUCT STORAGE AND HANDLING REQUIREMENTS

- A. Store and protect products according to manufacturers' instructions.
- B. Store products with seals and labels intact and legible.
- C. Store sensitive products in weathertight, climate-controlled enclosures in an environment suitable to product.
- D. Comply with all storage and temporary grounding requirements for stored equipment.
- E. For exterior storage of fabricated products, place on sloped supports aboveground.

- F. Cover products subject to deterioration with impervious sheet covering. Provide ventilation to prevent condensation and degradation of products.
- G. Store loose granular materials on solid flat surfaces in well-drained areas. Prevent mixing with foreign matter.
- H. Provide equipment and personnel to store products. Use methods to prevent soiling, disfigurement, or damage.
- I. Arrange storage of products to permit access for inspection. Periodically inspect to verify products are undamaged and are maintained in acceptable condition.

1.5 PRODUCT OPTIONS

- A. Products Specified by Reference Standards or by Description Only: Products complying with specified reference standards or description.
- B. Products Specified by Naming One or More Manufacturers: Products of one of named manufacturers and complying with Specifications; no options or substitutions allowed.
- C. Products Specified by Naming One or More Manufacturers with Provision for Substitutions: Submit Request for Substitution for any manufacturer not named, according to Section 01 25 13 - Product Substitution Procedures.

PART 2 - PRODUCTS – Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 63 00

CONTRACTOR PROVIDED BPA SPEC MATERIAL AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Contractor provided materials and equipment designed and fabricated to BPA specifications.
- B. Related Requirements: The Contract Documents will indicate BPA spec materials and equipment to be provided by Contractor, and applicable BPA material/equipment specifications.
 - 1. BPA specification 96-02, "Suspect/Counterfeit Fasteners Requirements", is required to accompany any BPA material or equipment specification.

1.2 DEFINITIONS

- A. BPA Spec Material: Construction material, hardware, or high voltage equipment that is manufactured to BPA material/equipment specifications by a BPA approved vendor.

1.3 SCHEDULING

- A. When ordering BPA spec materials, consider minimum order requirements, lead times, price, and availability to ensure material delivery that meets project schedule.

1.4 SUBMITTALS

- A. Materials Management Plan:
 - 1. Submit a Materials Management Plan for purchasing BPA spec materials identified as "Contractor Furnished" for approval prior to ordering. Include the following information for each material:
 - a. BPA catalog ID number.
 - b. Material description.
 - c. BPA material/equipment specification number.
 - d. Approximate quantity.
 - e. Minimum order quantity.
 - f. Source.
 - g. Vendor.
 - h. Plant Location.
 - i. Ordering Agent Clause (Yes or No).
 - j. Purchase Order (PO) date.
 - k. Lead time.
 - l. Proposed witness testing date(s).
 - m. Notification to BPA of witness test dates.
 - n. Witnessed by.

- B. Test Reports: Submit testing reports required by applicable material/equipment specification for BPA records.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Ensure all manufacturers' instructions are followed for temporary storage of equipment. This includes but is not limited to: maintaining positive pressure in SF6 cylinders (where applicable) and energization of heaters in high voltage equipment control cabinets. Contractor shall ensure that storage conditions do not void any manufacturers' warranty clauses upon receipt of equipment.
- B. See Section 01 66 05 – Material Yards for additional requirements.
- C. Packaging of materials to be in accordance with applicable BPA material/equipment specification.
- D. Shipping coordination is to be between Construction Contractor and material vendor.
- E. Warehousing Materials: When ordering excess quantities of materials for purpose of warehousing for future projects, comply with the following:
 - 1. Maintain a record of materials with applicable test results.
 - 2. Maintain inventory records of quantities warehoused and quantities issued for construction.
 - 3. For each material issue submit to BPA an inventory account and acceptance test results that correlate to materials issued.

PART 2 - PRODUCTS

2.1 BPA SPEC MATERIAL

- A. Material information can be found in BPA's eCatalog on BPA's ProjectWise site in the 'Material Catalog' folder under 'Policy & Specifications Library'.
- B. Material may only be purchased from sources and vendors identified in the eCatalog.
- C. BPA material and equipment specifications can be found on ProjectWise in the 'Transmission Services Standards' folder under 'Policy & Specifications Library'.
- D. BPA material specifications and any associated drawings will indicate the following:
 - 1. Required characteristics and tolerances for final product. These can include:
 - a. Materials.
 - b. Fabrication requirements.
 - c. Dimensions.
 - d. Performance requirements.
 - e. Finish.
 - 2. Required testing and frequency of testing.

2.2 APPLICABLE MATERIAL SPECIFICATIONS

- A. ALUMINUM AND ALUMINUM ALLOY CONDUCTORS (AAC, AAAC, AAC/TW), BPA 56-10.006, APRIL 14, 2017
- B. CABLE, CONTROL, COPPER SHIELDED, BPA 54-09.003, JUNE 19, 2015
- C. ARMOR RODS, REPAIR ARMOR RODS, PREFORMED, BPA 60-03.004, SEPTEMBER 6, 2018
- D. This is not an exclusive list. Depending upon the specific project requirements additional equipment specifications may be required by the design team.
- E. BPA specification 96-02, "Suspect/Counterfeit Fasteners Requirements", is required to accompany any BPA material or equipment specification.

2.3 APPLICABLE EQUIPMENT SPECIFICATIONS

- A. POWER CIRCUIT BREAKERS, 72.5 KV THROUGH 550 KV, BPA 20-04.010, SEPTEMBER 16, 2015
- B. AIR SWITCHES, 15 KV THROUGH 230 KV, OUTDOOR GROUP-OPERATED AND LOAD BREAK AIR SWITCHES, BPA 21-01.007, MARCH 30, 2018
- C. GAPLESS METAL-OXIDE SURGE ARRESTERS, BPA 45-06.003, SEPTEMBER 15, 2017
- D. TRANSFORMER, VOLTAGE, COUPLING-CAPACITOR-TYPE, 69KV – 500KV, BPA 22-20.006, AUGUST 17, 2015
- E. TRANSFORMERS, INSTRUMENT, OUTDOOR-TYPE, BPA 22-07.006 April 3, 2018
- F. INSULATORS, SUSPENSION, DISC, PORCELAIN AND GLASS, BPA 50-02.007, SEPTEMBER 21, 2018
- G. This is not an exclusive list. Depending upon the specific project requirements additional equipment specifications may be required by the design team.
- H. BPA specification 96-02, "Suspect/Counterfeit Fasteners Requirements", is required to accompany any BPA material or equipment specification.

2.4 SOURCE QUALITY CONTROL

- A. Contractor is responsible for compliance with all quality control requirements outlined in BPA material/equipment specifications for materials being procured.
 - 1. These requirements include, but are not limited to, material testing, witnessing of testing, and review and approval of test reports.
- B. Any approvals, inspections, etc. required by BPA, COTR, or Contracting Officer (CO) in the material/equipment specifications are to be performed by Construction Contractor.

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 64 02

BPA FURNISHED MATERIAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
 - 1. Issuance of BPA furnished materials.
 - 2. Replacing BPA furnished materials.
 - 3. Return of BPA furnished materials.
- B. Related Requirements:
 - 1. Bonneville Power Administration, U.S. Department of Energy:
 - a. Appendix D - BPA Material Forms:
 - 1) BPA Form F 4431.02e, Returned Materials Receipt.
 - 2) BPA Form F 6410.41e, Contract Construction Material Request.
 - b. Appendix M - Warehouse Operating Procedures (WOP):
 - 1) WOP 10-02, Contractor Pickup Material Requirements.
 - 2) WOP 12-02, Return Material Scheduling (Contractor).

1.2 SCHEDULING

- A. At preconstruction meeting BPA will identify any materials that will not be available at Notice to Proceed (NTP) and will indicate their expected arrival dates.

1.3 SUBMITTALS

- A. See Section 01 33 00 - Submittal Procedures for additional requirements.
- B. Contract Construction Material Request:
 - 1. Submit BPA form F 6410.41e to Acquisition Analyst (AA) and COTR.
 - 2. Provide time and date stamped photos with requests related to damaged material.
- C. Inventory Documentation:
 - 1. Vendor-Shipped Material: Submit copies of material packing slips, bills of lading, and signed inventory sheets to AA and COTR within 2 business days of material delivery.
 - 2. Other Material: Submit signed inventory sheets to AA and COTR within 2 days of performing inventory.
- D. Material Representative: Submit names of designated Materials Representative and one alternate in writing at preconstruction meeting.
- E. Returned Materials Receipt:
 - 1. Submit BPA form F 4431.02e to AA and COTR a minimum of 2 days prior to desired drop-off date.

1.4 ISSUANCE AND ACCEPTANCE REQUIREMENTS

- A. BPA property or materials will be issued at the following location(s):
 - 1. See Section 01 64 05 - Material Yards for yard requirements.

Material/ Property	Issuance Location
High Voltage Equipment*	BPA Ross Complex/Direct Ship to Site
Relay or Communication Racks**	BPA Ross Complex/Third-Party Vendor
Control Cables***	BPA Ross Complex
Bus and/or Bus Connection Assemblies***	BPA Ross Complex
Additional Miscenallenous Materials***	BPA Ross Complex

* High Voltage Equipment is currently listed as a combination of both contractor-furnished and government-furnished material. Project Management (based on lead-times and schedules) will direct any changes to these requirements. See site-specific statement of work documentation for a breakdown matrix of engineering, procurement, and construction resources required for this program.

** See site specific statement of work for relay and/or communication rack requirements. BPA project manager will inform contractor of rack sourcing decision upon 50% material review meeting.

*** *Other material is currently assumed to be contractor furnished until a collaborative material review can be completed with BPA, contracted design team, and contracted construction team. This is to take place at the 50% design milestone.

- B. :
 - 1. Inventory of BPA-furnished material staged at BPA provided material yard or delivered to Contractor provided material yard is required at start of Project. Inventory must be contractor performed. Report any discrpenecies immediately to the CO, COR, and AA.
 - a. Independent Inventory:
 - 1) BPA Provided Material Yard: Perform inventory within 3 business days of mobilizing into yard.
 - 2) Contractor Provided Material Yard: Perform inventory within 3 business days of receiving material at yard.
 - 3) Notify AA of any material damage, missing material, excess material, or discrepancies on inventory documents within 1 business day of completing inventory.
 - 2. Following joint or independent inventory sign inventory sheets.
 - a. Signing inventory sheets constitutes approval of inventory and inspection, acceptance of materials, and acknowledgment of responsibility for care and accountability of materials.
- C. Ross Warehouse Pick Up: Comply with the following requirements as well as those outlined in Warehouse Operating Procedure 10-02.
 - 1. Pick up all available BPA-furnished materials from Ross Warehouse within 2 weeks of NTP.
 - 2. Provide appropriate transportation, licensing, and permits for materials being transported.

3. If trailers are required for material pickup, coordinate with AA to drop off trailers for preloading by BPA.
4. Contractor accepts material when loaded onto Contractor carrier unless attending BPA Material Handler is notified of any apparent damage before Contractor signs Bill of Lading and inventory sheets.
5. Upon signing Bill of Lading and inventory sheets, Contractor acknowledges material is in good, functioning order.
6. Conduct inventory at Project site and report discrepancies to AA within 3 business days of receipt.
7. Damaged Material Claims: The COTR will determine if BPA or Contractor caused damage.

D. Vendor Shipped Materials:

1. BPA will notify Contractor when BPA-furnished materials will be direct-shipped from vendor after Notice to Proceed.
2. Off-load and receive materials when they arrive at designated location.
3. Perform material inventory within 1 business day of receiving material at yard or Project site.
4. Following inventory sign inventory sheets.
 - a. Signing inventory sheets constitutes approval of inventory and inspection, acceptance of materials, and acknowledgment of responsibility for care and accountability of materials.
5. Contact BPA Traffic Management Office, (360) 418-2472, within 1 day of arrival of BPA-furnished material that was delivered without prior notification from BPA.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Ensure all manufacturers' instructions are followed for temporary storage of equipment. This includes but is not limited to: maintaining positive pressure in SF6 cylinders (where applicable) and energization of heaters in high voltage equipment control cabinets. Contractor shall ensure that storage conditions do not void any manufacturers' warranty clauses upon receipt of equipment.
- B. See Section 01 66 05 – Material Yards for additional requirements.
- C. Packaging of materials to be in accordance with applicable BPA material/equipment specification.

1.6 REPLACEMENT OF BPA FURNISHED MATERIAL

- A. The Materials Representative and Alternate are the only persons allowed to submit requests for issuance of BPA furnished material.
- B. Defective Tower Steel Materials:
 1. When missing or damaged steel for lattice structures is discovered at time of unbundling, prepare BPA Form F 6410.41e, Contract Construction Material Request, and submit to AA and COTR.
 - a. When COTR determines that Contractor properly reported and did not cause defect, material will be replaced at BPA or vendor cost.
 - b. When COTR determines that Contractor improperly reported and caused defect, BPA will issue replacement material at Contractor's expense.

- C. Damaged, Lost, Stolen, or Destroyed Materials:
 - 1. When damaged, lost, stolen, or destroyed material is discovered, prepare BPA Form F 6410.41e, Contract Construction Material Request, and submit to AA and COTR.
 - a. Identify reason for replacement, and cause of problem, if known.
 - 2. The COTR will determine if replacement is required.
 - 3. When replacement is required, BPA will furnish replacement items when they become available.
 - 4. If COTR determines replacement was required due to fault of Contractor, BPA will charge Contractor for cost of replacement item, plus shipping, handling, overhead, markup percentage, and other applicable costs.
 - a. Costs will be documented on a Waste Loss and Damage Report submitted by AA as part of Project closeout.

1.7 RETURN OF BPA FURNISHED MATERIAL

- A. The Materials Representative and Alternate are the only persons allowed to submit requests for return of BPA furnished material.
- B. Comply with requirements of this Article and those outlined in Warehouse Operating Procedure 12-02.
- C. Return new material in original issued condition, and leftover material determined to be reusable, to BPA.
 - 1. Complete BPA Form F 4431.02e, Returned Materials Receipt.
 - 2. Submit form to AA and COTR a minimum of 2 business days prior to desired drop-off date.
 - a. AA may provide Contractor with additional instruction on what should and should not be returned to BPA.
 - b. Coordinate with AA following submittal to schedule drop-off appointment.
- D. Packaging: To prevent being charged for damage of returned materials, comply with the following requirements:
 - 1. Clearly label each item with the applicable BPA catalog ID and Work Order or Material Request Number.
 - 2. Use only pallet boxes for storage of BPA-furnished materials.
 - 3. Box, crate, or package returned materials in same manner as issued.
 - 4. Do not mix materials in returned containers unless approved by AA.
 - a. If mixing of material is allowed, all items to be clearly marked and separated.
 - 5. Clearly mark each box, container, and pallet with contents and the quantity of items contained.
 - 6. Package materials so contents are protected during shipping and handling.
 - 7. Specific Packaging Requirements:
 - a. Assemblies:
 - 1) If delivered to the project assembled, return assembled.
 - 2) If delivered to the project un-assembled and assembly took place in field in anticipation of use, return disassembled.
 - 3) Return fiber optic cable dead end assemblies complete with all parts attached.
 - b. Armor Rod:
 - 1) Remove weather-worn packaging.
 - 2) Bundles to be in original issue quantities.
 - 3) Unassembled.

- c. Bolts and Fasteners:
 - 1) Return all step bolts, fill washers, and anything made of stainless steel.
 - 2) Ensure items match original unit of issue:
 - a) If delivered to project in box or pail quantities, return full box or pail quantities.
- d. Empty Reels:
 - 1) Strip packing material from reels.
 - 2) Place returned reels in a neat and orderly manner so reel numbers can be checked without moving reel.
- e. Partial Reels:
 - 1) Fiber Optic Cable: See Section 33 82 23 - Optical Fiber Cabling and Splicing for Substations.
 - 2) Strain Bus and Overhead Ground Wire: See Section 33 72 26.26 - Substation Strain Bus and Overhead Ground Wire.
 - 3) Place returned reels in a neat and orderly manner so reel numbers can be checked without moving reel.
- f. Insulators:
 - 1) Return in original or similar packaging.
 - 2) Return in same quantity per crate as issued. If less than crate quantity remains after crating all units appropriately, clearly mark partial crates with included quantity.
 - 3) Do not mix insulator types in same return container.
- g. Aluminum Bus:
 - 1) Return all unused bus leftover from Project, regardless of length.
 - 2) Clearly mark or tag all pre-stressed and damaged bus pieces prior to return.
- h. Tower Bolts:
 - 1) Only unopened original pails are allowed to be returned. Any variances must be approved by the AA.
- 8. Securely pack major equipment assemblies for shipment.
- 9. BPA will inspect returned materials for completeness, damage, and quantity prior to acceptance of material.
 - a. Received quantities and disposition will be recorded on BPA Form F 4431.02e, Returned Materials Receipt.

1.8 WARRANTY

- A. BPA will arrange for manufacturer warranties, inspections, and product service.

PART 2 - PRODUCTS – Not Used

PART 3 - EXECUTION - Not Used

END OF SECTION

SECTION 01 66 05

MATERIAL YARDS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes: Establishment and use of material yards.

1.2 SUBMITTALS

- A. See Section 01 33 00 - Submittal Procedures for additional requirements.
- B. Product Data: Submit product data for absorbent matting when material is provided by Contractor.
- C. Contractor-Provided Material Yards:
 - 1. Submit location, layout, and design of proposed yard for approval.
 - 2. Submit Additional Work Area request documentation as required by Section 01 51 00 - Temporary Facilities and Controls.
 - 3. For material yards that require site civil work or surfacing, and will remain in place for more than one construction season design and submit engineered stormwater treatment and flow control plan for approval.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Absorbent Matting:
 - 1. Products:
 - a. ADsorb-It Filtration Fabric, Product #AF11-5, by Eco-Tec, Inc.
 - b. X-Text-B12 by Xextex Corporation.
 - c. Substitutions: See Section 01 25 13 - Product Substitution Procedures.

PART 3 - EXECUTION

3.1 MATERIAL YARD – GENERAL

- A. Contractor is responsible for establishing a material yard.
- B. Use material yard for the following:
 - 1. Receiving and storing BPA and Contractor furnished materials.
 - 2. Contractor show-up yard.
 - 3. Unbundling and minor re-fabricating of material.
- C. Upon receiving Notice to Proceed (NTP) notify Acquisition Analyst of anticipated date of mobilization into material yard.

3.2 MATERIAL YARD – BPA PROVIDED

- A. After issuance of Notice to Proceed (NTP), upon inventory and acceptance of BPA Furnished Materials, yard will be turned over to Contractor to operate and maintain.
- B. BPA will coordinate delivery of all BPA furnished materials to the primary material yard.
- C. Contractor is responsible for managing movement of material from primary to secondary material yards with no cost impact or schedule delays.
- D. Repair or stabilize rutted, ponding and degraded material yard surface as needed.
- E. If establishment of an additional material yard is required for completion of the Work, approval of additional location and design is required as indicated in MATERIAL YARD – CONTRACTOR PROVIDED Article below.

3.3 MATERIAL YARD – CONTRACTOR PROVIDED

- A. Prior to delivery of material, acquire and develop a material yard to receive materials.
 - 1. Submit proposed material yard location, or expansion of a material yard, for approval as an additional work area in accordance with Section 01 51 00 - Temporary Facilities and Controls.
 - a. Ensure each yard is of sufficient size to safely receive, store, sort, handle, and transport materials.
 - b. Locate material yards to comply with regulatory setback distances from property boundaries. Locate wood pole yards away from drainages, wetlands, and surface water to minimize potential for wood preservatives to contaminate surface waters and wetlands.
- B. Design of Contractor provided material yards to be reviewed and approved by BPA prior to yard construction.
 - 1. If new material yard will be constructed, or an existing yard modified or expanded, which will remain in place for more than one construction season, prepare and submit for approval a Stormwater Technical Information Report (TIR) which outlines the engineered stormwater treatment and flow control plan.
 - a. Design Criteria:
 - 1) Comply with the following:
 - a) Energy Independence and Security Act (EISA) Section 438.
 - b) Western Washington Stormwater Manual.
 - c) Eastern Washington Stormwater Manual.
 - 2) Treat all stormwater runoff prior to discharging offsite. Treatment method(s) must take into account potential contaminants that may originate from treated area during life of material yard.
 - 3) Design material yard to minimize volume of stormwater flowing onto yard and implement stormwater flow control best management practices.
 - 4) Slope material yard to drainage and treatment structures.
 - a) Preferred Design: Yard slope of 1 percent to provide sheet flow of stormwater into a vegetated filter strip for treatment and flow control.
 - 5) Include measures to protect installed or constructed stormwater features from damage by vehicles or equipment.

- C. Prior to establishing a material yard, obtain applicable permits and submit copies of permits to COTR.
- D. If establishment of an additional material yard is required for completion of the Work, approval of additional location and design is required as for a new yard as indicated above.
- E. Repair or stabilize rutted, ponding and degraded yard surface as needed.

3.4 FIELD QUALITY CONTROL

- A. Wood Pole Yards:
 - 1. Contractor is responsible for all maintenance up to project closeout to minimize ground contamination.
 - 2. Inspect wood pole yards a minimum of once per week to ensure no pollutants are being discharged.
 - 3. Inspect absorbent matting a minimum of once a week to ensure saturation has not been exceeded and that it is structurally intact.
 - 4. If discharge is discovered, see spill prevention and response procedure requirements in Section 01 57 19 - Temporary Environmental Controls or PAC Documentation.
- B. Prior to Project Closeout:
 - 1. Inspect material yard for discharges of petroleum products and other contaminants. If discharge is discovered, see spill prevention and response procedure requirements in Section 01 57 19 - Temporary Environmental Controls or PAC Documentation.
 - 2. Where absorbent mats were used:
 - a. Evaluate absorbent mats to determine if they can be reused or need to be disposed of due to deterioration or saturation with Penta preservative.
 - b. Dispose of mats as indicated WASTE MANAGEMENT Article below.
 - c. Following removal of absorbent matting, inspect wet pole bay area to identify and document any contamination requiring clean up prior to lease termination.
 - 3. Arrange for site inspection with BPA Environmental Lead after any contamination is cleaned up. Perform all inspections prior to Project closeout in event cleanup is required.

3.5 CLEANING

- A. At completion of Project, clean up yard and dispose of waste in approved off-site location in accordance with applicable local, state, and federal requirements.
- B. At completion of Project, remove any fencing and restore site in accordance with BPA approved plan for the work area.

3.6 WASTE MANAGEMENT

- A. Wood products that have been appropriately treated with industry standard wood preservatives are classified as non-hazardous waste, and require special handling.
 - 1. To the greatest extent possible, capture all treated wood byproducts by placing containment tarps or hoppers under cutting areas prior to cutting.
 - 2. Carefully collect chips, cuttings or wood particles and dispose of at a BPA-approved "Subtitle D" lined landfill with a leachate control system permitted to accept materials contaminated with wood preservatives.

- a. Contact COTR and BPA Environmental Representative for list of approved facilities.
- B. Contaminated mats, soil, and materials discovered during removal of material yards must be cleaned up and disposed of at a BPA-approved “Subtitle D” lined landfill with a leachate control system permitted to accept materials contaminated with wood preservatives.
 1. Contact COTR and BPA Environmental Representative for list of approved disposal facilities.
- C. At Contractor’s expense, remove all contaminated soils and materials from project area within 1 month of project closeout.

END OF SECTION

SECTION 01 71 23

FIELD ENGINEERING - SUBSTATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Construction surveying for substations.

B. Related Sections:

1. Section 01 31 19 - Project Meetings.
2. Section 01 78 39 - Project Records Documents

1.2 REFERENCES (RESERVED)

1.3 DEFINITIONS (RESERVED)

1.4 SYSTEM DESCRIPTION (RESERVED)

1.5 SUBMITTALS

A. Informational Submittals: Submit following packaged separately from other submittals:

1. Prior to start of survey work submit name, address, and telephone number of Surveyor.
2. On request, documentation verifying accuracy of survey work.
3. On request, documentation verifying Surveyor's license information.

B. Certifications: On company letterhead, letter certifying initial monuments and datum have been check and confirmed as correct.

1. Closeout Submittals: Project Record Documents: As Built: Drawings showing actual depths and locations of features that differ from design drawings.
2. Copy of final record of survey for BPA's records.
3. Survey Quality Assurance form (attached).

1.6 QUALITY ASSURANCE

A. Qualifications

1. Land Surveyor: Registered to perform surveying in State where project is located, acceptable to BPA.

B. Pre-Installation Meetings:

1. Section 01 31 19 - Project Meetings: Pre-installation meeting.
2. Convene minimum one week prior to commencing work of this section.

1.7 DELIVERY, STORAGE, AND HANDLING (RESERVED)

1.8 PROJECT/SITE CONDITIONS (RESERVED)

1.9 SEQUENCING

- A. Prior to first pour submit Survey Quality Assurance Form to Inspector for review.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 SURVEY REFERENCE POINTS

- A. Control datum is indicated on Drawings. Verify by comparing to BPA Construction Baseline computation sheet.
 1. Survey construction baseline monumentation:
 - a. Verify locations prior to starting Work.
 - b. Promptly notify BPA inspector of discovered discrepancies.
 - c. Control datum for survey is shown on drawings and BPA construction baseline computation sheet.
- B. Control Points: Prior to starting work, protect construction baseline monumentation points; preserve permanent reference points during construction.
 1. Do not change or relocate BPA construction baseline monumentation.

2. Promptly report to COTR the loss or destruction of any property corner or BPA construction baseline monumentation.
 3. When permanent monuments on substation baselines have been disturbed, notify COTR to have BPA survey crews re-establish the monuments.
- C. Existing Utilities and Equipment: Existence and location of indicated existing underground utilities and construction are not guaranteed.
1. Before beginning site work:
 - a. Investigate and verify existence, location, and elevations of underground utilities and other construction.
 - b. Verify location and invert elevations at points of connection for sanitary sewer, storm sewer, and water-service piping.
 - 1) Furnish information necessary to adjust, move, or relocate existing utility structures, utility poles, lines, services, or other appurtenances located in or affected by construction.
 - 2) Coordinate with local, state and federal authorities having jurisdiction.

3.2 SURVEY REQUIREMENTS

- A. Establishing facility locations, layout on site and elevations is responsibility of Contractor. Each sub-contractor will be responsible for layout, lines, and elevation of their Work based on the published substation construction monuments and design datum.
- B. Prior to commencement of Work, verify and establish elevations of existing facilities to assure that new Work will be in alignment, except where specifically detailed or indicated otherwise.
- C. Basis of substation work: Work from Construction baseline control points as shown on BPA Substation Benchmark Report (attached).
 1. Establish benchmarks and markers to set lines and levels for construction and elsewhere as needed to locate each element of Project properly.
 2. Verify set-backs and easements; confirm accuracy of drawing dimensions and elevations.
 3. Calculate, layout and measure required dimensions within indicated or recognized tolerances.
 4. Do not scale Drawings to determine dimensions.
 5. Advise and explain survey information to entities engaged in construction activities in regard to stakes, marked lines and levels provided for their use.
- D. Establish elevations, lines, and levels. Locate, lay out, and verify layouts by instrumentation and accepted surveying techniques for:

1. Site improvements including pavements; stakes for grading, fill and topsoil placement; and utility locations, slopes, and invert elevations;
 2. Grid or axis for structures.
 3. Facility foundations, column locations, and elevations.
 4. Checking every major element for line, level, and plumb.
- E. Survey Quality Assurance Form: Maintain and make available for references, surveyor's log of control and other survey work as Work progresses.
1. Record deviations from required lines and levels, and inform BPA of deviations exceeding indicated or recognized tolerances as Work progresses.
 2. Record deviations on Project Record Drawings that are accepted and not corrected.
 3. Record deviations on the Survey Quality Assurance form and submit to the COTR.

3.3 TOLERANCES

A. Degree of Accuracy - Substations:

1. Locate points for cross sections to the nearest 0.1 (1/10th) of a foot horizontally and vertically.
2. Close level loops within 0.05 (5/100th) of a foot times the square root of the length of the circuit in miles.
3. Set final grade stakes (blue tops) for concrete to 0.01 (1/100th) of a foot.
4. Alignment of tangents and curves; within 0.1 (1/10th) of a foot.
5. Set points for structures to the nearest 0.01 (1/100th) of a foot, except where operational function of special features or installations of metalwork and equipment require closer tolerances.

B. Degree of Accuracy - Entrance Roads:

1. On land in rural areas, residential, or commercial areas; establish the centerline of the access road with a horizontal positional closure of 1:10,000 or better.

END OF SECTION



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STANDARDS_GROUP



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SECTION 01 73 10

BOLT TORQUE REQUIREMENTS FOR SUBSTATIONS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Installation requirements and torque values for bolts, nuts and washer assemblies used in BPA substations.

B. Related Sections:

1. Section 01 11 04 – Summary of Work – Substations.
2. Section 01 32 16 – Project Schedule.
3. Section 01 33 00 – Submittal Procedures.
4. Section 01 43 27 – Quality Control Program.
5. Section 01 66 00 – Product Storage and Handling Requirements.
6. Section 01 77 00 – Closeout Procedures.

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM)

1. A325 Standard Specification for High-Strength Bolts for Structural Steel Joints
2. A354 Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners
3. A490 Standard Specification for High-Strength Steel Bolts, Classes 10.9 and 10.9.3, for Structural Steel Joints

B. The American Society of Mechanical Engineers

1. ASME B107.300-2010 Torque Instruments

1.3 DEFINITIONS (RESERVED)

1.4 SYSTEM DESCRIPTION

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Ensure shop drawings are stamped by a professional engineer.
- C. Provide copy of manufacturer installation recommendations along with shop drawings and product data.
- D. Test Reports

1.6 QUALITY ASSURANCE

- A. Qualifications
 - 1. Manufacturer: Company specializing in manufacturing products specified in this section with minimum 3 years of documented experience.
 - 2. Installer: Company specializing in performing work of this section with minimum 3 years of experience, approved by manufacturer.
 - 3. Testing: Testing Laboratory with 5 years of documented experience specializing in testing materials and products specified in this Section.

1.7 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 66 00 - Product Storage and Handling Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. Delivery Address:

1.8 PROJECT/SITE CONDITIONS

- A. Environmental Requirements
 - 1. Section 01 66 00 - Product Storage and Handling Requirements: Environmental conditions affecting products on site.
- B. Existing Conditions (Reserved)

1.9 SEQUENCING

- A. Section 01 11 04 – Summary of Work - Substations: Requirements for sequencing.

1.10 SCHEDULING

- A. Section 01 32 16 - Project Schedule: Requirements for scheduling.

1.11 WARRANTY

- A. Section 01 77 00 - Closeout Procedures: Requirements for warranties.

1.12 SYSTEM STARTUP (RESERVED)

1.13 OWNER'S INSTRUCTIONS (RESERVED)

1.14 COMMISSIONING (RESERVED)

1.15 MAINTENANCE

A. Extra Materials

1. Section 01 77 00 - Closeout Procedures: Requirements for extra materials.
2. Furnish:
 - a. Touch-up paint.
 - b. Replacement nuts, bolts, brackets.

PART 2 PRODUCTS

2.1 NOT USED

PART 3 EXECUTION

3.1 INSTALLATION

- A. Use BPA-approved bolt torque tools.
- B. Install anchorage nuts facing up or out, whenever possible.
- C. Ensure at least 2 bolt threads, minimum, extend above the nut to prevent water accumulation inside the nut on top of the bolt.
- D. Inspect the head marking of all bolts:
 1. Replace aluminum and bronze bolts and nuts with stainless steel equivalents.
 - a. Use torque values listed for aluminum or bronze bolts, for steel cap screws threaded into aluminum or bronze.

E. Structures and Lattice Steel Towers:

1. Tighten bolts and nuts used for structures and lattice steel according to the following torques:

ASTM A325 STRUCTURAL BOLT TORQUE RANGES	
Bolt Diameter (Inches)	Torque (Ft-lbs)
1/2"	45 - 70
5/8"	90 - 140
3/4"	160 - 250
7/8"	260 - 410
1"	390 - 610
1 - 1/8"	480 - 760
1 - 1/4"	670 - 1070

F. Terminal Jumpers, Suspension Clamps and Tap Fittings

1. Tighten bolts and nuts used for Terminal Jumpers, Suspension Clamps and Tap Fittings according to the following torques:

Standard Bolt Diameter (Inches)	BOLT TORQUES FOR STANDARD BOLTS
	Steel Bolts (Ft-lbs)
3/8"	25
7/16"	32
1/2"	40
9/16"	50
5/8"	60
3/4"	75

G. Bus and Bus Fittings

1. Tighten bolts and nut used for bus and bus fittings according to the following torques:

Standard Bolt Diameter (Inches)	Recommended Tightening Torque	
	Inch-lbs	Ft-lbs
5/16"	180	15
3/8"	240	20
1/2"	480	40
5/8"	660	55
3/4"	960	80

H. Install step bolts with both an inside and outside nut.

1. Install the inside nut tightly screwed against the step bolt shank.
2. Do not attempt to install or straighten bent or otherwise damaged step bolts.
3. Use spray paint to mark damaged step bolts.

I. Notify the COTR after bolts have been torqued.

3.2 FIELD QUALITY CONTROL

- A. Measure the actual torque of every bolt in the assembly when ten percent or more of the bolts checked by the COTR are shown to be tightened outside of the specified torque range.
1. Re-torque all bolts found to be below the specified torque range.
 2. Replace bolts that been torqued over the specified torque range.

3.3 ADJUSTING (RESERVED)

3.4 DEMONSTRATION (RESERVED)

3.5 PROTECTION OF FINISHED WORK

- A. Section 01 77 00 - Closeout Procedures: Requirements for protecting finished Work.

END OF SECTION

SECTION 01 77 00
CLOSEOUT PROCEDURES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Closeout procedures.
2. Final cleaning.
3. Starting of systems.
4. Demonstration and instructions.
5. Testing, adjusting and balancing.
6. Protecting installed construction.
7. Spare parts and maintenance products.
8. Product warranties and product bonds.

B. Related Sections:

1. Section 01 43 26- Testing & Inspection Services
2. Section 01 43 27- Quality Control Program

1.2 REFERENCES (RESERVED)

1.3 CLOSEOUT PROCEDURES

- A. Submit written certification that project documents have been reviewed, work has been inspected, and that work is complete in accordance with contract and ready for BPA review.

1.4 FINAL CLEANING

- A. Execute final cleaning prior to final project assessment.
- B. Clean interior/exterior glass and surfaces exposed to view. Remove temporary labels, stains and foreign substances. Polish transparent and glossy surfaces.
- C. Clean equipment and fixtures to sanitary condition using cleaning materials appropriate to the type of surface and material being cleaned.

- D. Replace filters of operating equipment.
- E. Clean debris from roofs, gutters, downspouts, and drainage systems.
- F. Clean work sites.
- G. Remove waste and surplus materials, rubbish, and construction facilities from work sites.

1.5 STARTING OF SYSTEMS

- A. Coordinate schedule for start-up of various equipment and systems.
- B. Notify BPA 5 days prior to start-up of each item.
- C. Verify each piece of equipment or system has been checked for proper lubrication, drive rotation, belt tension, control sequence, and conditions that may cause damage.
- D. Verify tests, meter readings, and specified electrical characteristics agree with those required by the equipment or system manufacturer.
- E. Verify wiring and support components for equipment are complete and tested.
- F. Execute start-up under supervision of applicable manufacturer's representative and Contractor personnel in accordance with manufacturer's instructions.

1.6 DEMONSTRATION AND INSTRUCTIONS

- A. Demonstrate operation and maintenance of products to BPA 2 weeks prior to date of final inspection.
- B. Utilize operation and maintenance manuals as basis for instruction. Review contents of manual with BPA personnel in detail to explain all aspects of operation and maintenance.
- C. Demonstrate start-up, operation, control, adjustment, troubleshooting, servicing, maintenance, and shutdown.
- D. Prepare and insert additional data in operations and maintenance manuals when the need for additional data becomes apparent during instruction.

1.7 TRAINING

- A. Contractors should identify in their proposals a recommended training program for BPA's personnel.
- B. Train a minimum of 4 people. Include in the training program classroom as well as hands-on-training.
- C. At a minimum, cover theory of operation, test procedures, installation, maintenance and emergency procedures for significant equipment.

- D. Comprehensive coverage of the interaction between all the different pieces of equipment is required in order to provide BPA with an understanding of the different interfaces.

1.8 TESTING, ADJUSTING AND BALANCING

- A. Employ, and pay for services of independent firm to perform testing, adjusting, and balancing.
- B. The independent firm shall perform services in accordance with applicable requirements specified in Section 01 43 26 - Testing and Inspection Services and Section 01 43 27 - Quality Control Program.
- C. Submit reports from the independent firm to BPA indicating observations and results of tests, and indicating compliance or non-compliance with requirements of contract documents.

1.9 PROTECTING INSTALLED CONSTRUCTION

- A. Protect installed work and provide special protection where specified in individual specification sections.
- B. Provide temporary and removable protection for installed products. Control activity in immediate work area to prevent damage.
- C. Provide protective coverings at walls, projections, jambs, sills, and soffits of openings.
- D. Protect finished floors, stairs, and other surfaces from traffic, dirt, wear, damage, or movement of heavy objects. Protect using durable sheet materials.
- E. Traffic or storage is prohibited on waterproofed or roofed surfaces. When traffic or activity is necessary, obtain recommendations for protection from waterproofing or roofing material manufacturer.
- F. Traffic on landscaped areas is prohibited.

1.10 SPARE PARTS AND MAINTENANCE PRODUCTS

- A. Furnish spare parts, maintenance, and extra products in quantities specified in individual specification sections.
- B. Deliver to project site and place in location as directed by BPA

1.11 PRODUCT WARRANTIES AND PRODUCT BONDS

- A. Obtain warranties and bonds executed in duplicate by responsible subcontractors, suppliers, and manufacturers, within 14 days of completion of applicable item of Work.
- B. Execute and assemble transferable warranty documents and bonds from subcontractors, suppliers, and manufacturers.
- C. Verify documents are in proper form and contain full information.

- D. Co-execute submittals when required.
- E. Time of submittals:
 - 1. For equipment or component parts of equipment put into service during construction as approved by BPA, submit documents within 10 days after acceptance.
 - 2. Make other submittals within 10 days after equipment is made operational, prior to final application for payment.
 - 3. For items of work for which acceptance is delayed beyond date of substantial completion, submit within 10 days after acceptance, listing the date of acceptance as the beginning of warranty or bond period.

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

Not Used

END OF SECTION

SECTION 01 78 23

OPERATION AND MAINTENANCE DATA

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Operation and Maintenance Data.
2. Manual for Materials and Finishes.
3. Manual for Equipment and Systems.
4. Manual for Communication Systems.

B. Related Sections:

1. Section 01 43 27- Quality Control Program

PART 2 PRODUCTS

Not Used

PART 3 EXECUTION

3.1 O & M MANUALS - MANUAL FORMAT

A. Manual:

1. Bound; 8-1/2 x 11 inch (A4) text pages; three "D" side ring; durable plastic covers.
2. Submit 4 sets of revised final volumes in final form within 20 days of final inspection.

B. On each binder, include a cover titled "Operation and Maintenance Instructions." Include the project name. When multiple binders are required, include the subject matter of each binder in title.

C. Internally subdivide binder contents with permanent page dividers, logically organized as described herein, with tab titles clearly printed under reinforced laminated plastic tabs.

D. Drawings: Provide with reinforced punched binder tab. Bind in with text; fold larger drawings to size of text pages.

- E. Contents: Prepare a table of contents for each volume, with each product or system description identified, typed on white paper, in 3 parts as follows:
1. Part 1: A directory listing names, addresses, and telephone numbers of Architect/Engineer, Contractor, Subcontractors, and major equipment suppliers.
 2. Part 2: Operation and maintenance instructions arranged by system and subdivided by specification section. For each category, identify names, addresses, and telephone numbers of subcontractors and suppliers. Identify the following:
 - a. Significant design criteria.
 - b. List of equipment.
 - c. Parts list for each component.
 - d. Operating instructions.
 - e. Maintenance instructions for equipment and systems.
 - f. Maintenance instructions for finishes, including recommended cleaning methods and materials, and special precautions identifying detrimental agents.
 3. Part 3: Project documents and certificates, including the following:
 - a. Shop drawings and product data.
 - b. Air and water balance reports.
 - c. Certificates.
 - d. Originals of warranties.

3.2 MANUAL FOR MATERIALS AND FINISHES

- A. Building Products, Applied Materials, and Finishes: Include product data, with catalog number, size, composition, and color and texture designations. Include information for re-ordering custom manufactured products.
- B. Instructions for Care and Maintenance: Include manufacturer's recommendations for cleaning agents and methods, precautions against detrimental agents and methods, and recommended schedule for cleaning and maintenance.
- C. Moisture Protection and Weather Exposed Products: Include product data listing applicable reference standards, chemical composition, and details of installation. Include recommendations for inspections, maintenance, and repair.
- D. Additional Requirements: As specified in individual product specification sections.

- E. Include listing in table of contents for design data, with tabbed fly sheet and space for insertion of data.

3.3 MANUAL FOR EQUIPMENT AND SYSTEMS

- A. Each item of equipment and each system: Include description of unit or system, and component parts. Identify function, normal operating characteristics, and limiting conditions. Include performance curves, with engineering data and tests, and complete nomenclature and model number of replaceable parts.
 - 1. Panelboard Circuit Directories: Provide electrical service characteristics, controls, and communications; by label machine.
 - 2. Include color coded wiring diagrams as installed.
 - 3. Operating Procedures: Include start-up, break-in, and routine normal operating instructions and sequences. Include regulation, control, stopping, shut-down, and emergency instructions. Include summer, winter, and special operating instructions.
 - 4. Maintenance Requirements: Include routine procedures and guide for preventative maintenance and trouble shooting; disassembly, repair, and reassembly instructions; and alignment, adjusting, balancing, and checking instructions.
 - 5. Include servicing and lubrication schedule, and list of lubricants required.
 - 6. Include manufacturer's printed operation and maintenance instructions.
 - 7. Include sequence of operation by controls manufacturer.
 - 8. Include original manufacturer's parts list, illustrations, assembly drawings, and diagrams required for maintenance.
 - 9. Include control diagrams by controls manufacturer as installed.
 - 10. Include Contractor's coordination drawings, with color coded piping diagrams as installed.
 - 11. Include charts of valve tag numbers, with location and function of each valve, keyed to flow and control diagrams.
 - 12. Include list of original manufacturer's spare parts, current prices, and recommended quantities to be maintained in storage.
 - 13. Include test and balancing reports as specified in Section 01 43 27 - Quality Control Program.
 - 14. Additional Requirements: As specified in individual product specification sections.
 - 15. Include listing in table of contents for design data, with tabbed dividers and space for insertion of data.

END OF SECTION

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 - GENERAL

1.1 SUMMARY

- A. Section includes: Maintaining up-to-date project records for:
 - 1. Drawings (as-builts) and attachments.
 - 2. Specifications.
 - 3. Surveys.
- B. Related Requirements:
 - 1. Bonneville Power Administration, United States Department of Energy:
 - a. Appendix A, Applicable BPA Standards:
 - 1) STD-DS-000038 - Required Content of a Substation Construction Package.

1.2 SUBMITTALS

- A. Closeout Submittals:
 - 1. After substantial completion and prior to final payment, provide COTR with as-built drawings.
 - 2. Return all as-built drawings including drawings where redline changes have not been made.

1.3 QUALITY CONTROL

- A. Contractor is responsible for maintaining as-builts at job site and making redline changes in Contract Documents.

1.4 SEQUENCING

- A. Progress or Milestone Payments: Prior to submitting progress or milestone payment request, ensure redlines are current, accurate, and complete.

PART 2 - PRODUCTS - Not Used

PART 3 - EXECUTION

3.1 AVAILABILITY

- A. Make redlines available to BPA at all times.

3.2 PROTECTION

- A. Protect redlines from damage and debris.

3.3 ACCURACY

- A. Record location, identification, and sizes of material, equipment, utilities, and elements of Project to same level of detail as in original Contract Documents.
- B. Incorporate any design-build elements.
- C. Maintain accurate, legible, detailed, and reliable as-builts for use with future work.

3.4 CONTRACTOR FURNISHED SUBMITTALS

- A. Maintain accurate and current as-built shop drawings and design/build drawings.

3.5 SURVEYED AS-BUILTS

- A. Record actual construction where installation varies from condition shown on Drawings, including:
 - 1. Include changes made by Contract modifications such as Addenda, supplementary instructions, change directives, field orders, minor changes in the Work, and change orders.
 - 2. Field changes of dimension and details.
 - 3. Details not on original Drawings.
 - 4. Site:
 - a. Measured horizontal and vertical locations of underground utilities, structures, and appurtenances, referenced to permanent surface improvements.
 - b. Measured horizontal and vertical locations of ends, corners, and junctions of buried utilities referenced to permanent surface improvements.
 - c. Measured horizontal and vertical locations of existing buried or concealed items encountered during Work.
 - d. Measured top of footing elevations for substation equipment if different from elevations indicated on Drawings.
 - e. Measured finished subgrade and switchyard surfacing elevations where grade has been restored following trenching or excavation.
 - 5. Buildings:
 - a. Measured locations of utilities and appurtenances concealed in building construction, referenced to visible and accessible features of construction.
- B. Provide BPA 48-hour notice prior to concealing surveyed features to verify accuracy and completeness of redlined documents.

3.6 RECORDING

- A. Clearly identify redline documents by marking each with title "REDLINES".
- B. Maintain log of pending changes to ensure that items are redlined after installation.
- C. Use an erasable red-colored pencil to clearly indicate an addition.
- D. Use an erasable green-colored pencil to clearly indicate deletion.

- E. Use an erasable blue-colored pencil for supplemental information that is not meant to be copied. Examples of supplemental information would include notes to drafter and information only for Contractor's information in monitoring change.
- F. Mark changes exactly as they should be indicated in record drawings. For example:
 - 1. Draw as-built revisions with attention to detail and accuracy. Do not illustrate relocation of items or elements with an arrow leader pointing from a circled item to new location.
 - 2. Correctly draw item or element in its final location exactly as initially drawn with all circuits or connections included, and with previous circuits and connections shown deleted.
- G. Cloud or otherwise identify redlines with reference to directive from which it was constructed. Attach copy of directive to back of preceding sheet.
- H. Add lettered revision block to drawings where redline changes are being recorded. Revision block should include brief description of changes being made, date change is being made, and company/initials of party responsible for change.
- I. Sketches:
 - 1. Duplication of sketches from change directive is not required as long as changed item or element is clearly identified.
 - 2. Sketch changes directly on sheet or attach sketches to back of preceding sheet.
 - 3. Use "cloud" or similar indicator on as-built to clearly identify information replaced by sketch.
 - 4. Ensure redlines reflect as-built condition when work is not constructed according to sketch accompanying change.
- J. Submit hardcopies of as-builts on paper size indicated in title block of original drawing.
 - 1. Submit as-builts of items not indicated on BPA drawings at scale adequate for legibility and identification of changes or conditions or at scale of similar BPA provided details or drawings.
- K. Separate as-builts by discipline and submit according to design packages originally issued. See STD-DS-000038 for additional guidance.

END OF SECTION

SECTION 01 91 00

COMMISSIONING – SUBSTATION GENERAL CONSTRUCTION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Procedures for performing commissioning of BPA Substation general construction and installation work
2. Submittals
3. Qualifications
4. Commissioning services
5. Commissioning responsibilities
6. Commissioning meetings
7. Commissioning reports
8. Sequencing
9. Scheduling
10. Maintenance materials
11. Test equipment
12. Verification check and startup procedures
13. Test methods
14. Deficiencies and test approvals

B. Related Sections:

1. Section 01 11 04 – Summary of Work
2. Section 01 26 14 – Requests for Information
3. Section 01 31 00 – Project Management and Coordination
4. Section 01 31 25 – Construction Administration & Information System (CAIS)

5. Section 01 32 16 – Project Schedules: Requirements for scheduling
6. Section 01 33 00 – Submittal Procedures: Requirements for submittals
7. Section 01 35 26 – BPA Safety Requirements
8. Section 01 43 26 – Testing and Inspection Services
9. Section 01 43 27 – Quality Control Program
10. Section 01 77 00 – Closeout Procedures: Requirements for submittals
11. Section 01 78 39 – Project Record Documents

C. Definitions

1. A/E: Architect and Design Engineers
2. HVAC: Heating, Ventilation and Air Conditioning
3. Checklists: Verification checklists developed and used during all phases of the commissioning process to verify that BPA's Project Requirements are being achieved.
4. BPA Commissioning Authority: Body defined by BPA to lead, plan, schedule and coordinate the commissioning team to implement the commissioning process.
5. Commissioning Plan: Document that outlines the organization, schedule, allocation of resources and documentation requirements of BPA's substation commissioning process.
6. Commissioning Process: A quality-focused process for verifying and documenting that the substation facility and all of its systems and assemblies are planned, designed, installed, tested, operated, and maintained to meet BPA's Project Requirements.
7. Commissioning Process Report: Document that records the activities and result of the Commissioning process.
8. Commissioning Team: Body of individuals responsible for implementing the commissioning process.
9. Construction Phase: The process of constructing the facility to meet the criteria established during the Design Phases and where the facility performance as outlined in the Construction Documents is validated through observations and testing.

1.2 REFERENCES

1. ANSI/NETA: 2017 ATS: Acceptance Testing Specifications for Electrical Power Equipment and Systems.
2. Specific Manufacturer's Information Provided with Electrical Equipment

1.3 SUBMITTALS

- A. Submit a Commissioning Plan to BPA's Commissioning Authority (2) weeks prior to beginning commissioning work. This submittal is strictly required for commissioning high voltage equipment, for example, SF6 power circuit breakers.
1. Ensure the Commissioning Plan contains the following documents and information:
 - a. Identify the name and location of the facility and equipment to be commissioned including the project name, address, building description and construction completion date.
 - b. Provide overview of the commissioning work to be performed.
 - c. Identify the people performing the commissioning work and their responsibilities.
 - d. Work sequence with dates and expected duration needed to perform the commissioning process on infrastructure, architectural, equipment and components.
 - e. A log of issues, conflicts and resolutions.
 - f. Submit Recommendations for solutions to problems encountered.
 - g. Construction and installation checklists for each project to be commissioned.
 - h. Submit a record of Testing and Verification methods to be used.
 - i. Submit a Commissioning Process report containing results of tests and inspections conducted.
 2. See section 01 31 25, Construction Administration & Information System (CAIS).

1.4 QUALIFICATIONS

- A. Third-party commissioning agents for high voltage and other electrical equipment shall submit qualifications, including testing and commission specifications, and previous equipment experience, at least (2) weeks prior to completing commissioning work. References may be requested by BPA if qualifications do not meet requirements. Demonstration of commissioning services for other utility customers is encouraged.

1.5 PRE-COMMISSIONING MEETINGS

- A. Discuss the commissioning process with the Commissioning Team and coordinate with BPA's Commissioning Authority.
1. Update BPA's Project Requirements as needed to maintain accurate and timely information in the Commissioning Plan
 2. Update the Commissioning Plan and verify all submittals meet BPA's project requirements.

3. Develop detailed inspection, testing and verification procedures to be followed during the commissioning process.
4. Develop and submit a commissioning project schedule.

B. Section 01 31 00 – Project Management and Coordination

1. Attend all preconstruction and commissioning team meetings.
2. Convene minimum 1 week prior to commencing work of this section.

1.6 SCHEDULING

- A. Section 01 32 16 – Project Schedules: Requirements for Scheduling.

PART 2 PRODUCTS

PART 3 EXECUTION

3.1 GENERAL REQUIREMENTS

- A. Ensure all safety, access and security regulations are followed by all members of the Commissioning Team.
- B. Perform all required verification processes.
1. Prepare and review checklists of substation construction items and commissioning procedures with the Commissioning Team, including:
 - a. Equipment Verification
 - b. Assembly Verification
 2. Pre-Installation/Pre-Construction checks
 3. Installation/Construction checks
 - a. Verify that systems and assemblies are installed according to BPA's Project Requirements.
 - 1) Identify any systems or assemblies that do not perform in accordance with BPA's Project Requirements.
 - b. Document negative response/conflicts/misses in detail including the following information:
 - 1) Identify the equipment/system/component installed.
 - 2) Document the date and time of the installation.

- 3) Identify the specific location within the facility.
 - 4) Identify the installer(s).
 - 5) Describe the nature of the conflict and objectively document the circumstances and conditions involved.
- c. Implement solutions on site, if possible.
 - d. Address conflicts in regularly scheduled lessons-learned meetings.
4. Review all quality requirements and ensure the Commissioning Team verifies achievement of BPA's Project Requirements according to the agreed upon quality measurement standards, including those provided in:
 - a. BPA Contract requirements
 - b. BPA Project design documents and drawings.
 - c. BPA substation equipment, systems, infrastructure and facility policies and standards.
 - d. BPA construction specifications
 - e. Tools, equipment and components required to perform the commissioning process.
 - C. Review scheduling and submittals to ensure the commissioning process is coordinated with ongoing construction work and overall progress of the project.
 - D. Maintain adequate accessibility to all substation facilities, as required by BPA.
 - E. Notify BPA's Commissioning Authority when construction and installation work is ready for inspection, testing and verification.
 - F. Demonstrate the equipment, components, systems, infrastructure and facilities have been constructed in accordance with design requirements, construction specifications and applicable regulations.
 - G. Complete the construction checklist as the work is accomplished.

3.2 CONSTRUCTION ACCEPTANCE

- A. Obtain approval for the Commissioning Plan from BPA's Commissioning Authority for all commissioning procedures prior to implementing the Commissioning Plan.
 1. After the completion of the Commissioning Process, provide (2) copies of the Operations Manual to BPA's Commissioning Authority, including:
 - a. Test Procedures and Data Records

- 1) Photos of facilities, equipment, systems and components commissioned.
- b. Training Plans and Records
- c. Record Drawings
- d. Submittal Review Reports and Comments
- e. Updated BPA Project Requirements
- f. Updated Issues and Resolution Log
- g. Commissioning Process Progress Reports

END OF SECTION

SECTION 02 41 26

SELECTIVE ELECTRICAL DEMOLITION

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:

1. Removal of existing electrical equipment, wiring, and conduit in areas to be remodeled; removal of designated construction; dismantling, cutting and alterations for completion of Work.
2. Disposal of materials.
3. Storage of removed materials.
4. Identification of utilities.
5. Salvaged items.
6. Protection of items to remain as indicated on Drawings.
7. Relocate existing equipment to accommodate construction.

B. Related Sections:

1. Section 01 11 04 – Summary of Work- Sub
2. Section 01 31 00 – Project Coordination: BPA Coordination
3. Section 01 31 00 – Project Meetings: Pre-installation meeting.
4. Section 01 32 16 – Construction Progress Schedule: Requirements for scheduling.
5. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
6. Section 01 77 00 – Closeout Procedures: Requirements for cleaning requirements for submittals.
7. Section 01 78 39 – Project Record Documents- As Built: Record actual locations of capped utilities, conduits and equipment abandoned in place, cables, and other features left in place.

1.2 REFERENCES (RESERVED)

1.3 DEFINITIONS (RESERVED)

1.4 SYSTEM DESCRIPTION (RESERVED)

1.5 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.

- B. Shop Drawings: Indicate demolition and removal sequence and location of salvageable items; location and construction of temporary work. Describe demolition removal procedures and schedule.

1.6 CLOSEOUT SUBMITTALS

- A. Section 01 77 00 - Closeout Procedures: Requirements for submittals.
- B. Section 01 78 39 – Project Record Documents – As Built: Record actual locations of capped utilities, conduits and equipment abandoned in place, cables, and other features left in place.

1.7 PRE-INSTALLATION MEETINGS

- A. Section 01 31 19 – Project Meetings: Pre-installation meeting.
- B. Convene minimum 1 week prior to commencing work of this section.

1.8 SEQUENCING

- A. Section 01 11 04 – Summary of Work- Sub: Requirements for sequencing.

1.9 SCHEDULING

- A. Section 01 32 16 – Construction Progress Schedule: Requirements for scheduling.
- B. Cease operations immediately when structure appears to be in danger and notify Engineer. Do not resume operations until directed.

1.10 COORDINATION

- A. Construction Manager is to notify BPA's Investment Recovery Center (IRC) at time of award to identify material disposition needs. Contractor is to provide a list of removed equipment for coordination with IRC.
- B. Section 01 31 13 - Project Coordination: Requirements for coordination.
- C. Conduct demolition to minimize interference with adjacent and occupied building areas.
- D. Coordinate and sequence demolition so as not to cause operational shutdown of surrounding areas.
- E. Shutdown Periods:
 - 1. Arrange timing of shutdown periods of in service panels with BPA District Operations Personnel. Do not shut down any utility without prior written approval.
 - 2. Keep shutdown period to minimum or use intermittent period as directed by BPA District Operations Personnel.

3. Maintain life-safety systems in full operation in occupied facilities, or provide notice minimum (10) business days in advance.

B. Identify salvage items in cooperation with BPA.

PART 2 PRODUCTS

NOT USED.

PART 3 EXECUTION

3.1 EXAMINATION

- A. Verify existing conditions before starting work.
- B. Verify wiring and equipment indicated to be demolished serve only abandoned facilities.
- C. Verify termination points for demolished services.

3.2 PREPARATION

- A. Erect, and maintain temporary safeguards, barricades, and similar measures, for protection of BPA, Contractor's employees, and existing improvements to remain.
- B. Temporary egress signage and emergency lighting.

3.3 DEMOLITION

- A. Demolition Drawings are based on casual field observation and existing record documents. Report discrepancies to COR and Design Team before disturbing existing installation.
- B. Remove exposed conduit, including abandoned conduit.
- C. Remove conduit, wire, boxes, and fastening devices to avoid any interference with new installation.
- D. Disconnect electrical systems in walls, floors, and ceilings scheduled for removal.
- E. Reconnect equipment being disturbed by renovation work and required for continued service to panel approved by engineer.
- F. Isolate service to areas where electrical work is to be removed. Remove electrical fixtures, equipment, and related switches, outlets, conduit and wiring that are not part of final project.
- G. Install temporary wiring and connections to maintain existing systems in service during construction.
- H. Perform work on energized equipment or circuits with experienced and trained personnel.

- I. Remove, relocate, and extend existing installations to accommodate new construction.
- J. Repair adjacent construction and finishes damaged during demolition and extension work.
- K. Remove exposed, abandoned grounding and bonding components, fasteners and supports, and electrical identification components. Cut embedded support elements flush with walls and floors.
- L. Clean and repair existing equipment to remain in place or be reinstalled.
- M. Protect and retain power to existing active equipment remaining.
- N. Cap abandoned empty conduit at both ends.

3.4 EXISTING PANELBOARDS

- A. Ring-out circuits in existing panel affected by Work. Where additional circuits are needed, use available circuits approved by engineer. If no breakers are available install breakers where approved by engineer.
- B. Tag unused circuits as spare.
- C. Where existing circuits are indicated to be reused, use sensing measuring devices to verify circuits are feeding Project area or are not in use.
- D. Remove existing wire no longer in use from panel to equipment.
- E. Provide new updated directories where circuits have been modified or rewired.

3.5 SALVAGE ITEMS

- A. Remove and protect items indicated on drawings to be salvaged and turn over to BPA as identified in Section 3.9 of this specification section.
- B. Items of salvageable value may be removed as work progresses. Transport salvaged items from site as they are removed.

3.6 REUSABLE ELECTRICAL EQUIPMENT

- A. Carefully remove equipment, materials, or fixtures that are to be reused.
- B. Disconnect, remove, or relocate existing electrical material and equipment interfering with new installation.
- C. Relocate existing lighting fixtures as indicated on Drawings. Clean fixtures and relamp. Test fixture to confirm good working condition before installation at new location.

3.7 CLEANING

- A. Section 01 77 00 – Closeout Procedures: Requirements for cleaning.

- B. Remove demolished materials as work progresses. Legally dispose.
- C. Keep workplace neat.

3.8 PROTECTION OF FINISHED WORK

- A. Section 01 77 00 – Closeout Procedures: Requirements for protecting finished Work.

3.9 SCHEDULES

Include schedule when known items are to be turned over to BPA, salvaged and reused in construction later, or destined for other use. These may include light fixtures, special equipment, and other items.

Consider the following examples when developing Project schedule.

- A. Remove the following equipment and materials for BPA's retention. Properly package and deliver to BPA IRC.
 - 1. Retired Power Circuit Breakers.
 - 2. Retired Disconnect Switches.
 - 3. Retired Instrument Transformers.
 - 4. Lead Cable.
- B. Protect the following materials and equipment remaining:
 - 1. Disconnect switch stands to be reused as directed by design package.
 - 2. Any concrete footings to be reused as directed by design package.
 - 3. Any bus work and/or bus connections to be reused as directed by design package.

END OF SECTION

SECTION 33 75 10

HIGH-VOLTAGE CIRCUIT BREAKER

PART 1 GENERAL

1.1 SUMMARY

- A. Section Includes: High-Voltage Circuit Breaker
- B. Related Sections:
 - 1. Section 01 11 04 – Summary of Work- Substations
 - 2. Section 01 31 13 – Project Coordination
 - 3. Section 01 31 19 – Project Meetings
 - 4. Section 01 32 16 – Project Schedules
 - 5. Section 01 33 00 – Submittal Procedures
 - 6. Section 01 43 27 – Quality Control Program
 - 7. Section 01 66 00 – Product Storage and Handling Requirements
 - 8. Section 01 77 00 –Closeout Procedures

1.2 REFERENCES

- A. Bonneville Power Administration:
 - 1. Appendix A –Applicable BPA Standards
 - 2. Appendix D – BPA Material Forms
 - 3. Appendix E – Applicable BPA Work Standards & Substation Maintenance Standards & Guides
 - a. SM-STD-1-4-1-1 (Substation Maintenance Standards & Guides): Circuit Breakers – External Bushing CT Cover
 - b. SM-STD-11-4-1 (Substation Maintenance Standards & Guides): Insulating Oil & Media – SF6 Handling
 - c. BPA-WS-3-3 (BPA Work Standards): System Operating Standards – Work on Equipment Separated from the Power System

1.3 DEFINITIONS

- A. Power Circuit Breaker (PCB): A switching device that can interrupt a circuit in a power system under overload or short-circuit conditions, usually automatically tripped by protective relays. Allows equipment or transmission lines to be isolated from the system as required.

1.4 SYSTEM DESCRIPTION

Section 01 11 04 – Summary of Work- Substation

1.5 DESIGN REQUIREMENTS

Detailed information on the type, rating, and amount of high voltage equipment is shown on Design Drawings and Bills of Material.

1.6 PERFORMANCE REQUIREMENTS

- A. For Contractor-Furnished Material: BPA review of manufacturer's prints is required. Provide BPA Specification Engineer and Design Engineer a minimum of (15) business days to review manufacturer's prints. Should revision(s) be required additional review(s) will be required with same (15) business day review requirement.
- B. For BPA-Furnished Material: After Installation Contract is awarded, BPA will provide copies of manufacturers' drawings for assembling and installing major equipment, when such drawings are available.
- C. Construction contractor must supply all required tools, equipment, and labor to complete the work including, but not limited to: ladders, vacuum pump, SF6, SF6 gas cart and required fittings for commissioning, test equipment, test leads and test connections, as necessary.
- D. Construction contractor must arrange for disposal of SF6 gas blanket that comes inside the circuit breaker as well as any spare SF6 left in bottles after the circuit breaker has been filled. Under no circumstances of contractor construction shall SF6 blanket or un-used SF6 be sent to BPA warehouse or disposed/recycled by BPA.

1.7 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Submit a written testing plan for SF6 circuit breaker commissioning agent. The testing plan must include qualifications and experience of commissioning agents, and commissioning procedures referencing industry standards (NETA and IEEE for example). BPA may request additional client references if commissioning agent experience is questioned.
- C. Submit a written report of SF6 gas testing showing compliance with Appendix E, Applicable BPA Work Standards & Substation Maintenance Standards & Guides – SM-STD-11-4-1, Insulating Oil & Media – SF6 Handling.

- D. Record installation and commissioning results in a factory installation and commissioning check sheet.
- E. Closeout Submittals
 - 1. Section 01 77 00 - Closeout Procedures: Requirements for submittals.
 - 2. Confirm that all tools, Instruction Books, and drawings as specified in BPA purchase order are with breaker at completion of Work.
 - 3. Provide a complete test report within 30 working days after Work is completed. Copies of raw test data will be provided to designated BPA Field Inspector at end of each day, if requested.
 - 4. 4. Confirm all contractor supplied SF₆ and SF₆ equipment blanket are in contractor's possession and have been removed from BPA site.

1.8 QUALITY ASSURANCE

- A. Qualifications – third party testing agent should be able to show significant experience in commissioning high voltage power system equipment. A minimum of (5) years' experience is required. Additional client references may be requested by BPA.
- B. Mockup
 - 1. Section 01 33 00 – Submittal Procedures: Requirements for mockup.
- C. Pre-installation Meetings
 - 1. Section 01 31 19 – Project Meetings: Pre-installation meeting.
 - 2. Participate in daily site safety meetings prior to starting any work for the day.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 66 00 - Product Storage and Handling Requirements: Requirements for transporting, handling, storing, and protecting products.
- B. For BPA-furnished equipment and/or contractor-furnished equipment the construction contractor is responsible for supplying SF₆ gas for equipment and disposal/recycle of SF₆ equipment blanket and any remaining SF₆ brought to the site for contractor installation/repair
- C. When handling SF₆ gas, refer to Appendix E, Applicable BPA Work Standards & Substation Maintenance Standards & Guides – SM-STD-11-4-1, for SF₆ Handling information.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 66 00 - Product Storage and Handling Requirements: Environmental conditions affecting products on site.

- B. Contractor is responsible for disposal of equipment blanket and contractor supplied SF6. Under no circumstances of contractor construction shall SF6 blanket or un-used SF6 be sent to BPA warehouse or disposed/recycled by BPA.

1.11 FIELD MEASUREMENTS (RESERVED)

1.12 SEQUENCING

- A. Section 01 11 04 – Summary of Work- Substations: Requirements for sequencing.

1.13 SCHEDULING

- A. Section 01 32 16 – Project Schedules: Requirements for scheduling.

1.14 COORDINATION

- A. Section 01 31 13 – Project Coordination: Requirements for coordination.

1.15 WARRANTY

- A. Section 01 77 00 - Closeout Procedures: Requirements for warranties.

1.16 MAINTENANCE

A. Maintenance Service

- 1. Section 01 77 00 - Closeout Procedures: Requirements for maintenance service.

B. Maintenance Materials

- 1. Section 01 77 00 - Closeout Procedures: Requirements for maintenance materials.

C. Extra Materials

- 1. Section 01 77 00 - Closeout Procedures: Requirements for extra materials.

PART 2 PRODUCTS (RESERVED)

PART 3 EXECUTION

3.1 EXAMINATION (RESERVED)

3.2 PREPARATION

- A. Equipment to be installed by Contractor, delivered to site in crates, shall be uncrated by Contractor. All equipment shall be completely assembled, including installation of accessories that may be shipped detached. All equipment shall be lubricated and adjusted in accordance with

manufacturers' instructions or as directed by BPA COTR and left in satisfactory operating condition. Extreme care shall be exercised in handling porcelain parts to avoid chipping or breakage.

- B. Damaged equipment shall be, as determined by COTR, placed in first-class operating condition or be returned to source of supply for repair or replacement.

3.3 EXISTING WORK (RESERVED)

3.4 INSTALLATION

- A. Procedures for working on equipment separated from the Power System must be followed as outlined in Appendix E, Applicable BPA Work Standards & Substation Maintenance Standards & Guides, Work on Equipment Separated from the Power System, BPA-WS-3-3.
- B. Power Circuit Breakers shall be assembled in accordance with manufacturers' drawings and instructions furnished with equipment and placed/located as shown on design drawings.
- C. Attach six NEMA 4-hole top terminals to each breaker bushing. Do not use the external bushing current transformer housing as a work platform. They are NOT designed to support the weight of an electrical worker. (See Appendix E, Applicable BPA Work Standards & Substation Maintenance Standards & Guides, External Bushing CT Cover, SM-STD-1-4-1-1).
- D. Fill and test SF6 gas using equipment manufacturer's instructions, following Appendix E, Applicable BPA Work Standards & Substation Maintenance Standards & Guides, SF6 Handling, SM-STD-11-4-1, and the following steps:
 - 1. Perform purity and moisture tests on shipping gas prior to removal
 - 2. Measure moisture content in empty equipment.
 - 3. Measure purity and moisture content of SF6 bottles.
 - 4. Fill equipment with SF6 and test 24 hours later for purity and moisture.
 - 5. Perform leak testing observed over a 24-hour period.
- E. Perform all factory-recommended and BPA-deemed field commissioning tests.
 - 1. Perform following tests on each Bushing Current Transformer (BCT):
 - a. Ratio test by primary current injection or voltage method
 - b. Saturation test
 - c. Polarity check
 - d. Meggar test (1000V DC)

2. Main-circuit contact-resistance check.
 3. Time breaker using a Doble timing device and time-travel recorder.
 4. Perform a functional test of all controls and alarms.
- F. All drilling on equipment, steel racks or supports and installation of all brackets, extensions or switch clip angles shall be performed, as necessary, to securely mount equipment shown on drawings.
- 3.5 INTERFACE WITH OTHER PRODUCTS (RESERVED)
- 3.6 ERECTION TOLERANCES
- A. Section 01 43 27 - Quality Control Program: Tolerances.
- 3.7 FIELD QUALITY CONTROL
- A. Section 01 43 27 - Quality Control Program: Field inspecting, testing, adjusting, and balancing.
- 3.8 MANUFACTURER'S FIELD SERVICES
- A. Section 01 43 27 - Quality Control Program: Requirements for manufacturer's field services.
- 3.9 ADJUSTING
- A. Section 01 77 00 - Closeout Procedures: Requirements for starting and adjusting.
- 3.10 CLEANING
- A. Section 01 77 00 - Closeout Procedures: Requirements for cleaning.
- B. Thoroughly clean all Contractor-installed insulators, bushings, and surge arresters after all Contractor-to-install station equipment has been installed.
- 3.11 DEMONSTRATION
- A. Section 01 77 00 - Closeout Procedures: Requirements for demonstration and training.
- 3.12 PROTECTION OF FINISHED WORK
- A. Section 01 77 00 - Closeout Procedures: Requirements for protecting finished Work.
- B. All structural steel in contact with concrete shall be given two coats of Koppers Company "Bitumastic Super Service Black" coal-tar base paint, or equal, on area that makes contact with concrete.

END OF SECTION

SECTION 33 75 53

DISCONNECTS AND OTHER PROTECTION DEVICES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes: Disconnects and Other Protection Devices

B. Related Sections:

1. Section 01 11 04 – Summary of Work- Substations
2. Section 01 31 13 – Project Coordination
3. Section 01 31 19 – Project Meetings
4. Section 01 32 16 – Project Schedules
5. Section 01 33 00 – Submittal Procedures
6. Section 01 43 27 – Quality Control Program
7. Section 01 66 00 – Product Storage and Handling Requirements
8. Section 01 77 00 –Closeout Procedures

1.2 REFERENCES

A. Bonneville Power Administration:

1. Appendix A – Applicable BPA Standards
2. Appendix D – BPA Material Forms
3. Appendix E – Applicable BPA Work Standards & Substation Maintenance Standards & Guides
 - a. SM-WS-5-5-2 (Substation Maintenance Standards & Guides): Disconnect Switches – Bus Pad Failures
 - b. BPA-WS-3-3 (BPA Work Standards): System Operating Standards – Work on Equipment Separated from the Power System

1.3 DEFINITIONS

- A. Disconnect Switch: A power system switch, manually or motor operated, used for changing connections in a circuit (open or close) or for isolating a circuit or piece of equipment from source of power. Also called a Disconnecting Switch.

1.4 SYSTEM DESCRIPTION

- A. Section 01 11 04 – Summary of Work- Substations

1.5 DESIGN REQUIREMENTS

- A. Detailed information on type, rating, and amount of high voltage equipment is shown on Design Drawings and Bills of Material.

1.6 PERFORMANCE REQUIREMENTS

- A. For Contractor-Furnished Material: BPA review of manufacturer's prints is required. Provide BPA Specification Engineer and Design Engineer a minimum of (15) business days to review manufacturer's prints. Should revision(s) be required additional review(s) will be required with same (15) business day review requirement.
- B. For BPA-Furnished Material: After Installation Contract is awarded, BPA will provide copies of manufacturers' drawings for assembling and installing major equipment, when such drawings are available.
- C. Construction contractor must supply all required tools, equipment, and labor to complete the work including, but not limited to: ladders, required fittings for commissioning, test equipment, test leads and test connections, as necessary.

1.7 SUBMITTALS

- A. Section 01 33 00 - Submittal Procedures: Requirements for submittals.
- B. Closeout Submittals
 - 1. Section 01 77 00 - Closeout Procedures: Requirements for submittals.

1.8 QUALITY ASSURANCE

- A. Qualifications (Reserved)
- B. Mockup
 - 1. Section 01 33 00 – Submittal Procedures: Requirements for mockup.
- C. Pre-installation Meetings
 - 1. Section 01 31 19 – Project Meetings: Pre-installation meeting.
 - 2. Participate in daily site safety meetings prior to starting any work for the day.

1.9 DELIVERY, STORAGE, AND HANDLING

- A. Section 01 66 00 - Product Storage and Handling Requirements: Requirements for transporting, handling, storing, and protecting products.

1.10 ENVIRONMENTAL REQUIREMENTS

- A. Section 01 66 00 - Product Storage and Handling Requirements: Environmental conditions affecting products on site.

1.11 FIELD MEASUREMENTS (RESERVED)

1.12 SEQUENCING

- A. Section 01 11 04 – Summary of Work- Substations: Requirements for sequencing.

1.13 SCHEDULING

- A. Section 01 32 16 - Project Schedules: Requirements for scheduling.

1.14 COORDINATION

- A. Section 01 31 13 – Project Coordination: Requirements for coordination.

1.15 WARRANTY

- A. Section 01 77 00 - Closeout Procedures: Requirements for warranties.

1.16 MAINTENANCE

- A. Maintenance Service

- 1. Section 01 77 00 - Closeout Procedures: Requirements for maintenance service.

- B. MAINTENANCE MATERIALS

- 1. Section 01 77 00 - Closeout Procedures: Requirements for maintenance materials.

- C. EXTRA MATERIALS

- 1. Section 01 77 00 - Closeout Procedures: Requirements for extra materials.

PART 2 PRODUCTS (RESERVED)

PART 3 EXECUTION

3.1 EXAMINATION (RESERVED)

3.2 PREPARATION

- A. Equipment to be installed by Contractor, delivered to site in crates, shall be uncrated by Contractor. All equipment shall be completely assembled, including installation of accessories that may be shipped detached. All equipment shall be lubricated and adjusted in accordance with manufacturers' instructions or as directed by BPA COTR and left in satisfactory operating condition. Extreme care shall be exercised in handling porcelain parts to avoid chipping or breakage.
- B. Damaged equipment shall be, as determined by the COTR, placed in first-class operating condition or be returned to source of supply for repair or replacement.

3.3 EXISTING WORK (RESERVED)

3.4 INSTALLATION

- A. Procedures for working on equipment separated from the Power System must be followed as outlined in (Appendix E – Applicable BPA Work Standards & Substation Maintenance Standards & Guides, Work on Equipment Separated from the Power System, BPA-WS-3-3).
- B. Disconnect switches, including Motor Operated Disconnect Switches, as well as insulators and operating mechanisms, shall be mounted on support structure as indicated on Drawings.
- C. All disconnect switches and associated equipment such as quick break, vacuum bottles or surge suppression resistors shall be assembled and adjusted in accordance with manufacturer's instructions and specifications. Contact blades shall snap solidly into toggle position when fully closed or open. Precautions must be observed when connecting the bus to the switch as outlined in (Appendix E – Applicable BPA Work Standards & Substation Maintenance Standards & Guides, Bus Pad Failures, SM-STD-5-5-2.).
- D. Other equipment such as fuse disconnects, high-current-limiting devices, current-limiting reactors, etc., as indicated on drawings shall be installed per manufacturers' drawings/instructions and placed/located as shown on Drawings.

3.5 INTERFACE WITH OTHER PRODUCTS (RESERVED)

3.6 ERECTION TOLERANCES

- A. Section 01 43 27 - Quality Control Program: Tolerances.

3.7 FIELD QUALITY CONTROL

- A. Section 01 43 27 - Quality Control Program: Field inspecting, testing, adjusting, and balancing.

3.8 MANUFACTURER'S FIELD SERVICES

- A. Section 01 43 27 - Quality Control Program: Requirements for manufacturer's field services.

3.9 ADJUSTING

- A. Section 01 77 00 - Closeout Procedures: Requirements for starting and adjusting.

3.10 CLEANING

- A. Section 01 77 00 - Closeout Procedures: Requirements for cleaning.
- B. Thoroughly clean all Contractor-installed insulators, bushings, and surge arresters after all Contractor-to-install station equipment has been installed.

3.11 DEMONSTRATION

- A. Section 01 77 00 - Closeout Procedures: Requirements for demonstration and training.

3.12 PROTECTION OF FINISHED WORK

- A. Section 01 77 00 - Closeout Procedures: Requirements for protecting finished Work.
- B. All structural steel in contact with concrete shall be given two coats of Koppers Company "Bitumastic Super Service Black" coal-tar base paint, or equal, on area that makes contact with concrete.

3.13 SCHEDULES (RESERVED)

END OF SECTION

APPENDIX A

INCORPORATION OF BPA SAFETY BY DESIGN

- Contractor must adhere to BPA Safety By Design Program Requirements.
- See the attached example checklist. Specific project requirements will dictate whether or not particular hazards need to be investigated during design and construction phases of the project.
- Design Submittals will be considered incomplete without proof of safety by design review and sign-offs by specific BPA subject matter experts reviewing the design submittals.
- The overall checklist discusses high-level safety issues. Each category has additional checklists that require further investigation based upon project-specific hazards.

Design Safety Review Checklist

Name of Project:	Sample Substation		
Design Review Stage:	<input type="checkbox"/> Scoping	<input checked="" type="checkbox"/> 60%	<input type="checkbox"/> 90% <input type="checkbox"/> Safety Plan

DESIGN SAFETY REVIEW PROJECT MANAGER / ENGINEER:

Name Ernie Engineer	Phone #: 360-418-8888
Title:	Org:

SAFETY ORGANIZATION REPRESENTATIVE (IF PRESENT):

Name	Phone #:
Title:	Org:

DESIGN SAFETY REVIEW FACILITATOR:

Name	Phone #:
Title:	Org:

DESIGN SAFETY REVIEW TEAM MEMBERS / SUBJECT MATTER EXPERTS:

Name	Org:

Sub-Checklist Category	Status <input checked="" type="checkbox"/> In Scope <input type="checkbox"/> Out of Scope <input type="checkbox"/> Needs further review
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Application to All projects

The Following checks pertain to all contracts:

Status <input checked="" type="checkbox"/> In Scope <input type="checkbox"/> Out of Scope <input type="checkbox"/> Needs further review	Safety Design Standard #	Design Safety Review Check	Decision Notes
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors fo requirements <i>Pertaining to All Contracts</i>	

Application to All projects

Check all DSRs that pertain to this project and need review:

Status <input checked="" type="checkbox"/> In Scope <input type="checkbox"/> Out of Scope <input type="checkbox"/> Needs further review	Design Safety Review	Applicability Criteria
✓	Arc Flash	Entering a substation switchyard or conducting other work where arc flash clothing will be required?
?	Asbestos	Drill, cut, move, break or in any way disturb building materials? Will this asbestos work generate waste?
X	Access Road Building and Maintenance:	Construction, maintenance, or alteration of access roads?
✓	Aerial Lift Equipment	Move, maintain, or use aerial lift equipment?
X	Aircraft Operations	Use of any type of fixed wing, helicopter or unmanned aerial vehicle?
?	Battery Work	All work associated with installation, maintenance or removal of substation or radio station batteries.
X	Celilo	Any work at BPA's Celilo facility other than attend meetings or provide classroom training?
?	Confined Space:	<ul style="list-style-type: none"> • Entering a transformer? • Entry into any other confined space?
✓	Cranes or Heavy Construction Equipment	Move or operate Cranes or Heavy Construction Equipment?
X	Demolition	Demolition of buildings and other structures?
X	Explosives and Blasting	Transportation, handling, storage, and use of explosives (such as implosive fittings)?

Status (☑) In Scope (X) Out of Scope (?) Needs further review	Design Safety Review	Applicability Criteria
✓	Fall Protection:	<ul style="list-style-type: none"> • Potential fall hazard of 4 feet or more above a lower level? • Access into a confined space requiring that may require the use of fall protection for rescue • Providing rescue for fall protection?
?	Fiber Optics:	Will the contractor maintain, install or adjust fiber optic equipment including cabling
✓	General Construction	<ul style="list-style-type: none"> • Will the contractor be involved in the construction of electric power, control, and transmission lines and equipment? • The alternation, conversion, and improvement of the existing transmission lines and equipment? • Any type of construction work, including alteration, repair, painting and decorating • Erection of new electric transmission and distribution lines and equipment
X	Herbicide Application	Spray or apply herbicide?
✓	High Voltage Electrical Work	<ul style="list-style-type: none"> • Operation or maintenance of electric power, control, and transmission lines and equipment and the alternation, conversion, and improvement of the existing transmission lines and equipment? • Operation and maintenance of electric power control, transformation, transmission, distribution lines and equipment

Status (☑) In Scope (X) Out of Scope (?) Needs further review	Design Safety Review	Applicability Criteria
?	Lead	<ul style="list-style-type: none"> • Removal, salvage, or demolition of structures or equipment where lead or materials containing lead are present; • Encapsulation of materials containing lead; • New construction, alteration, repair or renovation of structures where lead or materials containing lead are present; • Handling, removal or splicing of lead sheathed cable; • Removal, grinding or abrasive blasting of lead-containing paints; • Kneeling, sitting or crawling across lead-based painted equipment where there is physical transference of paint to clothing. • Cutting or torch burning of materials with lead-containing paints • Installation of products containing lead; • Lead contamination/emergency cleanup; • Transportation, disposal, storage, or containment of lead or materials containing lead on the site or location at which construction activities are performed, and • Maintenance operations associated with the construction activities.
X	Line Construction	Transmission line construction or maintenance?
?	Lockout / Tagout:	<ul style="list-style-type: none"> • Work on BPA owned or leased equipment requiring a lockout / tagout process? • Onsite repairs of vendor-owned equipment requiring a lock-out / tag-out process?

Status (☑) In Scope (X) Out of Scope (?) Needs further review	Design Safety Review	Applicability Criteria
	PCBs (Polychlorinated Biphenyls)	Will the contractor be drilling, cutting, or removing or otherwise disturbing any of the following types of building materials and components: <ul style="list-style-type: none"> • Coatings • Caulking compounds manufactured between prior to 1978 • Expansion joint compounds • Window glazing putties • Fluorescent light ballasts manufactured before 1979. • Oil filled electrical equipment. <ul style="list-style-type: none"> o Including materials contaminated by oil filled electrical equipment
	Radon	Will the contractor be entering unventilated crawl spaces, vaults, tunnels and basements?
	Silica	Will the contractor be doing any of the following activities that can produce silica dust: <ul style="list-style-type: none"> • Abrasive blasting using silica sand as the abrasive • Abrasive blasting of concrete • Crushing, loading, hauling, and dumping rock • Chipping, hammering, drilling, sawing, and grinding concrete or masonry • Demolition of concrete and masonry structures; including CMU Brick Dry sweeping or pressurized air blowing of concrete or sand dust
	Temporary Traffic Control	Are there hazards associated with: <ul style="list-style-type: none"> • Facilitating road users through a work zone or an incident area? • Grade crossings (railroad / light rail)? • River crossings • Pedestrian traffic within a work zone or areas impacted by a work zone
	Telecommunication	<ul style="list-style-type: none"> • Installing, maintaining or rearranging or removing communications equipment? • Installing, operating, maintaining, rearranging or removal of conductors and other equipment used for signal or communication service. • This includes access requirements for telecom companies to work on non-BPA owned equipment mounted on BPA structures

✓	Trenching and Excavation	Any excavation or trenching work?
✗	Vegetation Management:	Conducting any type of vegetation management work, including felling trees?
✓	Welding, Cutting Brazing:	Conducting any type of welding, cutting or brazing work?

List Safety Design Concerns needing Safety Organization Support
 List any type of hazard or concern in which the team is requesting Safety Organization follow-up or assistance in the safety design review.

Design Safety Review Checklist - Confined Space		
Name of Project:		
Date of Review:		Design Review Stage
DSR Team Leader:		
DSR Team Leader Phone#:		<input type="checkbox"/> 30% <input type="checkbox"/> 60% <input type="checkbox"/> 90%

Disposition Check = Meets Standard NA = Does not apply to this project ALT = Alternative Risk Control	Safety Design Standard #	Design Safety Review Check	Decision Notes
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Confined Spaces</i>	
	2017-05-11-10	All contractor entry into BPA transformers is a permit-required confined space entry.	
	2017-05-11-11	Identify the prime contractor as the Controlling Contractor for confined space entry at the worksite. (If BPA is to be the controlling contractor, note this in the Safety Design Concerns needing Safety Organization Support section for Safety Office Review. This designation would change BPA's regulatory requirements.	
	2017-05-11-12	How are all of the subcontractors made aware that the prime is the controlling contractor?	
	2017-05-11-13	Specifications should note: <ul style="list-style-type: none"> o The location of each known permit space o The hazards or potential hazards in each space or the reason it is a permit space o Any precautions that the host employer or any previous controlling contractor or entry employer implemented for the protection of employees in the permit space. 	
	2017-05-11-14	Ensure a sufficient level of detail in the contractor's multi-site safety plan (MSSP) or Site Specific Safety Plan (SSSP) regarding their entry operations and procedures to clearly demonstrate competence.	
	2017-05-11-15	Include a BPA Confined Space Competent Person on your vendor selection team to help define your statement of work requirements and evaluate the contractor's program and approach to confined spaces.	
	2017-05-11-16	What are BPA's expectations for a process to conclude the entry after entry operations have been completed, closing off the permit space, cancelling the permit?	
	2017-05-11-17	For entry permit posting, the Safety Office requires at least a copy in a weatherproof pouch be posted near the entry portal. This will ensure that all entrants can confirm that pre-entry preparations have been completed.	
	2017-05-11-18	BPA should clearly require the contractor to have a rescue plan and that the contractor provide documentation of their rescue plan.	
	2017-05-11-19	If the contractor plans to use local EMS or a confined space rescue service, the contractor should provide documentation of their evaluation of that rescue service's ability in terms of proficiency with rescue-related tasks and equipment, to function appropriately while rescuing entrants from the particular permit space or types of permit spaces identified. That evaluation should include: <ul style="list-style-type: none"> o Consideration of the capability to reach the victim(s) within a time frame that is appropriate for the permit space hazard(s) identified; o Is equipped for, and proficient in, performing the needed rescue services; o Agrees to notify the employer immediately in the event that the rescue service becomes unavailable o A plan to inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site; and o Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue team or service can develop appropriate rescue plans and practice rescue operations. 	

Design Safety Review Checklist - Cranes or Heavy Construction Equipment

Name of Project:		
Date of Review:		Design Review Stage
DSR Team Leader:		
DSR Team Leader Phone#:		<input type="checkbox"/> 30% <input type="checkbox"/> 60% <input type="checkbox"/> 90%

Disposition Check = Meets Standard NA = Does not apply to this project ALT = Alternative Risk Control	Safety Design Standard #	Design Safety Review Check	Decision Notes
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Cranes or Heavy Construction Equipment</i>	
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Grounding of Equipment</i>	
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Grounding of Normally Energized Electrical Equipment</i>	
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Grounding of Equipment, Tools, and Metallic Cables</i>	
	2017-05-11-20	Contractor to develop and include a crane safety plan as a part of the Site Specific Safety Plan. It is site specific, and addresses crane issues on the jobsite. Within the Crane Site Specific Safety Plan are items which detail "who", "when" and "how" certain processes are performed, as well as lift plans that describe the procedures to be utilized for each lift.	
	2017-05-11-21	Crane safety plan must contain: <ul style="list-style-type: none"> • Analysis of: <ul style="list-style-type: none"> o the locations where the contract / SOW prohibits or limits crane operations o potential hazards identified by the BPA Project Team in the Statement of Work o potential hazards identified by the contractor • Establish procedures and priorities for the use of the crane. • Assurance of satisfactory procedures for the inspection and/or load testing of cranes, both when cranes first arrive on the site and on a periodic basis during the course of construction. ANSI B30.5, Mobile & Locomotive Cranes, Section 5-2, Inspection, Testing, and Maintenance, and also section, 5.2.4, Rope Inspection, Replacement and Maintenance, as well as other applicable local, state and federal standards apply. • Assurance of the minimum qualifications of the workers performing rigging and lifting operations. • Assurance that workers are familiar with proper rigging procedures and that rigging is supervised by knowledgeable, competent persons and that these workers have an adequate employee orientation prior to their commencing work. • Establish well-defined operational criteria and a means of determining compliance. These criteria should include: the effect of weather, configuration of the crane which may be permitted, movement and transportation of loads and other direct operational uses. • Include a lift plan for production lifts and the criteria under which these are going to be performed and a separate lift plan for each critical lift. • Document the procedure for disseminating the plan to all parties involved. • Establish the crane movement plan. • Document and confirm that a Lift Director is assigned and identified for each lift. 	

	2017-05-11-22	Require contractor to Develop and include a General lift plan for Lifts that are neither Critical nor Production fall in this category. For example, the unloading of miscellaneous supplies or the delivery of lumber to a carpenter crew are general lifts.	
	2017-05-11-23	<p>The general lift plan should:</p> <ul style="list-style-type: none"> • List any restrictions that are necessary because of proximity to conductor, substation equipment and conductor, equipment, buildings, weather limitations, time of day and/or temperature restrictions; • Require that the weight of the load be known; • Give a description of the general arrangement and use of rigging equipment such as "no chains allowed" or "no slings made with cable clamps" or any other general admonition that the Service Provider feels is appropriate to site conditions or BPA has listed in the Contract Specifications. • Outline the procedures used to assure that rigging equipment has been inspected properly; • Require that there is a Lift Director in charge of each lift. This person may be the crane operator, a rigger or carpenter, but must be someone who is experienced and understands the task to be performed. There must be no misunderstanding as to the person in charge; • Have a requirement that a signal person be assigned and clearly identified as such to the operator. If multiple signal persons are required, a thorough briefing on the sequential communication with the crane operator is required. 	
	2017-05-11-24	<p>Require contractor to develop and include a Production Lift Plan for Production Lifts. Production lifts are repetitive and do not fall into the classification of a critical lift. Production lifts may all be covered by one lift plan that outlines the parameters and the equipment to be utilized as well as the procedures.</p>	
	2017-05-11-25	<p>Require production lift plans to include:</p> <ul style="list-style-type: none"> • Contain a physical description of the class or group of items to be repetitively lifted including size, shape, weight and center of gravity. The description for a class or group must include the most adverse properties for crane operation such as the heaviest or largest that will occur in the class; • List operational factors such as lifting and swing speeds, and the travel path; • Address hazards from failure of the rigging and/or collision. A hazard evaluation should be performed in order to identify and eliminate these potential hazards. Hazards associated with lifting over personnel and congested areas should be eliminated by either controlling access to the area or by changing the path of the lifting operation; • List specific restrictions over and above those for the general lift plan that are necessary because of weather limitations, time of day and/or temperature restrictions; • Identify the specific type and minimum capacity of the lifting equipment required. • Identify the specific arrangement of rigging equipment; • Identify any special rigging fixtures which might be required. The fixtures should be designed in accordance with applicable regulations and standards; • Require that rigging and lifting equipment be subject to specified inspection intervals and that a documented trail of the history of inspections and/or certifications be maintained; • Require that a designated leader of the rigging crew be appointed and specifically designated to perform the leadership functions needed by the rigging crew. 	
	2017-05-11-26	<p>Require the contractor to develop and include critical lift plans for critical lifts. Any lift utilizing multiple cranes is a critical lift. Other critical lift criteria would be the weight of the equipment to be lifted as compared to the allowable lift, the swing area of the lift, the overall risk, difficulty or complexity of the lift, toxicity of the product being lifted and other considerations at the discretion of the producer of the lift plan. The Crane Safety Plan sets appropriate limits on these parameters and contains a list of Critical Lifts. Critical Lifts require individual lift plans. (Use the requirements under general lift plan.)</p>	

Design Safety Review Sub-Checklist - Fall Protection

Name of Project:		
Date of Review:		Design Review Stage
DSR Project Mgr / Engr:		
DSR Facilitator:		<input type="checkbox"/> 30% <input type="checkbox"/> 60% <input type="checkbox"/> 90%

Disposition Check = Meets Standard NA = Does not apply to this project ALT = Alternative Risk Control CFW = Check at final walk-through	Safety Design Standard #	Design Safety Review Check	Decision Notes
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Fall Protection</i>	
	2017-05-17-50	Any work that will be conducted under a fall protection plan will need to be reviewed by the Safety Organization SME for Fall Protection for approval, and a written waiver for the use of the fall protection plan be included in the review submission to the Safety Organization (FALL PROTECTION STRATEGY IS PREFERRED)	
	2017-05-17-51	Require the SSSP to include the contractor's Fall Protection Strategy	
	2017-05-17-52	BPA policy requires that every project involving climbing is reviewed to determine if fall protection installation should be included in the project plan. a) Project in scope of requiring evaluation are all new construction, retrofitting and routine maintenance and modification. b) Project team is required to consult with an SME for fall protection to assess feasibility and applicability of including the installation of fall protection systems as part of this project. c) Contact the Safety Office SME for Fall Protection. Main Safety Office number is: (360) 418-2397.	
	2017-05-17-53	You're required to contact Transmission Engineering – TEL to identify if any towers that the vendor may climb will not support shock loading from fall protection.	
	2017-05-17-54	All towers within the scope of the contract work that will not support fall protection requirements are clearly listed and identified as "not capable of supporting shock loading from fall protection" in the specifications.	
	2017-05-17-55	All towers that will be climbed identify if any towers will contain antennas capable of transmission. If any towers contain antennas capable of transmission, the specifications should clearly note: a) BPA structures may have antennas that may be energized without notice. b) The minimum safe working distance for these antennas may be greater than five feet. c) Any antenna that requires a minimum safe working distance greater than 5 feet will have a warning sign posted to indicate the safe working distance.	
	2017-05-17-56	Site Specific Safety Plan to clearly document the contractor's approach to controlling RF exposures.	
	2017-05-17-57	e) Transmission Engineering – TEL maintains a list of BPA structures containing Telecom equipment on the following Sharepoint Site: https://txportal.bud.bpa.gov/orgs/TE/trans-eng/Trans_Eng_Data/default.aspx . Checked?	
	2017-05-17-58	Require the SSSP or MSSP to include the written fall protection plan or fall protection strategy	
	2017-05-17-59	If the vendor may be potentially working within proximity of an edge that is 4 feet or more above a lower level? o How are you identifying those areas of concern within your statement of work? o How are you requiring consideration of those areas in the contractor's SSSP or MSSP?	

		<p>Fall protection plan required to cover</p> <ul style="list-style-type: none"> o Elevator Shafts o Boom Lifts o Existing BPA Fall Protection systems such as exterior static lines o Rolling Scaffolding o Building Exterior o Open Stairwells (Railings removed during construction work activities) o Need for roof access (including inspections) o Transmission Line Tower work (All that includes climbing above 4 feet) o Substation work (All that includes climbing above 4 feet) o Scaffolding o Scissor Lifts o Window Openings (construction, repair, replacement, exterior cleaning) 	
	2017-05-17-61		
		<p>Require</p> <ul style="list-style-type: none"> o Assembly and disassembly of all equipment shall be done according to the manufacturer's specific recommended procedures. o Inspection shall be done by the foreman at the beginning of each job and by the employee, daily or PRIOR to each use. o Maintenance shall be completed on equipment prior to use and when recommended by the manufacturer. o Any equipment found to be defective must be tagged and removed from service. 	
	2017-05-17-62		
		<p>If scaffolding will be used, require that the scaffolding be designed by a professional engineer as required by OSHA and that documentation of PE design must be available at the job site on request by BPA.</p>	
	2017-05-17-63		
		<p>Are there existing BPA fall protection systems in place associated with the upcoming work areas that should be conveyed to the contractor? What is the strategy for informing the contractor?</p>	
	2017-05-17-64		
		<p>Are there existing BPA fall protection anchorages in place associated with this project that should be conveyed to the contractor?</p>	
	2017-05-17-65		
		<p>Ensure coordination is taking place to ensure vendor has adequate knowledge of BPA fall protection anchorage points.</p>	
	2017-05-17-66		
		<p>Contractor required to include a fall protection strategy in SSSP?</p>	
	2017-05-17-67		
		<p>Contractor required to include Fall Hazards in the fall protection strategy? Vendor should clearly list the fall protection hazards at the job site in sufficient detail to demonstrate that an assessment of potential fall hazards has taken place. Areas of risk at BPA include:</p> <ol style="list-style-type: none"> a. Elevator Shafts b. Boom Lifts c. Existing BPA Fall Protection systems such as exterior static lines d. Rolling Scaffolding e. Building Exterior f. Open Stairwells (Railings removed during construction work activities) g. Need for roof access (including inspections) h. Transmission Line Tower work (All that includes climbing above 4 feet) Substation work (All that includes climbing above 4 feet) i. Scaffolding j. Scissor Lifts k. Window Openings (construction, repair, replacement, exterior cleaning) 	
	2017-05-17-68		

		<p>Contractor required to include the type of fall protection systems to be utilized at the job site in the fall protection strategy? Examples are as follows:</p> <ul style="list-style-type: none"> a. Full Body Harness b. Fall Protection Lanyard c. Retractable Lanyard (SRL) d. 3' Positioning Lanyard e. Verticle Lifeline f. Large Carabiner g. Rope Grab h. Cable Safety System i. Restraint Line j. Horizontal Life Line k. Guard Rails l. Catch Platform m. Scaffolding Platform n. Temporary Anchors o. Portable guardrails p. Modular anchors q. Safety Nets 	
	2017-05-17-69		
		<p>Contractor required to include in their fall protection strategy their assembly, maintenance, inspection, and disassembly procedures, including assurances that:</p> <ul style="list-style-type: none"> a. Assembly and disassembly of all equipment shall be done according to the manufacturer's specific recommended procedures. b. Inspection shall be done by the foreman at the beginning of each job and by the employee, daily or PRIOR to each use. c. Maintenance shall be completed on equipment prior to use and when recommended by the manufacturer. d. Any equipment found to be defective must be tagged and removed from service. 	
	2017-05-17-70		
		<p>If scaffolding will be used, provide assurance that boards shall be installed on all scaffolding to prevent tools and equipment from falling from the scaffolding. Toe boards must be at least 3-1/2 inches in height and installed along the edge of scaffolding and walking surfaces in an area sufficient to protect employees below. Where tools, equipment or materials are piled higher than the top of the toe board, paneling or screening will be erected to protect employees below.</p>	
	2017-05-17-71		
		<p>Require a competent person in scaffolding to be present during the assembly of the scaffolding.</p>	
	2017-05-17-72		
		<p>Require the contractor to have a rescue plan and that the contractor provide documentation of their rescue plan.</p>	
	2017-05-17-73		
		<p>If the contractor plans to use local EMS or a rescue service, the contractor should provide documentation of their evaluation of that rescue service's ability in terms of proficiency with rescue-related tasks and equipment. That evaluation should include:</p> <ul style="list-style-type: none"> o Consideration of the capability to reach the victim(s) within a time frame that is appropriate hazard(s) identified; o Is equipped for, and proficient in, performing the needed rescue services at the heights associated with the work. o Agrees to notify the employer immediately in the event that the rescue service becomes unavailable o A plan to inform each rescue team or service of the hazards they may confront when called on to perform rescue at the site; and o Provide the rescue team or service selected with access to all permit spaces from which rescue may be necessary so that the rescue team or service can develop appropriate rescue plans and practice rescue operations. 	
	2017-05-17-74		
		<p>If existing fall protection systems are in place for the building, check with Workplace Services to see if they're a certified anchorage. Either inform contractor the fall protection system is certified or they're not certified and shall not be used.</p>	
	2018-08-02-1		

Design Safety Review Checklist - General Construction

Name of Project:		
Date of Review:		Design Review Stage
DSR Team Leader:		
DSR Team Leader Phone#:		<input type="checkbox"/> 30% <input type="checkbox"/> 60% <input type="checkbox"/> 90%

Disposition Check = Meets Standard NA = Does not apply to this project ALT = Alternative Risk Control	Safety Design Standard #	Design Safety Review Check	Decision Notes
		APPLICABILITY TO ALL CONSTRUCTION	
		Where cranes, aerial lift equipment, heavy equipment or skid steer equipment will be used, require the contract employer to submit to the COR assurance of competency of employees operating cranes, aerial lift equipment, heavy equipment, and other motorize equipment by documenting their experience, training, and licensing.	
		Check access to worksite and haul routes. Check plans for ensuring the condition of roads, clearance restrictions, bridge-load limits to ensure safe access for personnel and equipment to the job site.	
		Require the contract employer to provide assurance that they have conducted a job hazard assessment of all work tasks and have clearly identified the hazard controls and required personal protective equipment for those controls. Require the contract employer to state their plan for ensuring the planned hazard controls and Personal Protective Equipment will be utilized for those job tasks.	
		Ensure all equipment required under 29 CFR 1926.1000 Rollover Protective Structures (ROPS) for Material Handling Equipment, to be equipped with ROPS as listed in OSHA 1926.1001, "Minimum Performance Criteria for Rollover Protective Structures for Designated Scrapers, Loaders, Dozers, Graders, and Crawler Tractors."	
		Check requirement for safety restraints, as provided in powered industrial equipment that is equipped with a certified roll-over protection system, must be worn in accordance with 29 CFR 1926.602, Material Handling Equipment	
		APPLICABILITY TO ALL BUILDING CONSTRUCTION	
		For general construction the supervisor foreman should have a minimum of 3 years' experience as a supervisor or foreman in the type of construction contained in the project specifications.	
		APPLICABILITY TO ALL TLM CONSTRUCTION	
		For work on Transmission Line Construction, the supervisor should have a minimum of 3-years' experience as a supervisor or foreman in high-voltage transmission line construction.	
		APPLICABILITY TO ALL SUBSTATION CONSTRUCTION	
		For work within a substation yard, the supervisor should have a minimum of 3- years' experience as a supervisor or foreman in high-voltage substation construction.	

Design Safety Review Checklist - High Voltage

Name of Project:		
Date of Review:		Design Review Stage
DSR Team Leader:		
DSR Team Leader Phone#:		<input type="checkbox"/> 30% <input type="checkbox"/> 60% <input type="checkbox"/> 90%

Disposition Check = Meets Standard NA = Does not apply to this project ALT = Alternative Risk Control	Safety Design Standard #	Design Safety Review Check	Decision Notes
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Grounding of Equipment, Tools, and Metallic Cables</i>	
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Ground Grid</i>	
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Minimum Qualifications for Qualified Electrical Workers</i>	
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Grounding</i>	
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Grounding Normally Energized Electrical Equipment</i>	
		Check project design alignment and strategy for contractor awareness of project design requirements in the contractor Safety and Health requirements for Prime and Subcontractors for requirements under <i>Switches, Isolating Devices, Energized, Restrictions On</i>	
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Minimum Qualifications for Qualified Electrical Workers</i>	
		Check project design alignment and strategy for contractor awareness of project design requirements in the Contractor Safety and Health Requirements For Prime and Subcontractors for requirements under <i>Grounding</i>	
	2017-05-11-35	BPA QEW has reviewed SOW specifications	
	2017-05-11-36	The project specifications must clearly list the nominal voltage on any exposed live parts that may be encountered during the duration of this project.	
	2017-05-11-37	OSHA regulations require BPA to notify the contractor of maximum switching-transient voltages. This can be accomplished two ways: a. Clearly note the maximum switching transient voltages in project specifications or b. Require a meeting between BPA and contractor in which maximum switching voltages are conveyed and the documentation of that meeting is conveyed to the BPA COTR.	
	2017-05-11-38	The presence of hazardous induced voltages relevant to the project must be conveyed to the contract employer. There are two methods that are acceptable: a. Include this information in the project specifications, or b. Include a required meeting between BPA and the contractor to discuss and convey this information to the contractor before work begins. Documentation of that meeting should be conveyed to the COTR.	
	2017-05-11-39	Include the presence of protective grounds and equipment grounding conductors	
	2017-05-11-40	Identify the locations of circuits and equipment associated with this project, including electric supply lines, communication lines, and fiber optic lines.	

Design Safety Review Checklist - Line Construction

Name of Project:			
Date of Review:		Design Review Stage <input type="checkbox"/> 30% <input type="checkbox"/> 60% <input type="checkbox"/> 90%	
DSR Team Leader:			
DSR Team Leader Phone#:			

Disposition Check = Meets Standard NA = Does not apply to this project ALT = Alternative Risk Control	Safety Design Standard #	Design Safety Review Check	Decision Notes
	2017-05-11-55	Require the vendor to complete an electrical safety plan as part of their Site Specific Safety Plan or Multi-Site Safety Plan.	
	2017-05-11-56	<p>Minimum Approach Distance requirements in the Electrical Safety Plan portion of SSSP:</p> <ul style="list-style-type: none"> o Contractor’s plan for adherence to the appropriate Minimum Approach Distances when working around energized electrical equipment or conductors. o Understanding that no person or piece of construction or maintenance equipment can operate closer than 15’ on circuits operating at voltages up to 345KV or 20’ on circuits operating at 500KV. If these distances cannot be maintained, an electrical work Clearance, or the assignment of an electrical Safety Watcher may be required. o Material staging and management plan to avoid violations of the Minimum Approach Distance. o Awareness and hazard control of overhead/nearby transmission/distribution lines in your work area and mitigation plan for known hazards. o Use of Safety Watchers o Understanding if Clearances or Hold Orders required on this project 	
	2017-05-11-57	<p>Clearance Requirements in the Electrical Safety Plan portion of SSSP:</p> <p>2. Clearance Requirements</p> <ul style="list-style-type: none"> o The Contractor shall not come within the Minimum Approach Distances (MAD) of energized lines or equipment except under the provisions of a Work Clearance. o All conductors and equipment shall be treated as energized unless the Contractor has been informed by a qualified BPA Clearance Holder or dispatch that the line or equipment is de-energized and cleared for the Contractor to perform their work. A Job Briefing shall be conducted by the BPA Clearance Holder and all project workers shall be in attendance. o The Qualified Electrical Worker in charge of the project shall be qualified to recognize when a work Clearance on an energized conductor is required. o Contractor personnel shall be trained in working under a Clearance, and trained in the process of returning a line into service. o Working under a Clearance (or Concurrent Clearance) requires precise communications with the BPA Dispatcher and other work crews who may be working on the same line, and/or adjacent lines. Contractor personnel shall be trained and proficient in communications while working under a Clearance. 	

		<p>Safety Watcher Requirements for Electrical Safety Plan portion of SSSP:</p> <ul style="list-style-type: none"> o A Safety Watcher may be required when working in proximity to energized lines or equipment. The Contractor should make a hazard assessment to determine if a Safety Watcher is needed for any portion of the work. The hazard assessment should be communicated to the BPA Contracting Officer's Technical Representative (COTR). o Contractors working on energized equipment should have equipment onsite (laser range finders or other non-conductive measuring devices) for measuring the distances from the conductor to ground distances or equipment. o The SSSP shall state whether a Safety Watcher will or will not be required on the project. Large projects with multiple work activities may require multiple Safety Watchers. 	
	2017-05-11-58		
		STRINGING OPERATIONS REQUIREMENTS	
	2017-05-11-59	Require the contractor to include a stringing plan as part of the SSSP.	
		Stringing Plan must contain Contractor's description of their procedures for stringing including: <ul style="list-style-type: none"> - Description of the stringing method they will propose - Types of stringing equipment that will be used - Stringing procedures that will be followed - Grounding and bonding devices and procedures - Methods and procedures that will be used for crossing areas with potential hazard to members of the public such as roads, highways, buildings, utility lines, and railways. 	
	2017-05-11-60		
		Stringing Plan must contain the following equipment requirements: <ul style="list-style-type: none"> - Operators of pulling and braking machines shall be totally protected from contact with bull wheels, cable drums, and tension line recoil / snap-back. - A designated person, in direct voice communication with the pulling machine operator, shall watch the attachment between the pulling line and the conductor as it travels through each stringing block. 	
	2017-05-11-61		
		Stringing Plan must include the following Grounding and Bonding requirements: <ul style="list-style-type: none"> - All equipment, conductors, anchors, and structures that may be contacted during the course of the work area shall be bonded together and grounded. Establish equipotential work zones to limit touch and step voltage to a safe level by the proper use of low-resistance shunts, jumpering, and grounding equipment. Grounding equipment includes personal grounds, master grounds, structure base grounds, running grounds, traveler grounds, ground grids, and ground rods. - A moving-type ground (traveling ground) shall be installed and attached to an approved ground at the tensioning setup or bonded to the tensioner. - When splicing, making up jumpers, and working around un-spliced conductors. Employees shall not contact two conductors simultaneously until both conductors are bonded together. 	
	2017-05-11-62		
		Stringing plan must include the following Grounding and Bonding requirements in your specifications for stringing over energized line crossings: <ul style="list-style-type: none"> - Conductor clipping shall be completed on structures adjacent to energized crossings, prior to clipping the remaining structures in that line section. - Employees shall not contact two conductors simultaneously until both conductors are grounded to a common point, unless protective ground leads are installed and conductor clipping is completed on structures adjacent to energized line crossings. - Aerial lifts shall be grounded and bonded to the structure or conductor, as appropriate, until conductor clipping is completed on structures adjacent to energized crossings. 	
	2017-05-11-63		
		If stringing over roadways or highways, Stringing plan must include the plan for informing the authority having jurisdiction over that roadway or highway and ensuring that necessary permits are obtained	
	2017-05-11-64		

Safety Design Review Checklist - Temporary Traffic Control (TTC)

Name of Project:		
Date of Review:		Design Review Stage
DSR Team Leader:		
DSR Team Leader Phone#:		<input type="checkbox"/> 30% <input type="checkbox"/> 60% <input type="checkbox"/> 90%

Disposition <small>Check = Meets Standard NA = Does not apply to this project ALT = Alternative Risk Control</small>	Safety Design Standard #	Design Safety Review Check	Decision Notes
	2018-01-18-04	Require minimum qualifications for temporary traffic control planning is a nationally recognized certification that covers MUTCD Part 6 for work zone planning and design	
		Contractor provided a project-specified design speed for TTC zone	
		Contractor to consider events, rush hour, holiday and seasonal traffic in TTC design.	
		Contractor required to monitor effectiveness of traffic control plan in ensuring driver and worker safety.	
		Contractor to modify the plan, if appropriate, to provide mobility and positive guidance to the road user and to provide worker safety.	
		Provide authority for the TTC contractor to stop the job, if needed, to ensure applicable or remedial safety measures are taken.	
		Vehicular incident or near hit within the TTC zone triggers the TTC contractor to stop the job and assess the need for remedial safety measures. Any incident or near hit shall require the TTC contractor to notify the COTR of the incident and recommended remedial measures.	
		Require TTC contractor to participate in a pre-bid meeting with prime contractor or BPA project team to discuss: a. Construction schedule, including workday restrictions (traffic volume) b. Site visit prior to TTC plan development c. Contractor plan for monitoring traffic risk d. Inclusion of rumble strips in TTC design where potential for stop may exist.	
		Require contractor to conduct early coordination with the following entities if potential impact exists: a. railroad company or light rail transit agency. b. river crossing	
		Require the contractor to utilize tapers in both the transition and termination areas whenever feasible.	
		Additional safety considerations to consider for workers	
		Training—all workers should be trained on how to work next to motor vehicle traffic in a way that minimizes their vulnerability. Workers having specific TTC responsibilities should be trained in TTC techniques, device usage, and placement.	
		Temporary Traffic Barriers—temporary traffic barriers should be placed along the work space depending on factors such as lateral clearance of workers from adjacent traffic, speed of traffic, duration and type of operations, time of day, and volume of traffic.	
		Speed Reduction—reducing the speed of vehicular traffic, mainly through regulatory speed zoning, funneling, lane reduction, or the use of uniformed law enforcement officers or flaggers, should be considered.	
		Activity Area—planning the internal work activity area to minimize backing-up maneuvers of construction vehicles should be considered to minimize the exposure to risk.	

**APPENDIX B – POLLUTION ABATEMENTS
CLEARANCE**

U.S. DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION
POLLUTION ABATEMENT CLEARANCE (PAC) REQUEST
(Send completed package to: KEP-4; ATTN: PAC's)

PAC NUMBER		DATE RECEIVED
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1. Site Location	2. Work Order	3. FA/CC Start Date
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4. Project Description (e.g., Equipment to be installed or removed, footings to be installed or removed, etc.)

5. Clearance Requester	6. Telephone Number	7. Routing Code
------------------------	---------------------	-----------------

8. Project Manager	9. Telephone Number	10. Routing Code
--------------------	---------------------	------------------

11. Will this project entail any soil disturbance?
 Yes (If YES, please complete items 11A, 11B and 11C below; if NO, please go to item 12)
 No

11A. Describe the extent of the soil disturbance

11B. Desired use of excess/disturbed soil (Check one or more of the following)
 Backfill on Project Placed elsewhere on site or BPA property Off-site Disposal

11C. Approximately, how much excess soil (**Not to include backfill**) will be generated? (In cubic yards)

12. Will this project generate other types of debris for disposal such as footings, fencing, yard rock, building debris, pipes, lead, asbestos, paint or any other hazardous/regulated wastes?
 Yes, (If YES, please identify quantities of each type of debris below) No

12A. Desired use of excess debris (Check one or more of the following)
 Backfill on Project Placed elsewhere on site or BPA property Off-site Disposal

13. Are there any other projects planned for this site within the next two (2) years?
 Yes (If Yes, please indicate the Project(s) and Work Order(s)) No

14. ATTACHMENTS (Required)
 Detailed Drawing (Include specific project areas (**Dimensioned and highlighted**) for new equipment and soil excavation)
 Project Design Plan (If available)

- NOTES:**
- Whenever possible, clean excess soil should be kept on BPA property. If there are no on-site options available, then off-site disposal should be considered. Off-site disposal facilities will be recommended in the PAC. If there is a specific desired disposal location, please indicate.
 - The PAC process is not intended to provide NEPA compliance (i.e. replace the need for a CX).
 - A **Dig Permit** is required, in addition to a PAC, for all soil disturbing activities at the ROSS Complex in Vancouver.
 - If it is unclear as to whether or not a PAC needs to be initiated for a project, please contact Pollution Prevention and Abatement for assistance.

APPENDIX D

BPA FORMS

Obtain most recent electronic versions of BPA forms from COR or COR designated representative.

Contents:

F4431.02e	Returned Materials Receipt
F6410.15e	Contractor's Report of Personal Injury, Illness, or Property Damage Incident
F6410.41e	Contract Construction Material Request

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U.S. DEPARTMENT OF ENERGY
BONNEVILLE POWER ADMINISTRATION

CONTRACTOR'S REPORT OF PERSONAL INJURY, ILLNESS, OR PROPERTY DAMAGE INCIDENT

BPA Safety Office Use Only: Case Number:

Authority: 5 U.S.C. 301; Department of Energy Organization Act; Executive Order 12009.

Purpose: BPA will use this information to document and analyze incidents resulting in injury and develop appropriate corrective action.

Routine Uses: A record from this system may be disclosed to physicians who treat injured or ill employees and the Department of Labor to maintain a record of occupational injuries or illnesses. A record in this system may be disclosed to the appropriate local, state, or federal agency when the records alone, or in conjunction with other information, indicate a violation or potential violation of law, whether civil, criminal, or regulatory in nature. A record from this system may be disclosed for the purpose of an investigation, settlement of claims, or the preparation and conduct of litigation. Additional routine uses of the information contained in this record are listed in DOE-38.

Disclosure: Compliance is voluntary; however, failure to furnish this information may delay or preclude the pursuit of corrective action

OFFICIAL USE ONLY

May be exempt from public release under the Freedom of Information Act (5 U.S.C. 552), exemption number and category: _____
BPA review required before public release
Name/Org: _____ Date: _____

Instructions: Complete and submit one copy each to: 1-Project Manager; 2-Contracting Office; 3-Safety Office

A. Information Regarding Injured Contractor

1. Name of Contract Employee | 2. Job Title | 3. Age | 4. Gender | 5. Name and Address of Contracting Company

Male
 Female

6. BPA Org Code Contractor assigned to | 7. Name of Project Involved | 8. Location of Accident

9. Contract Number | 10. Date of Accident (Month, Day, Year) | 11. Time of Accident (Specify AM/PM) | 12. Time Contract Employee Began Work (Specify AM/PM)
Hour 00:00 Minute 00:00 AM PM

13. Occupation Status (Check One)		14. Incident Type	15. Injury Type	
<input type="checkbox"/> (1) Contractor	(1A) If Contractor, Date of Employment		<input type="checkbox"/> (1) Injury	<input type="checkbox"/> (1) Fatal
<input type="checkbox"/> (2) 3 rd Party			<input type="checkbox"/> (2) Property Damage	<input type="checkbox"/> (2) Recordable
		<input type="checkbox"/> (3) Property Damage (3 rd Party)	<input type="checkbox"/> (3) Lost Time	

16. Total Number of Days away from work | 17. Total Number days of Job Restriction | 18. Total Number of days of Job Transfer

19. INJURY RECORDED IN CONTRACTOR'S OSHA 300 LOG? Yes No

20. What was the Contract Employee doing just before the incident occurred? Describe the activity, as well as the tools, equipment, or material the Contract Employee was using. Be specific. (Examples: "climbing a ladder while carrying materials", "spraying chlorine from a hand sprayer", "daily computer key-entry.")

21. What Happened? Explain how the injury or incident occurred. Examples: "When ladder slipped on wet floor, worker fell 20 feet". "Worker was sprayed with chlorine when gasket broke during replacement", "Worker developed soreness in wrist over time."

22. What was the injury or illness? Explain the part of the body that was affected and how it was affected; be more specific than "hurt," "pain," or "sore." Examples: "strained back", "chemical burn, hand", "carpal tunnel syndrome."

23. What object, circumstance, or substance directly harmed the Contract Employee? Examples: "Impact with object", "chemical exposure", "radial arm saw." If this question does not apply to the incident, leave blank or not applicable.

Retain for 10 years and then dispose. (source: PE-53-17, Retention Schedule: N1-305-07-1-14/c)

OFFICIAL USE ONLY

CONTRACTOR'S REPORT OF PERSONAL INJURY, ILLNESS, OR PROPERTY DAMAGE INCIDENT

THE FOLLOWING TO BE COMPLETED BY CONTRACT EMPLOYEE'S SUPERVISOR

B. INFORMATION REGARDING 3RD PARTY PROPERTY DAMAGE

1. Name of Property Owner

2. Address of Property Owner

3. Description and Location of Property

4. Nature and Extent of Damage

C. INFORMATION ABOUT THE PHYSICIAN OR OTHER HEALTH CARE PROFESSIONAL

1. Name of Physician or Other Health Care Professional

2. Name and Address Where Treatment Received

3. Was Contract Employee Treated In An Emergency Room?

Yes No

4. Was Contract Employee Hospitalized Overnight As An In-Patient?

Yes No

5. Supervisory Opinion (*How could accident have been prevented*) (*Please state Who, What, Where and How*)

6. Please Attach Any Witness Reports (*Place cursor in row (space) below; Toolbar, Insert, File*)

7. Signature (*Foreman or Immediate Supervisor*)

a. Title

b. Phone Number

c. Date

8. Preventative Action Taken (*Action taken to prevent a recurrence.*)

9. Signature (*CO, COTR or Inspector*)

a. Date

OFFICIAL USE ONLY

APPENDIX “E”

APPLICABLE BPA WORK STANDARDS & SUBSTATION MAINTENANCE STANDARDS & GUIDES

(Please go to Project Wise to obtain the most current
revision of the standards)

Table of Contents

BPA Work Standards:

1. BPA-WS-3-3 - “Work on Equipment Separated from the Power System”
2. BPA-WS-6-2 - “Voltage Testing Procedures”
3. BPA-WS-6-4 - “PPG System”
4. BPA-WS-6-10 - “Use of Corona Rings as Grounding Point in Substations”
5. BPA-WS-6-12 - “Power & Telephone Service to Temporary Trailers”
6. BPA-WS-6-13 - “Underground Residential Distribution (URD)”
7. BPA-WS-7-3 - “Protective Guards and Barriers In Substations”
8. BPA-WS-8-1 - “Lockout/Tagout”
9. BPA-WS-9-1 - “Servicing and Testing Current Transformers”
10. BPA-WS-9-2 - “Batteries & Chargers”
11. BPA-WS-9-3 - “Fiber Optics”
12. BPA-WS-9-8 - “Hydraulic Safety & Policy”
13. BPA-WS-10-11 - “System Operations Signs”
14. BPA-WS-10-14 - “Communications during Concurrent Work Clearances with Contractors”
15. BPA-WS-11-1 - “Confined Spaces”
16. BPA-WS-11-3 - “Flammable / Combustible Liquids”
17. BPA-WS-11-4 - “Storage And Handling Of Propane”
18. BPA-WS-11-5 - “Communications Antennas - RF Exposure”

Substation Maintenance Standards & Guides Standards:

1. SM-STD-1-4-1-1 - “External Bushing CT Cover”
2. SM-STD-2-6-8 - “Procedure for Transformer & Reactor Dry-out”
3. SM-STD-4-1-1 - “All Capacitors”
4. SM-STD-4-1-4 - “Fuseless Capacitors Discharge Method”
5. SM-STD-5-5-2 - “Bus Pad Failures”
6. SM-STD-8-1-5 - “Battery Terminal Covers”
7. SM-STD-10-2-2 - “Making Bus Connections”
8. SM-STD-10-2-4 - “Tinning Copper Bus Connections”
9. SM-STD-10-3-1 - “Insulator Surface Cleaning and Washing”
10. SM-STD-11-1-6 - “Oil Hose Continuity Check”
11. SM-STD-11-2-1 - “Static Electricity Generation when Handling Insulating Oil”
12. SM-STD-11-2-4 - “Insulating Oil Handling”
13. SM-STD-11-2-7 - “Recycling SF6 Gas from Equipment Being Retired”
14. SM-STD-11-4-1 - “SF6 Handling”
15. SM-STD-12-1-1 - “PCB-in-Oil Analysis & Preparation for Shipment”
16. SM-STD-13-1-2 - “Fence Hazards Near BPA Substations”
17. SM-STD-13-1-3 - “Substation Yard Fence Grounding”
18. SM-STD-13-1-5 - “Precautions When Contacting The Substation Ground Grid”
19. SM-STD-13-1-6 - “Exothermic Welding Process Cadweld and Thermoweld”

20. SM-STD-13-1-9 - “Protecting Against Transferred Potential Hazards”
21. SM-STD-13-1-10 - “Applying Portable Protective Grounds”
22. SM-STD-13-1-12 - “Bonding”
23. SM-STD-13-1-13 - “Grounding Precautions”
24. SM-STD-13-1-15 - “Grounding Work Equipment and Vehicles in Substations”
25. SM-STD-13-1-16 - “Grounding of Substation Control, Power, Instrumentation & Alarm Cable Shields”
26. SM-STD-13-1-17 - “Adding to and Expanding Substation Ground Grids”
27. SM-STD-17-1-2 - “Special Purpose Electrical Barriers or Guards”
28. SM-STD-17-1-3 - “Mercury Spill Cleanup”
29. SM-STD-18-1-12 - “Trenwa Cable Trench”

APPENDIX F – BPA BOLT TORQUE STANDARDS

- B. TOWER BOLTS AND NUT ORIENTATION: Unless impractical to do so, install nuts facing up or out.
- C. TOWER BOLTS AND NUT TORQUE:
1. Tighten the bolts and nuts to the torques listed below. When necessary, use "backing" to prevent the bolt from turning when tightening the nut to the required torque.

ASTM A325 BOLT TORQUE	
Diameter (Inches)	Torque (Pound-Feet)
1/2**	45 - 70
5/8	90 - 140
3/4	160 - 250
7/8	260 - 410
1	390 - 610
1-1/8	480 - 760
1-1/4	670 - 1070

** Prior to using the bolts, inspect the head marking for the designation "32S" (ASTM A325 Bolts). BPA has maintained a supply of older 1/2 inch diameter bolts without the 32S designation. For those bolts, apply a 30 - 45 pound-foot torque.

2. The COTR will check torques in a tightening motion with a calibrated hand torque wrench on at least two percent of the bolts in a structure or assembly. When ten percent or more of the bolts checked are outside the specified torque range:
 - a. Measure the actual torque of every bolt in the structure or assembly.
 - b. Re-torque bolts found to be below the specified torque range, and
 - c. Replace bolts that have been torqued over the specified torque range.
- D. STEP BOLTS: Install step bolts with both an inside and an outside nut. Install the inside nut tightly screwed against the step-bolt shank. Do not install or straighten bent or otherwise damaged step bolts. When installed step bolts are found to be bent or otherwise damaged, remove and replace them. Spray paint damaged step bolts and give them to the COTR.

- E. LOCKNUTS: Install locknuts (specific type is shown on the drawings) on bolts, including on step bolts. Tighten locknuts 1/4 turn beyond the finger-tight position.

08.01.07 ASSEMBLY

- A. BLOCKING: Support each assembly with blocking to keep each member off the ground and straight. Use blocking sturdy enough to hold the members straight during assembly and under adverse weather conditions that could occur prior to erection.
- B. BOLTING: In an assembly, before fully tightening an individual bolt, insert all the bolts and tighten them sufficiently to prevent distortion and misalignment during bolting-up operations.

08.01.08 ERECTION

- A. FOOTING BACKFILL: Before erecting tower steel, complete the compacted backfill for plate footings to the point where the diagonal brace of the leg extension connects to the footing stub.
- B. LIFTING: Avoid damaging, distorting, or overstressing members during erection. Use a bridle and spreader when necessary. Protect tower steel from damage by chokers. Use tag lines to prevent the steel from dragging on the ground or against previously erected steel.
- C. BOLTING: Before placing additional steel, insert and tighten to the specified torque at least 50 percent of the bolts in each connection between assemblies. Before fully tightening a bolt in a face of an assembly, insert all bolts in the face. When joining assemblies, loosen previously tightened bolts as necessary to obtain the proper alignment of joints and assemblies.
- D. LEG EXTENSIONS:
 - 1. Towers with leg extensions common to all tower heights are unstable when partially erected. The leg extensions to the shortest tower bodies are stable when all four leg extensions are connected together by the fully assembled diaphragm located either at the top of the leg extensions, directly above the leg extensions, or (in some cases) when a temporary construction strut is included to provide stability for erection. The taller towers may not be stable until the entire pedestal, including the diaphragm at the waist, is erected. Some of the taller towers may have intermediate diaphragms, in which case they are stable when erected to and including these diaphragms.
 - 2. When tower erection is to be delayed after the leg extensions are erected, either:
 - a. Erect the towers to the point they are stable, or;

APPENDIX G – SAMPLE SUBMITTAL LIST

Spec Section	Document	Submittal Schedule	Submittal Description
011100	Project Schedule		
011100	Submittal Log		Contractor shall provide a log of all submittals submitted and a schedule for future submittals
011100	Required Certifications for the project	Prior to start of work on site	Contractor shall certify in writing that all equipment has been tested and is in good working order and that labor is qualified and properly trained in the operation of all equipment
011100	Request for release of owner supplied materials		Contractor shall submit a written request for release of owner supplied materials at owner designated site for pickup by the Contractor
013000	Site drawing and certificate (Signed by Land Surveyor)	Prior to start of work on site	
013000	Site drawing and certificate (Signed by Land Surveyor)	Completion of foundations and major site improvements	
013000	Meeting minutes from Pre-installation meetings	Less than 4 business after meeting	
013200	Procurement Schedule	Pre-installation meeting	Contractor schedule for procurement of necessary materials and equipment not provided by owner
013200	Training Schedule	Completion of equipment installation	
013200	Communications System Schedule	Pre-installation meeting	Contractor schedule for installation and testing of communication equipment and connections
013200	Project Updates	Weekly	Weekly update of project work to COTR
013300	Contractor furnished material submittals	Prior to installation	Contractor shall provide material submittals and certificates showing that material furnished by contractor complies with contract and construction specification requirements
013300	Construction Specification chapter submittals	15 working days prior to start of work on site	Contractor shall prepare separate submittals for each specification chapter that specifies contractor furnished material or design
013300	Proposed Products List	Within 15 working days after date of Notice to Proceed	Contractor shall submit list of major products proposed for use, with name of manufacturer, trade name, and model number of each product.
013300	Shop Drawings	15 working days prior to start of work on site	
013300	Test Reports	Promptly after each test / inspection	Digital submission or mail paper copy in Triplicate
013300	Samples	15 working days prior to start of work on site	
013300	Material Certificates	15 working days prior to start of work on site	
013300	Manufacturer's Instructions	15 working days prior to start of work on site	
013300	Manufacturer's Field Reports	Within 5 days of observation	
013300	Construction Photographs	Once a week for duration of work on site	Contractor shall submit electronic format photographs of site for duration of work on site, beginning prior to site disturbance and throughout progress of work
014000	Testing Agency Qualifications	Prior to start of work on site	Contractor shall submit qualifications of the testing agency prior to start of work
014000	Manufacturer's Field Observer Qualifications	14 days prior to required observation	Contractor shall submit qualifications of the Manufacturer's Field Observer
016000	Product Substitution Request	15 working days prior to start of work on site	
016005	Contractor Materials Representatives	Pre-installation meeting	Contractor shall submit the name of the Materials Representative and Alternate in writing
017000	Closeout Certification	At completion of work on site	Contractor shall submit written certification that contract documents have been reviewed, work has been completed and inspected in accordance with contract documents.
017000	As-built Drawings	At completion of work on site	Contractor shall submit 2 full sets of completed as-built drawings
017000	Operation and Maintenance Instructions	At completion of work on site	Contractor shall submit 4 binders containing Operation and Maintenance Instructions
017000	Manual for Materials and Finishes	Within 20 days after final inspection	

Spec Section	Document	Submittal Schedule	Submittal Description
017000	Manual for Equipment and Systems	Within 20 days after final inspection	
017000	Product Warranties and Product Bonds	Within 20 days after final inspection	
018900	Soil Removal Plan	Prior to start of work on site	
030000	Concrete Test Agency report	15 working days prior to start of work on site	Contractor shall submit concrete testing agency report for approval by Engineer before use on site
030000	Concrete Shop Drawings Submittals	15 working days prior to start of work on site	Contractor shall submit detailed information on Concrete mix, Reinforcing steel and other relevant data
042200	Concrete Masonry Units Submittals	15 working days prior to start of work on site	Contractor shall submit detailed information on grout mix, mortar and provide test reports that show that it conforms to relevant standards, specifications and design documents
055000	Manufacturer's Certificate of Conformance	15 working days prior to start of work on site	Contractor shall certify in writing that all metal fabrications conform to specifications and design documents
055000	Metal Fabrications Submittals	15 working days prior to start of work on site	Contractor shall submit manufacturer's catalog data, descriptive literature or shop drawings
061000	Rough Carpentry Submittals	15 working days prior to start of work on site	Contractor shall submit technical data on insulated sheathing, wood preservative materials, and application instructions.
061753	Shop Fabricated Wood Trusses Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings, installation instructions and certify that trusses comply with design and specifications
072100	Thermal Insulation Submittals	15 working days prior to start of work on site	Contractor shall submit manufacturer's product characteristics, data including thermal performance criteria, and product limitations of materials
076100	Sheet Metal Roofing Submittals	15 working days prior to start of work on site	Contractor shall submit data on metal types, finishes, and characteristics
076200	Sheet Metal Flashing and Trim Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings
079000	Joint Sealers Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product data indicating sealant chemical characteristics, performance criteria, substrate preparation, limitations, and color availability
081113	Steel Doors and Frames Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings, product information, manufacturer's installation instructions and certificates of conformity to design and specification requirements
087100	Door Hardware Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings and product information
088000	Glazing Submittals	15 working days prior to start of work on site	Contractor shall submit detailed information on the performance characteristics of the glass and glazing sealants, compounds and accessories
092116	Gypsum Board Assemblies Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product data on gypsum boards, accessories, framing and show compliance with design and specifications
095113	Acoustical Panel Ceilings Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings, product information and manufacturer's installation instructions
096500	Resilient Flooring Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product data describing physical and performance characteristics including sizes, patterns, colors available and installation instructions.
099000	Paints and Coatings Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product data that includes the manufacturer's name, manufacturer's full range of colors, MPI product number and manufacturer's installation instructions
100000	Specialties Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product technical data that includes catalog information for all identification systems and any other necessary information to show compliance with specifications
101400	Interior Signage Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings that indicate sign styles, font, colors, locations and dimensions of signs and provide samples
104400	Fire Extinguishers and Cabinets Submittals	15 working days prior to start of work on site	Contractor shall provide detailed product data that includes size, type of extinguisher, color, lettering, manufacturer's installation instructions and maintenance

Spec Section	Document	Submittal Schedule	Submittal Description
221400	Drainage Pipe Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings that include dimensions, materials, catalog cut, manufacturer's installation instructions and certificates that show conformance to the specifications
230000	General Mechanical Provisions Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings and product information for HVAC mechanical provisions
230500	Basic Materials and Methods Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings and product information for HVAC equipment and materials
230529	Supports and Anchors Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product data, construction details and performance characteristics for each type of anchor and support for HVAC system
230593	Testing, Adjusting and Balancing Agency Submittal	Within 30 days after award of contract	Contractor shall submit name and qualifications of the HVAC adjusting and balancing agency
230700	Mechanical Insulation Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product data, installation instructions, list of materials and thickness for each service and locations
260000	General Electrical Requirements Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings, operation and maintenance documentation, product data, certificates of code authority acceptance, closeout documentation and record drawings
260126	Maintenance Testing of Electrical Systems Submittals	20 working days prior to scheduling acceptance testing	Contractor shall submit testing agency qualifications, list of proposed testing personnel, personnel qualifications and sample test report forms for each type of equipment tested
260126	Maintenance Testing of Electrical Systems Submittals	Prior to energizing equipment	Contractor shall submit coordinated phasing diagram and copies of field test reports for all applicable pre-energization tests
260126	Maintenance Testing of Electrical Systems Submittals	Within 10 working days after completion of acceptance testing	Contractor shall submit the final test report, identification of test equipment used, conclusions and recommendations
260500	Common Work Results for Electrical Submittal	15 working days prior to start of work on site	Contractor shall submit detailed product information, product data sheets, acknowledgement of UL or ETL listing and manufacturers instructions for delivery, storage and installation
260523	Low Voltage Electrical Power Conductors and Cables	15 working days prior to start of work on site	Contractor shall submit detailed product data for wires, cables, connectors and lugs
260526	Grounding and Bonding for Electrical Systems	15 working days prior to start of work on site	Contractor shall submit shop drawings, product data for the grounding material and grounding system test report
260529	Hangars and Supports for Electrical Systems	15 working days prior to start of work on site	Contractor shall submit detailed product data for straps and hangers used for electrical systems
260533	Raceway and Boxes for Electrical Systems Submittal	15 working days prior to start of work on site	Contractor shall submit shop drawings and product data for raceways, conduit fittings, outlet boxes, junction boxes and pull boxes
260543	Underground Duct and Raceways for Electrical System Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product data for all products and provide fabrication and layout drawings for each manhole indicating all specified accessories and conduit entry locations
260636	Cable Trays for Electrical Systems Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings, fabrication / layout drawings, product technical data, cable tray fill calculations and cable schedule
260923	Lighting Control Devices Submittals	15 working days prior to start of work on site	Contractor shall submit product catalog cut sheets for contactors, time switches and photoelectric switches
262400	Switchboards and Panelboards Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings, product data, operating instructions, maintenance instructions and installation instructions for distribution panelboards
265000	Lighting Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product information for lighting components including electrical ratings, wiring diagrams, operation and maintenance instructions
266000	Switchyard Conduit, Lighting and Wiring Submittals	15 working days prior to start of work on site	Contractor shall submit manufacturer's installation instructions, catalog information and certificates showing compliance with design and specifications
268000	Low Voltage Circuit Protecting Devices Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product data for all low voltage circuit protective devices including characteristics of fuses supplied for the project
271513	Communications Copper Horizontal Cabling Submittals	At least 30 days prior to start of work on site	Contractor shall submit detailed product information, labeling schemes, test procedures, schedule of activities, product cut-sheets and written confirmation of inspection of the jobsite

Spec Section	Document	Submittal Schedule	Submittal Description
271513	Communications Copper Horizontal Cabling Submittals	Within 30 days after completion of work on site	Contractor shall submit system documentation, record drawings and warranty detail
272000	Data Communications Systems Submittals	10 working days after data network acceptance	
283100	Fire Detection and Alarm Submittals	15 working days prior to start of work on site	Contractor shall submit detailed and completed system wiring diagram, manufacturer's installation instructions, operating, maintenance and repair data and information relevant for the system
310513	Soils for Earthwork Submittals	15 working days prior to start of work on site	Contractor shall submit material source, supplier's certificates, testing laboratory certificate and samples of soils used
310516	Aggregates for Earthwork Submittals	15 working days prior to start of work on site	Contractor shall submit 45 pound sample of Switchyard Rock aggregate along with name of the material source and manufacturer's certificate of compliance with specified requirements
312213	Rough Grading Submittals	10 working days prior to start of work on site	Contractor shall submit source of imported materials, certificate of conformance to specifications, testing laboratory's certificate of standard test results and earthwork inspection and testing plan
312316	Excavation Submittals		
312317	Trenching Submittals	15 working days prior to start of work on site	Contractor shall submit a detailed excavation protection plan, product data for materials used on site and manufacturer's certificate that shows that products meet or exceed specified requirements
312323	Backfill Submittal	15 working days prior to start of work on site	Contractor shall submit data for geotextile fabric and name of imported fill materials suppliers
312515	Storm Water Pollution Prevention Plan Submittal	15 working days prior to start of work on site	Contractor shall submit documentation showing qualifications of the ESC lead
313526	Oil Spill Containment Submittal	15 working days prior to start of work on site	Contractor shall submit certificates of conformity to specifications for precast concrete vault, geotextile fabric and manufacturer's installation instructions
321123	Aggregate Base, Switchyard Rock surfacing and Surface Course	15 working days prior to start of work on site	Contractor shall submit name of aggregate materials suppliers and data for geotextile fabric and herbicide
321713	Parking Bumpers Submittal	15 working days prior to start of work on site	Contractor shall submit detailed product data that includes unit configuration, dimensions and concrete mix design
323113	Chain Link Fences and Gates Submittal	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings and product data for all fence and gate components
323223	Segmental Retaining Walls Submittal	15 working days prior to start of work on site	Contractor shall submit detailed product data, samples for geotextile material, project experience list and manufacturer's installation instructions
329219	Seeding Submittal	15 working days prior to start of work on site	Contractor shall submit certificates of conformity to specifications, certified copies of reports, copies of invoices, maintenance data and warranty information
329221	Native Grass Seeding Submittal	15 working days prior to start of work on site	Contractor shall submit certificates for grass seed mixture, maintenance data, warranty information and specify type of herbicide used
330513	Drainage Structures Submittals	15 working days prior to start of work on site	Contractor shall submit detailed shop drawings and detailed product data
334213	Pipe Culverts Submittals	15 working days prior to start of work on site	Contractor shall submit detailed product data and manufacturer's installation instructions

APPENDIX “H”

CONDUIT BOOT FIGURES AND SAMPLE SHOP DRAWINGS



FIGURE 1.



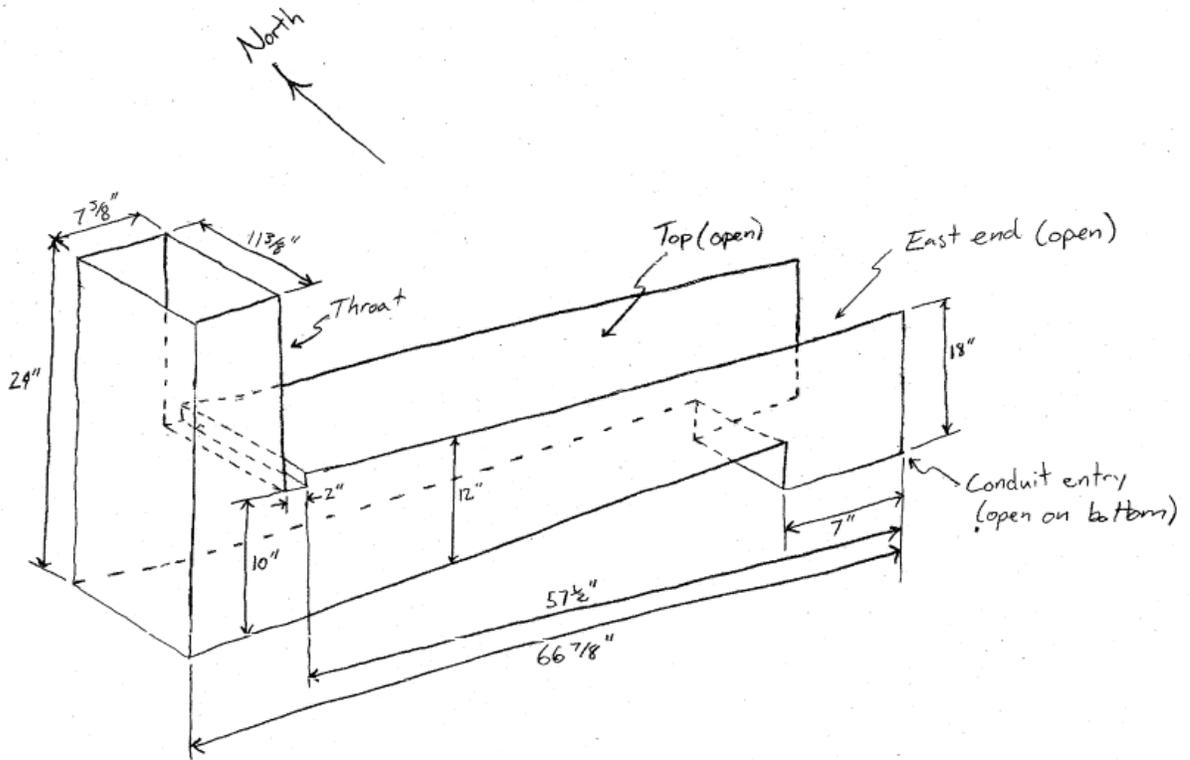
FIGURE 2.



FIGURE 3.



FIGURE 4.



BOOT

- .125 Smooth alum.
- SLEEVE to slide over throat
- LID to cover top and east end

FIGURE 5.

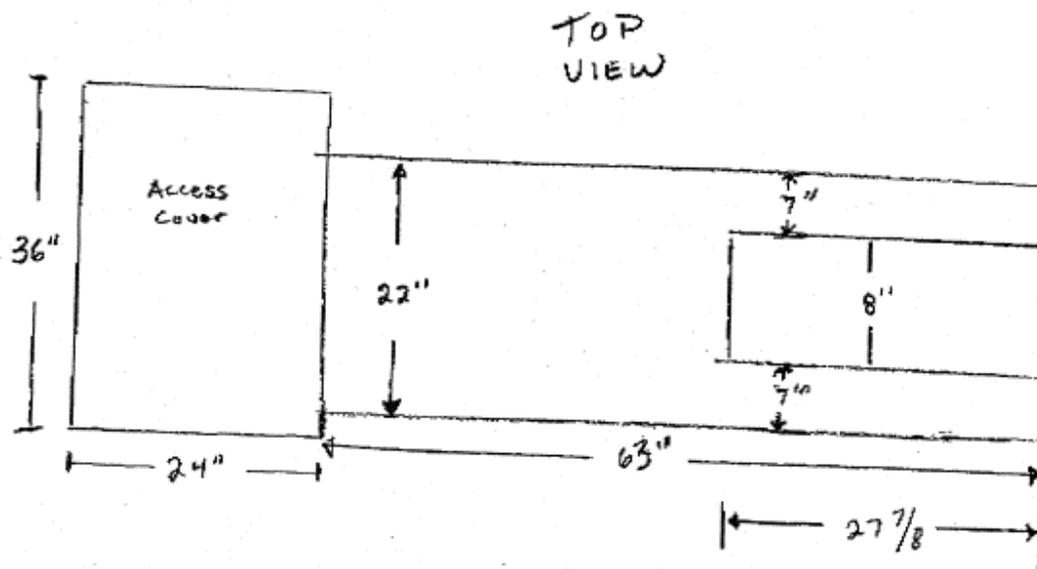
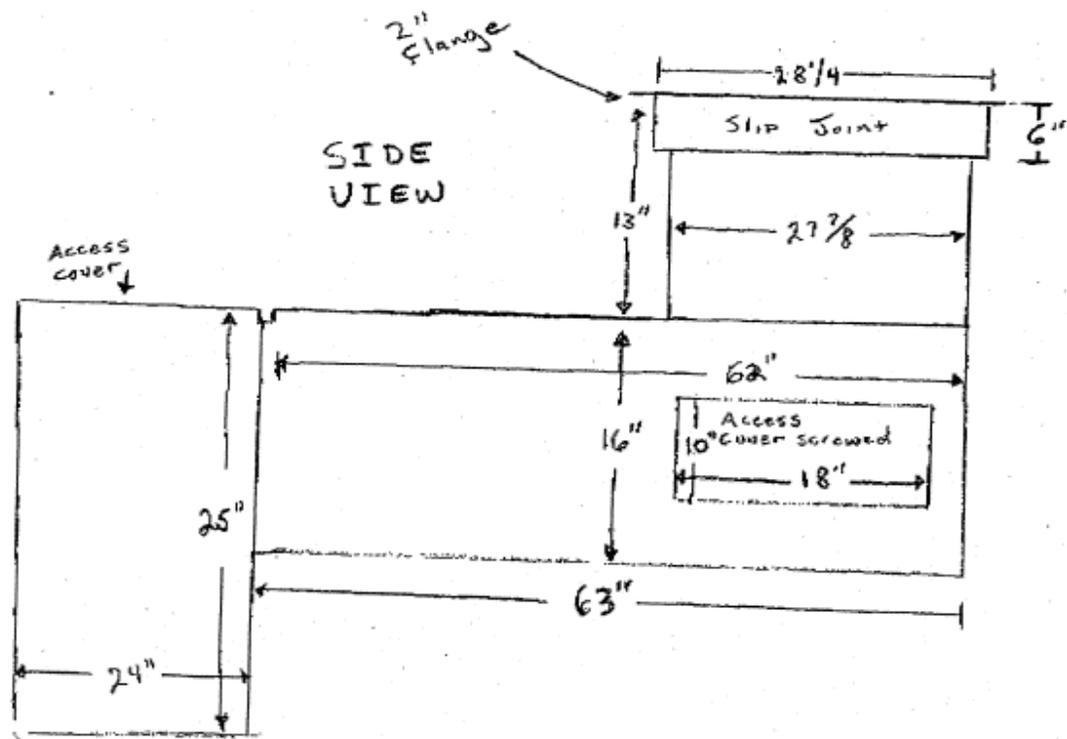


FIGURE 6.

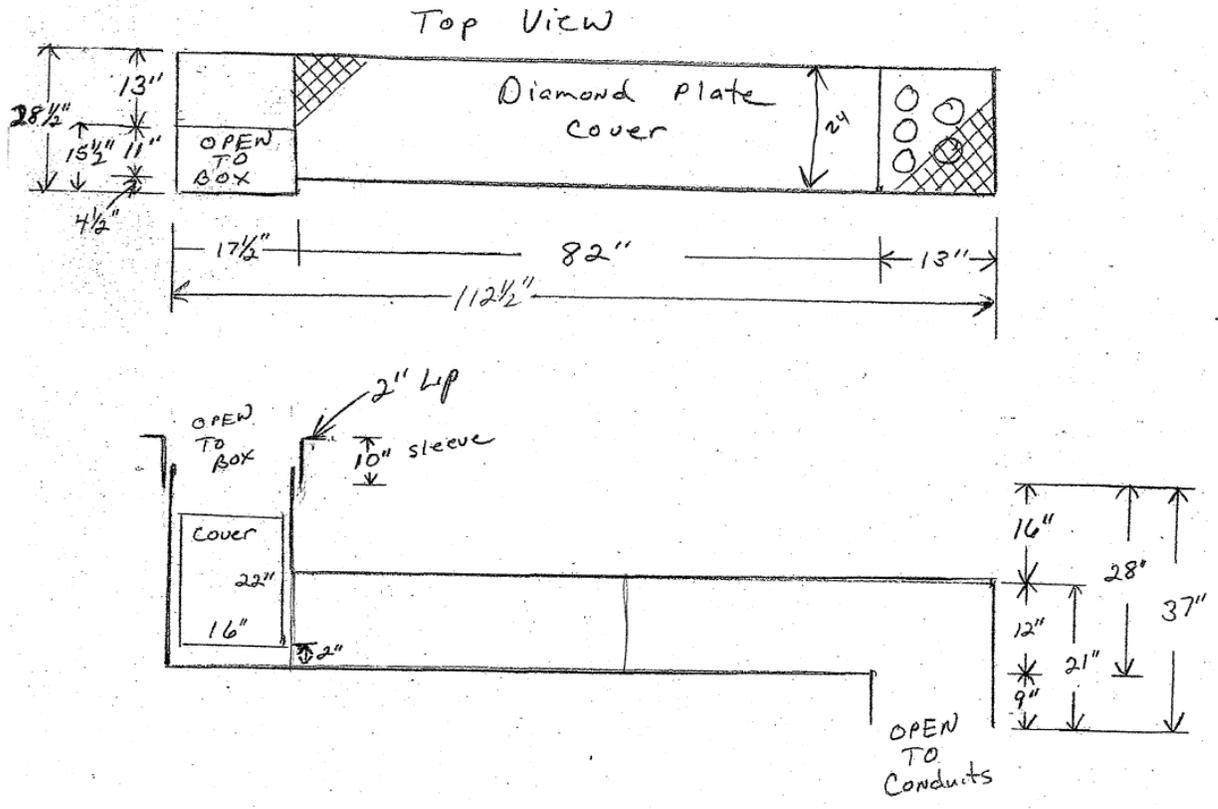


FIGURE 7.

APPENDIX K – BPA ANCHOR BOLT TECHNICAL SPECIFICATION

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TECHNICAL SPECIFICATION

SUBSTATION STRUCTURE ANCHORAGES, BPA 49-16, SEPTEMBER 30, 2009

3-1 SCOPE

This specification covers the technical requirements for the manufacture, test, inspection, and preparation for delivery of anchor bolts, threaded rods, and substation structure anchorages.

3-2 GENERAL REQUIREMENTS

3-2.1 ORDER OF PRECEDENCE FOR TECHNICAL INFORMATION

Discrepancies shall be resolved by giving precedence in the following order:

- a. Purchase Order Item Description.
- b. Technical Specification.
- c. Referenced Drawings.
- d. Referenced Documents.

3-2.2 REFERENCED DOCUMENTS

The following documents form a part of this specification, the most recent revision applies, unless otherwise noted.

- a. American National Standards Institute (ANSI)
 - B1.1 Unified Inch Screw Threads (UN and UNR Thread Form)
- b. American Society for Testing and Materials (ASTM) Standards
 - A 36 Standard Specification for Carbon Structural Steel
 - A 153 Standard Specification for Zinc Coating (Hot-Dip) on Iron and Steel Hardware
 - A 194 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High-Pressure and High-Temperature Service
 - A 325 Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength
 - A 354 Standard Specification for Quenched and Tempered Alloy Steel Bolts, Studs, and Other Externally Threaded Fasteners
 - A 563 Standard Specification for Carbon and Alloy Steel Nuts
 - F 436 Standard Specification for Hardened Steel Washers
 - F 606 Standard Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, and Rivets
 - F 1554 Standard Specification for Anchor Bolts, Steel, 36, 55, and 105-ksi Yield Strength
- c. American Welding Society (AWS)
 - D1.1 Structural Welding Code Steel

3-2.3 LANGUAGE AND UNITS

3-2.3.1 All correspondence, literature, drawings, and markings shall be in the English language.

3-2.3.2 Dimensioning and tolerancing shall conform to ANSI Y14.5M. Dimensions shall be in the U.S. customary units, unless SI (metric system) units are requested. If fabricating in the SI unit, both units shall be shown on the drawings. Conversion dimensions shall be 1 inch = 25.4 mm. Converted dimensions may be rounded off to the nearest $\frac{1}{32}$ inch (0.794 mm) provided the rounded dimension falls within the design limits.

3-2.4 MATERIALS AND WORKMANSHIP

3-2.4.1 Materials shall be as specified below, of recent manufacture, unused, and free of defects or irregularities. All work shall be performed by skilled craftsmen following the best modern practices of the industry. All components of the same design and designation shall be identical and like components shall be interchangeable.

3-3 QUALITY ASSURANCE REQUIREMENTS

3-3.1 QUALITY ASSURANCE PROGRAM

3-3.1.1 The Contractor shall have a Quality Assurance (QA) Program in place at the specific site of manufacture of products covered by this specification. This program shall ensure that all products and materials are manufactured, tested, inspected, and delivered in compliance with the BPA purchase order requirements.

3-3.1.2 The Quality Assurance Program shall include a Quality Manual that adequately describes the Contractor's quality program. This program and manual shall be subject to review and approval by the BPA Contracting Officer's Technical Representative (COTR). Changes made to the program or its manual after the purchase order has been awarded shall also be subject to BPA review and approval. BPA reserves the right to perform audits and surveys, as it deems necessary.

3-3.2 ASSURANCE INSPECTION REQUIREMENTS

As a minimum, the Contractor shall perform the actions specified in the Assurance Inspection Requirements (AIR), associated with this specification. These actions will provide assurance that the specification requirements are being met before, during, and after production of the specified material. BPA reserves the right to witness the required inspections and tests.

3-3.3 ADVANCE NOTICE

Advance notice of inspections and tests must be given to the BPA Contracting Officer's Technical Representative (COTR) by the Contractor. The Contractor shall coordinate with direct personal contact not less than 14 days before the date of inspection or test. If the inspections and tests will be performed outside the continental United States, 21 days advance notice shall be provided. If BPA elects to witness the inspections and tests, the Contractor shall not proceed without the COTR being present. A waiver must be granted by the designated COTR in order for inspections or tests to proceed without BPA presence.

3-3.4 CONTRACTOR SUBMITTALS

3-3.4.1 Events Schedules

3-3.4.1.1 The contractor shall submit an Events Schedule to the Contracting Officer/ Contracting Officer's Representative (CO/COR) and COTR within 30 days of purchase order award. The Events Schedule shall address the dates of submittals, manufacture, inspections, tests, and shipment. The Events Schedule shall be updated and resubmitted as necessary for the life of the purchase order.

3-3.4.1.2 The Events Schedule shall also include the Purchase Order number, Purchase Order item number, product name, and BPA catalog identification number, and be signed and dated by the contractor's authorized representative.

3-3.4.2 Inspection and Test Plan

An Inspection and Test Plan (I&TP) shall be developed by the Contractor and submitted, to the COTR for approval, within 30 days following the contract award. The plan shall encompass all areas of manufacture including design, production, and preparation for delivery, as listed below:

- a. Production flow and inspection stations beginning with receiving inspection.
- b. Characteristics to be inspected.
- c. Cross-reference to detailed inspection and test procedures.
- d. Inspection Sampling Plan.
- e. Coordination of inspection and tests to be witnessed by the COTR.
- f. Data to be submitted to the COTR.
- g. Material nonconformance instructions.

3-3.4.3 Inspection and Test Reports

Copies of the Inspection and Test Reports shall be made available for review by the COTR prior to release of material for shipment. Reports shall include, but not be limited to, the following:

- a. Description of materials.
- b. BPA purchase order number, release number (when applicable), item number, applicable BPA technical specification, quantity, serial numbers, and reference to applicable drawings by number, revision, and date.
- c. Standards, specifications, and procedures to which the inspections and tests were performed.
- d. Test data obtained and parameters utilized during the testing.
- e. List of personnel performing and witnessing the tests and signature of the Contractor's representative.

3-3.4.4 Certifications of Compliance

3-3.4.4.1 Certification of Compliance, when required, shall be delivered by the Contractor to the COTR at the stage specified. Certifications shall contain a statement that the materials being offered have been found to be in compliance with the requirements of the Purchase Order. The certificate shall be signed, dated, and list the position of the certifying official.

3-3.4.4.2 Certifications and other supporting documentation shall be on file and available for review and verification by the COTR.

3-3.4.5 Mill Test Reports (MTR)

MTRs shall be verified by the Contractor, prior to material use in production, for compliance with the respective standards,.

These reports shall identify the purchase order number to which the material applies and quantity of each item covered. The Contractor's internal records shall be available for review. This information shall be sufficient to trace and verify the use of mill test report material to the end product.

3-3.4.6 Shipping Manifests and Packing Lists

The Contractor shall submit a copy of the shipping manifests to the CO/COR, and copies of both the shipping manifests and packing lists to the COTR within 2 days of shipment. The shipping manifests and packing lists shall include the following information:

- Purchase order and release number
- Purchase order item number
- Product name
- BPA Catalog ID number
- Signature of the Contractor's authorized representative, and date of signature
- Gross weight
- Destination

3-3.5 PURCHASE ORDER SURVEILLANCE

3-3.5.1 The COTR is responsible for interpreting the technical specifications, referenced standards, codes, and engineering drawings. This responsibility includes resolving associated discrepancies, reviewing and approving inspection and test plans, reports, and ensuring that materials and supplies meet the specified requirements of the contract. During times of material processing the COTR may make periodic visits to the production plant. These trips will be to assist with technical problems and verify compliance with the above contract requirements. When the contracted material has been processed and accepted, the COTR will release it for shipment.

3-3.5.2 The Receiving Inspector is responsible for checking each shipment for material quality, quantity, and product condition. The inspector will also reconcile any associated delivery problems.

3-3.5.3 The Traffic Manager is responsible for coordinating receipt of shipments. The Contractor shall notify the traffic manager of shipments and deliveries. Notification shall be as described in the Release Notice, issued by the COTR, which authorizes the Contractor to ship the material.

3-3.6 RECORDS MAINTENANCE

3-3.6.1 The Contractor shall generate and maintain records of all inspection and test activities. These records shall indicate inspection levels, quantity accepted / rejected, lot sizes, and item disposition.

3-3.6.2 MTRs that are received with raw materials shall be maintained.

3-3.6.3 Contractor shall maintain qualified welding procedures and current welder qualifications in accordance with AWS D1.1 for all welding performed during the manufacture of products required for this purchase order.

3-4 DETAIL REQUIREMENTS

3-4.1 ANCHOR BOLTS AND THREADED RODS

3-4.1.1 Headless anchor bolts and threaded rods in accordance with BPA Drawing No. 134431-DSD-A1 and with diameters of ½ inch through 1-½ inch inclusive shall conform to the requirements of ASTM A 325, Type 1.

3-4.1.2 Headless anchor bolts and threaded rods in accordance with BPA Drawing No. 134431-DSD-A1 and with diameters greater than 1-½ inch shall conform to the requirements of ASTM A 354, Grade BC.

3-4.1.3 Headed anchor bolts and threaded rods in accordance with BPA Drawing No. 263939-SFS-A1 and with diameters of ½ inch through 1-¾ inch inclusive shall conform to the requirements of ASTM F 1554, Grade 36.

3-4.1.4 To insure adequate ductility, all anchor bolts and threaded rods conforming to ASTM A 325, Type 1; ASTM A 354, Grade BC; and ASTM F 1554, Grade 36 shall have a minimum elongation of 14, 16, and 23 percent, respectively, in a 2 inch gage length as determined from coupon testing.

3-4.1.5 Threads shall be the Unified Coarse Thread Series as specified in ANSI B1.1 and shall have Class 2A tolerances.

3-4.2 WASHERS

Washers shall be galvanized and conform to the requirements of ASTM F 436.

3-4.3 NUTS

3-4.3.1 Nuts and jam nuts shall be heavy hex per ASTM A 194, grade 2H or ASTM A 563, grade DH.

3-4.3.2 Nut threads shall be tapped oversize to closely fit those of the galvanized anchor bolt or threaded rod, tight enough to develop the strength of the bolt or rod, but free enough to permit the nut to be turned on freely with the fingers over the entire bolt or rod thread length.

3-4.4 PLATES AND SHAPES

Material for items made from flat stock or structural shapes shall meet the minimum requirements of ASTM A 36.

3-4.5 FABRICATION

3-4.5.1 Diameters of holes for anchor bolts or threaded rods shall be within the given bolt or rod nominal diameter plus $\frac{1}{8}$ inch or minus $\frac{1}{64}$ inch unless otherwise specified on the drawings.

3-4.5.2 Holes shall be within $\frac{1}{16}$ inch of their detailed position.

3-4.5.3 Anchor bolts, threaded rods, washers, and nuts shall be free of cracks.

3-4.6 WELDING

3-4.6.1 Welding procedures shall be in accordance with AWS D1.1. During the operation of welding, parts shall be held by clamps or other suitable means to keep them in correct alignment and in close contact. All welds shall be smooth, uniform, and without overlaps or excessive undercutting. All welds shall completely seal connecting parts.

3-4.6.2 Distortion due to welding shall be corrected by methods that will not damage the material.

3-4.6.3 Welders and welding operators shall be qualified in accordance with AWS D1.1 within 12 months previous to beginning of work under this purchase order, and shall be so certified by the Contractor to the COTR. The certificate shall state that such welders and welding operators have been doing satisfactory welding of the required type within the three month period previous to beginning work under this purchase order. The certificate shall state the name of the welder or welding operator, the name and title of the person who conducted the examination, the kind of specimens, the position of welds, the results of the tests, and the date of the examination.

3-4.7 GALVANIZING

All material designated on the drawing to be galvanized shall be hot-dip galvanized in accordance with the requirements of ASTM A 153. Material shall be galvanized after all shop operations have been completed, except that nuts may be tapped after galvanizing.

3-4.8 IDENTIFICATION

Individual pieces do not require identification marks.

3-5 TESTS

3-5.1 STRENGTH TESTS

3-5.1.1 The entire lot represented by the anchor bolts or threaded rods tested shall be rejected if any fails at a value less than the minimum tensile strength specified in ASTM A 325, Type 1; ASTM A 354, Grade BC; or ASTM F 1554, Grade 36 as applicable.

3-5.1.2 Anchor bolts, threaded rods, washers, and nuts shall be subjected to Axial Tension Testing of Full-Size Product as specified in ASTM F 606. To accomplish this, a length consistent with test requirements shall be cut from the anchor bolt or threaded rod and held by a suitable fixture as approved by the COTR. Failure shall occur in the threaded section or by stripping the threads.

3-5.2 DUCTILITY TESTS

Tension test coupons shall be machined from finished anchor bolts or threaded rods and tested in accordance with Tension Testing of Machined Test Specimens as specified in ASTM F 606 to ensure conformance with the minimum elongation requirement specified in 3-4.1.4. Failure to meet the ductility requirement shall be cause for rejection of the lot.

3-5.3 BEND TESTS

Anchor bolts and threaded rods shall be bent around a mandrel of 4 times the bolt or rod diameter without cracking.

3-5.4 GALVANIZING TESTS

Galvanized parts shall be subjected to the tests specified in ASTM A 153.

3-6 PREPARATION FOR DELIVERY

3-6.1 MARKING

All boxes shall be plainly marked by a permanent stencil on both sides and one firmly fastened metal tag, showing the item description, size, BPA Catalog Number, mark number, quantity, net weight (pounds), and purchase order number.

3-6.2 PACKAGING

3-6.2.1 All material shall be packaged in substantial wooden boxes.

3-6.2.2 All anchor bolts and threaded rods shall be shipped with nuts assembled to a minimum of full nut thickness. Items of identical size and description shall be packaged together.

3-6.3 PALLETIZING

3-6.3.1 Containers -Boxes - Crates shall be steel banded longitudinally and transversely onto pallets with banding of adequate strength to secure the containers from shifting.

3-6.3.2 Pallets shall be not more than 44 x 44 inches . Pallets shall be the two - way entry (from the long side), flush, double deck, reversible, expendable type, using three stringers no smaller than 2 x 4 - inch dimensional lumber, and of sufficient strength to accommodate the stacking of pallets three high. Block type pallets are not acceptable. Completed pallets shall be no higher than 48 inches. Pallets shall weigh no more than 4,000 pounds.

3-7 APPENDIX

3-7.1 DRAWINGS

The following BPA drawing forms a part of this specification:

Drawing No.	Title
134431-DSD-A1	Substation Footings Typical Anchor Bolts and Dead End Tower Anchorages
263939-SFS-A1	Standard Headed Anchor Bolts

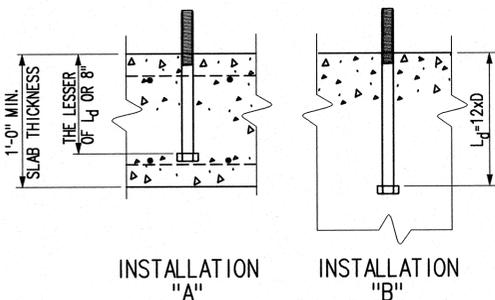
DRAWING 134431-DSD-A1

DRAWING 263939-SFS-A1

HEADED ANCHOR BOLT TABLE

BOLT DIA.	GROSS AREA	TENSILE STRESS AREA	TENSION/SHEAR CAPACITY (NOTE D2)	HEAVY HEX WIDTH	HEAVY HEX HEAD HEIGHT	HEAVY HEX NUT HEIGHT	THREADS	CHAMFER	VERT. BAR AREA	VERT. BAR USED TO CALC. DEVL'P	THREAD LENGTH	INSTALLATION	BOLT LENGTH	MARK	ITEM NO.	
D	A _g	A _t	T=V (KIPS)	F	C	H _h	H _n	PER INCH	A _{bar}		T _l		L		00010021XX XX	
(IN)	(IN ²)	(IN ²)		(IN)	(IN)	(IN)	(IN)		(IN ²)		(IN)		(IN)			
1/2	0.196	0.142	4.6	7/8	1	3/8	1/2	13	0	0.09	#4	3/2	A,B	10	H0410	52
													C	14	H0414	53
													D	20	H0420	54
5/8	0.307	0.226	7.3	1 1/16	1 1/4	7/8	5/8	11	0	0.14	#4	4	A,B	12	H0512	55
													C	15	H0515	56
													D	20	H0520	57
3/4	0.442	0.334	10.8	1 1/4	1 7/8	1 1/2	3/4	10	0	0.20	2-#4	4 1/2	A,B	13	H0613	58
													C	15	H0615	59
													D	21	H0621	60
7/8	0.601	0.462	14.9	1 7/8	1 11/16	7/8	7/8	9	0	0.28	2-#4	5	A	13	H0713	61
													B,C	16	H0716	62
													D	21	H0721	63
1	0.785	0.606	19.6	1 5/8	1 7/8	1 1/2	1	8	0	0.36	2-#4	5 1/2	A	13	H0813	64
													B,C	17	H0817	65
													D	21	H0821	66
1 1/8	0.994	0.763	24.7	1 7/8	2 1/16	3/4	1 1/8	7	5/8	0.46	2-#5	6 1/2	A	14	H0914	67
													B,C	19	H0919	68
													D	26	H0926	69
1 1/4	1.227	0.969	31.3	2	2 5/16	7/8	1 1/4	7	5/8	0.58	2-#5	7	A	14	H1014	70
													B,C	21	H1021	71
													D	26	H1026	72
1 3/8	1.485	1.16	37.5	2 3/16	2 1/2	1 5/8	1 3/8	6	7/8	0.70	2-#6	7 1/2	A	14	H1114	80
													B,C	23	H1123	81
													D	34	H1134	82
1 1/2	1.767	1.41	45.6	2 3/8	2 3/4	1	1 1/2	6	7/8	0.85	2-#6	7 1/2	A	15	H1215	73
													B,C	25	H1225	74
													D	34	H1234	75
1 3/4	2.405	1.90	61.5	2 3/4	3 3/8	1 3/4	1 3/4	5	7/8	1.14	3-#6	12	A	15	H1415	76
													B,C	28	H1428	77
													D	35	H1435	78

$L_d = 12xD$ (PCA)
 l_d = DEVELOPMENT LENGTH OF STRAIGHT BAR IN TENSION (ACI)
 l_{dh} = DEVELOPMENT LENGTH OF STANDARD HOOKED BAR IN TENSION (ACI)



ANCHOR LENGTH SELECTION FOR SLAB FOOTINGS
 WITH ANCHORS SPACED 36D OR GREATER
 AND EDGE DISTANCE 18D OR GREATER

NOTE: FOR SLABS NOT MENTIONED ABOVE, SEE NOTE D6.

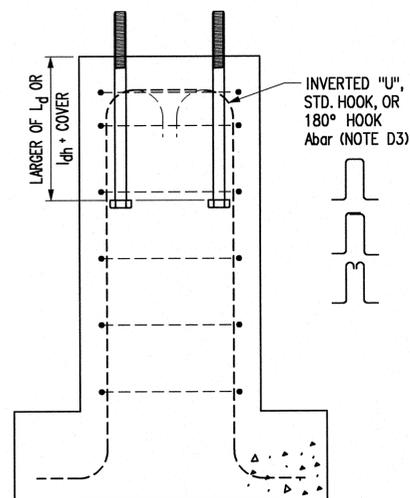
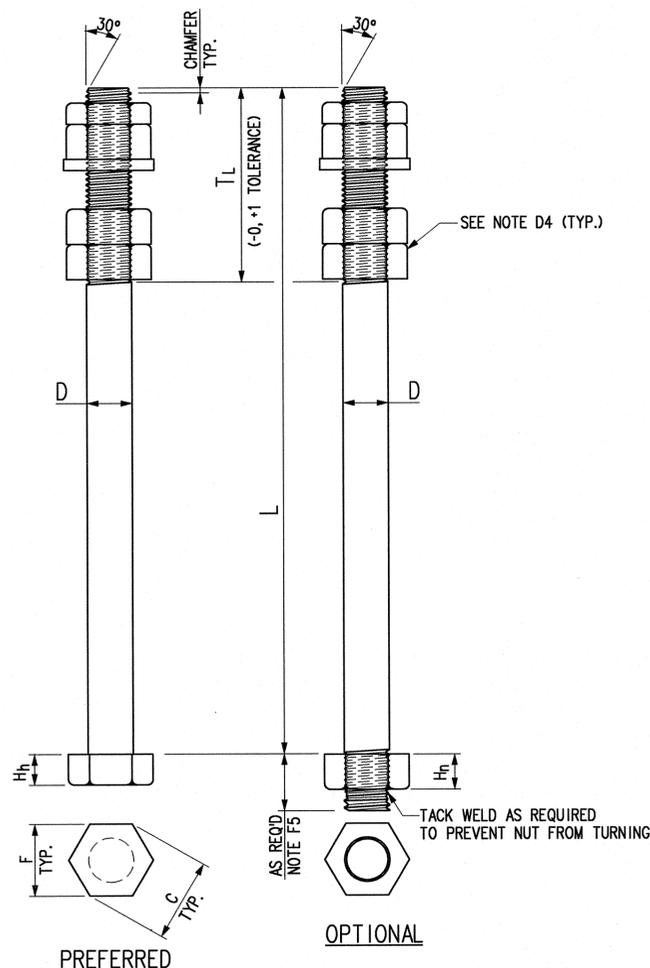
FABRICATION NOTES:

- FORMED HEADED BOLTS SHALL BE ASTM-F1554 GRADE 36, HOT-DIP GALVANIZED PER ASTM-A153. THE HEAD DIMENSIONS SHALL BE IN ACCORDANCE WITH THAT OF A HEAVY HEX BOLT PER ANSI B18.2.1. BOLT THREADS PER UNC ANSI B1.1 CLASS 2A.
- NUTS SHALL BE ASTM-A563 GRADE DH OR ASTM-A194 GRADE 2H, HOT DIP GALVANIZED PER ASTM-A153. MILD STEEL MAY BE SUBSTITUTED FOR THE JAM NUT. THE HEAVY HEX NUT DIMENSIONS SHALL BE IN ACCORDANCE WITH ANSI B18.2.2. NUT THREADS PER UNC ANSI B1.1 CLASS 2B.
- WASHERS SHALL BE ASTM-F436, GALVANIZED.
- ALL BOLTS SHALL BE FURNISHED WITH (3) THREE NUTS, (1) ONE JAM NUT, AND (1) ONE STANDARD FLAT WASHER.
- ROD THREADED AT BOTH ENDS MAY BE USED IN LIEU OF A FORMED HEADED BOLT. ADDITIONAL LENGTH AND AN ADDITIONAL NUT SHALL BE FURNISHED AT THE BOTTOM. THE NUT SHALL BE TACK WELDED TO THE LOWER THREADS TO PREVENT LOOSENING.

DESIGN NOTES:

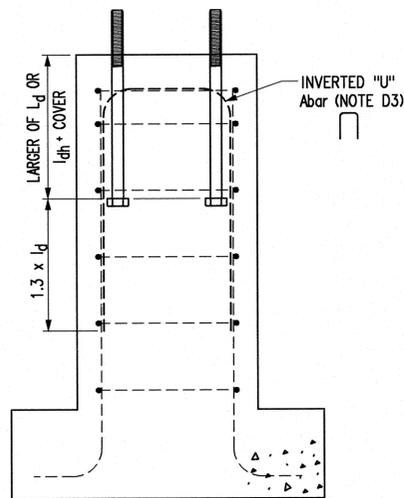
- IN GENERAL, ANCHOR BOLTS SHALL BE SIZED AND FOUNDATIONS DETAILED TO FORCE DUCTILE FAILURE. IF THIS IS NOT PRACTICAL, THERE SHALL BE AN ADDITIONAL SAFETY FACTOR OF 2.
- THE TENSION AND SHEAR CAPACITIES LISTED ARE BASED ON: $T=V=0.9x\phi xF_y$. THE INTERACTION OF TENSILE AND SHEAR FORCE MAY NOT EXCEED 1.2 (PER PCA). THESE CAPACITIES MAY ONLY BE REACHED WITH PROPER REINFORCEMENT SIZING AND DETAILING. THE CAPACITIES ARE BASED ON THE FOLLOWING ASSUMED CONDITIONS:
 F_y (BOLT)=36 KSI F_c =3 KSI F_y (REBAR)=60 KSI
- LENGTHS WERE SELECTED BASED ON EMBEDMENT AND DEVELOPMENT LENGTH REQUIREMENTS. THESE ARE DESIGNATED BY INSTALLATIONS "A", "B", "C" AND "D". FOR INSTALLATIONS "C" AND "D" THE VERTICAL BAR SIZES WERE APPROXIMATED USING $A_{bar}=A_t(F_y(BOLT)/F_y(REBAR))$. BAR SIZES #4, #5 AND #6 WERE ASSUMED AS SHOWN IN TABLE. THESE SIZES ARE TYPICAL OF BPA STANDARD DESIGNS.
- ONE OF THE SUPPLIED NUTS IS MADE AVAILABLE FOR SETTING PURPOSES AND MAY BE "LOST" IN THE CONCRETE AS REQUIRED.
- THE WASHER SUPPLIED IS SIZED FOR A STANDARD OVERSIZED HOLE. IF HOLE SIZE EXCEEDS THAT SHOWN BELOW THE WASHER'S ADEQUACY SHOULD BE EVALUATED.

NOMINAL DIA. OF FASTENER	STANDARD OVERSIZE
3/8" OR LESS	1/16"
1"	3/16"
1 1/8" OR MORE	7/16"
- REFERENCES INCLUDE THE FOLLOWING:
 "BPA SUBSTATION FOOTING DESIGN GUIDE" BPA 2001
 "STRENGTH DESIGN OF ANCHORAGE TO CONCRETE" COOK, PORTLAND CEMENT ASSOC., 1999
 "DESIGN OF HEADED ANCHOR BOLTS" SHIPP AND HANINGER, ENGINEERING JOURNAL/AISC VOL 20, NO. 2, 1983
 "BUILDING CODE REQUIREMENTS FOR STRUCTURAL CONCRETE (ACI 318) AND COMMENTARY (ACI 318R), AMERICAN CONCRETE INSTITUTE



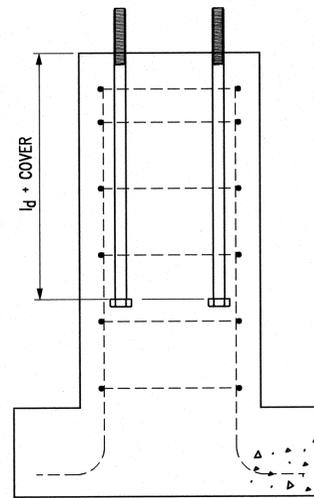
INSTALLATION "C"

VERTICAL STEEL HOOKED



INSTALLATION "C"

VERTICAL STEEL SPLICED W/HOOK



INSTALLATION "D"

VERTICAL STEEL STRAIGHT

ANCHOR LENGTH SELECTION FOR PEDESTAL FOOTINGS
 WITH ANCHORS SPACED LESS THAN 36D
 OR LESS THAN 18D EDGE DISTANCE

1	STD	00004340	REMOVED NUT STAKING, ADDED NUT TACK WELD ADDED MILD STEEL JAMB NUT ALTERNATIVE	JAB	02/05/03	LK	JAB	GWG
NO.	STD	00004340	REVISION	BY	DATE	APPROVED		
* C - CONTRACT CONSTRUCTION, FA - FORCE ACCOUNT, R - RECORD								
DSGN	LK/JAB		UNITED STATES DEPARTMENT OF ENERGY BONNEVILLE POWER ADMINISTRATION HEADQUARTERS, PORTLAND, OREGON					
DRWN	JAB		STANDARD SUBSTATION FOOTINGS HEADED ANCHOR BOLTS					
CHKD								
REVV								
CNCR								
APPR	LEON KEMPNER JR. PROJECT MANAGER		Serial	Source	Size	Sheet	Revision	
DATE	4-19-02		263939	SFS	A1	1 OF 1	1	

U.S. DEPARTMENT OF ENERGY - BONNEVILLE POWER ADMINISTRATION
ASSURANCE INSPECTION REQUIREMENTS (AIR)

BPA Technical Specifications reference: **BPA 49-16, September 30, 2009**

Type of Material: **SUBSTATION STRUCTURE ANCHORAGES**

Contractor AIR actions shall be understood not to be final acceptance by BPA.

CHARACTERISTIC/ REQUIREMENT	INSPECTION/ TEST METHOD	INSPECTION ACTION BY CONTRACTOR					
		PLAN: See end of listing					
		CODE: A. Inspection/Test Report Submittal B. Mill Test Report Submittal C. Certificate of Compliance Submittal D. Other Submittal E. BPA Approval F. BPA Witness G. BPA Verification					
PRE-PRODUCTION		N-PROCESS		FINAL			
PLAN	CODE	PLAN	CODE	PLAN	CODE		
<u>Quality Assurance Requirements, 3-3</u>							
<u>Contractor Submittals, 3-3.4</u>							
QA Manual, 3-3.4.1 and 3-3.1.2		1	D, E				
Events Schedule, 3-3.4.2		1	D	1	D		
Inspection and Test Plan, 3-3.4.3		1	D, E				
Shipping Manifests and Packing Lists, 3-3.4.7						1, D, E, G	
<u>Detail Requirements, 3-4</u>							
<u>Anchor Bolts and Threaded Rods, 3-4.1</u>	ANSI B1.1, ASTM A 325, A 354, and F 1554/Visual/Direct Measurement					1, A, E, F, G	
<u>Washers, 3-4.2</u>	ASTM F 436/Visual/Direct Measurement					1, 2, A, E, F, G	
<u>Nuts, 3-4.3</u>	ASTM A 194 and A 563/Visual/Direct Measurement					1, A, E, F, G	
<u>Plates and Shapes, 3-4.4</u>	Material Test Report Traceability/ASTM A 36					1, B, E, G	
<u>Fabrication, 3-4.5</u>	Visual/Direct Measurement					1, 3, A, E, F, G	
<u>Welding, 3-4.6</u>	AWS D1.1/Visual/Direct Measurement	1, 4	D, E	1, 3	A, E, F, G	1, 3, A, E, F, G	
<u>Galvanizing, 3-4.7</u>	ASTM A 153					1, C, E, G	
<u>Tests 3-5</u>							
<u>Strength Tests, 3-5.1</u>	ASTM A 325, A 354, F 1554, and F 606/Visual/Direct Measurement					1, 3, A, E, F, G	

**U.S. DEPARTMENT OF ENERGY - BONNEVILLE POWER ADMINISTRATION
ASSURANCE INSPECTION REQUIREMENTS (AIR)**

BPA Technical Specifications reference: **BPA 49-16, September 30, 2009**

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PRE-PRODUCTION		IN-PROCESS		FINAL			
PLAN	CODE	PLAN	CODE	PLAN	CODE		
<u>Ductility Tests, 3-5.2</u>	ASTM F 606/Visual/Direct Measurement					1, 5	A, E, F, G
<u>Bend Tests, 3-5.3</u>	Visual/Direct Measurement					1, 5	A, E, F, G
<u>Galvanizing Tests, 3-5.4</u>	ASTM A 153/Visual/Direct Measurement					1, 3	A, E, F, G
<u>Preparation For Delivery, 3-6</u>							
<u>Marking, 3-6.1</u>	Visual					1, 100%	A, E, G
<u>Packaging, 3-6.2</u>	Visual					1, 100%	A, E, G
<u>Palletizing, 3-6.3</u>	Visual/Direct Measurement					1, 100%	A, E, G

Note: The contractor shall submit **three** copies of all submittals to the BPA Contracting Officer's Technical Representative (COTR).

PLANS

Plan 1:

The Contractor shall establish and maintain a Quality Assurance Program in accordance with the requirements of BPA Specification BPA 49-16, 3-3 Quality Assurance Requirements.

Plan 2:

The manufacturers inspection and test reports from the sampling of the continuous mass production of washers for stock shall be sufficient for satisfying the requirements of this specification.

**U.S. DEPARTMENT OF ENERGY - BONNEVILLE POWER ADMINISTRATION
ASSURANCE INSPECTION REQUIREMENTS (AIR)**

BPA Technical Specifications reference: **BPA 49-16, September 30, 2009**

Page 3 of 3

Type of Material: **SUBSTATION STRUCTURE ANCHORAGES**

Contractor AIR actions shall be understood not to be final acceptance by BPA.

Plan 3:

For purposes of inspection and test, a lot is defined as all anchor bolts or threaded rods with nuts (and washers if specified) of one diameter processed under essentially the same procedures and conditions and offered for inspection at one time. The lot formation shall be subject to the approval of the BPA COTR. All samples must meet the specified criteria for the lot to be accepted.

The number of samples for each inspection lot shall be as follows:

<u>Number in Lot</u>	<u>Number to be Inspected</u>
50 or less	3
51 to 110	5
111 to 180	6
181 to 300	7
301 to 500	8
501 to 800	9
801 and Over	10

Plan 4:

The Contractor shall submit all welder qualifications and welding procedures to the BPA COTR for review and approval before starting fabrication. Separate weld procedures are required for each weld joint to be used in fabrication. These procedures shall include both pre-qualified welds, and welds to be qualified in accordance with AWS D1.1, Section 5. A Weld Procedure form is attached herein.

Plan 5

The number of samples for each test lot for each diameter of anchor bolt or threaded rod shall be as follows:

<u>Number in Lot</u>	<u>Number to be Inspected</u>
1 to 1000	3
1001 and over	5

B O N N E V I L L E
P O W E R A D M I N I S T R A T I O N



Substation Switchboard Racks Specification



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Section 1: General

1.1 Scope

This specification describes Bonneville Power Administration's (BPA's) requirements to construct, weld, wire, test, package, store and ship the following substation switchboard racks:

- Data Systems
- Metering and Remedial Action Scheme (RAS)
- Protective Relay
- Telecommunication

1.2 Engineering/Manufacturing Codes and Standards

The vendor will comply with the most recent and applicable ANSI, IEEE, NEMA and ASTM or equivalent codes and standards to construct, weld, wire, test, package, store and ship the substation switchboard racks.

The vendor will use the most stringent standard when codes and/or standards conflict. When changes to a substation rack are required to meet the most recent and applicable codes and standards, the vendor is responsible for the expense of making those changes.

1.3 Safety Standards

The vendor will comply with applicable federal, state and local safety laws. The vendor will use the most stringent laws when laws conflict.

1.4 Bill of Materials and Engineering Design Package

In addition to this specification, BPA will provide the vendor with the *Bill of Materials* and complete engineering design drawings for each outsourced substation switchboard rack project.

The vendor will comply with this specification in conjunction with the *Bill of Materials* and engineering design drawings to construct, weld, wire and test the substation switchboard racks.

Upon receipt of the engineering design drawings, and before rack construction, the vendor will carefully review the *Bill of Materials* and design drawings for discrepancies. The vendor will resolve discrepancies with BPA before beginning rack construction.

1.5 Materials and Components

Equivalent materials and components

Except where BPA indicates within this specification that equivalent material/component substitutions are allowed, use only the materials and components BPA has specified.

Purchasing and costs

The vendor will purchase and incur the costs of components and materials used to construct, weld, wire, test, package, store and ship the substation switchboard racks.

Warranties/documentation

Obtain equipment manufacturers' (OEM) warranties and any technical and operational documentation for components and materials to construct and wire the substation switchboard racks, as indicated within the contract, and include these items within the substation switchboard rack(s) shipment to the designated BPA site.

1.6 Packaging/Storage/Shipping

The vendor will store materials and components used to construct, wire, weld, test, and package and ship the substation switchboard racks.

The vendor will comply with ASTM or equivalent standards to protect the materials and components from physical or environmental damage or any other type of exposure during packaging, storage, transportation and handling.

Protection From Dirt and Contaminants

Ensure that materials and components are protected against dirt and other contaminants that could cause damage.

Protection From Moisture

Ensure that materials and components susceptible to moisture, corrosion or deterioration are properly wrapped.

Protection From Shock, Movement and Vibrations

Ensure that materials and components requiring protection from physical and mechanical damage are wrapped, cushioned, or packed within a compartment to mitigate shock and vibration during shipment and storage.

Packaging Containers and Materials

Choose ASTM or equivalent regulated containers and any necessary blocking, bracing, cushioning, or waterproofing materials to ensure safe delivery to the BPA site. Also ensure that containers have forklift access on sides and ends and they meet containerization weight and size limitation requirements.

Labeling and Documentation

Ensure that special handling labels (e.g., Fragile, This Side Up, Do Not Drop) are used and placed in compliance with ASTM or equivalent regulations.

Ensure that ASTM or equivalent required documents (e.g., Certificates of compliance, tags, tests, reports) are placed in a plastic sealed bag and affixed in a noticeable location on the identification side of the shipping container, not on the top or bottom.

Section 2: Electrical Switchboard Racks

This section contains the components installation and wiring specifications for Data Systems, Metering and Remedial Action Scheme (RAS) and Protective Relay substation switchboard racks.

2.1 Requirements

The vendor will furnish electrical substation switchboard racks that are completely constructed, assembled, wired and tested at the vendor's site.

2.2 Standard Components List and Build/Installation Instructions

Customized Control Rack Frame, Panel Segments and Accessories

General Instructions

- Use the Bill of Materials to determine the type of frame, panel segments and accessories (e.g., panel extenders, shelves, ground bar kit, nameplates) required. See *Appendix A: Sample of Standard Bill of Materials*.
- Use the *CRAM Rack Structural Diagram, 229695*, in conjunction with the any additional build instructions (below) to determine the specific dimensions of the frame, panel segments and accessories; the positioning of the component cutouts; and the welding and construction requirements. See *Appendix B: Sample of CRAM Rack Structural Diagram*.

Additional Build Instructions

- Use the American Welding Society (AWS) or equivalent standard gas shielded arc-welding process to construct the rack frame.
- Join rack frame base angles squarely and weld continuously on interior side.
- Join rack frame upright sections to base angles squarely and weld continuously on interior side.
- Weld internal structural frames continuously from corner to corner.
- Ensure the exterior and interior surfaces are free of flaws in workmanship.
- Ensure exterior and interior surfaces are true and smooth.
- Ensure the exterior and interior surfaces are free of dust and debris.
- Add grommet stripping to the rack frame channel edges.
- Use bolted panel segments only on front side of rack frame unless otherwise indicated. Attach panel segments to the frame with head screws and cup.
- Use hinged panel segments only on backside of rack frame unless otherwise indicated. Affix hinges to back panel segments using the American Welding Society (AWS) or equivalent standard spot-welding process. Attach back panel segments higher on the rack so that hinges do not protrude more than 25 mm into usable space.
- Ensure to add a top and bottom plate extensions when adding an end panel to the rack frame.
- Use correct base mounting installation method for the site. Use the freestanding base mounting installation method for all new sites, unless otherwise indicated. When adding or replacing racks, use the same base mounting installation method for the existing site.
- Finish the frame, panel segments, hinges and bolt heads; matching the sheen and color to the paint samples provided by BPA and as indicated on the Project Order.

Customized Radio Rack Frame and Panel Segments

General Instructions

- Use the *Bill of Materials* to determine the type of frame and panel segments required. See *Appendix A: Sample of Standard Bill of Materials*.
- Use the *Standard Rack and Panel for Radio Equipment, 057635*, in conjunction with the additional build instructions (below) to determine the specific dimensions of the frame and panels; the positioning of the drill holes; and the welding and construction requirements. See *Appendix C: Standard Rack and Panel for Radio Equipment*.

Additional Build Instructions

- Use the American Welding Society (AWS) or equivalent standard gas shielded arc-welding process.
- Weld internal structural frames continuously from corner to corner.
- Ensure the exterior and interior surfaces are free of flaws in workmanship.
- Ensure exterior and interior surfaces are true and smooth.
- Ensure the exterior and interior surfaces are free of dust and debris.
- Use bolted panel segments only on front side of rack frame unless otherwise indicated. Attach panel segments to the frame with head screws and cup.
- Use hinged panel segments only on backside of rack frame unless otherwise indicated. Affix hinges to back panel segments using a spot-welding process. Attach back panel segments higher on the rack so that hinge material does not protrude more than 25 mm into usable space.

Standard Electrical Components

General Instructions

- Use the *Bill of Materials* to determine required component types, quantities, manufacturers and part numbers. See *Appendix A: Sample Standard Bill of Materials*.
- Install the components in the location indicated on Sheet 1 of the applicable *Layout & Wiring Diagram* and in conjunction with any additional installation instructions indicated below. See *Appendix D: Sample of Layout & Wiring Diagram*.
- Align and carefully mount components to prevent damage to either the components or the panel finish.
- Cover installed components to protect them from panel drilling/cutting dust or debris when adding components.
- Ensure that component-mounting accessories do not protrude into the wire ways.

Air Circuit Breakers

Standard Types

- 1.5A, 80V DC, 2 pole, with auxiliary switch – BPA Catalog ID # 190710
- 2.0A, 125/250V AC, 1 pole, with auxiliary switch – BPA Catalog ID # 1008867

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- 2.5A, time curve 2, 250V AC, 3 pole ganged, 3-phase, 250V AC, 3000 A interrupting capacity, back connected, black handles – BPA Catalog ID # 1009219
 - 2.5A, time curve 3, 250V AC, 1 pole series trip with SPDT auxiliary switch, 3000 A interrupting capacity, back connected – BPA Catalog ID # 1004424
 - 5A, time curve 2, 65V DC, 2 pole with auxiliary switch, back connected – BPA Catalog ID # 190732
 - 5A, time curve 3, 125V DC, 2 pole with SPDT auxiliary switch, back connected, white handle – BPA Catalog ID# 1006766
 - 10A, time curve 2, 250V AC, 2 pole with auxiliary switch, 1000A interrupting capacity at 125V DC, back connected – BPA Catalog ID# 190733
 - 10A, time curve 3, 125V DC, 2 pole with SPDT auxiliary switch, back connected, white handle – BPA Catalog ID # 1006767
 - 20A, time curve 1, 125V DC, 2 pole with auxiliary switch 5000 A interrupting capacity at 125V DC, back connected – BPA Catalog ID # 190743
 - 20A, time curve 3, 125V DC, 2 pole with SPDT auxiliary switch, back connected, white handle – BPA Catalog ID # 1006768
 - 30 A, time curve 3, 125V DC, 2 pole with SPDT auxiliary switch, back connected, white handle – BPA Catalog ID # 1006769

Preferred Manufacturer

Heinemann

Additional Installation Instructions

Ensure the correct current rating of all air circuit breakers before installation.

Receptacles and Accessories

Standard Types

- Receptacle, duplex, 15A, 125 V AC, 2-pole, 3-wire, isolation ground, orange, back and side wired 15A, 125V spec grade – BPA Catalog # 196796
- Receptacle, duplex, 20 A, 125V AC, 2-pole, 3-wire, flush type, brown, straight blade, NEMA 5-20R – BPA Catalog # 196641
- Receptacle, simplex, 15 A, 125 V AC, 2-pole, 3-wire, flush type, brown, straight blade – BPA Catalog # 196642
- Box, conduit outlet, utility, galvanized – BPA Catalog # 287120
- Box, double gang, duplex, plastic with mounting feet, type FS – BPA Catalog # 287190
- Cover, conduit outlet, single gang, simplex, wall plate, galvanized – BPA Catalog # 196605
- Cover, single gang, duplex, smooth finished stainless steel – BPA Catalog # 287395, 287396

Preferred Manufacturer

No preferred manufacturer; outlets must be specification grade.

Additional Installation Instructions

Ensure that the receptacle hot terminal is facing downward.

Relays and Accessories

Standard Types

- Arc suppressors and accessories – BPA Catalog # 234820, 1005132, 1006336
- Auxiliary – BPA Catalog # 232821, 232851, 232853, 232856, 232859, 235109, 235110, 1003750, 1003074, 1005708, 1006804
- Breaker closing – BPA Catalog ID # 1002080
- Breaker monitoring – BPA Catalog # 1008041
- Bus differential – BPA Catalog # 1003139, 1003809, 1010447,
- Communications processor – BPA Catalog # 235321
- General purpose – BPA Catalog # 234922, 234924
- Latch – BPA Catalog # 233201, 972855
- Line protection – BPA Catalog # 1000287, 1007028, 1010511, 1010813
- Lockout – BPA Catalog ID # 232592
- Multifunction protection – BPA Catalog # 1006833
- Overcurrent protection – BPA Catalog ID # 1001685
- Overvoltage monitor – BPA Catalog ID # 1003822, 1008287
- Programmable, multi-functional – BPA Catalog # 230123
- Repeat – BPA Catalog # 1005773, 1010508
- Sockets – BPA Catalog ID # 251450, 677803
- TDDO – BPA Catalog # 232531
- Voltage differential protection – BPA Catalog ID # 232644

Preferred Manufacturers

- ABB
- Agastat
- BI-Stable Revenue Metering
- Curtis Wright for Sockets
- Newark
- Omron
- P & B
- Timemark

Switchboard Cables/Connectors and Accessories

Standard Types

- Annunciator – BPA Catalog # 546392, 546393
- Braid assembly – BPA Catalog # 171801

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- Cable assembly, pigtail, coaxial antenna, RG58/U, 50ft long, with TNC male & N mount– BPA Catalog # 1000448
 - Cable with DB9 connectors – BPA Catalog # 1010840
 - Coaxial – BPA Catalog # 540409, 541410, 664133 (No number for the BNC connector)
 - Communication – BPA Catalog # 546324, 546325, 546391
 - Conduit – BPA Catalog # 283210, 283310, 286390, 286507,
 - Control – BPA Catalog # 543200, 543205, 543210, 543215, 546325
 - Coupling – BPA Catalog # 28670
 - Data – BPA Catalog # 1002592,
 - DB9 – BPA Catalog # 990249, 1008332
 - D-Sub and accessories – BPA Catalog # No number
 - Fiber optic and accessories – BPA Catalog # 1002421, 1002423, 1002424, 1002594, 1002595, 1002596, 1002688, 1002690

Preferred Manufacturers

No preferred manufacturer.

Additional Installation Instructions

Use quality grade manufacturer that utilizes appropriate cable/connector colors.

Switchboard Wire

Standard Types

- Building, THHN/THWN, single conductor, 600V, stranded, copper, #8 AWG, rated 45 A, black – BPA Catalog # 540270
- SIS, single conductor, 600V, stranded, tinned CU, #12 AWG, 65 strands – BPA Catalog # 546283
- SIS, single conductor, 600V, stranded, tinned CU, #16 AWG, 26 strands – BPA Catalog # 546285

Preferred Manufacturers

- Belden
- Genex

Additional Installation Instructions

Use Belden for radio racks; use Genex for CRAM racks.

Switches

Standard Types

- Assembly – BPA Catalog # 665146
- Control switches – BPA Catalog ID # 231323, 251238
- Line share switches – BPA Catalog # 990793
- Pushbutton switches – BPA Catalog # 197370
- Selector switches – BPA Catalog ID # 235340, 251325, 251353, 1000755, 1001669, 1002063, 1005298, 1006782, 1006784, 1006785, 1008055, 1008056

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- Test switches – BPA Catalog ID # 234902, 234913, 234914, 235345, 254055, 254071, 254082, 254105, 254111, 254113, 1003377, 1003754, 1009438
 - Toggle switches – BPA Catalog ID # 197390, 197394, 197395, 197396, 1008391

Preferred Manufacturers

ABB
Asea
Cutler Hamm
Electroswitch
Microswitch
States

Additional Installation Instructions

- Use the proper switch base.
- Maintain a minimum of 1-3/32 inches between the center of the last assembly and each extreme end of a switch base to allow for the sealing studs and mounting holes.
- Maintain the proper working space distance and maximum pole usage between the centers of the extreme outside elements.
- Make barriers standard between poles or between current and potential poles and have spacing up to and including 1 inch.
- Mount vertical test switches so that the blades and test switch handle open to the left and horizontal test switches so that the blades and test switch handle open down.
- Mount the test switches to the segments using 10-32 barrel nut and/or brass screws.
- Place small labels on the back of the segments to number components to correspond with the design drawings.

Terminal Blocks and Accessories

Standard Types

- Assembly rail – BPA Catalog # 256392
- Current block – BPA Catalog # 256280, 1008915
- Disconnect plug – BPA Catalog #
- Double tier/double level, bottom to Top Flow – BPA Catalog #
- Double Tier/Double Level, Top to Bottom Flow – BPA Catalog #
- End clamp – BPA Catalog # 256370
- End section (aka end plate, end cover) – BPA Catalog # 256265, 256272, 256326
- End stops – BPA Catalog # 256394
- Grounding block – BPA Catalog # 256396, 1009523, 1009526
- Grounding clamp – BPA Catalog # 1000002
- Holding clamp – BPA Catalog # 256394
- Knife disconnecting blocks – BPA Catalog #1005167, 1006832, 1008895
- Mounting rail – BPA Catalog # 1008037, 1009521
- Plate partition – BPA Catalog # 1004113

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- Potential block – BPA Catalog # 256278, 256290, 256292, 256327, 256328
 - Terminal base – BPA Catalog # 232822, 253302,

Preferred Manufactures

- ABB
- Entrelect
- Phoenix
- Weidmuller

Additional Assembly and Installation Instructions

The vendor will assemble the terminal blocks using the standards below in conjunction with Sheet 1 of the Layout & Wiring Diagram and applicable additional diagram sheets as indicated on Sheet 1.

Terminal Block Mounting Rails (AKA Din or Top Hat Rails)

- Cut the rail to the length of the rack, assuring tolerances for required terminal blocks.
- Mount rail assembled terminal block rail on the inside of the rack ensuring that the rail accommodates incoming cables on each side of the rack and does not obstruct protruding equipment.

Current, Ground, Potential and Disconnect Terminal Blocks

- Run current wires to 8mm non-screw insert current blocks.
- Run ground wires to 10mm ground blocks, unless space constraints require smaller blocks.
- Run power, trip and close wires to 8mm screw insert potential blocks.
- Run alarm wires to 6.5mm disconnecting blocks

End Plates

Install an insulating and closing end plate on the open element of each terminal board for each type and cross section of a terminal block. Install end plate terminal blocks also to separate different phases of adjoining terminal blocks linked by cross connections or to increase insulation distances when required.

End Stops

Install end stops on the ends of terminal block groups.

Labeling

Use manufacture's labels to number incoming cable side of terminal blocks. If terminal points are not clear, or are difficult to read, use a smaller label.

Data System Components

Data System Standard Configurations

- GE D20 – D20 SCADA Rack – BPA *Bill of Materials* # 280021-SDS-BM
- GE D20 – D20 SER Racks – BPA *Bill of Materials* # 286018-SDS-BM
- GE D20 – D20 SER Expansion – BPA *Bill of Materials* # 286548-SDS-BM
- GE D20 – D20 SER Alarm Distribution Frame & PC Annunciator – BPA *Bill of Materials* # 280845-SDS-BM

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- Limit Wind Trip – BPA *Bill of Materials* # 288740-SDS-BM

Data System Standard Components List

- Annunciator – BPA Catalog # 190312, 1008451
- Analog input module – BPA Catalog # 1008575
- Chassis Assembly – BPA Catalog # 1008573
- Circuit breakers – BPA Catalog # 1008863, 1008864, 1008865, 1008866, 1008867, 1008868, 1008869, 1008870
- Control card/digital output module – BPA Catalog # 1008565
- Flasher – BPA Catalog # 251845
- Interface connection board – BPA Catalog # 1008836
- Interposer relay module – BPA Catalog # 1008577
- Inverter – BPA Catalog # 1000885
- Modem – BPA Catalog # 1008835
- Printer – BPA Catalog # 1001206
- RS485 to fiber media converter – BPA Catalog # 1008871
- Status card/digital input module – BPA Catalog # 1008576
- UPC assembly – BPA Catalog # 1008574

Preferred Manufacturers

General Electric

Metering Components

Metering Standard Configurations

- Demand Recorder SSR-6000 – BPA *Bill of Materials* # 277729-SDS-BM
- Large Generation Integration – BPA *Bill of Materials* # 280718-SDS-BM
- Revenue Metering, LandLine – BPA *Bill of Materials* # 281315-SDS-BM
- Metering, Cell Phone – BPA *Bill of Materials* # 287765-SDS-BM

Metering Components List

- Antenna and accessories – BPA Catalog # 1007003, 1007004, 1007644, 1009159
- Cable assembly – BPA Catalog # 1007007
- Data cable – BPA Catalog # 546329
- Data combiner for KWH – BPA Catalog # 1007917
- DB25 male solder connectors – BPA Catalog # 665390
- Ground bar kit – BPA Catalog # 1008631
- Harness – BPA Catalog # 1007000
- Line share switch – BPA Catalog # 990793
- Line sharing switch shelf – BPA Catalog # no number

- Modem and accessories – BPA Catalog # 1008677
- Recorder and accessories – BPA Catalog # 1006998, 1007000, 1007007
- Revenue meter, Jemstar – BPA Catalog # 1008090
- Telephone cord for use with Teletone Line Share Switch – BPA Catalog # 666746
- Transducer – BPA Catalog # 1008488

Preferred Manufacturers

Ametek - Jemstar

Ohio Semitronics

Teletone

Protective Relay Components

Protective Relay Standard Configurations

- Main & Transfer Mini-Control – BPA *Bill of Materials* # 249304-SCP-BM
- 1-1/2 Mini-Control – BPA *Bill of Materials* # 249306-SCP-BM
- Single Pole Relay Set #1, Positive Trip – BPA *Bill of Materials* # 263978-SCP-BM
- Single Pole Relay Set #2, Positive Trip – BPA *Bill of Materials* # 263980-SCP-BM
- Iniven PTR-1500 MWTT Set #1 – BPA *Bill of Materials* # 265820-SCP-BM
- SEL-2100 Set 1 & 2 Mirrored Bit Transfer Trip – BPA *Bill of Materials* # 267253-SCP-BM
- SEL –2100 Protection Logic Processor – BPA RED-521
- Bus Differential, Three Phase – BPA *Bill of Materials* # 267805-SCP-BM
- RED-521 Bus Differential, Single Phase – BPA *Bill of Materials* # 267843-SCP-BM
- SEL-421 – BPA *Bill of Materials* # 275810-SCP-BM
- Iniven PTR-1500 MWTT, Three Phase App #1 – BPA *Bill of Materials* #278072-SCP-BM
- SEL-352 – BPA *Bill of Materials* # 278350-SCP-BM
- Synchronizing – BPA *Bill of Materials* # 278444-SCP-BM
- Breaker Auxiliary – BPA *Bill of Materials* # 278641-SCP-BM
- Tertiary Ground Detector – BPA *Bill of Materials* # 281813 – SCP-BM
- BEL-951 Overcurrent – BPA *Bill of Materials* # 282546-SCP-BM
- SEL-287V – BPA *Bill of Materials* # 284245-SCP-BM
- SEL-421 SPR Set 1, Rack QQ01 – BPA *Bill of Materials* # 287076-SCP-BM
- RED-670 SPR Set 2, Rack RR01 – BPA *Bill of Materials* #287078-SCP-BM
- Cable Tray – BPA *Bill of Materials* #287162-SCP-BM

Protective Relay Standard Components List

- Cable tray and accessories – BPA Catalog ID # 286241, 979160, 979161, 979168, 979174, 979177, 1010645, 1010646, 1010647, 1010648, 1010649, 1010650, 1010651, 1010652, 1010653, 1010654, 1010655

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- Controller – BPA Catalog ID # 1009837
 - Frequency meter – BPA Catalog ID # 1008324
 - High speed line protection system – BPA Catalog ID # 1000287
 - LED assembly – BPA Catalog ID # 257703, 257704, 257705
 - LED, bi-color and light holder – BPA Catalog ID # 251466, 251470
 - Light holder – BPA Catalog ID # 251470
 - Multi-function meter – BPA Catalog ID # 1009173
 - MWTT terminal – BPA Catalog ID # 1002071, 1002570
 - Outdoor PT junction box – BPA Catalog ID # 1005164
 - Protection logic processor – BPA Catalog ID # 1002474
 - Pull drawer – BPA Catalog ID # 152772
 - Rectifier – BPA Catalog ID # 683070, 683080
 - Resistor – BPA Catalog ID # 1004201, 1008461
 - Satellite system receiver – BPA Catalog # 1005614, 1005615
 - SEL-2020 to printer – BPA Catalog # No number
 - SEL-2020 to 100 Series SEL Relay – BPA Catalog # No number
 - SEL-2020 to 200/321 Series SEL Relay – BPA Catalog # No number
 - SEL-2020/30 to miscellaneous device – BPA Catalog # No number
 - SEL-2100 protection logic processor – BPA Catalog # 1002474
 - SEL-2100 to miscellaneous device – BPA Catalog # No number
 - Shunt – BPA Catalog # 1006180
 - Steel channel – BPA Catalog # 285010
 - Substation communication server – BPA Catalog # 1010204
 - Surge suppressor and branch connector – BPA Catalog # 1006336 and 1005132
 - Synchroscope – BPA Catalog # 243207-SCP-BM
 - Transceiver – BPA Catalog # 1004369
 - Transformer – BPA Catalog ID # 235149
 - Voltmeter – BPA Catalog ID # 1004152, 1005299

Preferred Manufacturers

- B-Line Systems
- Dialight
- Dymec
- Electro Industries
- Empro

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- General Electric
 - Iniven
 - LEDTronics
 - Pacific Resistor
 - TEKRON International
 - Vishay Dale
 - Yokagawa

Remdial Action Scheme (RAS) Components

RAS Standard Configurations

- Control Center, ACA-GE N60 W/CTI Modules – BPA *Bill of Materials* # DITTMERCC-SRA-BM
- Control Center, ACB-GE N60 W/CTI Modules – BPA *Bill of Materials* # MUNROCC-SRA-BM
- RFL9745/585 F, Negative and Positive/Analog Tones – BPA *Bill of Materials* # 266402-SRA-BM
- RFL9745/400 A, Negative and Positive/Digital Fiber – BPA *Bill of Materials* # 266404-SRA-BM
- RFL9745/400 A, Negative and Positive/Digital RS-499 – BPA *Bill of Materials* # 266443-SRA-BM

RAS Components List

- BNC coaxial connector – BPA Catalog # no number
- BNC tee adapter – BPA Catalog # 664158
- Boot for modular plug – BPA Catalog # no number
- Cable management panel – BPA Catalog # 1010871
- Cable manager – BPA Catalog # 1010850
- DB9 connectors and accessories – BPA Catalog # 990249, 1008332, 1010840
- DC-to-DC converter power supply – BPA Catalog # 1010836
- D-Sub connector and accessories – BPA Catalog # no numbers
- Ethernet switch – BPA Catalog # 1010837
- Fiber cable assembly and protection accessories – 1002421, 1002423, 1002424, 1002594, 1002595, 1002596, 1002688, 1002690,
- Metal hood for DB037 connector – BPA Catalog # No number
- MWTT digital terminal – BPA Catalog # 1002570
- Modular plug – BPA Catalog # No number
- Modular jack – BPA Catalog # No number
- N60 universal relay – BPA Catalog ID # 1010060
- Patch panel – BPA Catalog # 1002591, 1010873
- PLC/Ethernet bridge – BPA Catalog # 1010852, 1010853, 1010854

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- Power supply rack kits (floor mount, top rack, rack isolation) – BPA Catalog # 667630, 667632, 667633
 - Resister and accessories – BPA Catalog # 675286, 1009812
 - Sequential event recorder assembly – BPA Catalog # 1010839
 - Strain relief for modular plug – BPA Catalog #
 - Tip jack – BPA Catalog # 663052, 663053

Preferred Manufacturers

Control Technologies International

EF Johnson

General Electric

Newark

Newton

Panduit

Phoenix

Pomona

RapidNet

Schneider Electric

SOLA

Systemax Solutions

Section 3: Telecommunication Switchboard Racks

This section contains the components installation and wiring specifications for Telecommunication substation switchboard racks.

3.1 Requirements

The vendor will furnish telecommunication substation switchboard racks that are completely constructed, assembled, wired and tested at the vendor's site.

3.2 Standard Components List and Build/Installation Instructions

Radio Rack Frame and Accessories

General Instructions

- Use the *Standard Rack and Panel for Radio Equipment, 057635*, in conjunction with the (Chatsworth) manufacturer drawings and build instructions that come with the rack. See *Appendix C: Standard Rack and Panel for Radio Equipment*.
- Use the *Bill of Materials* to determine required rack and accessory types, quantities, manufacturers and part numbers. See *Appendix A: Sample Standard Bill of Materials*.

Components List

- Cable strain relief bracket – BPA Catalog # 1006103
- Extender – BPA Catalog # 00664128
- Floor mount kit – BPA Catalog # 00667630
- Ground bus bar – BPA Catalog # 01000669, 00664350
- Printer shelf – BPA Catalog # 01000521
- Rack – BPA Catalog # 01001698, 01001726, 01001727
- Rack isolation kit – BPA Catalog # 00667633
- Standoff cable tie bracket – BPA Catalog # 01005359
- Top mount kit – BPA Catalog # 00667632

Standard Electrical Components

General Instructions

- Use the *Bill of Materials* to determine required component types, quantities, manufacturers and part numbers. See *Appendix A: Sample Standard Bill of Materials*.
- Install the components in the location indicated on Sheet 1 of the applicable *Layout & Wiring Diagram* and in conjunction with any additional installation instructions indicated below. See *Appendix D: Sample of Layout & Wiring Diagram*
- Align and carefully mount components to prevent damage to either the components or the panel finish.
- Cover installed components to protect them from panel drilling/cutting dust or debris when adding components.
- Ensure that component-mounting accessories do not protrude into the wire ways.

Air circuit breaker

Standard Types

- Miniature, din rail mounted, 1-pole, 15A, for CB-17, Square D – BPA Catalog # 01000659
- Miniature, din rail mounted, 1-pole, 30A, for CB-17, Square D – BPA Catalog # 01006760
- Miniature, din rail mounted, 1-pole, 50A, for CB-17, Square D – BPA Catalog # 01010437
- Miniature, din rail mounted, 2-pole, 70A, for CB-17, Square D – BPA Catalog # 01000655

Preferred Manufacturer

Square D

Alarms

Standard Types

- Hex nut – BPA Catalog # 00771659
- Alarm Phoenix contact – BPA Catalog # 01008169
- Jumper assembly – BPA Catalog # 01009911
- Marking strip – BPA Catalog # 01009912, 01009913, 01009914, 01009916, 01009917, 01009918, 01009919

Preferred Manufacturer

Phoenix

Analog

Standard Types

- Channel unit – BPA Catalog # 00664096
- Attenuator – BPA Catalog # 00664192, 00664193, 00664194, 00664195, 00664196
- Shelf assembly – BPA Catalog # 01008158

Preferred Manufacturer

No preferred manufacturer.

Ardax

Standard Types

- Digital partyline telephone unit chassis assembly – BPA Catalog # 01004983, 01004984, 01008741
- Cable assembly – BPA Catalog # 01005004
- HSU cable – BPA Catalog # 01005006

Preferred Manufacturer

Ardasys

Cable Tray

Standard Types

- All threaded drop rod – BPA Catalog # No number
- Amplifier – BPA Catalog # 01005684
- Cable tray – BPA Catalog # No number
- Heavy duty stringer splice kit – BPA Catalog # No number
- Loud speaker – BPA Catalog # 01003383
- Relay rack runway support kit – BPA Catalog # No number
- Runway support kit – BPA Catalog # No number
- Runway wall support kit – BPA Catalog # no number
- Slip-on runway support kit – BPA Catalog # No number
- Splice extension splice kit – BPA Catalog # No number
- Tee splice kit – BPA Catalog # No number

Preferred Manufacturer

B-Line

Charger

Standard Types

- AC junction box, connecting AC to Charger – BPA Catalog # No number
- Battery charger chassis – BPA Catalog # 01009001, 01009002, 01009010
- Battery charger controller – BPA Catalog # 01009004
- Circuit breaker panel – BPA Catalog # 01006757
- Rectifier – BPA Catalog # 01009005, 01009006, 01009007, 01009008
- DC termination panel – BPA Catalog # 01009029
- Discrete alarms cable assembly – BPA Catalog # 01009012, 01009013
- Lexan cover and accessories – BPA Catalog # 01000675, 01000676, 01006507,
- Lexan top and rear – BPA Catalog # 01000673

Preferred Manufacturer

No preferred manufacturer

Circuit breaker

Standard Types

20A 1-pole, bolt on, QOB, 120Vac, GFCI, Square D type, Graybar – BPA Catalog # No number

Preferred Manufacturer

Square D

Converter

Standard Types

- 24V DC to 48V DC, DC-DC (200W) – BPA Catalog # 01008263
- 48V DC to 12V DC, DC-DC (200W) – BPA Catalog # 01009284
- 48V DC to 24V DC, DC-DC (200W) – BPA Catalog # no number
- 130V DC to 48V DC, DC-DC (400W) – BPA Catalog # 01007972

Preferred Manufacturer

No preferred manufacturer.

Dantel

Standard Types

- Data bridge shelf – BPA Catalog # 01002521
- Data hubbing module – BPA Catalog # no number

Preferred Manufacturer

Dantel

DSX-1 JF

Standard Types

- Cable assemblies – BPA Catalog # 00664123, 00664139, 01001161, 01002558, 01006991, 01007012, 01007013, 01007014
- Front cross connect module – BPA Catalog # 00994372
- Jackfield – BPA Catalog # 00994375
- Panel extenders – No BPA Catalog #
- Sonet Cisco 15454 alarm interface control board – BPA Catalog # 01005130
- Sonet Cisco 15454 cable assembly – BPA Catalog # 01003736
- Sonet Cisco 15454 cross connect board – BPA Catalog # 01006453
- Sonet Cisco 15454 DS1 board – BPA Catalog # 01002975
- Sonet Cisco 15454 electrical interface module – BPA Catalog # 01003734
- Sonet Cisco 15454 empty slot filler panel board – BPA Catalog # 01005374
- Sonet Cisco 15454 jumper fiber – BPA Catalog # no number
- Sonet Cisco 15454 laptop shelf – BPA Catalog # 01008744
- Sonet Cisco 15454 manuals – BPA Catalog # no number
- Sonet Cisco 15454 optical board – BPA Catalog # 01002971, 01006454
- Sonet Cisco 15454 optical multiplexer chassis – BPA Catalog # 01005910
- Sonet Cisco 15454 shelf assembly – BPA Catalog # 01002985
- Sonet Cisco 15454 software package – BPA Catalog # 01006455
- Sonet Cisco 15454 timing and communications control board – BPA Catalog # 01005127

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- Sonet Cisco 15454 XCVT board – BPA Catalog # 01002982

Preferred Manufacturer

Cisco

Fiber Optic Panel

Standard Types

- Faceplate – BPA Catalog # 01000608, 01000609
- Jumper – BPA Catalog # 01001692
- Panel and accessories – BPA Catalog # 01000607, 01000610, 01000611, 01000612, 01001404, 01001549

Preferred Manufacturer

Bejed

FIN/NMS

Standard Types

- Access router – BPA Catalog # 01006292, 01006293, 01006294
- Cable assembly – BPA Catalog # 01001506, 01001537, 01002016, 01006296,
- Cisco 2811 router generating system software – BPA Catalog #, 01006291
- Dual T1 WAN card – BPA Catalog #, 01006297
- Ethernet module – BPA Catalog #, 01006294, 01006293, 01006294
- WAN interface card – BPA Catalog # 01001504, 01006512, 01006295,
- SmartNet warranty for Cisco router – BPA Catalog # no number
- Patch panel – BPA Catalog # 01009856
- Lockable box assembly – BPA Catalog # 01008399
- WAN interface card – BPA Catalog #

Preferred Manufacturer

Manufacturer dependent upon release; refer to project *Bill of Materials*.

Fuse Panel

Standard Types

- Telect filtered fuse panel – BPA Catalog # 00988211
- Telect panel fuse – BPA Catalog # 01010068
- Telect fuse indicating alarm – BPA Catalog # 00664092, 00664093, 00664094, 00988203, 01004212
- Premisys channel bank chassis – BPA Catalog # 00992526
- Premisys channel bank power supply – BPA Catalog # 00992518
- Premisys channel bank CPU board – BPA Catalog # 01005536
- Premisys channel bank IF interface board – BPA Catalog # 01005535

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- Premisys channel bank dual WAN board – BPA Catalog # 01010438, 01010439
 - Premisys channel bank plug-in-module – BPA Catalog # 00992525
 - Premisys channel bank E&M/TO board – BPA Catalog # 00992510
 - Premisys channel bank SRU board – BPA Catalog # 00992533
 - Premisys channel bank FXO board – BPA Catalog # 00992512
 - Premisys channel bank FXS board – BPA Catalog # 00992511
 - Premisys channel bank ring generator – BPA Catalog # 01001444
 - Premisys channel bank HSU board – BPA Catalog # 01006265, 01001529
 - Premisys channel bank OHSU board – BPA Catalog # 01006264
 - Premisys channel bank IP router and bridging board – BPA Catalog # 01008751
 - Premisys channel bank VF jackfield – BPA Catalog # 01000936
 - Premisys channel bank bracket – BPA Catalog # 00664128
 - Premisys channel bank cable assembly – BPA Catalog # 01006877

Preferred Manufacturer

Premisys

Telect

GPS

Standard Types

- Tekron GPS unit – BPA Catalog # 01005614
- Universal Distributing Frame – BPA Catalog # 01003443

Preferred Manufacturer

Tekron

IDF

Standard Types

- Adjustable mounting bracket – BPA Catalog # 00664125
- Mounting bar assembly – BPA Catalog # 00666767
- Mounting bar – BPA Catalog # 00664043

Preferred Manufacturer

No preferred manufacturer.

JMUX

Standard Types

- Blank panel – BPA Catalog # 01000431
- CDAX unit module – BPA Catalog # 01009439
- CDAX, JMUX paddle board interface assembly – BPA Catalog # 01009441
- CD, TPIM-JMUX, TN-1U&TN-1UeFULLMAN – BPA Catalog # no number

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- Computer test cable kit – BPA Catalog # no number
 - External sync paddle board interface assembly – BPA Catalog # 01000873
 - External sync unit (J-Sync) module – BPA Catalog # 01000872
 - JIF-share unit, JMUX paddle board interface assembly – BPA Catalog # 01000437
 - JIF-share unit module – BPA Catalog # 01000436
 - JMUX to Sync paddle board cable – BPA Catalog # 01009436
 - JNCI NMS-II J channel software – BPA Catalog # 01000861
 - JNCI NMS-II J configuration software – BPA Catalog # 01000862
 - MTG panel – BPA Catalog # 01000860
 - OC-1, STS-1, Ribbon cable kit – BPA Catalog # 01000442
 - OC-3, STS-1, Ribbon cable kit – BPA Catalog # no number
 - OC-1, 1300nm laser module – BPA Catalog # 01000434
 - OC-3 module – BPA Catalog # 01000432
 - Orderwire unit – BPA Catalog # 01000429
 - Orderwire paddle board interface assembly – BPA Catalog # 01000430
 - Paddle board service unit interface assembly – BPA Catalog # 01000428
 - Power unit converter – BPA Catalog # 01000425
 - Power supply – BPA Catalog # 01000426
 - RTU License, VistaNET Network Interface – BPA Catalog # no number
 - Service unit module – BPA Catalog # 01000427
 - Service to order wire cable – BPA Catalog # 01001486
 - Shelf – BPA Catalog – BPA Catalog # 01000423
 - Speakerphone – BPA Catalog # 01000858
 - VT/DS0 Ribbon Cable Kit – BPA Catalog # no number
 - 2W/4W-VF, JMUX Paddle Board Interface Assembly – BPA Catalog # 01000439
 - 4W-VF 2CH E&M channel unit – BPA Catalog # 01000438
 - 28VT JMUX to JIF cables – BPA Catalog # no number

Preferred Manufacturer

No preferred manufacturer.

Jumpers

Standard Types

- ST-SC 1 meter – BPA Catalog # 01005377
- ST-SC 2 meters – BPA Catalog # 01005378
- ST-SC 3 meters – BPA Catalog # 01005379
- ST-SC 5 meters – BPA Catalog # 01005380

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- ST-SC 10 meters – BPA Catalog # 01005381
 - ST-ST 1 meter – BPA Catalog # 01005382,
 - ST-ST 2 meters – BPA Catalog # 01005383
 - ST-ST 3 meters – BPA Catalog # 01005384
 - ST-ST 5 meters – BPA Catalog # 01005385
 - ST-ST 10 meters – BPA Catalog # 01005386
 - ST-LC 2 meters – BPA Catalog # 01010191
 - ST-LC 3 meters – BPA Catalog # 01010193
 - ST-LC 5 meters – BPA Catalog # 01010192
 - ST-LC 7 meters – BPA Catalog # 01010195
 - ST-LC 10 meters – BPA Catalog # 01010194

Preferred Manufacturer

Fiber Instrument Sales

Nitrogen tank

Standard Types

- Adapter – BPA Catalog # 00227918
- Low pressure gauge – BPA Catalog # 01009906
- Regulator – BPA Catalog # 00227900

Preferred Manufacturer

No preferred manufacturer.

Outlet

Standard Types

- Bushing electrical conduit – BPA Catalog # 00283500
- Conduit – BPA Catalog # 00286700, 00283021
- Connector – BPA Catalog # 00283149
- Power isolation transformer – BPA Catalog # 00663248
- Radio rack panel – BPA Catalog # 00253155, 00253165
- Receptacle box – BPA Catalog # 00287190
- Receptacle cover – BPA Catalog # 00287396
- Receptacle, duplex – BPA Catalog # 00196796

Preferred Manufacturer

No preferred manufacturer.

Panduit

Standard Types

- Slotted duct – BPA Catalog # 01005405

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- Slotted duct cover – BPA Catalog # 01005406
 - End cap – BPA Catalog # 01005407
 - Fiber duct mounting brackets – BPA Catalog # 01009167

Preferred Manufacturer

Panduit

Porta

Standard Types

- Paging system circuit card – BPA Catalog # 00666772
- Telephone line protector – BPA Catalog # 01002103, 01005804

Preferred Manufacturer

Delcomsy

PSTN

Standard Types

- ADC Telephone looping plug – BPA Catalog # 00666155
- Isolation panel – BPA Catalog # 00666150
- Isolator card – BPA Catalog # 01000562
- Lightning arrester assembly – BPA Catalog # 01001656
- Modem – BPA Catalog # 01006172
- Power supply card – BPA Catalog # 01006174
- Telephone line protection shelf – BPA Catalog # 01000554, 01000555
- Telephone line card – BPA Catalog # 00666135

Preferred Manufacturer

No preferred manufacturer.

Sniffer

Standard Types

- Cisco 15454 - ONS 15454 XC-VXC-10G card – BPA Catalog # 01009815
- Cisco 15454 - ONS 15454 MRC-12 card – BPA Catalog # 01009817
- Cisco 15454 - ONS 15454 Optical, SFP, OC3, IR1, 1310 card – BPA Catalog # 01009823
- Gas sensor and enclosure – BPA Catalog # 00662009, 01008893
- Propane and hydrogen gas detector/alarm unit module – BPA Catalog # 00100846

Preferred Manufacturer

Cisco

Terminal Blocks

Standard Types

- Adjustable mounting bracket – BPA Catalog # 00664125
- Connectorized – BPA Catalog # 00664140, 00664175
- Holding clamp – BPA Catalog # 00256370
- IDF terminal block mounting bar – BPA Catalog # 00664043
- Mounting rail – BPA Catalog # 01008037
- Quick connect – BPA Catalog # 00666254
- Wire wrap – BPA Catalog # 00666271
- 12 pole, 9" length, 2" max, Width, 8-1/4" mounting holes C-C – BPA Catalog # 00256020

Preferred Manufacturer

- ABB
- Entrelect
- Phoenix
- Weidmuller

Time Provider

Standard Types

Timing system – BPA Catalog # 01006689

Preferred Manufacturer

No preferred manufacturer.

Transformer

Standard Types

Power isolation, 1kV, 120Vac, 15 A popout indication CB, in mounted 10"x8"x6" enclosure – BPA Catalog # 00663248

Preferred Manufacturer

No preferred manufacturer

Section 4: Wiring

4.1 General Wiring Instructions

- Wire the components according to the BPA **approved** Layout & Wiring drawings. Use stripping and crimping tools that meet industry quality standards to ensure that wires are properly handled and not damaged.
- Use only the proper type, color, gauge and/or stranding of wire for the application performed:

Current and 20 A ACB applications – use switchboard wire, 600 volt, #12 AWG, type SIS, single conductor, stranded, tinned CU, 65 strands, Manhattan M217 grey

MWTT applications – use Belden wire

Ground applications – use green Belden wire

All other applications – use switchboard wire, 600 volt, #16 AWG, type SIS, single conductor, stranded, tinned CU, 26 strands, Manhattan M215 slate

- Do not splice wires.

4.2 Wiring Without Lugs or Ferrules

When connecting a solid or stranded wire to a screw type connection without the use of a terminal lug or ferrule, strip the wire to the proper length so the minimum bare wire is exposed, the insulation does not extend under the screw head and the exposed wire can neatly be looped around the screw in a clockwise direction, with no log tails or loose strands extending beyond the connection.

4.3 Wiring With Lugs or Ferrules

- Use only the specified approved type of terminal lugs:

#12 – Yellow

#16 – Blue

#18 – Red

#22 – Red

- Use only the specified approved type of ferrules:

#12 – Gray

#16 – Red

#18 – Yellow

#22 – Orange

- Strip wires to correct length for lugs and ferrules as per manufacturers' specification.
- Crimp the lug/ferrule connection securely.
- Do not sharply bend or strain wires and will maintain an adequate wire loop size to terminal points.
- Insert lugs/ferrules into the terminal points securely.

4.3 Bundled Wiring

- When connecting several wires to a terminal block, form bundles using domestic UV rated black plastic wire ties; pull wire ties snugly and cut off tails squarely with industry approved cutters so as not to leave sharp or exposed ends.
- For bottom fed racks, tail wires out of the top of the wire bundles before beginning panel wiring. For top fed racks, build the bundles while installing panel wiring and run under the bottom terminal rail bracket to the side of the rack.
- For wires to basement wired racks, tail wires 16 to 18 feet out the bottom of the rack.
- Ensure that wires and wire bundles do not cross blank segments or open areas and that they are routed across one another.
- Use brackets or plastic supports when running wire bundles along a large span.
- Divide the bundles down each side of the rack, when necessary, to avoid bundles from becoming too bulky and cumbersome.

4.4 Shielded cables

Ground shielded cables only at one end, leaving the other end floated or bonded to assure one point delivery to ground. Use a shrink tube at the stripped point of the cable.

Appendix A: Sample of Standard Bill of Materials

Appendix B: Sample of CRAM Rack, Panel Segments and Accessories Structural Details

Appendix C: Sample of Radio Rack Panel Segments and Accessories Structural Details

Appendix D: Sample of Layout & Wiring Diagram

Appendix E: Sample of Completed Rack Photographs

APPENDIX L – SUBSTATION SWITCHBOARD RACKS SPECIFICATION

Substation Switchboard Racks Specification

Section 1: General

1.1 Scope

This specification describes Bonneville Power Administration's (BPA's) requirements to construct, weld, wire, test, package, store and ship the following substation switchboard racks:

- Data Systems
- Metering and Remedial Action Scheme (RAS)
- Protective Relay
- Telecommunication

1.2 Engineering/Manufacturing Codes and Standards

The vendor will comply with the most recent and applicable ANSI, IEEE, NEMA and ASTM or equivalent codes and standards to construct, weld, wire, test, package, store and ship the substation switchboard racks.

The vendor will use the most stringent standard when codes and/or standards conflict. When changes to a substation rack are required to meet the most recent and applicable codes and standards, the vendor is responsible for the expense of making those changes.

1.3 Safety Standards

The vendor will comply with applicable federal, state and local safety laws. The vendor will use the most stringent laws when laws conflict.

1.4 Bill of Materials and Engineering Design Package

In addition to this specification, BPA will provide the vendor with the *Bill of Materials* and complete engineering design drawings for each outsourced substation switchboard rack project.

The vendor will comply with this specification in conjunction with the *Bill of Materials* and engineering design drawings to construct, weld, wire and test the substation switchboard racks.

Upon receipt of the engineering design drawings, and before rack construction, the vendor will carefully review the *Bill of Materials* and design drawings for discrepancies. The vendor will resolve discrepancies with BPA before beginning rack construction.

1.5 Materials and Components

Equivalent materials and components

Except where BPA indicates within this specification that equivalent material/component substitutions are allowed, use only the materials and components BPA has specified.

Purchasing and costs

The vendor will purchase and incur the costs of components and materials used to construct, weld, wire, test, package, store and ship the substation switchboard racks.

Warranties/documentation

Obtain equipment manufacturers' (OEM) warranties and any technical and operational documentation for components and materials to construct and wire the substation switchboard racks, as indicated within the contract, and include these items within the substation switchboard rack(s) shipment to the designated BPA site.

1.6 Packaging/Storage/Shipping

The vendor will store materials and components used to construct, wire, weld, test, and package and ship the substation switchboard racks.

The vendor will comply with ASTM or equivalent standards to protect the materials and components from physical or environmental damage or any other type of exposure during packaging, storage, transportation and handling.

Protection From Dirt and Contaminants

Ensure that materials and components are protected against dirt and other contaminants that could cause damage.

Protection From Moisture

Ensure that materials and components susceptible to moisture, corrosion or deterioration are properly wrapped.

Protection From Shock, Movement and Vibrations

Ensure that materials and components requiring protection from physical and mechanical damage are wrapped, cushioned, or packed within a compartment to mitigate shock and vibration during shipment and storage.

Packaging Containers and Materials

Choose ASTM or equivalent regulated containers and any necessary blocking, bracing, cushioning, or waterproofing materials to ensure safe delivery to the BPA site. Also ensure that containers have forklift access on sides and ends and they meet containerization weight and size limitation requirements.

Labeling and Documentation

Ensure that special handling labels (e.g., Fragile, This Side Up, Do Not Drop) are used and placed in compliance with ASTM or equivalent regulations.

Ensure that ASTM or equivalent required documents (e.g., Certificates of compliance, tags, tests, reports) are placed in a plastic sealed bag and affixed in a noticeable location on the identification side of the shipping container, not on the top or bottom.

Section 2: Electrical Switchboard Racks

This section contains the components installation and wiring specifications for Data Systems, Metering and Remedial Action Scheme (RAS) and Protective Relay substation switchboard racks.

2.1 Requirements

The vendor will furnish electrical substation switchboard racks that are completely constructed, assembled, wired and tested at the vendor's site.

2.2 Standard Components List and Build/Installation Instructions

Customized Control Rack Frame, Panel Segments and Accessories

General Instructions

- Use the Bill of Materials to determine the type of frame, panel segments and accessories (e.g., panel extenders, shelves, ground bar kit, nameplates) required.
- Use the *CRAM Rack Structural Diagram, 229695*, in conjunction with the any additional build instructions (below) to determine the specific dimensions of the frame, panel segments and accessories; the positioning of the component cutouts; and the welding and construction requirements.

Additional Build Instructions

- Use the American Welding Society (AWS) or equivalent standard gas shielded arc-welding process to construct the rack frame.
- Join rack frame base angles squarely and weld continuously on interior side.
- Join rack frame upright sections to base angles squarely and weld continuously on interior side.
- Weld internal structural frames continuously from corner to corner.
- Ensure the exterior and interior surfaces are free of flaws in workmanship.
- Ensure exterior and interior surfaces are true and smooth.
- Ensure the exterior and interior surfaces are free of dust and debris.
- Add grommet stripping to the rack frame channel edges.
- Use bolted panel segments only on front side of rack frame unless otherwise indicated. Attach panel segments to the frame with head screws and cup.
- Use hinged panel segments only on backside of rack frame unless otherwise indicated. Affix hinges to back panel segments using the American Welding Society (AWS) or equivalent standard spot-welding process. Attach back panel segments higher on the rack so that hinges do not protrude more than 25 mm into usable space.
- Ensure to add a top and bottom plate extensions when adding an end panel to the rack frame.
- Use correct base mounting installation method for the site. Use the freestanding base mounting installation method for all new sites, unless otherwise indicated. When adding or replacing racks, use the same base mounting installation method for the existing site.
- Finish the frame, panel segments, hinges and bolt heads; matching the sheen and color to the paint samples provided by BPA and as indicated on the Project Order.

Customized Radio Rack Frame and Panel Segments

General Instructions

- Use the *Bill of Materials* to determine the type of frame and panel segments required.
- Use the *Standard Rack and Panel for Radio Equipment, 057635*, in conjunction with the additional build instructions (below) to determine the specific dimensions of the frame and panels; the positioning of the drill holes; and the welding and construction requirements.

Additional Build Instructions

- Use the American Welding Society (AWS) or equivalent standard gas shielded arc-welding process.
- Weld internal structural frames continuously from corner to corner.
- Ensure the exterior and interior surfaces are free of flaws in workmanship.
- Ensure exterior and interior surfaces are true and smooth.
- Ensure the exterior and interior surfaces are free of dust and debris.
- Use bolted panel segments only on front side of rack frame unless otherwise indicated. Attach panel segments to the frame with head screws and cup.
- Use hinged panel segments only on backside of rack frame unless otherwise indicated. Affix hinges to back panel segments using a spot-welding process. Attach back panel segments higher on the rack so that hinge material does not protrude more than 25 mm into usable space.

Standard Electrical Components

General Instructions

- Use the *Bill of Materials* to determine required component types, quantities, manufacturers and part numbers.

- Install the components in the location indicated on Sheet 1 of the applicable *Layout & Wiring Diagram* and in conjunction with any additional installation instructions indicated below.
- Align and carefully mount components to prevent damage to either the components or the panel finish.
- Cover installed components to protect them from panel drilling/cutting dust or debris when adding components.
- Ensure that component-mounting accessories do not protrude into the wire ways.

Air Circuit Breakers

Standard Types

- 1.5A, 80V DC, 2 pole, with auxiliary switch – BPA Catalog ID # 190710
- 2.0A, 125/250V AC, 1 pole, with auxiliary switch – BPA Catalog ID # 1008867
- 2.5A, time curve 2, 250V AC, 3 pole ganged, 3-phase, 250V AC, 3000 A interrupting capacity, back connected, black handles – BPA Catalog ID # 1009219
- 5A, time curve 2, 65V DC, 2 pole with auxiliary switch, back connected – BPA Catalog ID # 190732
- 5A, time curve 3, 125V DC, 2 pole with SPDT auxiliary switch, back connected, white handle – BPA Catalog ID# 1006766
- 10A, time curve 2, 250V AC, 2 pole with auxiliary switch, 1000A interrupting capacity at 125V DC, back connected – BPA Catalog ID# 190733
- 10A, time curve 3, 125V DC, 2 pole with SPDT auxiliary switch, back connected, white handle – BPA Catalog ID # 1006767
- 20A, time curve 1, 125V DC, 2 pole with auxiliary switch 5000 A interrupting capacity at 125V DC, back connected – BPA Catalog ID # 190743
- 20A, time curve 3, 125V DC, 2 pole with SPDT auxiliary switch, back connected, white handle – BPA Catalog ID # 1006768
- 30 A, time curve 3, 125V DC, 2 pole with SPDT auxiliary switch, back connected, white handle – BPA Catalog ID # 1006769

Preferred Manufacturer

Heinemann

Additional Installation Instructions

Ensure the correct current rating of all air circuit breakers before installation.

Receptacles and Accessories

Standard Types

- Receptacle, duplex, 15A, 125 V AC, 2-pole, 3-wire, isolation ground, orange, back and side wired 15A, 125V spec grade – BPA Catalog # 196796
- Receptacle, duplex, 20 A, 125V AC, 2-pole, 3-wire, flush type, brown, straight blade, NEMA 5-20R – BPA Catalog # 196641
- Receptacle, simplex, 15 A, 125 V AC, 2-pole, 3-wire, flush type, brown, straight blade – BPA Catalog # 196642
- Box, conduit outlet, utility, galvanized – BPA Catalog # 287120
- Box, double gang, duplex, plastic with mounting feet, type FS – BPA Catalog # 287190
- Cover, conduit outlet, single gang, simplex, wall plate, galvanized – BPA Catalog # 196605
- Cover, single gang, duplex, smooth finished stainless steel – BPA Catalog # 287395
- Cover, 2 gang, duplex, smooth finished stainless steel – BPA Catalog # 287396

Preferred Manufacturer

No preferred manufacturer; outlets must be specification grade.

Additional Installation Instructions

Ensure that the receptacle hot terminal is facing downward.

Relays and Accessories**Standard Types**

- Arc suppressors and accessories – BPA Catalog # 234820, 1005132, 1006336
- Auxiliary – BPA Catalog # 232821, 232851, 232853, 232856, 232859, 235109, 235110, 1003750, 1003074, 1005708, 1006804
- Breaker closing – BPA Catalog ID # 1002080
- Breaker monitoring – BPA Catalog # 1008041
- Bus differential – BPA Catalog # 1003139, 1003809, 1010447, 1012305, 1013985
- Communications processor – BPA Catalog # 235321
- General purpose – BPA Catalog # 234922, 234924
- Latch – BPA Catalog # 233201, 972855
- Line protection – BPA Catalog # 1000287, 1007028, 1010511, 1010813
- Lockout – BPA Catalog ID # 232592
- Multifunction protection – BPA Catalog # 1006833
- Overcurrent protection – BPA Catalog ID # 1001685
- Overvoltage monitor – BPA Catalog ID # 1010490, 1008287
- Programmable, multi-functional – BPA Catalog # 230123
- Repeat – BPA Catalog # 1005773, 1010508
- Sockets – BPA Catalog ID # 251450, 677803
- TDDO – BPA Catalog # 232531
- Voltage differential protection – BPA Catalog ID # 232644

Preferred Manufacturers

- ABB
- Agastat
- BI-Stable Revenue Metering
- Curtis Wright for Sockets
- Newark
- Omron
- P & B
- Timemark

Switchboard Cables/Connectors and Accessories

Standard Types

- Annunciator – BPA Catalog # 546392, 546393
- Braid assembly – BPA Catalog # 171801
- Cable assembly, pigtail, coaxial antenna, RG58/U, 50ft long, with TNC male & N mount– BPA Catalog # 1000448
- Cable with DB9 connectors – BPA Catalog # 1010840
- Coaxial – BPA Catalog # 540409, 540410, 664133 (No number for the BNC connector)
- Communication – BPA Catalog # 546324, 546325, 546391
- Conduit – BPA Catalog # 283210, 283310, 286390, 286507,
- Control – BPA Catalog # 543200, 543205, 543210, 543215, 546325
- Coupling – BPA Catalog # 28670
- Data – BPA Catalog # 1002592,
- DB9 – BPA Catalog # 990249, 1008332
- D-Sub and accessories – BPA Catalog # No number
- Fiber optic and accessories – BPA Catalog # 1002421, 1002423, 1002424, 1002594, 1002595, 1002596, 1002688, 1002690

Preferred Manufacturers

No preferred manufacturer.

Belden

Genex Cabling Products

Draka Cableteq USA

Black Box Corporation

Additional Installation Instructions

Use quality grade manufacturer that utilizes appropriate cable/connector colors.

Switchboard Wire

Standard Types

- Building, THHN/THWN, single conductor, 600V, stranded, copper, #8 AWG, rated 45 A, black – BPA Catalog # 540270
- SIS, single conductor, 600V, stranded, tinned CU, #12 AWG, 65 strands – BPA Catalog # 546283
- SIS, single conductor, 600V, stranded, tinned CU, #16 AWG, 26 strands – BPA Catalog # 546285

Preferred Manufacturers

- Belden
- Genex

Additional Installation Instructions

Use Belden for radio racks; use Genex for CRAM racks.

Switches

Standard Types

- Assembly – BPA Catalog # 665146
- Control switches – BPA Catalog ID # 231323, 251238

- Line share switches – BPA Catalog # 990793
- Pushbutton switches – BPA Catalog # 197370
- Selector switches – BPA Catalog ID # 235340, 251325, 251353, 1000755, 1001669, 1002063, 1005298, 1006782, 1006784, 1006785, 1008055, 1008056
- Test switches – BPA Catalog ID # 234902, 234913, 234914, 235345, 254055, 254071, 254082, 254105, 254111, 254113, 1003377, 1003754, 1009438
- Toggle switches – BPA Catalog ID # 197390, 197394, 197395, 197396, 1008391

Preferred Manufacturers

ABB
Asea
Cutler Hamm
Electroswitch
Microswitch
States

Additional Installation Instructions

- Use the proper switch base.
- Maintain a minimum of 1-3/32 inches between the center of the last assembly and each extreme end of a switch base to allow for the sealing studs and mounting holes.
- Maintain the proper working space distance and maximum pole usage between the centers of the extreme outside elements.
- Make barriers standard between poles or between current and potential poles and have spacing up to and including 1 inch.
- Mount vertical test switches so that the blades and test switch handle open to the left and horizontal test switches so that the blades and test switch handle open down.
- Mount the test switches to the segments using 10-32 barrel nut and/or brass screws.
- Place small labels on the back of the segments to number components to correspond with the design drawings.

Terminal Blocks and Accessories

Standard Types

- Assembly rail – BPA Catalog # 256392
- Current block – BPA Catalog # 256280, 1008915
- Disconnect plug – BPA Catalog #
- Double tier/double level, bottom to Top Flow – BPA Catalog #
- Double Tier/Double Level, Top to Bottom Flow – BPA Catalog #
- End clamp – BPA Catalog # 256370
- End section (aka end plate, end cover) – BPA Catalog # 256265, 256272, 256326
- End stops – BPA Catalog # 256394
- Grounding block – BPA Catalog # 256396, 1009523, 1009526
- Grounding clamp – BPA Catalog # 1000002
- Holding clamp – BPA Catalog # 256394
- Knife disconnecting blocks – BPA Catalog #1005167, 1006832, 1008895
- Mounting rail – BPA Catalog # 1008037, 1009521

- Plate partition – BPA Catalog # 1004113
- Potential block – BPA Catalog # 256278, 256290, 256292, 256327, 256328
- Terminal base – BPA Catalog # 232822, 253302,

Preferred Manufactures

- ABB
- Entrelect
- Phoenix
- Weidmuller

Additional Assembly and Installation Instructions

The vendor will assemble the terminal blocks using the standards below in conjunction with Sheet 1 of the Layout & Wiring Diagram and applicable additional diagram sheets as indicated on Sheet 1.

Terminal Block Mounting Rails (AKA Din or Top Hat Rails)

- Cut the rail to the length of the rack, assuring tolerances for required terminal blocks.
- Mount rail assembled terminal block rail on the inside of the rack ensuring that the rail accommodates incoming cables on each side of the rack and does not obstruct protruding equipment.

Current, Ground, Potential and Disconnect Terminal Blocks

- Run current wires to 8mm non-screw insert current blocks.
- Run ground wires to 10mm ground blocks, unless space constraints require smaller blocks.
- Run power, trip and close wires to 8mm screw insert potential blocks.
- Run alarm wires to 6.5mm disconnecting blocks

End Plates

Install an insulating and closing end plate on the open element of each terminal board for each type and cross section of a terminal block. Install end plate terminal blocks also to separate different phases of adjoining terminal blocks linked by cross connections or to increase insulation distances when required.

End Stops

Install end stops on the ends of terminal block groups.

Labeling

Use manufacture's labels to number incoming cable side of terminal blocks. If terminal points are not clear, or are difficult to read, use a smaller label.

Data System Components

Data System Standard Configurations

- GE D20 – D20 SCADA Rack – BPA *Bill of Materials* # ~~280021~~-286021-SDS-BM
- GE D20 – D20 SER Racks – BPA *Bill of Materials* # 286018-SDS-BM
- GE D20 – D20 SER Expansion – BPA *Bill of Materials* # 286548-SDS-BM
- GE D20 – D20 SER Alarm Distribution Frame & PC Annunciator – BPA *Bill of Materials* # 280845-SDS-BM
- Limit Wind Trip – BPA *Bill of Materials* # 288740-SDS-BM

Data System Standard Components List

- Annunciator – BPA Catalog # 190312, 1008451
- Analog input module – BPA Catalog # 1008575

- Chassis Assembly – BPA Catalog # 1008573
- Circuit breakers – BPA Catalog # 1008863, 1008864, 1008865, 1008866, 1008867, 1008868, 1008869, 1008870
- Control card/digital output module – BPA Catalog # 1008565
- Flasher – BPA Catalog # 251845
- Interface connection board – BPA Catalog # 1008836
- Interposer relay module – BPA Catalog # 1008577
- Inverter – BPA Catalog # 1000885
- Modem – BPA Catalog # 1008835
- Printer – BPA Catalog # 1001206
- RS485 to fiber media converter – BPA Catalog # 1008871
- Status card/digital input module – BPA Catalog # 1008576
- UPC assembly – BPA Catalog # 1008574

Preferred Manufacturers

General Electric

Metering Components

Metering Standard Configurations

- Demand Recorder SSR-6000 – BPA *Bill of Materials* # 277729-SDS-BM
- Large Generation Integration – BPA *Bill of Materials* # 280718-SDS-BM
- Revenue Metering, LandLine – BPA *Bill of Materials* # 281315-SDS-BM
- Metering, Cell Phone – BPA *Bill of Materials* # 287765-SDS-BM

Metering Components List

- Antenna and accessories – BPA Catalog # 1007003, 1007004, 1007644, 1009159
- Cable assembly – BPA Catalog # 1007007
- Data cable – BPA Catalog # 546329
- Data combiner for KWH – BPA Catalog # 1007917
- DB25 male solder connectors – BPA Catalog # 665390
- Ground bar kit – BPA Catalog # 1008631
- Harness – BPA Catalog # 1007000
- Line share switch – BPA Catalog # 990793
- Line sharing switch shelf – BPA Catalog # no number
- Modem and accessories – BPA Catalog # 1008677
- Recorder and accessories – BPA Catalog # 1006998, 1007000, 1007007
- Revenue meter, Jemstar – BPA Catalog # 1008090
- Telephone cord for use with Teletone Line Share Switch – BPA Catalog # 666746
- Transducer – BPA Catalog # 1008488

Preferred Manufacturers

Ametek - Jemstar

Protective Relay Components

Protective Relay Standard Configurations

- Main & Transfer Mini-Control – BPA *Bill of Materials* # 249304-SCP-BM
- 1-1/2 Mini-Control – BPA *Bill of Materials* # 249306-SCP-BM
- Single Pole Relay Set #1, Positive Trip – BPA *Bill of Materials* # 263978-SCP-BM
- Single Pole Relay Set #2, Positive Trip – BPA *Bill of Materials* # 263980-SCP-BM
- Iniven PTR-1500 MWTT Set #1 – BPA *Bill of Materials* # 265820-SCP-BM
- SEL-2100 Set 1 & 2 Mirrored Bit Transfer Trip – BPA *Bill of Materials* # 267253-SCP-BM
- SEL –2100 Protection Logic Processor – BPA RED-521
- Bus Differential, Three Phase – BPA *Bill of Materials* # 267805-SCP-BM
- RED-521 Bus Differential, Single Phase – BPA *Bill of Materials* # 267843-SCP-BM
- SEL-421 – BPA *Bill of Materials* # 275810-SCP-BM
- Iniven PTR-1500 MWTT, Three Phase App #1 – BPA *Bill of Materials* #278072-SCP-BM
- SEL-352 – BPA *Bill of Materials* # 278350-SCP-BM
- Synchronizing – BPA *Bill of Materials* # 278444-SCP-BM
- Breaker Auxiliary – BPA *Bill of Materials* # 278641-SCP-BM
- Tertiary Ground Detector – BPA *Bill of Materials* # 281813 – SCP-BM
- BEL-951 Overcurrent – BPA *Bill of Materials* # 282546-SCP-BM
- SEL-287V – BPA *Bill of Materials* # 284245-SCP-BM
- SEL-421 SPR Set 1, Rack QQ01 – BPA *Bill of Materials* # 287076-SCP-BM
- RED-670 SPR Set 2, Rack RR01 – BPA *Bill of Materials* #287078-SCP-BM
- Cable Tray – BPA *Bill of Materials* #287162-SCP-BM

Protective Relay Standard Components List

- Cable tray and accessories – BPA Catalog ID # 286241, 979160, 979161, 979168, 979174, 979177, 1010645, 1010646, 1010647, 1010648, 1010649, 1010650, 1010651, 1010652, 1010653, 1010654, 1010655
- Controller – BPA Catalog ID # 1009837
- Frequency meter – BPA Catalog ID # 1008324
- High speed line protection system – BPA Catalog ID # 1000287
- LED assembly – BPA Catalog ID # 257703, 257704, 257705
- LED, bi-color and light holder – BPA Catalog ID # 251466, 251470
- Light holder – BPA Catalog ID # 251470
- Multi-function meter – BPA Catalog ID # 1009173
- MWTT terminal – BPA Catalog ID # 1002071, 1002570
- Outdoor PT junction box – BPA Catalog ID # 1005164
- Protection logic processor – BPA Catalog ID # 1002474

- Pull drawer – BPA Catalog ID # 152772
- Rectifier – BPA Catalog ID # 683070, 683080
- Resistor – BPA Catalog ID # 1004201, 1008461
- Satellite system receiver – BPA Catalog # 1005614, 1005615
- SEL-2020 to printer – BPA Catalog # No number
- SEL-2020 to 100 Series SEL Relay – BPA Catalog # No number
- SEL-2020 to 200/321 Series SEL Relay – BPA Catalog # No number
- SEL-2020/30 to miscellaneous device – BPA Catalog # No number
- SEL-2100 protection logic processor – BPA Catalog # 1002474
- SEL-2100 to miscellaneous device – BPA Catalog # No number
- Shunt – BPA Catalog # 1006180
- Steel channel – BPA Catalog # 285010
- Substation communication server – BPA Catalog # 1010204
- Surge suppressor and branch connector – BPA Catalog # 1006336 and 1005132
- Synchroscope – BPA Catalog # 243207-SCP-BM
- Transceiver – BPA Catalog # 1004369
- Transformer – BPA Catalog ID # 235149
- Voltmeter – BPA Catalog ID # 1004152, 1005299

Preferred Manufacturers

- B-Line Systems
- Dialight
- Dymec
- Electro Industries
- Empro
- General Electric
- Iniven
- LEDTronics
- Pacific Resistor
- TEKRON International
- Vishay Dale
- Yokagawa

Remdial Action Scheme (RAS) Components

RAS Standard Configurations

- Control Center, ACA-GE N60 W/CTI Modules – BPA *Bill of Materials* # DITTMERCC-SRA-BM
- Control Center, ACB-GE N60 W/CTI Modules – BPA *Bill of Materials* # MUNROCC-SRA-BM
- RFL9745/585 F, Negative and Positive/Analog Tones – BPA *Bill of Materials* # 266402-SRA-BM

- RFL9745/400 A, Negative and Positive/Digital Fiber – BPA *Bill of Materials* # 266404-SRA-BM
- RFL9745/400 A, Negative and Positive/Digital RS-499 – BPA *Bill of Materials* # 266443-SRA-BM

RAS Components List

- BNC coaxial connector – BPA Catalog # no number
- BNC tee adapter – BPA Catalog # 664158
- Boot for modular plug – BPA Catalog # no number
- Cable management panel – BPA Catalog # 1010871
- Cable manager – BPA Catalog # 1010850
- DB9 connectors and accessories – BPA Catalog # 990249, 1008332, 1010840
- DC-to-DC converter power supply – BPA Catalog # 1010836
- D-Sub connector and accessories – BPA Catalog # no numbers
- Ethernet switch – BPA Catalog # 1010837
- Fiber cable assembly and protection accessories – 1002421, 1002423, 1002424, 1002594, 1002595, 1002596, 1002688, 1002690
- Metal hood for DB037 connector – BPA Catalog # No number
- MWTT digital terminal – BPA Catalog # 1002570
- Modular plug – BPA Catalog # No number
- Modular jack – BPA Catalog # No number
- N60 universal relay – BPA Catalog ID # 1010060
- Patch panel – BPA Catalog # 1002591, 1010873
- PLC/Ethernet bridge – BPA Catalog # 1010852, 1010853, 1010854
- Power supply rack kits (floor mount, top rack, rack isolation) – BPA Catalog # 667630, 667632, 667633
- Resister and accessories – BPA Catalog # 675286, 1009812
- Sequential event recorder assembly – BPA Catalog # 1010839
- Strain relief for modular plug – BPA Catalog #
- Tip jack – BPA Catalog # 663052, 663053

Preferred Manufacturers

Control Technologies International

EF Johnson

General Electric

Newark

Newton

Panduit

Phoenix

Pomona

RapidNet

Schneider Electric

SOLA

Systemax Solutions

Section 3: Telecommunication Switchboard Racks

This section contains the components installation and wiring specifications for Telecommunication substation switchboard racks.

3.1 Requirements

The vendor will furnish telecommunication substation switchboard racks that are completely constructed, assembled, wired and tested at the vendor's site.

3.2 Standard Components List and Build/Installation Instructions

Radio Rack Frame and Accessories

General Instructions

- Use the *Standard Rack and Panel for Radio Equipment, 057635*, in conjunction with the (Chatsworth) manufacturer drawings and build instructions that come with the rack.
- Use the *Bill of Materials* to determine required rack and accessory types, quantities, manufacturers and part numbers.

Components List

- Cable strain relief bracket – BPA Catalog # 1006103
- Extender – BPA Catalog # 00664128
- Floor mount kit – BPA Catalog # 00667630
- Ground bus bar – BPA Catalog # 01000669, 00664350
- Printer shelf – BPA Catalog # 01000521
- Rack – BPA Catalog # 01001698, 01001726, 01001727
- Rack isolation kit – BPA Catalog # 00667633
- Standoff cable tie bracket – BPA Catalog # 01005359
- Top mount kit – BPA Catalog # 00667632

Standard Electrical Components

General Instructions

- Use the *Bill of Materials* to determine required component types, quantities, manufacturers and part numbers.
- Install the components in the location indicated on Sheet 1 of the applicable *Layout & Wiring Diagram* and in conjunction with any additional installation instructions indicated below.
- Align and carefully mount components to prevent damage to either the components or the panel finish.
- Cover installed components to protect them from panel drilling/cutting dust or debris when adding components.
- Ensure that component-mounting accessories do not protrude into the wire ways.

Air circuit breaker

Standard Types

- Miniature, din rail mounted, 1-pole, 15A, for CB-17, Square D – BPA Catalog # 01000659
- Miniature, din rail mounted, 1-pole, 30A, for CB-17, Square D – BPA Catalog # 01006760
- Miniature, din rail mounted, 1-pole, 50A, for CB-17, Square D – BPA Catalog # 01010437
- Miniature, din rail mounted, 2-pole, 70A, for CB-17, Square D – BPA Catalog # 01000655

Preferred Manufacturer

Square D

Alarms**Standard Types**

- Hex nut – BPA Catalog # 00771659
- Alarm Phoenix contact – BPA Catalog # 01008169
- Jumper assembly – BPA Catalog # 01009911
- Marking strip – BPA Catalog # 01009912, 01009913, 01009914, 01009916, 01009917, 01009918, 01009919

Preferred Manufacturer

Phoenix

Analog**Standard Types**

- Channel unit – BPA Catalog # 00664096
- Attenuator – BPA Catalog # 00664192, 00664193, 00664194, 00664195, 00664196
- Shelf assembly – BPA Catalog # 01008158

Preferred Manufacturer

No preferred manufacturer.

Ardax**Standard Types**

- Digital partyline telephone unit chassis assembly – BPA Catalog # 01004983, 01004984, 01008741
- Cable assembly – BPA Catalog # 01005004
- HSU cable – BPA Catalog # 01005006

Preferred Manufacturer

Ardasys

Cable Tray**Standard Types**

- All threaded drop rod – BPA Catalog # No number
- Amplifier – BPA Catalog # 01005684
- Cable tray – BPA Catalog # No number
- Heavy duty stringer splice kit – BPA Catalog # No number
- Loud speaker – BPA Catalog # 01003383
- Relay rack runway support kit – BPA Catalog # No number
- Runway support kit – BPA Catalog # No number
- Runway wall support kit – BPA Catalog # no number
- Slip-on runway support kit – BPA Catalog # No number
- Splice extension splice kit – BPA Catalog # No number
- Tee splice kit – BPA Catalog # No number

Preferred Manufacturer

B-Line

Charger

Standard Types

- AC junction box, connecting AC to Charger – BPA Catalog # No number
- Battery charger chassis – BPA Catalog # 01009001, 01009002, 01009010
- Battery charger controller – BPA Catalog # 01009004
- Circuit breaker panel – BPA Catalog # 01006757
- Rectifier – BPA Catalog # 01009005, 01009006, 01009007, 01009008
- DC termination panel – BPA Catalog # 01009029
- Discrete alarms cable assembly – BPA Catalog # 01009012, 01009013
- Lexan cover and accessories – BPA Catalog # 01000675, 01000676, 01006507
- Lexan top and rear – BPA Catalog # 01000673

Preferred Manufacturer

No preferred manufacturer

Circuit breaker

Standard Types

20A 1-pole, bolt on, QOB, 120Vac, GFCI, Square D type, Graybar – BPA Catalog # No number

Preferred Manufacturer

Square D

Converter

Standard Types

- 24V DC to 48V DC, DC-DC (200W) – BPA Catalog # 01008263
- 48V DC to 12V DC, DC-DC (200W) – BPA Catalog # 01009284
- 48V DC to 24V DC, DC-DC (200W) – BPA Catalog # no number 1009988, 1009989
- 130V DC to 48V DC, DC-DC (400W) – BPA Catalog # 01007972

Preferred Manufacturer

No preferred manufacturer.

Dantel

Standard Types

- Data bridge shelf – BPA Catalog # 01002521
- Data hubbing module – BPA Catalog # no number

Preferred Manufacturer

Dantel

DSX-1 JF

Standard Types

- Cable assemblies – BPA Catalog # 00664123, 00664139, 01001161, 01002558, 01006991, 01007012, 01007013, 01007014

- Front cross connect module – BPA Catalog # 00994372
- Jackfield – BPA Catalog # 00994375
- Panel extenders – No BPA Catalog #
- Sonet Cisco 15454 alarm interface control board – BPA Catalog # 01005130
- Sonet Cisco 15454 cable assembly – BPA Catalog # 01003736
- Sonet Cisco 15454 cross connect board – BPA Catalog # 01006453
- Sonet Cisco 15454 DS1 board – BPA Catalog # 01002975
- Sonet Cisco 15454 electrical interface module – BPA Catalog # 01003734
- Sonet Cisco 15454 empty slot filler panel board – BPA Catalog # 01005374
- Sonet Cisco 15454 jumper fiber – BPA Catalog # no number
- Sonet Cisco 15454 laptop shelf – BPA Catalog # 01008744
- Sonet Cisco 15454 manuals – BPA Catalog # no number
- Sonet Cisco 15454 optical board – BPA Catalog # 01002971, 01006454
- Sonet Cisco 15454 optical multiplexer chassis – BPA Catalog # 01005910
- Sonet Cisco 15454 shelf assembly – BPA Catalog # 01002985
- Sonet Cisco 15454 software package – BPA Catalog # 01006455
- Sonet Cisco 15454 timing and communications control board – BPA Catalog # 01005127
- Sonet Cisco 15454 XCVT board – BPA Catalog # 01002982

Preferred Manufacturer

Cisco

Fiber Optic Panel

Standard Types

- Faceplate – BPA Catalog # 01000608, 01000609
- Jumper – BPA Catalog # 01001692
- Panel and accessories – BPA Catalog # 01000607, 01000610, 01000611, 01000612, 01001404, 01001549

Preferred Manufacturer

Bejed

FIN/NMS

Standard Types

- Access router – BPA Catalog # 01006292, 01006293, 01006294
- Cable assembly – BPA Catalog # 01001506, 01001537, 01002016, 01006296,
- Cisco 2811 router generating system software – BPA Catalog #, 01006291
- Dual T1 WAN card – BPA Catalog #, 01006297
- Ethernet module – BPA Catalog #, 01006294, 01006293, 01006294
- WAN interface card – BPA Catalog # 01001504, 01006512, 01006295,
- SmartNet warranty for Cisco router – BPA Catalog # no number
- Patch panel – BPA Catalog # 01009856

- Lockable box assembly – BPA Catalog # 01008399
- WAN interface card – BPA Catalog #

Preferred Manufacturer

Manufacturer dependent upon release; refer to project *Bill of Materials*.

Fuse Panel

Standard Types

- Telect filtered fuse panel – BPA Catalog # 00988211
- Telect panel fuse – BPA Catalog # 01010068 1012073
- Telect fuse indicating alarm – BPA Catalog # 00664092, 00664093, 00664094, 00988203, 01004212
- Premisys channel bank chassis – BPA Catalog # 00992526
- Premisys channel bank power supply – BPA Catalog # 00992518
- Premisys channel bank CPU board – BPA Catalog # 01005536
- Premisys channel bank IF interface board – BPA Catalog # 01005535
- Premisys channel bank dual WAN board – BPA Catalog # 01010438, 01010439
- Premisys channel bank plug-in-module – BPA Catalog # 00992525
- Premisys channel bank E&M/TO board – BPA Catalog # 00992510
- Premisys channel bank SRU board – BPA Catalog # 00992533
- Premisys channel bank FXO board – BPA Catalog # 00992512
- Premisys channel bank FXS board – BPA Catalog # 00992511
- Premisys channel bank ring generator – BPA Catalog # 01001444
- Premisys channel bank HSU board – BPA Catalog # 01006265, 01001529
- Premisys channel bank OHSU board – BPA Catalog # 01006264
- Premisys channel bank IP router and bridging board – BPA Catalog # 01008751
- Premisys channel bank VF jackfield – BPA Catalog # 01000936
- Premisys channel bank bracket – BPA Catalog # 00664128
- Premisys channel bank cable assembly – BPA Catalog # 01006877

Preferred Manufacturer

Premisys

Telect

GPS

Standard Types

- Tekron GPS unit – BPA Catalog # 01005614
- Universal Distributing Frame – BPA Catalog # 01003443

Preferred Manufacturer

Tekron

IDF

Standard Types

- Adjustable mounting bracket – BPA Catalog # 00664125
- Mounting bar assembly – BPA Catalog # 00666767
- Mounting bar – BPA Catalog # 00664043

Preferred Manufacturer

No preferred manufacturer.

JMUX

Standard Types

- Blank panel – BPA Catalog # 01000431
- CDAX unit module – BPA Catalog # 01009439
- CDAX, JMUX paddle board interface assembly – BPA Catalog # 01009441
- CD, TPIM-JMUX, TN-1U&TN-1UeFULLMAN – BPA Catalog # no number
- Computer test cable kit – BPA Catalog # no number
- External sync paddle board interface assembly – BPA Catalog # 01000873
- External sync unit (J-Sync) module – BPA Catalog # 01000872
- JIF-share unit, JMUX paddle board interface assembly – BPA Catalog # 01000437
- JIF-share unit module – BPA Catalog # 01000436
- JMUX to Sync paddle board cable – BPA Catalog # 01009436
- JNCI NMS-II J channel software – BPA Catalog # 01000861
- JNCI NMS-II J configuration software – BPA Catalog # 01000862
- MTG panel – BPA Catalog # 01000860
- OC-1, STS-1, Ribbon cable kit – BPA Catalog # 01000442
- OC-3, STS-1, Ribbon cable kit – BPA Catalog # no number
- OC-1, 1300nm laser module – BPA Catalog # 01000434
- OC-3 module – BPA Catalog # 01000432
- Orderwire unit – BPA Catalog # 01000429
- Orderwire paddle board interface assembly – BPA Catalog # 01000430
- Paddle board service unit interface assembly – BPA Catalog # 01000428
- Power unit converter – BPA Catalog # 01000425
- Power supply – BPA Catalog # 01000426
- RTU License, VistaNET Network Interface – BPA Catalog # no number
- Service unit module – BPA Catalog # 01000427
- Service to order wire cable – BPA Catalog # 01001486
- Shelf – BPA Catalog – BPA Catalog # 01000423
- Speakerphone – BPA Catalog # 01000858
- VT/DS0 Ribbon Cable Kit – BPA Catalog # no number
- 2W/4W-VF, JMUX Paddle Board Interface Assembly – BPA Catalog # 01000439
- 4W-VF 2CH E&M channel unit – BPA Catalog # 01000438

- 28VT JMUX to JIF cables – BPA Catalog # no number

Preferred Manufacturer

No preferred manufacturer.

Jumpers

Standard Types

- ST-SC 1 meter – BPA Catalog # 01005377
- ST-SC 2 meters – BPA Catalog # 01005378
- ST-SC 3 meters – BPA Catalog # 01005379
- ST-SC 5 meters – BPA Catalog # 01005380
- ST-SC 10 meters – BPA Catalog # 01005381
- ST-ST 1 meter – BPA Catalog # 01005382,
- ST-ST 2 meters – BPA Catalog # 01005383
- ST-ST 3 meters – BPA Catalog # 01005384
- ST-ST 5 meters – BPA Catalog # 01005385
- ST-ST 10 meters – BPA Catalog # 01005386
- ST-LC 2 meters – BPA Catalog # 01010191
- ST-LC 3 meters – BPA Catalog # 01010193
- ST-LC 5 meters – BPA Catalog # 01010192
- ST-LC 7 meters – BPA Catalog # 01010195
- ST-LC 10 meters – BPA Catalog # 01010194

Preferred Manufacturer

Fiber Instrument Sales

Nitrogen tank

Standard Types

- Adapter – BPA Catalog # 00227918
- Low pressure gauge – BPA Catalog # 01009906
- Regulator – BPA Catalog # 00227900

Preferred Manufacturer

No preferred manufacturer.

Outlet

Standard Types

- Bushing electrical conduit – BPA Catalog # 00283500
- Conduit – BPA Catalog # 00286700, 00283021
- Connector – BPA Catalog # 00283149
- Power isolation transformer – BPA Catalog # 00663248
- Radio rack panel – BPA Catalog # 00253155, 00253165
- Receptacle box – BPA Catalog # 00287190

- Receptacle cover – BPA Catalog # 00287396
- Receptacle, duplex – BPA Catalog # 00196796

Preferred Manufacturer

No preferred manufacturer.

Panduit

Standard Types

- Slotted duct – BPA Catalog # 01005405
- Slotted duct cover – BPA Catalog # 01005406
- End cap – BPA Catalog # 01005407
- Fiber duct mounting brackets – BPA Catalog # 01009167

Preferred Manufacturer

Panduit

Porta

Standard Types

- Paging system circuit card – BPA Catalog # 00666772
- Telephone line protector – BPA Catalog # 01002103, 01005804

Preferred Manufacturer

Delcomsy

PSTN

Standard Types

- ADC Telephone looping plug – BPA Catalog # 00666155
- Isolation panel – BPA Catalog # 00666150
- Isolator card – BPA Catalog # 01000562
- Lightning arrester assembly – BPA Catalog # 01001656
- Modem – BPA Catalog # 01006172
- Power supply card – BPA Catalog # 01006174
- Telephone line protection shelf – BPA Catalog # 01000554, 01000555
- Telephone line card – BPA Catalog # 00666135

Preferred Manufacturer

No preferred manufacturer.

Sniffer

Standard Types

- Cisco 15454 - ONS 15454 XC-VXC-10G card – BPA Catalog # 01009815
- Cisco 15454 - ONS 15454 MRC-12 card – BPA Catalog # 01009817
- Cisco 15454 - ONS 15454 Optical, SFP, OC3, IR1, 1310 card – BPA Catalog # 01009823
- Gas sensor and enclosure – BPA Catalog # 00662009, 01008893
- Propane and hydrogen gas detector/alarm unit module – BPA Catalog # 00100846

Preferred Manufacturer

Cisco

Terminal Blocks

Standard Types

- Adjustable mounting bracket – BPA Catalog # 00664125
- Connectorized – BPA Catalog # 00664140, 00664175
- Holding clamp – BPA Catalog # 00256370
- IDF terminal block mounting bar – BPA Catalog # 00664043
- Mounting rail – BPA Catalog # 01008037
- Quick connect – BPA Catalog # 00666254
- Wire wrap – BPA Catalog # 00666271
- 12 pole, 9" length, 2" max, Width, 8-1/4" mounting holes C-C – BPA Catalog # 00256020

Preferred Manufacturer

- ABB
- Entrelect
- Phoenix
- Weidmuller

Time Provider

Standard Types

Timing system – BPA Catalog # 01006689

Preferred Manufacturer

No preferred manufacturer.

Transformer

Standard Types

Power isolation, 1kV, 120Vac, 15 A popout indication CB, in mounted 10"x8"x6" enclosure – BPA Catalog # 00663248

Preferred Manufacturer

No preferred manufacturer

Section 4: Wiring

4.1 General Wiring Instructions

- Wire the components according to the BPA **approved** Layout & Wiring drawings. Use stripping and crimping tools that meet industry quality standards to ensure that wires are properly handled and not damaged.
- Use only the proper type, color, gauge and/or stranding of wire for the application performed:
 - Current and 20 A ACB applications – use switchboard wire, 600 volt, #12 AWG, type SIS, single conductor, stranded, tinned CU, 65 strands, Manhattan M217 grey
 - MWTT applications – use Belden wire
 - Ground applications – use green Belden wire

All other applications – use switchboard wire, 600 volt, #16 AWG, type SIS, single conductor, stranded, tinned CU, 26 strands, Manhattan M215 slate

- Do not splice wires.

4.2 Wiring Without Lugs or Ferrules

When connecting a solid or stranded wire to a screw type connection without the use of a terminal lug or ferrule, strip the wire to the proper length so the minimum bare wire is exposed, the insulation does not extend under the screw head and the exposed wire can neatly be looped around the screw in a clockwise direction, with no log tails or loose strands extending beyond the connection.

4.3 Wiring With Lugs or Ferrules

- Use only the specified approved type of terminal lugs:
 - #12 – Yellow
 - #16 – Blue
 - #18 – Red
 - #22 – Red
- Use only the specified approved type of ferrules:
 - #12 – Gray
 - #16 – Red
 - #18 – Yellow
 - #22 – Orange
- Strip wires to correct length for lugs and ferrules as per manufacturers' specification.
- Crimp the lug/ferrule connection securely.
- Do not sharply bend or strain wires and will maintain an adequate wire loop size to terminal points.
- Insert lugs/ferrules into the terminal points securely.

4.3 Bundled Wiring

- When connecting several wires to a terminal block, form bundles using domestic UV rated black plastic wire ties; pull wire ties snugly and cut off tails squarely with industry approved cutters so as not to leave sharp or exposed ends.
- For bottom fed racks, tail wires out of the top of the wire bundles before beginning panel wiring. For top fed racks, build the bundles while installing panel wiring and run under the bottom terminal rail bracket to the side of the rack.
- For wires to basement wired racks, tail wires 16 to 18 feet out the bottom of the rack.
- Ensure that wires and wire bundles do not cross blank segments or open areas and that they are routed across one another.
- Use brackets or plastic supports when running wire bundles along a large span.
- Divide the bundles down each side of the rack, when necessary, to avoid bundles from becoming too bulky and cumbersome.

4.4 Shielded cables

Ground shielded cables only at one end, leaving the other end floated or bonded to assure one point delivery to ground. Use a shrink tube at the stripped point of the cable.

RACK PREPARATION AND COMPLETION CHECKLIST

RACK PREPARATION FOR RING OUT

- Right kind of rack (Color, depth, free-standing, standard)
- Make sure grommet stripping is on channel edges
- Screw slots on panel mounting screws are line vertically
- Proper relays in place
- Equipment should be labeled by equipment number. In clued small numbers on terminals that are not clear.
- Check proper ACB. Ratings (Amperage and Time Delay). All acb's should be in the "off" position for ring ring-out of poles; "on" position when ringing alarms.
- ACB guards should be on relay potential breakers and two pole "AM" type acb's.
- Check proper test switch makeup and position. (Paper out for ringing)
- Assure selector switches have screw stops are installed correctly in back of switch.
- Make sure all unnecessary washers have been removed from equipment.
- All screws and nuts should be termination points, which have no wires on them.
- Check barriers between poles on diode blocks and test switches.
- Assure "tranzorbers", arc suppressors and jumpers are installed where required and installed in proper position.
- Check terminal block style and order installed on rails.
- Holding clamps and endplates must be installed.
- Rail grounds installed on rails.
- Check position of diodes in diode blocks.
- Disconnect blocks should be installed to open to incoming cable. Open all disconnecting blocks that have wiring on both sides of blocks.
- Check wire size especially on currents. (#12 AWG only)
- No more that 2 wires per terminal point.
- Proper lugs and ferrules should be used for the wire size. (Crimped with ratchet style crimpers)
- Check ferrule insertion into terminal blocks. (Pull on them)
- Jumpers that are drawn in must be wired in white wire sized for the circuit or jumper comb.
- Check that all terminations are tight.
- Check proper stripping length of wire. (No wire strands should be exposed)
- Use green wire, sized per circuit, on all ground functions.

- Add ground wire to all Baslers. (Not always shown on print)
- Check soldered connections.
- Wires should be lifted at any points that could ring through when wire checking.
- No wire bundles across blank segments or across bottom (Off) of rack.
- One bundle only off of any protruding relay.
- Shields on 2cc/3cc cables floated and/or bonded together.
- Bundle loop for hinge effect on ITTS units.
- One hinged bundle for each rear panel.
- Check barriers between poles on diode blocks and test switches.
- Check that auxiliary bus wires are installed if required (5'- 6' out of top or bottom of rack if applicable)
- Wires to basement fed racks should be run out of bottom of rack with 16'- 18' tails. Keep wires to appropriate sides of rack.
- Strip ends off all wires tails for ringing. (Make sure all wires have tags on them)
- Prints should be clean of any unnecessary marks.

RACK COMPLETION FOR SHIPMENT (AFTER RING OUT)

- Screw heads and ends showing on panel fronts should be painted.
- Remove paper tags from test switches, put covers on tightly.
- Check nameplates for spelling errors and assure they are placed in their proper position. (Adhered in a straight manner)
- Finalize B/M: Mark what items are "on rack" or "in box". At bottom of B/M list the number of boxes with that rack.
- Install all relays in rack or put in boxes if required. Mark boxes in bold black marker with: STATION NAME, WORK ORDER AND RACK#.
- Ship all manuals and books with that rack. (In boxes)
- For freestanding racks send a set feet and bolts/lock washers with rack.
- Make sure shorting bars and screws are tied in with rack for any current terminal blocks.
- Tag rack is marked with STATION NAME, WORK ORDER AND RACK #. Original print (With all changes marked in red) should be tied inside rack.
- Apply blue painters tape to terminal blocks to cover screws.

**APPENDIX M – WAREHOUSE OPERATING PROCEDURES
(WOP)**

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WOP 10-12 Contractor Pickup Material Requirements

BPA WAREHOUSE OPERATING PROCEDURES (WOP)

WOP 10-02 Contractor Pickup Material Requirements

Effective Date: February 2010

Revised: May 2012

Logistics Manager:

(b) (6)

Michael K. Ware

(b) (6)

Supply Chain Process Manager:

Melissa McMullen

Summary: This Warehouse Operating Procedure (WOP) describes the guidelines and roles and responsibilities for when contractors pick up project materials at the Ross Warehouse. The contractor must:

- ✓ Schedule pickup time with assigned Acquisition Analyst
- ✓ Provide no less than 2-business days
- ✓ Contact assigned Acquisition Analyst if agreed-upon pickup time must be changed for reasons outside of their control to reschedule
- ✓ Provide appropriate transportation for materials picking up (typically, standard flatbed semi truck and trailer appropriate or forklift/pallet friendly trailers)
- ✓ Provide own tie-down straps/transportation safety equipment
- ✓ Conduct visual walk around the load with BPA foreman II, or warehouse representative, at time material is loaded and ready for departure
- ✓ Conduct an inventory and report discrepancies within 3 business days

Warehouse Hours Available to **Start and Finish** loading, excluding holidays and weekdays 12:00 p.m. to 12:30 p.m.:

Mondays: 10:00 a.m. to 3:00 p.m.

Tuesday-Thursday: 7:30 a.m. to 3:00 p.m.

Fridays: 7:30-12:00 p.m. By Exception Only

BPA will not schedule any pickup times outside of these hours without preapproval. BPA will facilitate the drop off of contractor-owned trailers for preloading when appropriate and coordinated.

All items being returned by the contractor must be accompanied by a Return Material Receipt.

Procedures/Responsibilities:

The contractor will contact the assigned Acquisition Analyst no less than 48 hours before desired pickup time. The Acquisition Analyst will negotiate the preferred time with the warehouse Foreman III or Foreman II. After pickup time confirmed, the Acquisition Analyst schedule the pickup using the Ross Shipping calendar and Process for Scheduling Contractor Material Pickup. The Acquisition Analyst will complete all required security paperwork. The contractor must notify the Acquisition Analyst if they are delayed or if they need to cancel or request a change to the negotiated pickup time. Conduct visual walk around the load with BPA foreman II, or warehouse representative, at time material is loaded and ready for departure. The contractor will be provided a Load List and should indicate any appearance of damaged items on load list. The contractor will have three business days to report any discrepant materials to the Acquisition Analyst.

Acquisition Analyst:

For items NOT Picked/Issued: Provide warehouse with 2-week written notice of Notice To Proceed OR *minimum* three business day's notice for smaller material pickups.

For Items Picked/Issued: Negotiate pickup time with minimum **2 business day's advance notice**, changes to negotiated pickup times, or trailer drop off with contractor and BPA Foreman II or III. Schedule the pickup using the Ross Shipping calendar and Process for Scheduling Contractor Material Pickup. Complete all required security paperwork.

Coordinate remediation of any reported discrepancies with Ross Warehouse and Contractor.

Contractor: Coordinate and schedule a pickup time or changes to negotiated pickup times with the assigned Acquisition Analyst no less than 48 hours before desired pickup time. Indicate appearance of damaged items on Load List and report any discrepant materials to the Acquisition Analyst within three business days.

Inventory Management Specialist: Identify all staging locations upon notification of scheduled pickup time. Upon pickup, print Load List (items actually loaded) and Inventory list and provide to contractor. Electronically send Acquisition Analyst spreadsheet of items the contractor picked up and provide hard copy, signed Load List within one business day.

Warehouse Foreman III/II: Coordinate staff and equipment for contractor load for scheduled time. Notify Acquisition Analyst if contractor does not arrive per schedule or if contractor arrives without advance notification.

Reference: WOP 10-03 Contractor Return Material Requirements

WOP Development Team Members / Stakeholder Approval:

BPA WAREHOUSE OPERATING PROCEDURES (WOP)

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Kathy Gish
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Jerry Shipe
Melissa McMullen

WOP 12-02 Return Material Scheduling (Contractor)

BPA WAREHOUSE OPERATING PROCEDURES (WOP)

WOP 12-02 Return Material Scheduling (Contractor)

Effective Date: April 2012

Logistics Manager: (b) (6)
Michael K. Ware

Supply Chain Process Manager: (b) (6)
Melissa Millard

Summary: This Warehouse Operating Procedure (WOP) describes the guidelines and roles and responsibilities for when contractors return project materials at the Ross Warehouse.

The contractor must coordinate and schedule a drop off time or changes to negotiated drop off times with the assigned Acquisition Analyst no less than 2 working days before desired drop off time. Coordinating and scheduling a specific drop off time will ensure that staff and equipment are available and ready to unload at the prearranged time.

Investment Recovery Hours Available to Start and Finish unloading, excluding holidays and weekdays 12:00 p.m. to 12:30 p.m.:

Monday-Wednesday: 7:00-3:00

Thursday: 7:30-12:00, Thursday afternoon **by exception only**

Friday: By Exception Only

Schedule One Hour per Truck.

BPA will not schedule any dropoff times outside of these hours without preapproval. BPA will facilitate the drop off of contractor-owned trailers for unloading when appropriate and coordinated.

All items being returned by the contractor must be accompanied by a Return Material Receipt.

Procedures/Responsibilities:

The contractor will contact the assigned Acquisition Analyst no less than 2 working days before desired drop off time. If contractor is requesting a drop off time within the above parameters, the Acquisition Analyst can schedule the dropoff using the Ross IRC Returns calendar. If requested time outside of the above times, the Acquisition Analyst will negotiate the preferred time with the Foreman II or Foreman I, and then schedule

BPA WAREHOUSE OPERATING PROCEDURES (WOP)

using the Ross IRC Returns calendar. After drop off time confirmed, the Acquisition Analyst will complete all required security paperwork. The contractor must notify the Acquisition Analyst if they are delayed or if they need to cancel or request a change to the negotiated drop off time.

Acquisition Analyst: Negotiate drop off time, changes to negotiated drop off times, or trailer drop off with contractor and BPA Foreman II or I. Schedule the dropoff using the Ross IRC Returns calendar. Complete all required security paperwork. Coordinate the return of all materials through appropriate parties.

Contractor: Coordinate and schedule a drop off time or changes to negotiated drop off times with the assigned Acquisition Analyst no less than 2 working days before desired drop off time. Package and label all materials to ensure items are identifiable and usable.

Warehouse Foreman III/I: Coordinate staff and equipment for contractor unload for scheduled time. Notify Acquisition Analyst if contractor does not arrive per schedule or if contractor arrives without advance notification. Contact Acquisition Analyst upon contractor arrival.

WOP Development Team Members / Stakeholder Approval:

Jeff Haxby

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APPENDIX N – ROCK RESISTIVITY TEST PROCEDURE

BONNEVILLE POWER ADMINISTRATION

ROCK RESISTIVITY TEST PROCEDURE

ELMM-004

TO INGO NIKOLBY

FROM
J. Lutz

BPA

Branch of Bonneville Power Administration
 Laboratories
 Technical Rock Resistivity Test Procedure
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 January 1, 1993
 Procedure Number

Prepared by:

(b) (6)

R.R. Nilson

Approved by:

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EMM/004

(b) (6)

1. Scope

This procedure describes how to measure crushed rock resistivity in a laboratory test facility. Normally, the procedure is intended for application to BPA "switchyard rock," but it may be applied to other coarse aggregate, with low levels of "fines" (less than 5% passing the 1/4 inch sieve).

2. Summary of Procedure

The rock sample is placed in the resistivity test cell with three equal lifts and consolidated by using a wooden mallet to vibrate loose stones into place. After adding each lift, the cell is pounded several times on each of six equally spaced spots on the circumference of the container at the approximate center of each "new" lift. The wooden mallet used weighs 0.5 kg (approximately 1.4 pounds). The test technician uses "moderate" pounding force -- "hard enough to do the job, but not hard enough to break the (1/4 inch thick, high density polypropylene) plastic cell".

The cell is immersed in water for 24 hours to assure thorough saturation of the rock material. The cell is then drained for 2 hours minimum. Alternating current (AC) and cell voltage readings are taken at nine 50 volt increments, measured at the power supply. The calculated resistance's are averaged and converted to resistivity using the pre-calculated cell constant (see the Calculations Section) associated with each test cell. Incidental to the test, rock gradation and DMSO (Dimethyl Sulfoxide) accelerated weathering test data are obtained and reported, since they are essential to engineering interpretation of the resistivity test results.

3. Applicable Documents

ASTM C-29, Section 6, "Jigging Method".
 ASSHTO T2 "Sampling Stone, Slag, Gravel, Sand and Stone Block for Use as Highway materials".
 ASSHTO T11 "Amount of Material Finer than 0.075 Min. Sieve in Aggregate".
 ASSHTO T27 "Sieve analysis of Fine and Coarse Aggregates".
 ASSHTO T210 "Production of Plastic Fines in Aggregates".
 ASSHTO T248 "Reducing Field Samples of Aggregate to Testing Size".
 BPA Procedure "Accelerated Weathering of Aggregate by use of Dimethyl Sulfoxide (DMSO)".

4. Definitions

Ammeter - the current is measured on an ammeter capable of measuring from 0.001 to 1000 milliamps AC.

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Cell Constant - the ratio of cross sectional area of the cell interior to the "center to center" distance between cell voltage probes, expressed in meters.

Cell Voltage - the AC voltage across the volume of rock situated between the cell voltage probes, expressed in volts.

Current - total current passing through the rock and supplied by the power supply, expressed in milliamps.

Power Supply - variable transformer with 0-250 VAC, 1 Amp. rated output.

Power Supply Voltage - the AC voltage of the power supply connected to the current collectors of the test cell. It ranges from 50 to 250 to 50 volts in nine 50-volt increments. Accuracy of ± 1 percent is adequate.

Resistivity Cell - the cell used is made of a 3/8 inch thick high density polymeric material, is cylindrical, and measures 12.5 inches long and 8 3/8 inches in external diameter. It has an aluminum current collector plate at each end fitted to the internal diameter. 1/8 inch holes spaced 3.8 inches apart allow placement of voltage probe rods at 3.8 and 7.2 inches from the bottom, in the axial direction.

Voltmeters - two voltmeters are used. The "Power Supply Voltage" may be read on an analog meter (or equal) since great precision is not required. The "Cell Voltage" is read on a high impedance meter and having an internal resistance of 10 megohms or greater. They should both be capable of reading from 0 -250 volts, AC.

5. Apparatus

Data sheets - test record sheets (See pp. 8 & 9).

Filter paper - Eaton-Dikeman grade 613 (or equal) - cut to fit the internal diameter of the cell.

Meters - one ammeter and two voltmeters, such as described in the Definitions Section.

Power supply - a variable transformer with 0-250 volt AC output at up to 1 Ampere.

Resistivity cell - one or more test cells such as described in the Definitions Section and illustrated at the end of this procedure.

Scales or Balances - capable of $\pm 0.1\%$ accuracy for weights to 75 pounds.

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6. Safety

The test personnel must always be conscious of the 250 VAC electrical safety hazards associated with the procedure. Precautions should be taken by test personnel to assure that the power supply is disconnected from the power line any time the operator handles or touches the resistivity cell. Since there will be water leaking from the cell, there is always a danger that a "grounded" operator may touch a "hot" connection! This condition could be fatal!

After the 24 hour soak, the cell is drained for 2 hours. Before the leads are connected, be sure the cell is electrically isolated, by suitable dry supports, from any grounded surface (e.g. the sink in which the cell is drained). Similarly, be conscious of the physical and electrical hazards of spilled water. Use insulated gloves when handling the equipment after the power supply is connected. Disconnect the power supply before touching any connected device which could cause a shock.

It is also possible that existing Switchyard rock may be contaminated by spilled PCB's (Polychlorinated Biphenyl's) or other toxic substances. Therefore, appropriate safety precautions should be observed while handling these materials.

7. Sampling

A single resistivity test will require about 50 pounds of rock. If duplicate tests or related but not specified tests are planned, a total of 100 pounds would be more prudent.

The method of obtaining the material will depend upon the purpose for which the test is performed and is not addressed in this procedure, but will generally follow established AASHTO T-2, "Sampling ... Materials" procedures.

8. Preparation for Testing

Rock Samples should be dried to a constant dry weight after having been sieved on sizes 1-1/2, 3/4, 5/8, 1/4 inches, and "pan." (If replica tests are performed, the material should be carefully split into the requisite number of sub-batches, before drying). Record gradations on the test record sheets. Use careful printing for clarity. Combine and thoroughly mix sieved material.

Record the resistivity cell tare weight and cell constant (resistivity conversions). Instructions for calculating cell constants are found in the Calculations Section.

Place three cut-to-size sheets of Dikeman-Eaton Grade 613 (or equal) filter paper in the inside bottom of the cell.

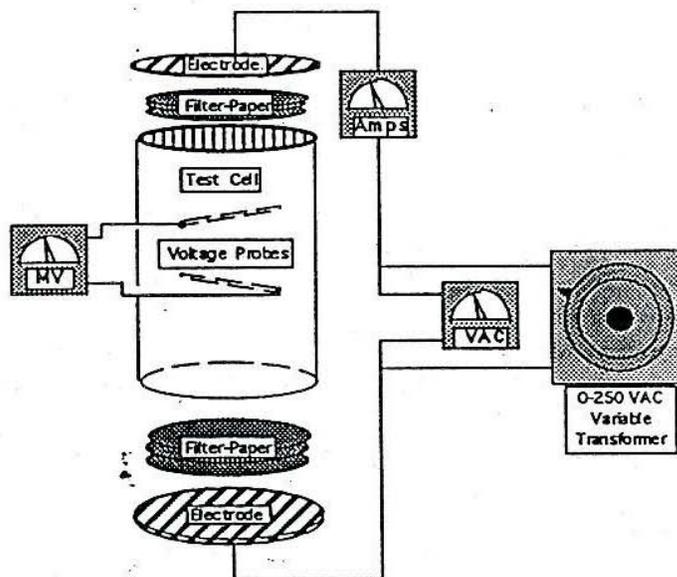
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Fill the cell with sample rock in three equal lifts using the ASTM C-29, Section 6 Jigging method. Assure the distribution of rock (including fines) is as homogeneous as possible throughout the cell volume. Determine and record the dry weight and packing density of the samples used. The method of calculating dry packing density is described in the Calculations Section.

Level the top rocks carefully by removing protruding stones and filling voids with smaller rocks. The surface should be as flat as possible. Place three (or more, for very uneven surfaces) cut-to-size filter papers on top of the smoothed rock. Set the top current collector in place and tap the collector securely into place using a 2 kg mallet.

Totally immerse the cell and contents in tap water* for 24 hours. Preferably, the immersion should start early in the working day. Allow water to drain through the cracks in the cell bottom for two hours. During this period, prepare to connect the cell as shown in the Test Cell Wiring Schematic, Figure 1.



Test Cell Wiring Schematic
 Figure 1.

Note that coarse rock will tend to drain well. If large amounts of fines are present, two hours may not be sufficient time for drainage to be complete (See the Procedure Section). That is, the first and last 50 VAC readings may indicate different resistance's in the few minutes required to perform the test.

* Usually, "tap water" will give almost the same results as distilled or de-ionized water, since rocks will have considerable soluble salts on their surfaces. If the laboratory water is very hard, de-ionized or distilled water should be used.

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If repeatability of $\pm 1\%$ in calculated resistance is not achieved, allow drainage to continue (e.g. 4, 6, or 24 hours) until stability is obtained. Record the exact time for each test to the nearest 1/10 hour in the Summary on the second Data Sheet.

Before running the resistivity test, determine the "saturated" weight of rock, and then connect the leads. Record the weight gain as "water weight" and Weight Percent Moisture.

Finally, the "boiler plate" information, including the data identified above, should be written into the Data Sheet (s), such as Test Date, Test Personnel, Sample Description, Evaluation Background, Rock Gradation, Saturated Weight, Cell#, and Cell Constant. Copies of blank Data Sheets (see pp. 8 & 9) should be used.

A portion of the 1-1/2, 3/4, 5/8, and 1/4 inch rock should be tested using the BPA "Accelerated ... (DMSO)" test after the resistivity tests are complete, or by using extra material.

9. Calibration

All meters should be calibrated periodically and the present condition should be checked by the Instrument & Standards Section (ELII). Sieves, scales and balances should also be checked for present condition and accuracy. All recorded data should include at least three significant digits, except that the power supply voltage is set at increments of 50 ± 1 VAC.

10. Procedure

Ensure that the cell is connected as in Figure 1, "Test Cell Wiring Schematic," provided in the Preparation for Testing Section, above. Make sure the area is safe for work (spilled water, wet hands, etc.), being conscious of the 250 VAC power supply and the possibility of accidental grounds. Never touch the cell when it is connected to the energized power supply.

Measure and record cell voltages and current at sequential 50 VAC test points (measured at the power supply). Try to use the exact increments cited in the second Data Sheet (p. 9). Resistance's calculated from four of the nine measurements should be duplicated (e.g. readings 1 & 9, 2 & 8, 3 & 6, and 4 & 5) within ± 1 percent. Cell voltage readings should be recorded in volts and the current in milliamps. Calculate the resistance for each reading set.

Add up all readings and calculate the resistivity as shown in the resistivity calculation formula of the second Data Sheet (p. 9). If the individual resistance's vary by more than ± 1 percent or if there is a consistent change in resistance between the first and ninth reading, the test should be run again immediately and at the next drain time interval, etc.

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Record the data (including any repeat tests) on the second Data Sheet in the Resistivity Report Summary Table. The Summary Data on the second sheet should include data recorded on any other Data Sheets.

11. Calculations

A. Cell Constant

Measure the inside diameter (in mm.) of the cell at angles about 30° apart. average value is considered the "cell diameter" (approximately 203 mm.). Measure the center to center distance between the voltage probes to determine the "cell length" (approximately 96.5 mm.). Calculate the "cell constant" by dividing the cross sectional area (approximately 32,400 mm² in this example) by the center to center probe distance, after converting the dimensions to meters.

$$\text{Area, } A = 3.14 \times (d^2/4) = 3.14 \times (0. \underline{\quad\quad\quad} \text{ meters})^2 = 0. \underline{\quad\quad\quad} \text{ meters}^2$$

$$\text{Cell Length, } L = 0. \underline{\quad\quad\quad} \text{ meters}$$

$$\text{Cell Constant, } K = A/L = 0. \underline{\quad\quad\quad} / 0. \underline{\quad\quad\quad} \text{ meters} = 0. \underline{\quad\quad\quad} \text{ meters}$$

(approximately 0.33 meters is expected)

B. Dry Packing Density (expressed in Pounds/Cubic Foot)

Measure the total outside height at the cell (approximately 14 inches) and subtract the distance of the cell bottom to the inside of the base current collector (approx. 1 inch). Also, subtract the inside top current collector to cell top distance (variable, assume 2 inches, for example). The inside height will be approximately 11 inches (14 - [1+2] inches). The inside diameter is about 8 inches. Therefore, the inside volume is about 553 cubic inches or about 0.32 cubic feet.

$$\text{Volume} = [\text{Inside height} \times (\text{Inside radius})^2 \times 3.14] / 1728 \text{ Cu.In./Cu.Ft.} =$$

$$= \underline{\quad\quad\quad} \times (\underline{\quad\quad\quad})^2 \times 3.14 / 1728 =$$

$$= 0. \underline{\quad\quad\quad} \text{ cubic feet.}$$

$$\text{Packing density} = [\text{filled cell (dry wt - tare wt) wt.}] / [\text{cu.ft. volume (pounds)}].$$

$$= (\underline{\quad\quad\quad} - \underline{\quad\quad\quad}) / 0. \underline{\quad\quad\quad} =$$

$$= \underline{\quad\quad\quad} \text{ pounds / cubic foot.}$$

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12. Report

A Laboratory test report should be written to convey the test results, using a copy of the report forms provided on pages 8 & 9. Copies should be sent to the Requester, to persons identified by the Requester and to the Standard Distribution noted below:

Distribution:

D. Blank - EESA
I. Thurein - EL
W. White - ELM
M. Johnson - ELMM
(Requester Name & Routing)
(Names identified by Requester)
Library - EL
Official File - ELM

This Distribution is effective January, 1993, and is subject to change.

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Resistance/Resistivity Data

Resistivity Cell # _____ Cell Constant (K) _____ Drain Time (hrs) _____				
	P.S.Voltage	Cell Voltage (E)	Current (I)	Resistance(R)
Reading#	(VAC)	(volts)	(ma)	(volts/ma)
1	50	_____	_____	X 10 ³ ohms
2	100	_____	_____	X 10 ³ ohms
3	150	_____	_____	X 10 ³ ohms
4	200	_____	_____	X 10 ³ ohms
5	250	_____	_____	X 10 ³ ohms
6	200	_____	_____	X 10 ³ ohms
7	150	_____	_____	X 10 ³ ohms
8	100	_____	_____	X 10 ³ ohms
9	50	_____	_____	X 10 ³ ohms
Sums (Σ):		_____	_____	_____
Average = ΣV / Σma =				X 10 ³ ohms
Calculated Resistivity:	_____	X 0. _____	=	_____ Ohm-Meters
	(Ohms)	(K)		

Interpretational Comments

Resistivity Report Summary:

	2	2	4	6	24
Drain Time (hrs)	_____	_____	_____	_____	_____
Resistivity (ohm-meters)	_____	_____	_____	_____	_____
Wt. Percent Moisture	_____	_____	_____	_____	_____
Packing Density (lbs/cu.ft.)	_____	_____	_____	_____	_____

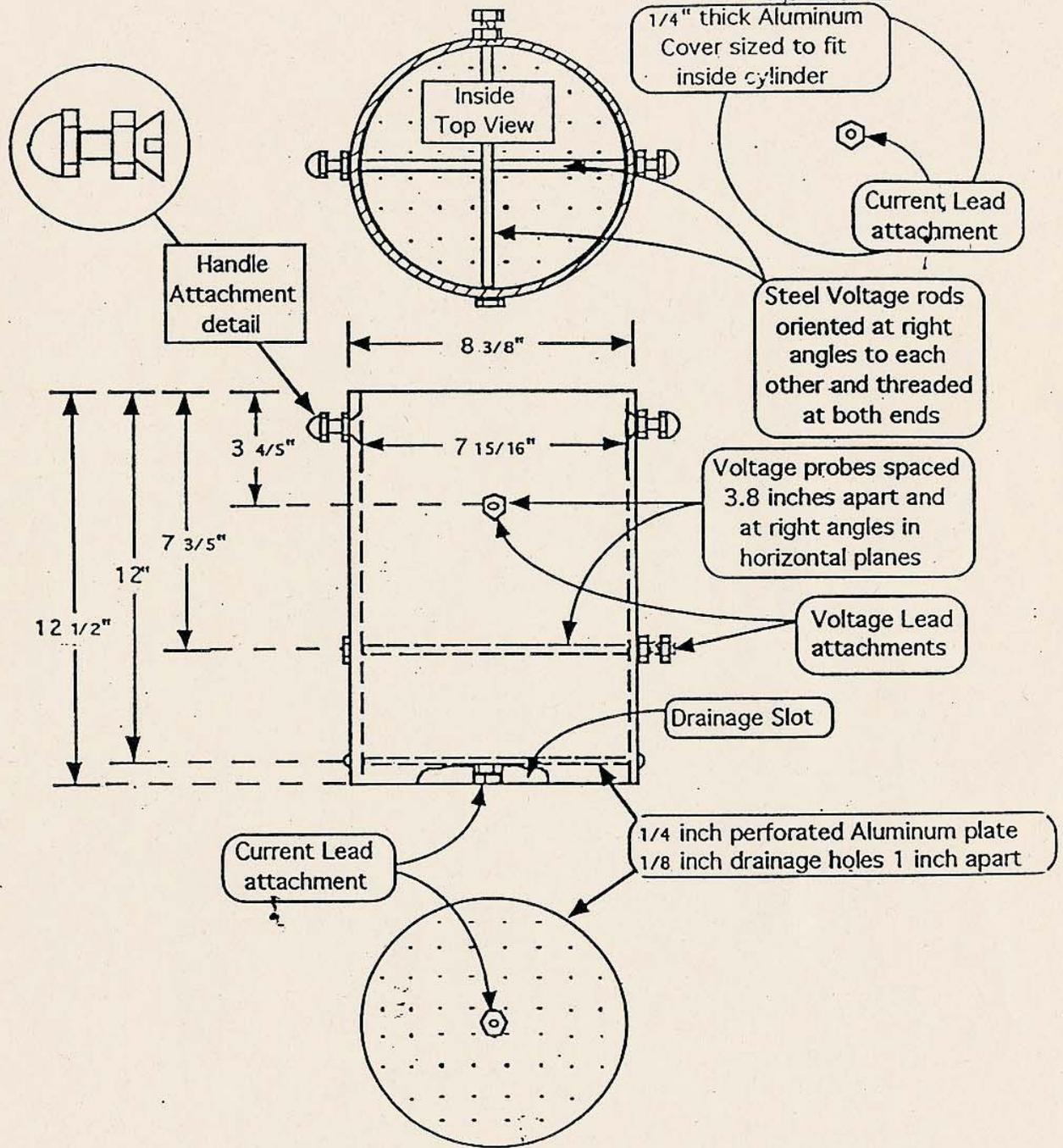
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1. Test Cell "cell constant" is calculated and recorded (on Cell and in data) _____
2. Test Cell is weighted and recorded (record cell wt. on cell for future tests) _____
3. Sample (about 40 lbs) is split per AASHTO T248 (be conscious of
 possible contamination of Switchyard Rock by toxic materials). _____
4. Sample has been dried, sieved, and recombined. _____
 Data is recorded _____
5. Six paper disks per cell cut (three installed per end) _____
6. Cell loaded (pounded and assembled) _____
 Dry packing density calculated and recorded. _____
7. Cell and sample immersed for a minimum 24 hours (consider the
 possibility of spilled hazardous materials in soaking water) _____
8. Cell drained 2 hours and re-weighed (hazardous materials considered)
 Weight gain (water retained) calculated and recorded. _____
9. Calibrated meters (milliamps and volts) available _____
10. Power supply (0 - 250 VAC) available. _____
11. Current/Voltage measurements made, recorded, and data checked for
 repeatability and consistency. _____
 Repeat drainage, weight change, and electrical measurements if required.
12. Calculate and record resistivity. _____
13. Record all "boiler plate" data (Operator name, Date, Etc.) _____
14. Unload cells, rinse, and perform DMSO procedure. _____
15. Store all material for 30 days to allow for further testing after engineering
 analysis (consider possibility of hazardous materials contamination). _____
16. Test Data Sheets signed and approved prior to release _____

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Design Details of BPA Rock Resistivity Cell

APPENDIX O – CABLE SPLICING GUIDANCE

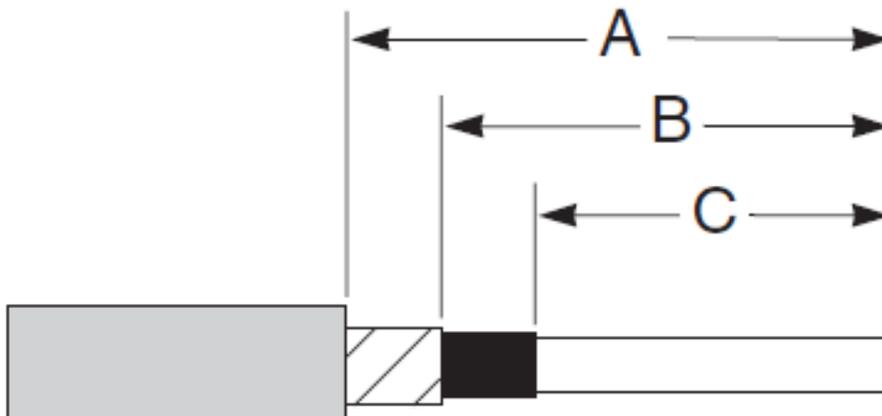
Splicing 600 volt, 10mil Copper Shielded, Multi conductor Cable, Non-lead shielded
(Note: For lead shielded cable, contact BPA)

Material Needed:

1. Raychem HVS-MESH-2-5000 Shielding Mesh
2. Raychem MWTM Insulation Tubing
3. Raychem CRSM-CT-53/13-1200 Rejacketing Tube
4. Scotch 23 tape
5. Scotch plastic tape
6. Barrel splice
7. Raychem CFS Constant force spring
8. Raychem S-1052 Sealant strips

This procedure is to splice 600 volt, 10mil copper shielded multi conductor cable.

1. Prepare cables:
 - a. Expose insulation at least 18 inches
 - b. Expose copper shield two inches
 - c. Clean jacket four inches beyond exposed shield

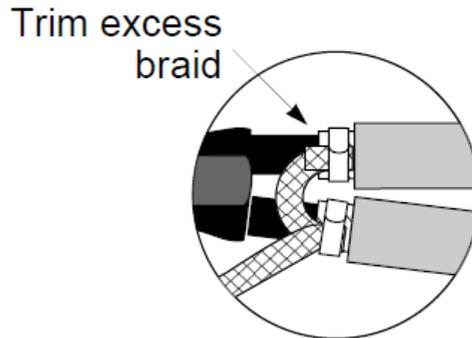


C = 18 inches exposed conductor insulation

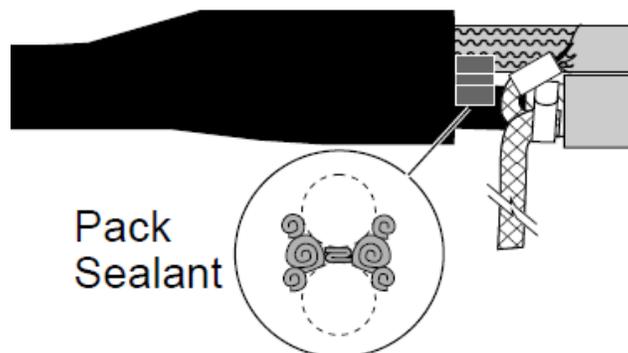
B = An additional 1 inch exposed inner cable jacket

A = An additional 2 inches of exposed copper shield.

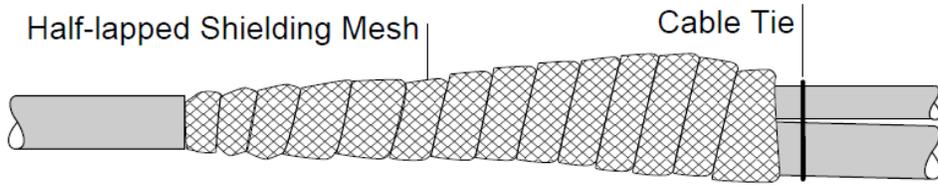
2. Lay out conductors to allow room to wrap tape around barrel splices. Offset splices to reduce overall splice diameter. Trim excess conductor length. Strip insulation one inch on all conductors.
3. Trim Insulating Tube to cover internal cable jacket on each side of cable. Place Tube over cable.
4. Place the three exposed copper ends of the conductors into the barrel splice with two conductors entering on one side of the barrel splice and one on the other side. Crimp.
5. Cover barrel splice with scotch 23 tape. Cover 23 tape with Scotch plastic tape
6. Tin one inch of the exposed copper shield toward the splice. Attach grounding braid to copper shield using spring. Loop braid to connect all three cables.



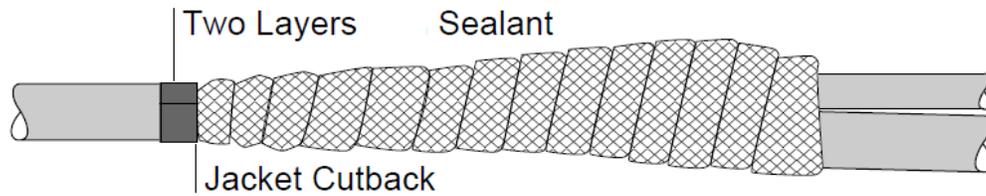
7. Solder grounding braids to copper shield.
8. Use sealant strips to seal the ends of the conductor near the shield.



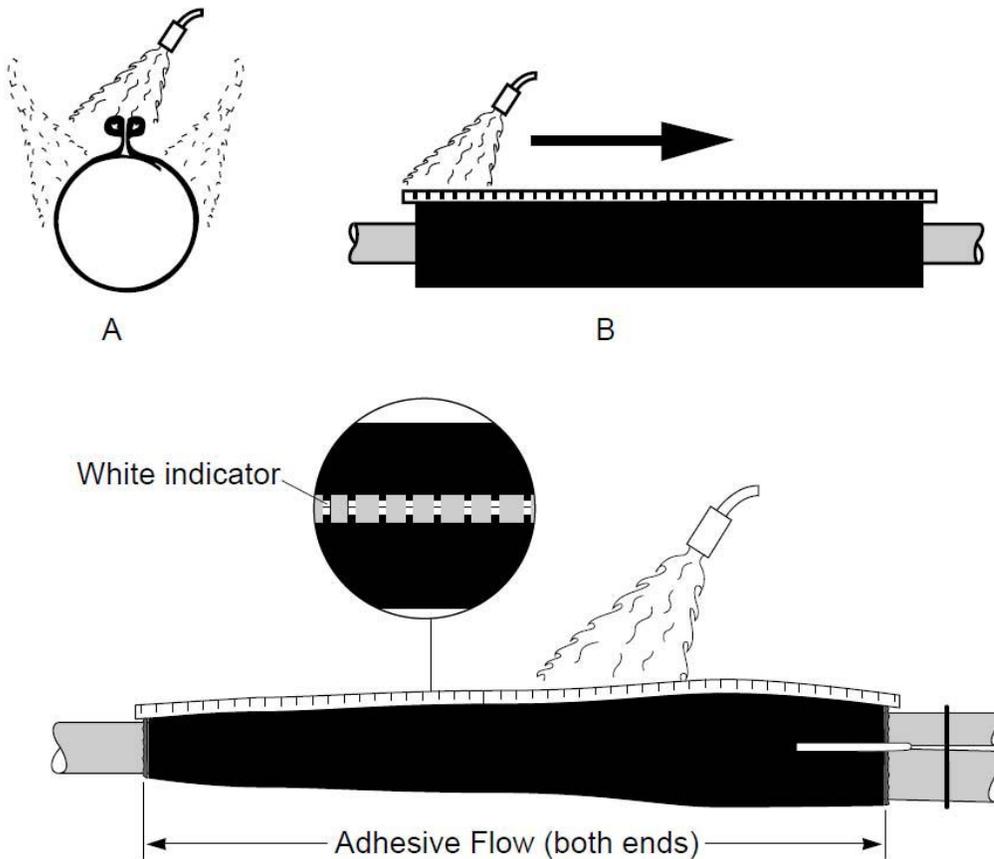
9. Position Insulating Tube over exposed insulation and taped splices leaving one inch exposed copper shield on each end. Heat shrink.
10. Install shielding mesh making five wraps with a 25% overlap. Mesh should completely cover copper shield.



- Use sealant strips to seal the ends of the cables. Pack sealant between conductors in a manner similar to step 8 before installing the two layers of sealant to the two conductor end of mesh.



- Install Rejacketing Tube overlapping mesh by one inch.



Step 1



Step 3



Step 4



Step 5



Step 6



Step 8 (result after shrinking tube)



Step 10



Step 12



APPENDIX P- FERC Asset Report and Instructions

Asset Report Instructions Sheet

General Instructions:

All items should be typed in, not copy and paste. Excel formulas will be overwritten by copy and paste.

Gray boxes do not need to be filled in.

Do not insert new lines into the spreadsheet. If you are adding a line for equipment not listed in the report, use the section at the end of the report labeled 'Additional Items'.

Inserted lines will not carry over any calculated fields.

Red fields indicate a required figure is missing in the cell.

Labor values can come from the bid estimates if needed.

If you have a piece of equipment where one item is BPA furnished (GFE) and another piece is contractor purchased, add another line at the end of the report in the 'Additional Items' section to cover the BPA (GFE) equipment. For example, you have two circuit breakers where one was supplied by BPA and the other was purchased by the contractor, you will add the BPA equipment to the 'Additional Items' section and fill in the values as required.

Form header section

Project Name – Required. This is the official Project name from BPA.

Project Location – Required. This is the physical location of the project, usually stated as part of the project name. An example would be Schultz

Contractor – Required. Prime contractor is entered here, not the sub.

Date – Required. This is the date the form is filled out.

WO# - Required. This is the work order number associated with the trackable equipment. There may be multiple work orders on a particular project, and each work order may have its own equipment. Use a separate spreadsheet for each work order. Do not combine trackable equipment for multiple work orders on the same spreadsheet. BPA tracks its equipment by work order.

Contract #/ Release - Required. This is the contract number from BPA for the project. The format of this line should be contract – release, or xxxxx-xxxxx.

Substation and Indoor equipment sections

The instructions for this section explain how to fill out the columns reading from left to right on the form.

Trackable Equipment – This list is pre-populated with a generic set of equipment. When additional equipment is needed, add it to the list by inserting a line underneath the most like piece of equipment. Do not add lines to the end of the report. It will cause the totals and calculations to be incorrect.

State – Required. This field is selected from a drop down list as the two digit postal code for the state where the construction took place. State is required to track taxable work to each state.

County - Required. This value is entered (typed) into each field where a trackable piece of equipment is entered. You do not have to type the work 'county', e.g. Clark County can just be entered as Clark. County is required to track taxable work to each state.

BPA furnished material - Required. This field is selected from the drop down list. 'Y' equals Yes, and 'N' equals No. If the trackable equipment is furnished by BPA as Government Furnished Material (GFM) it would be selected as 'Y'. Contractor paid for material would be 'N'.

If 'Y', the material is BPA furnished, and you will also fill in the dollar amounts in Labor, if applicable (column B), and total units in Quantity (column C).

If 'N', the material is not BPA furnished, and you will also fill in the dollar amount in Material (column A), Labor dollars in Labor (column B) and total units in Quantity (column C). Labor dollars will come from the cost to install, or from the bid amount to install the equipment.

Being Installed Section

This section is for equipment being installed at the construction site. If equipment is being removed and installed, a separate line must be used for each entry, so that each SER set has a separate line.

Cost Material – Required if contractor furnished. This is the total material cost for the trackable equipment. This field is filled in if the material is contractor provided (non-GFM). If the material is BPA government furnished equipment then the field will be blank.

Labor- Required if contractor furnished equipment and there is labor. Value will be zero if there is no labor. This field is the total dollar cost for the trackable equipment. This field can be blank, or filled in with a dollar value if there is labor involved. Labor dollars will come from the cost to install, or from the bid amount to install the equipment.

Quantity – Required. This is the total number(s) of trackable equipment on the line. As an example, if there are 3 braking resistors the number 3 will be entered in this field.

Unit Cost – Calculated. Do not enter values in this field. It is calculated from the cost field divided by quantity field to get a single unit cost.

SER Numbers – Required. Each serial number is entered in the field, separated by commas. For example, if you have two BPA supplied current transformers you would type in the SER numbers as 12345, 12346.

Master Lease Tag – Required if item has a master lease tag. Check yes if it is covered by a master lease, no if not covered by a master lease tag.

Being Removed Section

This section is for equipment being removed at the construction site. If equipment is being removed and installed, a separate line must be used for each entry, so that each SER set has a separate line.

Quantity - Required. This is the total number(s) of trackable equipment on the line. As an example, if there are 3 braking resistors the number 3 will be entered in this field.

Labor \$ - Required. This is the total labor in dollars used to remove the equipment for each entry. It is the total removal cost including disposal, but does not include salvage.

SER Numbers - Required. Any removed equipment must have the SER number recorded. This is usually located on a metal plate on the equipment being removed. Each serial number is entered in the field, separated by commas. For example, if you have two BPA supplied current transformers you would type in the SER numbers as 12345, 12346.

APPENDIX Q – ASBESTOS AND LEAD ABATEMENT GUIDANCE

Asbestos and Lead Abatement

B O N N E V I L L E
P O W E R A D M I N I S T R A T I O N



A1.Introduction:

The abatement Contractor shall remove materials indicated on the drawings as being retired, removed, and/or are impacted by construction activities. Some of these affected materials have been tested and confirmed to contain asbestos or lead, such as paint, pipe insulation, cables, wires, and floor tile. The tested and other known items are identified in the specification appendices. These tests performed are not to be considered exhaustive. It is the Contractor's responsibility to identify, take precautions, and mitigate per regulatory requirement for any additional materials that potentially contain lead or asbestos material.

A2. Background

Short term asbestos abatement services needed to complete installation and/or removal of project facilities as defined in the project documents.

A3. BPA Furnished Services and Property

BPA has included the testing laboratory reports in the specification appendices. If the Contractor suspects additional material may contain asbestos, the Contractor shall notify Bonneville Power Administration and request asbestos testing of the item. BPA will not perform personal air monitoring to meet Contractor's OSHA and state regulatory requirements. Compliance with all regulatory requirements is the responsibility of the Contractor.

Drawings and asbestos and lead cables testing reports and cable lists for the Substation are located in the specification appendices.

The Contractor must provide a safety watcher at all times while asbestos or lead abatement is being performed. Abatement work in close proximity to electrical panels and energized equipment requires a safety watcher.

A4. Contractor Furnished Services

Contractor provides asbestos abatement services to remove asbestos and/or lead materials in the Substations.

The Contractor shall provide a site-specific safety plan for lead abatement and asbestos abatement.

The Contractor shall transport and dispose of asbestos wastes and demolition material.

A.5 Definitions

Bonneville Power Administration (BPA)

Heating, ventilating, and Air Conditioning (HVAC)

Contracting Officer (CO) -An individual who has been delegated authority to obligate funds and establish contracts on behalf of the Bonneville Power Administration (BPA).

Contracting Officer's Technical Representative (COTR) -An individual who has been delegated authority by the CO to perform technical contract administration activities on behalf of the CO. It is COTR's responsibility to monitor the goods and services received and ensure that they conform to the technical requirements set forth in the contract. Key responsibilities of the COTR include acting as a liaison between the contractor and the CO on matters related to the contract requirements, maintaining a record of all communications with the contractor and significant events related to the contract, assisting the contractor with interpretation of the technical requirements of the contract, reviewing vouchers or invoices submitted by the contractor and certifying them for payment, and providing an overall evaluation of contractor performance to the CO.

A.6 Documentation

Regulations and Standards

- Publications listed below are part of this work statement. Where standards or codes conflict the most stringent applies.

- State of Oregon Department of Environmental Quality Asbestos Regulations Oregon Administrative Rules (OAR) 340, Division 248 DEQ Emission Standards & Abatement Requirements Oregon-OSHA Construction Asbestos Rule OAR 43703-1926.1101 OAR 340, Division 248 Sections 100 – 180 Licensing & Certification
- State of Oregon Lead Regulations Division 11 Approved Training & Professional Credentials OMR 812-011-0000 – 812-11-0070 Division 7 Licensing of Individuals and Firms Engaged in Lead-Based Paint Activity 812-007-0000 to 812-0070090
- State of Oregon Department of Environmental Quality Regulations / Policy titled “Management of Building Demolition Waste, Policy Number: 1997-PO-002A November 21, 1997
- Occupational Safety and Health Administration Department of Labor (OSHA) Code of Federal Regulations (CFR)
 - Title 29 1926.62 Lead
 - Title 29 1926.103 Respiratory Protection
 - Title 29 1926.1101 Asbestos
 - Title 29 CFR 1910.134 Respiratory Protection
 - Title 29 CFR 1910.1025 Lead
 - Title 29 1910.1001 Asbestos
- Environmental Protection Agency (EPA) Regulations
 - EPA 40 CFR, Sub-part M 61.140-157 NESHAP
- American National Standards Institute (ANSI) Publications
 - Fundamentals Governing the Design and Operation of Local Exhaust Systems
 - ZS.2-79 or latest edition
 - Practices for Respiratory Protection ZSB.2-8 Latest Edition
- National Fire Protection Association (NFPA) Publications

Asbestos Abatement Notifications and Permits: The Contractor shall furnish copies to the Contracting Officer of regulatory documents including DEQ required notifications and permits for asbestos and lead abatement, storage, transportation, disposal, and asbestos disposal at landfill or a designated disposal site specified herein. The Contractor shall provide the Contracting Officer and BPA Environmental Specialist with copies of waste shipment records and manifests for transporting asbestos and lead waste.

A7. Safety and Security

The Abatement Contractor shall provide a safety orientation before starting work. The Contractor shall provide BPA and the station operator with the scheduled time for the safety orientation. The Contractor shall ensure compliance with asbestos and/or lead abatement regulations. See Health and Safety clauses for additional information.

Security at the BPA and PGE facilities are in a controlled access area. Security and security operating procedures are applicable to both BPA and contractor employees alike. Day-to-day operating procedures shall be reviewed prior to undertaking any work. Any subsequent changes to operating procedures will be issued by the CO in writing and will be covered verbally in the day’s pre-work commencement meetings. Non-compliance with security directives (either written or verbal) will result in the contractor employee being denied further access privileges for the remainder of the job. BPA security rules require abatement contractor employees entering BPA property must have a BPA escort at all times. Any abatement employees that need to enter BPA property projects must sign the substation logbook in the control house.

BPA security rules require Contractor employees have US citizenship. There are no exceptions. Applicants with dual US

citizenship and are citizens of a sensitive country or a country listed as a state sponsor of terrorism will require additional clearance processing and will take longer to process/approve for a BPA access to site.

Additional security requirements may apply depending on Homeland Security alert levels that have threat levels color-coded blue, green, yellow, orange, and red. During abatement work, the substation operator or BPA inspector will notify abatement contractor of changes in security requirements due to threat condition status. For additional information on threat level, contact BPA hotline at (866) 767-9883 or (503) 230-3333.

All contractors' deliveries of materials including all contractor delivered materials shall be routed through the contractor's approved entrance. All deliveries (and removal vehicles) will be quarantined at the gate until signed in, and deliveries including vehicles have been searched. Contractor delivering materials and equipment requires an escort for the vehicle and driver and return to security at the exit gate when the delivery (or pickup for removal) is finished. Contractor must provide security staff with a list of contractor names and phone numbers to security staff so that security can use the information to notify a contractor worker of the need for an escort. The contractor provides security with the names, business name, materials delivered, and delivery schedule for expected deliveries or removals.

The contractor notifies BPA inspector and security immediately if any of his workers or subcontractor workers have lost or misplaced their BPA badge.

Part B Technical Approach/Tasks B1. General Technical Requirements

Contractor provides resources such as materials, equipment, labor, experience, and supervision necessary for asbestos and lead abatement as specified herein and other construction documents.

Contractor determines the techniques, means, method, and materials required for asbestos and heavy metals abatement that complies with the contract and local, state, and federal regulations.

Evaluate site conditions such as electrical equipment and cable trays clearances that may affect abatement work. Contractor reviews asbestos and heavy metals testing reports before abatement work begins. Verify locations of asbestos and heavy metals removal as specified herein or in contract documents. See Site Investigation clause and Safety and Health clause with Site Specific Safety Plan requirement.

Contractor furnishes any necessary temporary electrical wiring with ground fault interrupter for equipment such as decontamination facilities, temporary lighting, abatement equipment, HEPA vacuum cleaners, and abatement ventilation that complies with NEC and local, state, and federal asbestos regulations.

- Contractor arranges tag and lock out of electrical panels and energized electrical equipment with substation operator /qualified BPA electrical worker.

Contractor decontaminates all equipment including any BPA furnished equipment, tools, barriers, portable toilets, and other items inside the abatement area after completion of work and in compliance with regulations specified herein.

Contractor responsible for obtaining and paying for any required permits and application fees required for asbestos and heavy metals abatement, notifications, transport and disposal.

Coordinate all staging of abatement work with BPA's Contracting Officer and Contracting Officer's Technical Representative (COTR) or (CSR). Contractor provides minimum 48-hour notice before beginning asbestos or lead abatement to Contracting Officer, COTR, and substation operator in charge of the substation.

No interruption of water, electrical or other services to existing facilities allowed unless specified otherwise herein without prior notice to the substation operator, COTR and Contracting Officer and then only at a definite time period. No torch cutting allowed for any abatement work.

Contractor responsible for insuring all workmen including those of subcontractors follows all safety requirements including those of OSHA, and the contract at applicable sites. Attend any required pre-construction safety meeting. Oregon State Safety Requirements, and Occupational Safety and Health Act (OSHA) requirements, as applicable, apply to all work.

Contractor takes precautions to prevent water used for abatement work from entering nearby electrical equipment, cables, conduit, cable trays, and panels.

Protect equipment and surrounding surfaces during abatement work or have substation operator, qualified BPA electrical worker, or Safety watcher available to prevent accidental contact with electrical equipment, panels, relay panels, batteries, and

other critical equipment.

BPA will occupy the surrounding premises during the entire contract period. The Contractor must cooperate with BPA in all site operations to facilitate the BPA's use of buildings and grounds. In addition, due to the critical importance of the on going work at the substations the contractor's work will be limited to the building and immediate surrounding work area. Contractor's abatement materials and equipment storage locations are subject to BPA's substation operator, Contracting Officer /COTR approval.

- Contractor to maintain access to the substation for operations and maintenance personnel during abatement. Sequence work to ensure access to relay and control panels for operation of power system and emergency response to system equipment for sub station operator and maintenance personnel.
- Contractor to clearly mark regulated area(s) with asbestos hazard tape and OSHA / DEQ compliant asbestos warning signs.

The Contractor will contract the services of a testing laboratory to conduct any necessary bulk sampling and air monitoring. Air monitoring is required prior, during and after asbestos and lead abatement. Asbestos control limits during abatement work and clearance levels are ambient levels or per state and federal regulations specified herein. A technician / Certified Industrial Hygienist shall remain on the job site and either has samples sent out to laboratory daily for next day delivery or brings in equipment to perform analysis done on site. BPA will not perform personal air monitoring to meet the Contractor's OSHA and state requirements.

Asbestos control limits during abatement work complies with OSHA, EPA, and State of Oregon (DEQ) Regulations. Asbestos control limits after abatement are ambient levels or per regulations specified herein. Contractor furnished reports for any BPA contracted air testing at work site done before asbestos abatement, after abatement, and including monitoring done inside regulated and outside regulated areas.

Lead control limits during abatement work comply with OSHA, State, and local regulations. Contractor conducts own air monitoring and laboratory testing for lead to comply with OSHA, State of Oregon (DEQ), and local requirements for any purpose.

Approved asbestos waste disposal facilities are as follows:

- Northern Wasco County Landfill 2550 Steele Road, The Dalles, Oregon 97058 Telephone: (541)-296-4082
- Columbia Ridge Landfill and Recycling Waste Management Inc. Star Route, Box 6, Arlington, Oregon 97812 Telephone: (541) 454-2030
- Approved Oregon DEQ landfill that accepts asbestos wastes

Materials and Equipment: Materials and equipment used in abatement tasks comply with Oregon, OSHA, and EPA asbestos regulations. Contractor provides abatement workers with protective clothing and respirator protection designed for asbestos abatement and type of asbestos abated.

- Amended Water: Provide water and surfactant mixture. Use a mixture of surfactant and water that results in wetting of asbestos containing materials and retardation of fiber release. Water amended with a surfactant consisting of one ounce of a solution of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.
- Asbestos Encapsulants: Encapsulants conform to US EPA regulations and contains no toxic or hazardous substance as defined in OSHA 29 CFR 1926.
- Lock-down Encapsulant: Material complies with following standards:
 - ASTM E84 Flame Spread: 25, Smoke Emission: 50
 - ASTM C732 Life Expectancy: 20 years
 - ASTM E96 Permeability: Minimum 0.4-perms
 - ASTM E119 Fire Resistance: Negligible affect on fire resistance rating over 3-hour test
 - ASTM E736 Bond Strength: 100-lbs of Force/foot
- Asbestos Removal Encapsulants: Material complies with the following standards:
 - ASTM E84 Flame Spread: 24, Smoke Emission: 50
 - ASTM C732 Life Expectancy: 20 years
 - ASTM E96 Permeability: Minimum 0.4-perms
- Asbestos HEPA Filter Vacuum Cleaners: HEPA Filtered Fan Units: Factory sealed to prevent asbestos contamination from released during use, transportation, or maintenance. Unit arranged to provide access to and replacement of all air filters from intake end. Fans have instrumentation such as manometer to measure pressure drop and indicate when filters need change. Provide HEPA filters with manufacturer’s certification and individually tested with an efficiency of 99.7percent or better. UL listed with UL586 label. Each fan unit has overload protection, fan components grounded. Filtered fan units used in unventilated and confined areas. References: Control Resource Systems, Nilfisk, Minuteman International, Global Consumer Services, and Tri-Dim Filter Corporation. All units have filters designed for removing asbestos fibers.
- Abatement contractor prohibited from using toxic or flammable paint stripping compounds for removing asbestos containing paint or materials that generate more toxic waste in addition to the asbestos without the approval of BPA.
- Coordinate work with other abatement contractors and site maintenance contractors to avoid interference or cause disruption of operations.
- Control Limits: Contractor to clean to control limits or less as shown in Table. If Contractor fails to meet control limits, the Contractor then cleans surface or space until control limits are achieved.

<u>Exposure Limit</u>	<u>Description</u>	<u>Regulation or Source</u>
0.1-fibers/cc	Time weighted Avg (TWA) 8-hour day	OSHA 29 CFR 1926.110 OSHA 29 CFR 1910.1001
1-fibers/cc	Excursion Limit 15-minutes	OSHA 29 CFR 1926.110 OSHA 29 CFR 1910.1001
0.01-fibers/cc	Clearance	DEQ OAR 340-248 EPA 40 CFR 763 Subpart E
1-percent or greater Asbestos containing material	Solid Materials	OSHA & Oregon DEQ regulations

B2. Specific Technical Requirements and Tasks

Contractor abatement work as required to complete removals as per project specification, including appendices and drawings.

Technical contact for abatement contract Harvey Schowe – Mechanical Engineer Telephone: (360) 619-6755 BPA Regional Safety **Office Rex Billingsley** – Safety & Occupational Health Manager-CF-Redmond (541) 965 -2223