Spec. No. 986

Western Area Power Administration

SECTION C
DESCRIPTION/SPECIFICATIONS

PROJECT SPECIFICATIONS

KESWICK SUBSTATION
STATION SERVICE UPGRADES

CALIFORNIA

SAFETY
A HABIT TO LIVE BY

SECTION C
DESCRIPTION/SPECIFICATIONS

KESWICK SUBSTATION STATION SERVICE UPGRADES

DIVISION 1 – GENERAL REQUIREMENTS

A. CONTRACT REQUIREMENT:

Construct and complete Keswick Substation Station Service Upgrade, in accordance with the Construction Contract (Standard Form 1442); the Contract Clauses; WAPA's Construction Standards, including Standard 1 – General Requirements (March 2021), Standard 2 – Sitework (March 2021), Standard 3 – Concrete (March 2021), Standard 4 – Substation Metalwork and Transmission Line Lattice Structures (March 2021), Standard 5 – Transmission Line Steel Pole Structures (March 2021), Standard 6 – Light Duty Steel Pole Structures (March 2021), Standard 7 – Wood Poles (March 2021), Standard 8 – Glued Laminated Structures (March 2021), Standard 9 – Substation – Electrical (March 2021), Standard 10 – Transmission Line – Electrical (March 2021), Standard 11 – Service Building (March 2021), Standard 12 – Painting (March 2021), Standard 13 – Environmental Quality Protection (March 2021), Standard 14 – Communication Facilities (March 2021), Standard 15 – Drawings (March 2021); Standard Drawings; and these Project Specifications and Drawings.

If a conflict occurs between the Project Specifications and the Construction Standards, the Project Specifications shall govern. The Project Specifications and the Drawings are used to take exceptions or provide additions to the Construction Standards. Some paragraphs in the Construction Standards will not apply to this job.

WAPA's Construction Standards, Standard Drawings, and Electrical Equipment Standards are available on the project Sharepoint page.

WAPA Project Specifications and Construction Standards are explained in Standard 1 – General Requirements, Section 1.1.1, "Standards and Project Specifications".

B. DESCRIPTION OF WORK:

1. THE PRINCIPAL COMPONENTS OF WORK include the following:

    a. Installation of 230-kV Government-furnished SSVT's and associated material.

    b. Installation of 115-kV Government-furnished station service transformer and associated material.

    c. Installation of automatic transfer switch, safety switches, main distribution panel and associated station service equipment including yard panels, dry-type pad mounted transformers, insulated conductors, conduit, concrete foundations and support structures for station service equipment.

    d. Providing foundations and galvanized streel structures for electrical equipment.

    e. Providing and installing precast cable trench

    f. Removal of cable/equipment after station service cutover.

Paragraphs "Description of Bidding Schedule Items" in Divisions – 1, 2, 3, 4, 9, 13 and 15 describe the work to be performed.

The work is located near Redding, California, as shown on Drawing KE 0015. The jobsite address is Keswick Substation, 16599 Keswick Dam Road, Redding, California, 96003.

C. DESCRIPTION OF BIDDING SCHEDULE ITEM:

1. **Bidding Schedule item "Mobilization and preparatory work"** includes the following:

   a. Performing mobilization and preparatory work in accordance with Section H of the contract clauses.

   b. Prepare and submit a Construction Schedule and furnish a Safety and Health Program.

   c. Providing jobsite office trailer and the items listed below. Prior to any jobsite work, the Contractor shall provide the office trailer for the exclusive use of WAPA.

      (1) Relocation: If the Contractor changes the location of his office during the term of the contract, then the Contractor shall also move the mobile office trailer provided for WAPA, simultaneously with the transportation of his own unit.

         (a) Installation: Install anchors and tie-downs for the trailer complying with local, State and Federal regulations. The office trailer shall be grounded. Entry points to the trailer shall be provided with stairways complying with OSHA (29 CFR 1926.1052).

         (b) Office Space Requirements:

            1) Size and Arrangement: At least 250-square feet (minimum) consisting of two (2) separate rooms (one (1) office and one (1) larger workroom).

            2) Heating and Cooling: Heating and cooling unit sized to provide adequate heating and cooling.

            3) Lighting and Electrical: Adequate lighting and 110-V electrical outlets.

            4) Utilities: Make all arrangements and pay all costs for providing utilities, including potable drinking water, electrical power, and heating and cooling energy.

            5) Toilet Facilities: Toilet facilities shall be provided in the immediate vicinity of the office and shall be maintained.

      (2) Emergency Equipment: Provide and maintain the following emergency equipment:

         (a) First aid kit that meets or exceeds ANSI Z308.1 (latest version) Class B, Type IV. Mount to the wall inside the workroom.

         (b) Dry chemical fire extinguishers, classified 4-A:60-B:C, one (1) to be located inside each entrance to the trailer.

      (3) Window Coverings: Provide adjustable mini-blinds.

      (4) Office Furniture: Provide good quality, fully functional, office furniture as follows:

Quantity	Description
Five (5)	Folding Office Chairs.
One (1)	Office Desk (30-inches by 60-inches minimum).
Two (2)	Office Tables (30-inches by 60-inches minimum).
One (1)	Five (5) Drawer File Cabinet.
One (1)	Bookcase (30-inches by 13-inches by 48-inches).
Twelve (12)	"Plan Hold" binders No. 1CB-24 (including one (1) plan rack).

D. COMMENCEMENT, PROSECUTION AND COMPLETION OF WORK: See FAR 52.211-10 in Section F of the solicitation/contract.

1. SUBMITTAL APPROVAL TIME: Except as otherwise provided for specific submittals, WAPA will require 30-calendar-days for review of drawings or data submitted for approval.

2. COMMENCEMENT OF CONTROL WORK: Do not perform any control board or outdoor equipment wiring until receipt of Government-furnished wiring diagrams. WAPA will furnish outdoor wiring diagrams and schematic diagrams no sooner than 20-calendar-days after WAPA receives equipment final drawings and data from the Contractor for contractor-furnished items. Include these restrictions in the Construction Schedule.

3. OUTAGE RESTRICTIONS: In addition to the restrictions listed in Construction Standard 1, the following outage restrictions shall apply:

   a. Make all outage requests in writing to the onsite WAPA representative a minimum of 14-days in advance. Meeting the minimum advance notice requirement does not guarantee an outage will be approved. Weather conditions and other system conditions must be evaluated against an outage request before approval can be granted. At any time, WAPA may deny an outage request or direct the Contractor to return facilities to operating conditions and release the applicable Special Work Permit.

   b. February 14, 2022 to April 1, 2022 is the scheduled outage at KES 230 kV transfer bus. All work associated with the 230kV SSVT construction shall be completed during this outage period.

   c. April 2, 2022 to July 11, 2022 construction allowed on equipment less than 100kV.

   d. During July 12, 2022 to July 22, 2022 outage on the 115 kV East bus, the work associated with the 115kV KX1E transformer construction shall be completed during this outage period. 115 kV commissioning shall take place the following week after completion.

4. CONSTRUCTION SCHEDULE RESTRICTIONS: The following Construction Schedule restrictions shall apply:

   a. The Contractor shall not work more than 12-hours per day and no more than 60-hours in one continuous period without approval from the Contracting Officer's Representative (COR).

   b. WAPA station service replacement projects shall be done sequentially (not concurrently).

Station	Duration	Start Date	Completion by Date
Maxwell	102 Days	10/15/21	1/31/22
Keswick	180 Days	2/1/22	7/31/22

5. PROTECTIVE GROUND LEADS: See WAPA Construction Standards, Standard 1 "General Requirements", Section 1.4.14.3(1).

6. MAXIMUM AVAILABLE FAULT CURRENT: When protective ground leads are required, the protective ground leads shall be sized as defined below and shall meet the requirements of Standard 1 – General Requirements, Section 1.4 “Safety and Health” and the following:

   a. The maximum available fault current in the 230-kV area is 21,960-amps and the X/R ratio is 10.33.

   b. A minimum of one (1) (4/0) grounds shall be used in the 230-kV area.

   c. The maximum available fault current in the 115-kV area is 19.343-amps and the X/R ratio is 13.28.

   d. A minimum of two (2) (4/0) grounds shall be used in the 115-kV area.

7. TYPICAL FOUNDATIONS FOR GOVERNMENT-FURNISHED ELECTRICAL EQUIPMENT: Typical foundations are shown in Drawing KE 2300. WAPA will design these foundations after receipt of the seismic report and informational drawings and data, including the seismic report from the equipment manufacturer. WAPA will forward the revised construction drawings for these foundations no later than 45-days prior to the “NLT” delivery date listed in the “Material” section. If the “NLT” delivery date is adjusted by WAPA, forwarding of revised foundation construction drawings will be automatically adjusted in a like manner.

8. TYPICAL FOUNDATIONS FOR CONTRACTOR-FURNISHED ELECTRICAL EQUIPMENT: Typical foundations are shown on Drawings KE 2300 through KE 2304. Regarding foundations noted as “design not firm”: WAPA will design these foundations after receipt and final approval of seismic qualification documents and informational drawings and data from the Contractor.

E. CONSTRUCTION SCHEDULE:

1. SUBMITTAL TIME: Prepare and Submit a Construction Schedule to the Contracting Officer (CO) within 45-calendar-days after date of Notice to Proceed.

2. FORMAT AND DETAIL: Dates for each item of Government-furnished material shall be provided. Do not program dates earlier than the estimated delivery dates shown in the “Material” paragraph.

F. MATERIAL: Furnish all material for completing the work, except material furnished by WAPA as listed below:

ITEM	ESTIMATED WEIGHT (LBS)	ESTIMATED DELIVERY DATE	ESTIMATED COST
Three (3) single-phase, station service voltage transformers, 230-kV-480 Gnd-Y, 333-KVA designated KY7A	11,500 ea.	NST 12/02/2020 NLT 08/17/2021	$410,000
One (1) 3-phase, station service power transformer, 115-kV-480 V, 2.5 MVA, designated KX1E	39,700 lbs	NST 07/01/2021 NLT 10/04/2021	$323,000

NST – No sooner than.
NLT – No later than.

1. POINTS-OF-DELIVERY: GFE Material furnished by WAPA will be delivered to Keswick Substation. The Contractor shall inspect the equipment and report any damages to the COR.

G. GEOLOGIC INVESTIGATIONS:

Bidders shall obtain their own samples and perform tests on the material to evaluate properties, which they believe to be significant. WAPA does not guarantee that the geologic information and records show the conditions that will be encountered in performing the work, but only that the geologic information and records show conditions encountered at the particular point and time the information and records were obtained. The geologic information may not indicate variations, such as those caused by seasonal fluctuations in rainfall and other factors, which may affect the water level. The Contractor shall determine the nature of material to be excavated, the difficulties of making and maintaining required excavations and doing other work affected by geology and ground water elevations at the worksite.

H. ELECTRIC POWER FOR CONSTRUCTION PURPOSES:

Electric power for construction purposes will be available without cost. Source of supply is located in the receptacles throughout the substation. The Contractor may furnish power for his operations by other means at no additional cost to WAPA. Power made available by WAPA will be delivered as single-phase, 60 Hz, AC, at approximately 120-240 V. Coordinate with the COR for establishing electric power service.

I. WATER FOR CONSTRUCTION PURPOSES:

Furnish water for construction purposes. Make arrangements for obtaining the water and provide for conveying the water to the points of use.

J. EXPLOSIVES AND BLASTING:

Explosives shall not be used.

K. BURIED UTILITIES:

Prior to excavation, examine the area and determine the location of buried utilities. Utilities shall be identified with a marker denoting the type of service.

L. EMPLOYEE REQUIREMENTS:

In addition to the requirements listed in WAPA Construction Standard 1.4.3 all employees are restricted from wearing a headset, headphone or other listening device, other than a hearing aid or instrument for the improvement of defective human hearing, hearing protection worn as the hazard exists or for communication purposes while on a WAPA jobsite.

M. ELECTRICAL MINIMUM APPROACH DISTANCES:

In addition to the requirements listed in WAPA Construction Standard 1.4.9 equipment other than cranes and derricks, conductive objects or personnel, shall not be brought closer to energized facilities than the electrical minimum approach distances established by OSHA 1926.958(b), “Materials, Handling and Storage”. The less stringent equipment clearance distances established by OSHA 1926.960, “Working On or Near Exposed Energized Parts”, Table V-5 and Table V-6, may only be used after the Contractor has completed and submitted WAPA’s Electrical Clearance Variance form and has received the signed form in return from the COR.

N. SUBMITTALS AND CORRESPONDENCE:

1. GENERAL: Submittals must be provided in accordance with the Construction Standards and Project Specifications. The Contractor shall furnish submittals electronically (i.e. SharePoint or

e-mail), unless otherwise specified by the COR. Submittals shall be sent to DSW Construction SharePoint Site in standard PDF or electronic CAD "*.dwg" (AutoCAD 2016) formats. All submittals shall include WAPA's Contract No., Project Title, Transmittal/Submittal No. and corresponding Item No. Refer to the Submittal Log for the list of required submittals. This list may not be all-inclusive, and it remains the Contractor's responsibility to ensure conformance to the individual Specifications for possible additional submittal requirements. All submittals must be submitted with the attached SNR submittal cover sheet in Microsoft Excel or PDF. Submittals will be rejected if SNR transmittal form is not attached.

In addition to the submittals required in the attached Submittal Log, the Contractor shall submit the following to DSW Construction SharePoint site:

a. Payrolls.
b. Sub-Contractor List/Forms.
c. Citizenship Forms.
d. Erosion Control Plan.
e. Environmental Submittals.
f. Request for Information (RFI.)
g. Request for Equitable Adjustment (REA).
h. Any questions comments, correspondence relevant to this project.

A submittal is required if the item is used in the performance of this contract.

2. TRANSMITTAL: The Contractor shall submit all correspondence (Request for Information, Submittals, etc.) to the following email addresses care of the COR.

Desert Southwest Region
ATTN: G5600
Email: DSW-G5600-CS@wapa.gov

3. SUBMITTAL RESPONSE: WAPA will provide a response to all submittals in accordance with Division 1.D.2 of these specifications with an "Acceptable" or "Not Acceptable" status, with comments as appropriate to the email address where the submittals originated.

4. PROJECT PROTOCOL:

a. Electronic Correspondence:

SUBMITTAL FORMAT:
Subject Line
Transmittal number with KES, Submittal number, Subject, Applicable Standard Number, and Project Name/Number
Example: Transmittal 001KES, Submittal 017, Steel Compression Dead Heads-Std 10, Substation Stage 06-DE-WA000xxxx

b. Payment Requests:

PAYMENT REQUEST FORMAT:
Subject Line
Invoice number and Project Name/Number
Example: Invoice 01, Substation Stage 06 DE-WA000xxxx

c. Certified Payrolls-Prime and Subcontractors:

CERTIFIED PAYROLL FORMAT:

Subject Line
Certified Payroll (CP), Contractor's names, Week ending (WE), and Project Name/Number
Example: CP-(Smith Inc., Bob's Electrical), WE 09/12/15 & 09/19/15, Substation Stage 06-DE-WA000xxx

d. Request for Information:

RFI (REQUEST FOR INFORMATION) FORMAT:
Subject Line
Request for Information (RFI), Project Name/Number
Example: RFI-003, Labeling Info, Substation Stage 06-DE-WA000xxxx

TABLE 1 – SUBMITTAL INFORMATION GUIDELINE

Specifications SECTION	ITEM	PRODUCT DATA	SHOP DRAWINGS (preliminary & final)	CALCULATIONS	INSTALLATION DATA	COLOR SAMPLES	MAINTENANCE MATERIAL	OPERATION AND MAINT. DATA	MFR WIRING DIAGRAMS	TESTING REPORTS	WARRANTY	CERTIFICATIONS	O&M MANUALS
Division 1	Construction Schedule			●	●								
Division 4	Steel Structures, welded (galvanized)	●	●										
Division 3	Concrete	●											
Division 9	Free-standing automatic transfer switch	●	●		●			●	●				●
Division 9	Station service dry type transformers	●	●		●								
Division 9	Safety switches	●	●		●								
Division 9	Insulated conductors	●											
Division 9	Outdoor AC main distribution panelboard	●	●						●				
Division 9	RS-485 communication cable	●											
Division 9	Junction cabinet	●	●						●				
Division 9	Cable terminators	●	●										
Division 9	Riser cable supports	●	●										
Division 9	Emergency generator connection box	●											
Division 9	Signs	●											

This table does not reflect all submittals but references specific information required in the following submittals.

Refer to Division 13 Environmental Quality Protection section of the specifications for environmental submittal requirements.

DIVISION 2 – SITEWORK

A. DESCRIPTION OF BIDDING SCHEDULE ITEMS:

1. **Bidding Schedule item "Miscellaneous sitework, excluding vicinity of station service power transformer, 115-kV-480/277 V"** includes the following:

   a. Providing PVC pipe drain, as shown on the Drawings.

   b. Providing riprap and sand and gravel bedding for protecting earth slopes at outlets of pipe drains as shown on the Drawings.

   c. Replacing and protecting existing gravel surfacing.

   d. Removing and reinstalling 4-strand barbed wire fencing in way of construction, replace or reinstall to match existing fence.

   e. Removing concrete wheelstop(s) and painted white line associated with southernmost parking space located east of control building.

   f. Demo existing concrete curbing in way of construction and replace with concrete curbing as directed.

   g. Providing, installing and properly grounding protective bollards.

   h. Repairing and rerouting drain lines impacted by foundation construction, refer to Drawing KE 2094.

2. **Bidding Schedule item "Miscellaneous sitework within vicinity of station service power transformer, 115-kV-480/277 V"** includes the following:

   a. Removing and reinstalling 4-strand barbed wire fencing in way of construction, replace or reinstall to match existing fence.

   b. Replacing and protecting existing gravel surfacing

   c. Demo existing concrete curbing in way of construction and replace with concrete curbing as directed.

   d. Locate existing oil detention drains to ensure drains are located within concrete curbing, refer to Drawing KE 2094.

   e. Repairing and rerouting drain lines impacted by foundation construction, refer to Drawing KE 2094.

3. **Bidding Schedule item "Demolition"** includes the following:

   a. Completely removing and disposing of concrete foundations designated on Drawing KE 2010.

4. **Bidding Schedule item "Asphalt paving"** includes the following:

   a. Removing and disposing of asphalt, gravel base and subgrade soil in approximate locations as shown on Drawings KE 2000, KE 2001, KE 2003 and KE 2005.

b. Providing new asphalt paving, thickness to match existing asphalt. Provide new gravel base, thickness to match existing gravel base. Provide backfill, thickness as needed to match the elevation of the existing subgrade after compaction. Preparation, placing and compaction of each layer shall be in accordance with Standard 2. The grade of asphalt cement shall be AC-10 or AC-20.

(1) The finished grade for the new asphalt shall match the alignment and grades of the existing and surrounding asphalt.

(2) The Contractor shall comply with the manufacturer's specifications and recommendations for cleaning, binding agent, temperature restrictions and application methods.

5. **Bidding Schedule does not contain separate items for the following.** Include these items in applicable Bidding Schedule items.

a. Excavations for foundations, structures, equipment and trenches.

b. The Contractor shall be responsible for providing protection and shoring of existing concrete foundations and associated structures as required for construction. The Contractor shall submit temporary shoring plan to COR.

c. Placing and compacting earth material and backfill.

d. Providing gravelfills under concrete foundations as shown on the Drawings.

e. Contractor shall install conduit through existing control building foundation wall as shown on KE 3011, 3012 and 3013. The Contractor is responsible for locating and avoiding rebar in control building foundation wall. The Contractor shall use nondestructive and noninvasive techniques for locating rebar.

f. Disposing of excavated material. Material from excavations not suitable or required for earthwork shall be removed from the substation and access road right-of-way. The Contractor shall make arrangements required for disposal of waste material in an approved landfill.

DIVISION 3 – CONCRETE

A. GENERAL:

1. MATERIAL:

   a. Cement: Type IIA cement.

   b. Compressive Strength: 4000-psi at 28-days for concrete.

   c. Water-Cement Ratio: Net water-cement ratio, exclusive of water absorbed by the aggregates, shall not exceed 0.52 by weight for NESC light loading areas.

   d. Type A and D water-reducing and retarding admixtures may be used if approved by the COR.

   e. Class F fly ash is required to neutralize severe alkali or ASR reaction in accordance with ASTM C 311 (regarding test data), ASTM C 618 (regarding material) and Standard 3 – Concrete (regarding WAPA-specific requirements). Proposed concrete mix designs shall incorporate fly ash up to a maximum of 20-percent; minimum 28-day compressive strength shall be maintained in mix design.

2. TEST FOR POTENTIAL REACTIVITY OF SAND AND COARSE AGGREGATE: Perform test for each source used. If the tests determine the aggregate(s) to be unsuitable as a concrete aggregate, a suitable source will be obtained by the Contractor.

3. REBAR DEVELOPMENT (LD) AND LAP LENGTH:

   a. Class B lap splices apply unless noted otherwise; refer to Table 3 on Standard Drawing 01 2004-1 General Outline and Reinforcement Notes.

   b. Typical closed circular tie lap splice lengths for drilled piers and columns, 4,000 - 4,500-psi normal weight concrete, unless noted otherwise, are 18-inches for No. 3 ties, 24-inches for No. 4 ties, and 30-inches for No. 5 ties.

B. DESCRIPTION OF BIDDING SCHEDULE ITEMS:

1. **Bidding Schedule item "Concrete foundations, excluding station service power transformer, 115-kV-480/277 V"** includes the following:

   a. Earthwork, formwork, reinforcement, material used in concrete, void forming material, drilling and grouting anchor bars, anchor bolts, curing, finishing, joints and other related work and material needed to complete the concrete construction.

   b. Concrete foundations for steel structures.

   c. Concrete foundations for electrical equipment.

   Measurement for quantities for concrete foundations will be made on the basis of concrete quantities shown on Drawing KE 2009. If separate quantities of formed and auger concrete for each type of foundation are shown on the Drawing, the concrete quantity shall be the total of the formed and auger concrete quantities. Regardless of the concrete quantities actually placed, payment will be based on the quantities of concrete shown on the Drawing. Concrete quantities in augered foundation bells are based on a 45-degree bell angle and 6-inch toe height.

2. **Bidding Schedule item "Concrete foundation, station service power transformer, 115-kV-480/277 V"** includes the following:

   a. Earthwork, formwork, reinforcement, material used in concrete, void forming material, drilling and grouting anchor bars, anchor bolts, curing, finishing, joints and other related work and material needed to complete the concrete construction.

   b. Concrete foundations for electrical equipment.

   Measurement for quantities for concrete foundations will be made on the basis of concrete quantities shown on Drawing KE 2009. If separate quantities of formed and auger concrete for each type of foundation are shown on the Drawing, the concrete quantity shall be the total of the formed and auger concrete quantities. Regardless of the concrete quantities actually placed, payment will be based on the quantities of concrete shown on the Drawing. Concrete quantities in augered foundation bells are based on a 45-degree bell angle and 6-inch toe height.

3. **Bidding Schedule item "Cable trench"** includes providing precast concrete cable trenches, complete with sandfill, polymer concrete covers and other accessories.

DIVISION 4 – SUBSTATION METALWORK

A. GENERAL:

1. GOVERNMENT-FURNISHED DRAWINGS: Existing shop drawings for steel structures are not available.

2. MEASUREMENT: Measurement for quantities for Bidding Schedule items “Steel structures, welded (galvanized)” will be made on the basis of weights calculated in accordance with LRFD, “AISC Code of Standard Practice for Steel Buildings and Bridges”, except that weights for nonrectangular shapes and plates are to be based on actual detailed dimensions.

   a. Steel structure weights, calculated as noted above shall be shown on the Contractor-furnished final shop drawings, and payment will be based thereon. Steel estimated weights are shown on the specifications drawings for the structures requiring approval drawings as noted in the Bidding Schedule items “Steel structures, welded (galvanized)”.

B. DESCRIPTION OF BIDDING SCHEDULE ITEMS:

1. **Bidding Schedule item “Steel structures, welded (galvanized)”** includes providing the following:

   a. Three (3) – Equipment Cabinet Platform – Type III including grating (31 2044).
   b. One (1) – Station Service Equipment Support Frame (KE 2600).
   c. One (1) – KX1E Transformer Equipment Cabinet Platform – Type I (31 2044).
   d. Three (3) – Safety Switch Support Frame. (KE 2601 and KE 2603).
   e. Two (2) – Safety Switch Platform – Type I including grating (31 2044).

   Structures listed above requiring approval drawings.

   The above material including connection bolts, nuts, washers and lock nuts shall be galvanized.

DIVISION 9 – SUBSTATION - ELECTRICAL

A. GENERAL: Electrical equipment and material shall be as specified in WAPA's "WAPA ES" Standard Equipment Specifications, as shown on project drawings and in accordance with NEMA, ANSI, IEEE, ICEA, ASTM, NEC, NESC, UL and Federal specifications and standards as applicable. Applicable requirements shall be met under the following service conditions:

Ambient Temperatures:

Maximum.....+40°C
Maximum 24-Hour Average.....+30°C
Minimum.....-30°C

Elevation:

Above Mean Sea Level.....600-Feet

*ASCE-7 Wind Load:

Minimum Basic Wind Speed.....90-MPH
Importance Factor..... 1.15

*IEEE 693 Seismic Qualification.....Moderate

*May include support structure in accordance with STANDARD 9.1.1.2. Wind and seismic loads are nonsimultaneous.

1. **Bidding Schedule for Government-furnished items** (including associated supporting structures when furnished) require the Contractor to provide:

   a. Unless otherwise indicated, unloading and inspecting Government-furnished items.
   b. Installing Government-furnished items as shown on drawings.
   c. Furnishing equipment and material not furnished by WAPA.

2. **Bidding Schedule for items (not furnished by the Government)** shall be furnished by the Contractor and shall include the following:

   a. Providing (furnishing and installing) bidding schedule items.
   b. Furnishing equipment and material not furnished by WAPA.
   c. Installing bidding schedule items as shown on drawings.

3. Unless otherwise specified, associated support structures provided for each electrical equipment rated above 7-kV shall be 102-inches in height and hot-dip galvanized, if made of steel. Instrument transformers that are seismically qualified shall be 96-inches in height. If tubular steel supports are furnished, they shall be galvanized internally and externally.

4. Installation and painting of electrical equipment and material shall be provided in accordance with Standards 9 and 12 respectively.

B. DESCRIPTION OF BIDDING SCHEDULE ITEMS:

1. **Bidding Schedule item "Station service voltage transformer, 230-kV, 333-kVA (Government-furnished)"** includes furnishing all equipment and material not furnished by WAPA and installing the Government-furnished station service voltage transformers with support structures:

DESIGNATION	KY7A
Type	Station Service Voltage Transformer
Nominal Voltage Rating (kV)	230/132.8 Gnd Y
Maximum Voltage Rating (kV)	245
Basic Impulse Level (kV)	1050
Primary Power Winding Voltage (kV)	132.8
High-Voltage Taps (percent)	±2.5, ±5.0
Secondary Power Winding Voltage (single-phase, 3-wire)	480/277 Gnd Y
Capacity (kVA)	1000 (333 Per phase)
One (1) minute Emergency Over Voltage Operation	125-percent
Mounting	Base

The equipment supplier is responsible for unloading the station service voltage transformers. Contractor personnel shall inspect the transformers for possible damage during shipment or transportation and report any damage to WAPA's COR.

2. **Bidding Schedule item "Station service power transformer, 115-kV-480/277 V, 2.5 MVA (Government-furnished)"** includes furnishing all equipment and material not furnished by WAPA and installing the Government-furnished station service power transformer:

DESIGNATION	KX1E
Type	Station Service Power Transformer
Nominal Voltage Rating (kV)	115
Maximum Voltage Rating (kV)	121
Basic Impulse Level (kV)	550
Primary Power Winding Voltage (kV)	67
Secondary Power Winding Voltage (3-phase, 3-wire)	480/277 V Gnd Y
Capacity (MVA)	2.5
One (1) minute Emergency Over Voltage Operation	125-percent

3. **Bidding Schedule item "480-120/208 V three-phase station service transformer, 225-kVA"** includes providing a station service transformer in accordance with WAPA ES 2.1 Equipment Standard:

DESIGNATION	K6
Type	Pad mounted, 3-phase, outdoor, self-cooled, dry-type
Voltage Rating	480 V to 120/208V Gnd Y
High-Voltage Taps (percent)	±2.5
Capacity (kVA)	225
Impedance (minimum)	0.8

4. **Bidding Schedule item "480-120/240 V Single-phase station service transformers"** includes providing station service transformers in accordance with WAPA ES 2.1 Equipment Standard:

DESIGNATION	K3 K5
Type	Pad mounted, single-phase, outdoor, self-cooled, dry-type
Voltage Rating	480 V to 120/240V
High-Voltage Taps (percent)	±2.5
Capacity (kVA)	100
Impedance (minimum)	0.8

5. **Bidding Schedule item "480-208/120 V three-phase station service transformers, 30-kVA"** includes providing station service transformers in accordance with WAPA ES 2.1 Equipment Standard:

DESIGNATION	K7 K8
Type	Wall mounted, 3-phase, outdoor, self-cooled, dry-type
Voltage Rating	480 V to 120/208V
High-Voltage Taps (percent)	±2.5

DESIGNATION	K7 K8
Capacity (kVA)	30
Impedance (minimum)	0.8

The transformers being installed shall be 480-208/120V 30kVA, 150C rise, aluminum windings GE Catalog number 9T83B3142 with wall mount bracket 9T18Y5042 and rain shield kit 9T18Y4317G05 or equal.

6. **Bidding Schedule item "Surge arrester, 192-kV Duty Cycle, 152-kV MCOV"** includes providing the following disconnecting switch as shown on the Drawings and in accordance with WAPA ES 9.1 Equipment Standard and providing associated support structures:

DESIGNATION	AY7A1, AY7A2, AY7A3
Class	Station
System kV (L-L)	230
Duty Cycle Voltage (kV)	192
MCOV	152

The surge arresters being installed shall be qualified to meet the requirements of IEEE 693-2005 and shall meet the requirements of the moderate qualification level. If the support structure parameters are not provided by the equipment manufacturer, provisions within all subparagraphs of Section 5.5 of IEEE 693-2005 shall be followed in order to meet these requirements.

7. **Bidding Schedule item "115-kV Disconnect Fuse"** includes providing outdoor Underhung Hook-Stick operated Disconnect Fuse Assembly Southern States Catalog number HPA-I-115-25 with High Speed Fuse PXA-115012.5 or equal as shown on the Drawings and in accordance with WAPA ES 8.3 Equipment Standards. One (1) spare fuse shall be provided.

8. **Bidding Schedule item "Free-standing automatic transfer switch, 480 V, 1200-amps, 3-phase"** includes providing outdoor automatic transfer switch Emerson Network Power ASCO H7ATSB31200NGXV, with accessories 44G (480V input), 135L, 29A (primary source selector switch), 6DL (non-automatic mode switch) or equal as shown on the Drawings and in accordance with WAPA ES 2.3.6 Equipment Standards:

DESIGNATION	ATS
Type	Free-standing, self-contained, metal enclosed, 3-phase, 60 Hz
Required Voltage Rating	480 V
Enclosure	Type 3RX Outdoor
Transition type	Contactor based
Source continuous current rating (amps)	1200

DESIGNATION	ATS
Momentary current 10-cycle Asym, (kA)	65
Operation type	Open (break before make)
Poles	4
Switched neutral	Yes
Switches	29A-Priority Selector Switch and 6DL- Non Automatic Mode Switch

a. The automatic transfer switch shall have 3-phase switching and have automatic, remote and manual operation. The source transfer shall be break before make.

b. Voltage and frequency on both the primary and secondary sources shall be continuously monitored with adjustable pickup and dropout settings.

c. Load side power monitoring shall be provided, to include voltage, current, frequency and power factor, read from an LCD screen ASCO 5210 digital power meter or equal on the ATS.

d. The power meter must be able to transmit voltage, frequency, current, switch position and source availability via Modbus protocol.

e. The power meter shall include provisions for RS485 interface capable of external Modbus RTU communication.

f. The transfer switch shall display source availability and switch position indicators.

g. The automatic transfer switch shall be installed complete and ready for operation.

9. **Bidding Schedule item "Safety Switches"** includes providing seven (7) AC safety switches as shown on the Drawings. Safety Switches are designated SSA, SSB, SSC, SSD, SSE, SSF, SSG. Safety Switch enclosures shall be NEMA type 4X. Safety Switches shall be in accordance with WAPA ES 2.3.4.15 Equipment Standard.

10. **Bidding Schedule item "Insulated conductors"** includes providing insulated conductors and cables except, 12/c No. 10 AWG and 2/c No. 2 AWG control cable, communication cable and power cable with insulation greater than 15,000V. No splicing of existing cables shall be allowed except for approval from the COR.

11. **Bidding Schedule item "Outdoor AC main distribution panelboard"** includes providing outdoor mounted AC distribution board system DZA as shown on Drawing KE 1603. Panelboard shall be Square D I-Line or equal and shall have three (3) flat bus bars stacked and aligned vertically with glass reinforced polyester insulators laminated between phases. The molded polyester insulators shall support and provide phase isolation to the entire length of bus.

    Distribution panelboard DZA shall include a "ground return" ground fault detection scheme. This shall consist of a main circuit breaker capable of remote trip from an included ground fault sensor located on the neutral ground bond as shown on Drawing KE 1603. The distribution panelboard enclosure shall be NEMA 4X and large enough to house branch circuit breakers and condensation heater as shown on Drawing KE 1603 and shall be a minimum of 42-inches-wide by 86-inches-high. The distribution panelboard shall be in accordance with WAPA ES 2.3.3,

2.3.4 and 2.3.11 Equipment Standards. Provide Hoffman enclosure clamp assemblies No. AFC412SS or equal in lieu of the standard NEMA 4X door clamps.

12. **Bidding Schedule item "Outdoor AC distribution yard panels"** includes furnishing surface mounted outdoor AC distribution board system as shown on Drawing KE 1601, KE 1604, KE 1605 and KE 3036. The AC distribution boards are designated DZB, DZC, DZD. Distribution board enclosures shall be NEMA 4X with a maximum dimension of 24-inches-wide by 60-inches-high and include condensation heaters. The distribution boards shall be in accordance with WAPA ES 2.3.4 and 2.3.11 Equipment Standard. Provide Hoffman enclosure clamp assemblies No. AFC412SS or equal in lieu of the standard NEMA 4X door clamps.

13. **Bidding Schedule item "Indoor AC distribution board"** includes furnishing surface mounted NEMA 1 indoor AC distribution board system as shown on Drawing KE 3036 and KE 3405-2. The AC distribution boards are designated DHD, Warehouse Panel A, and Warehouse Panel B. Warehouse panels A and B currently exist and will be replaced in the same location with branch circuits re-terminated. The distribution boards shall be in accordance with WAPA ES 2.3.4 and 2.3.11 Equipment Standard.

14. **Bidding Schedule items "Furnishing 12/c No. 10 AWG control cable"** include furnishing 12/c No. 10 AWG control cable.

15. **Bidding Schedule items "Installing 12/c No. 10 AWG control cable"** includes installing 12/c No. 10 AWG control cable. The Contractor shall install and terminate control cable in all outdoor equipment installed under this contract. WAPA will terminate control cable inside the control building. Provide sufficient cable to allow termination on the highest terminal block of switchboard CHB3F in the control building.

16. **Bidding Schedule items "Furnishing RS-485 communication cable"** includes furnishing RS -485 communication cable. RS-485 communication cable shall be direct burial foil and braid shielded CPE 2 pair No. 22 AWG cable, Belden catalog No. 3107DB or equal.

17. **Bidding Schedule items "Installing RS-485 communication cable"** includes installing RS-485 communication cable. Contractor shall install communication cable and terminate at the ATS. WAPA will terminate the other end of the cable at the RTU inside the control building. Provide sufficient cable to allow termination plus 10-extra-feet to RTU No. 1 in the Control Building.

18. **Bidding Schedule item "Associated electrical equipment and material"** includes providing equipment, material and services required to complete the following substation installations as shown on the Drawings:

    a. Electrical Testing: Includes providing electrical testing in accordance with Standard 9, paragraph 9.1.2 Acceptance Tests – Method A.

    b. Substation Grounding System: Repair and complete the substation grounding system. Unless otherwise specified on drawings, splices, connections and other fittings may be compression type (DMC Power's Swage, AFL Swage system or equal. It's recommended to obtain the necessary tooling from the respective manufacturer). Due to ongoing copper theft problems, all new exposed ground wire shall be copper clad steel. NOTE: The included drawings and standards have not been revised to show this new requirement. NOTE: Copper clad steel shown on drawings and standard drawings as seven (7) No. 5 shall be seven (7) No. 4, or 19 No.8, in lieu of seven (7) No. 5. New cable trench grounding shall be two (2) 7 No. 4, or two (2) 19 No. 8, copper-clad steel conductors in lieu of two 2/0 AWG copper conductor as indicated in WAPA Standard 9.2.1.2 (7) as shown on Drawing 31 1061. (For clarification, 7 No. 4 is seven individual No. 4 conductors, stranded together

to form a single conductor. Nineteen (19) No. 8 is nineteen individual No. 8 conductors, stranded together to form a single conductor.)

c. Electrical Conduit System: Electrical conduit system including embedded and exposed conduit. Conduit entering the cable trench with a 90-degree bend is allowed to be Schedule 40 PVC as shown on Drawing 31 1006. All other 90-degree bends shall be rigid metal. All underground rigid metal conduits shall have half lapped 10-mil corrosion protection tape extending 6-inches above finished grade. A red or yellow polyethylene warning tape shall be installed directly above each conduit run and located 12-inches below finished grade. All conduits shall have sealing compound installed at both ends. Informational drawings and data are not required for this item.

d. Outdoor Bus System: Outdoor strain and jumper buses, rigid buses and overhead ground wire unless otherwise specified on the Drawings, splices, elbows, pad type terminal connectors and other fittings used on rigid or cable buses shall be compression type (DMC Power's Bus and Cable Connectors and Swage System, AFL Swage system or equal.) If required, tools shall be obtained from respective manufacturers.

e. Neutral Junction Cabinet: Junction cabinet designated EZ7A shall be mounted using Unistrut and be NEMA type 4X in the location shown on the Drawings. The junction cabinet shall include 4-inch by 3/16-inch copper alloy C110000 bus bar mounted in the cabinet with standoff insulators. Cabinet's dimensions and internal component arrangement is shown on Drawing KE 1010.

f. Control Building Junction Cabinet: A Minimum 30-inches by 30-inches Junction cabinet to be mounted to the east basement wall to allow transition from 3-inches external conduits from Safety Switch SSE to main building switchboard Panel DHA. Existing 3-1/2-inches conduits to DHA shall be re-terminated in cabinet.

g. Gas Cart Receptacle Circuit Junction Cabinet: Junction cabinet designated DZE and DZF shall be mounted using Unistrut and be NEMA type 4X in the location shown on the Drawings. The junction cabinet shall be sized (minimum 24-inches by 24-inches) to allow for the gas cart receptacle feed to be spliced into the existing circuit using power distribution blocks as well as provide space for a new gas cart receptable to be mounted to the bottom of the box.

h. 120 V Receptacles: Provide 120 V power receptacles within a weatherproof receptacle box as shown on the Drawings.

i. 120/208 V Gas Cart Receptacles: Provide 60 Amp, Watertight, 4-pole, 5-wire, 3-phase 120/208V receptacles Mennekes part number ME 560R9W with Metallic Back Box part number 60BBW-1 and mounting plate part number 2030MP.

j. Molded Case Circuit Breakers: The Contractor shall determine and provide panelboard matching molded case circuit breakers for the station service as shown on Drawings.

k. Emergency Generator Plug: Provide 600A emergency generator connection box Union Connector Catalog Number No. GCP-N-0-5-600-1-1-3-0-0 or equal as shown on Drawing KE 1603.

l. Pull Boxes: Cable pull boxes PB1, PB2 and PB3 shown on Drawings KE 1017 and KE 1018 shall have a minimum 3-feet-0-inches by 4-feet-0-inches internal dimension. Concast Part number PBKO1-44-56-40-A or equal.

m. Equipment Identification Signs (31 1000): Lettering on the signs shall be as shown on Drawing KE 1102.

19. **Bidding Schedule item "Existing outdoor electrical equipment and material"** includes constructing a temporary storage facility to hold existing equipment containing PCB oil with 2-ppm or greater. The temporary storage facility shall be in accordance with the standards. Bidding Schedule item "Existing outdoor electrical equipment and material" also includes removal and disposal of existing electrical equipment and material.

a. Material to be removed and disposed of is as follows:

(1) Transformer KX1E and Associated Unit Sub.

(2) Remove BOR feed.

(3) 115-kV Power Disconnect Fuse FX1E and associated conductors.

(4) Existing 120/240 V and 480 V power cabinets and associated pad mounted transformers as shown on the Drawings.

(5) Substation control, power cables and conduit as designated on the Drawings. Portions of cables in conduit, trench, and/or trays shall be removed and disposed of.

(6) Remove rack and wall mounted non-functioning UPS equipment in Room 203.

DIVISION 13 – ENVIRONMENTAL QUALITY PROTECTION

A. GENERAL:

The Contractor shall comply with all Federal, State, and local environmental laws and the requirements set forth in WAPA Construction Standard 13 - Environmental Quality Protection on Sharepoint.

Specifically, the contractor will be required to provide the following. Final payment will be withheld until the referenced submittal, report or plan is received.

1. SUBMITTALS/CONTRACTOR FURNISHED DATA:

   a. Recycled Materials Quantity Report: Submit quantities (pounds or metric tons) of all recycled material by category to the COR within 30-days of recycling and prior to submittal of final invoice.

   b. Recovered and Biobased Material Products Report: Provide the COR the following information for purchases of items listed in Section 13.8, “Use of Recovered Material and Biobased Material Products”.

      (1) Quantity and cost of listed items with recovered or biobased material content and quantity and cost of listed items without recovered or biobased material content prior to submittal of final invoice.

      (2) Written justification of listed items if recovered material or biobased material products are not available:

         (a) Competitively within a reasonable time frame.

         (b) Meeting reasonable performance standards as defined in the Standards or Project Specifications.

         (c) Or, at a reasonable price.

   c. Waste Material Quantity Report: Submit quantities of total project waste material disposal as listed below to the COR prior to submittal of final invoice.

      (1) Unregulated Wastes (i.e., trash): Volume in cubic yards or weight in pounds.

      (2) Hazardous or Universal Wastes: Weight in pounds.

      (3) Other regulated wastes (e.g., lead-based paint or asbestos): Weight in pounds (specify type of waste in report).

   d. Spill Prevention Notification and Cleanup Plan (Plan): Submit the Plan as described in Section 13.11.2, “Spill Prevention Notification and Cleanup Plan”, to the COR for review and comment 14-days prior to start of work. Review of the Plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State and local regulations.

   e. Prevention of Air Pollution: If an air permit is required, the Contractor is responsible to provide a copy of the Authority to Construct to the COR 14-days prior to the start of work, and to remit a copy of the Permit to Operate to the COR prior to submittal of the final invoice as described in 13.14 “Prevention of Air Pollution”.

f. Lead Paint Notices: Submit a copy of lead paint notices with contractor recipient signatures as described in 4(d) to the COR prior to submittal of final invoice. Submit copies of certificates of disposal and/or receipts for waste to the COR prior to submittal of final invoice.

g. Oil-Filled Electrical Equipment Receipt: The Contractor will obtain a receipt for equipment transported and disposed, recycled or reprocessed from the scrap metal dealer and submit that to the COR. Funds received in exchange for the metal or other materials being recycled, will be returned to WAPA prior to submittal of the final invoice.

2. USE OF RECOVERED MATERIAL AND BIOBASED MATERIAL PRODUCTS:

a. Recovered Material Products: If the products listed below or other products listed at https://www.epa.gov/smm/comprehensive-procurement-guideline-cpg-program#products are obtained as part of this project, purchase the items with the highest recovered material content possible unless recovered material products are not available:

(1) Competitively within a reasonable time frame.

(2) Meeting reasonable performance standards as defined in the Standards or Project Specifications.

(3) Or, at a reasonable price.

Examples include: Building Insulation Products, Cement and concrete containing coal fly ash, ground granulated blast furnace slag, cenospheres or silica fume, Consolidated and reprocessed latex paint, Floor Tiles, Flowable fill, Laminated Paperboard, Roofing materials, Dividers/partitions, Signage and Structural Fiberboard.

b. Biobased Material Products: If the products listed at https://www.biopreferred.gov/BioPreferred/faces/pages/ProductCategories.xhtml are obtained as part of this project, purchase the items with the highest biobased content possible and no less than the percent indicated for each product unless biobased material products are not available:

(1) Competitively within a reasonable time frame.

(2) Meeting reasonable performance standards as defined in the Standards or Project Specifications.

(3) Or, at a reasonable price.

c. Recovered Material and Biobased Material Products Report: Provide the COR the following information for purchases of those items listed above: Quantity and cost of listed items with recovered or biobased material content and quantity and cost of listed items without recovered or biobased material content prior to submittal of final invoice.

3. DISPOSAL OF WASTE MATERIAL:

a. General: Wastes generated on SNR projects will be managed in accordance with this section, and in accordance with applicable Federal, State and local regulations. In addition to the requirements of the Contract Clause “Cleaning Up”, remove all waste material from the construction site. No waste shall be left on WAPA property, right-of-way or easement. Burning or burying of waste material is not permitted.

b. Hazardous, Universal and Non-Hazardous Wastes: If required, disposals of hazardous waste will be coordinated by the COR and Environment. WAPA will be the generator of hazardous waste. The Permanent EPA ID number for Keswick Substation is CA1890090003. The Contractor will work with the COR, electricians and project manager

to coordinate disposals of hazardous waste with WAPA Environmental. WAPA Environmental will engage the services of the disposal contractor and will be onsite to sign the manifest for wastes going out on a hazardous waste manifest carrying this ID number. Used oil is a hazardous waste in the State of California. Prior to recycling, oil from breakers, transformers and other oil-filled electrical equipment must be sampled and analyzed for polychlorinated biphenyls, using analytical methods approved by EPA and applicable state regulations.

c. Sampling and Testing of Insulating Oil for PCB Content: The KE electricians will sample the oil from equipment slated for disposal on the first day of the outage and turn the sample(s) over to WAPA Environment as soon as practicable. WAPA Environment will have the samples analyzed for PCBs and make the determination of how the oil will be removed from the equipment and hauled away. Sampling equipment will be decontaminated and disposed according to documented good laboratory practices (these can be contractor developed or EPA standards) and in compliance with hazardous waste regulations.

d. Removal and Disposal of Insulating Oil and Oil-Filled Electrical Equipment: The Contractor will be responsible to haul empty equipment to the scrap metal recycler.

e. Recycled Materials: Reduce wastes, including excess WAPA material, by recycling, reusing or reprocessing. Examples of recycling, reusing or reprocessing includes, but is not limited to, reprocessing of solvents; recycling cardboard; and salvaging scrap metals. All materials generated from the project that can be recycled, shall be recycled. The Contractor shall record quantities of material by category that is salvaged, recycled, reused or reprocessed, and report them in the recycled materials quantity report as required in the submittals section. These materials include, but are not limited to:

(1) Steel: Weight in pounds or tons.
(2) Aluminum: Weight in pounds or tons.
(3) Copper: Weight in pounds or tons.
(4) Other Metals: Weight in pounds or tons.
(5) Gravel, Asphalt, or Concrete: Weight in pounds or tons.
(6) Batteries: Weight in pounds.
(7) Wood Construction Material: Weight in pounds.
(8) Cardboard: Weight in pounds.
(9) Fluorescent Bulbs: Weight in pounds.
(10) Ballasts: Weight in pounds.

4. MATERIAL WITH LEAD-BASED PAINT:

a. General: The Contractor will comply with all applicable Federal, State and local regulations concerning any work with items containing lead-based paint, including disposal of material painted with lead-based paint and all other management of these materials. OSHA and General Industry Standards apply to worker safety and right-to-know issues. Federal EPA and State agencies regulate waste disposal and air quality issues.

b. Testing: If lead is suspected on an item of equipment, the item shall be tested for the presence of lead. A swipe style test can be used to make this determination, and it can be performed by WAPA Environment, electricians or the COR.

c. Working with Lead Painted Equipment: If lead is determined to be present, the equipment may still be recycled. If the item must be cut into pieces to get it on a truck or for any other reason, any resulting paint waste (from the associated cutting sanding, stripping or abrading) is hazardous waste and must be managed as such. The Contractor and COR will consult with WAPA Environmental, who will engage the services of a disposal contractor and will be onsite to sign the manifest for wastes shipped on a hazardous waste manifest.

d. Transfer of Property: If lead-based paint-containing equipment or material is to be given away or sold for reuse, scrap or reclaiming, the Contractor shall provide a written notice to the recipient stating that the material contains lead-based paint and that the Hazardous Waste regulations may apply to the waste or the paint in some circumstances. The new owner must also be notified that they may be responsible for compliance with OSHA requirements if the material is to be cut, sanded, abraded or stripped of paint. The Contractor will also submit a copy of any required lead paint notices with Contractor and recipient signatures to the COR prior to submittal of final invoice in accordance with the submittals section.

e. Certificates of Disposal and Receipts: Obtain receipts from the landfill or scrap metal recycler and submit copies to the COR prior to submittal of final invoice.

5. CONTRACTOR'S LIABILITY FOR REGULATED MATERIAL INCIDENTS:

a. General: The Contractor is solely liable for all expenses related to spills, mishandling or incidents of regulated material attributable to his actions or the actions of his subcontractors. This includes all response, investigation, cleanup, disposal, permitting, reporting and requirements from applicable environmental regulation agencies.

b. Supervision: The actions of the Contractor employees and subcontractors shall be properly managed at all times on WAPA property or while transporting WAPA's (or previously owned by WAPA) regulated material and equipment.

6. POLLUTANT SPILL PREVENTION, NOTIFICATION AND CLEANUP:

a. General: Provide measures to prevent spills of pollutants and respond appropriately if a spill occurs. A pollutant includes any hazardous or non-hazardous substance that when spilled, will contaminate soil, surface water or ground water. This includes any solvent, fuel, oil, paint, pesticide, engine coolants and similar substances.

b. Spill Prevention Notification and Cleanup Plan (Plan): Provide the Plan to the COR for review and comment 14-days prior to start of work. Review of the Plan is for the purpose of determining compliance with the specifications only and shall not relieve the Contractor of the responsibility for compliance with all Federal, State and local regulations. Include the following in the Plan:

(1) Spill Prevention Measures: Describe the work practices or precautions that will be used at the jobsite to prevent spills. These may include engineered or manufactured techniques such as installation of berms around fuel and oil tanks; storage of fuels, paints and other substances in spill proof containers; and management techniques such as requiring workers to handle material in certain ways.

(2) Notification: Most States and the Environmental Protection Agency require by regulation that anyone who spills certain types of pollutants in certain quantities notify them of the spill within a specific time period. Some of these agencies require written follow up reports and cleanup reports. Include in the Plan the types of spills for which notification would be made, the agencies notified, the information the agency requires during the notification and the telephone numbers for notification.

(a) If a spill happens that is over 10-gallons or any amount reaches a waterway:

1) Contact the COR immediately.
2) Call Sierra Nevada Region Dispatch Emergency at (916) 353-2201.

(3) Employee Awareness Training: Describe employee awareness training procedures that will be implemented to ensure personnel are knowledgeable about the contents of the Plan and the need for notification.

(4) Commitment of Manpower: Equipment and Material. Identify the arrangements made to respond to spills, including the commitment of manpower, equipment and material.

(5) If applicable, address all requirements of 40CFR112 pertaining to Spill Prevention, Control and Countermeasures Plans.

7. PREVENTION OF AIR POLLUTION:

a. General: Ensure that construction activities and the operation of equipment are undertaken to reduce the emission of air pollutants. Submit a copy of permits for construction activities, if required (e.g., “non-attainment” areas, State implementation plans or Class I air-sheds), from Federal, State or local agencies to the COR 14-days prior to the start of work. The Contractor shall fulfill the conditions under any applicable locally prepared Environmental Impact Statements (EISs) or Environmental Assessments (EAs) conducted for the project under the National Environmental Protection Act (NEPA).

b. Machinery Air Emissions: The Contractor and subcontractor machinery shall have and shall use the air emissions control devices required by Federal, State or local Regulation or ordinance.

c. Dust Abatement: Dust shall be controlled. Oil shall not be used as a dust suppressant. Dust suppressants shall be approved by the COR prior to use.

d. For work occurring in the North Area ROW at the KE substation, Standard Operating Procedures (SOPs) required become more stringent as the activity required becomes more impactful to air quality. Since new infrastructure is considered a Category C activity, all the SOPs are required for this project. They are listed here:

(1) AQ-SOP-1: WAPA will adhere to all applicable requirements of those agencies having jurisdiction over air quality matters and any necessary permits for O&M will be obtained.

(2) AQ-SOP-2: Machinery and vehicles will be kept in good operating condition and older equipment will be replaced with equipment meeting applicable emission standards; appropriate emissions-control equipment will be maintained for vehicles and equipment, per California, EPA and WAPA air-emission requirements.

(3) AQ-SOP-3: Idle equipment will be shut down when not in active use; visible emissions from stationary generators will be controlled.

(4) AQ-SOP-4: Dust shall be controlled. Oil shall not be used as a dust suppressant. Dust suppressants shall be approved by the COR prior to use. Trucks transporting loose material will be covered or maintain at least 2-feet of freeboard and will not create any visible dust emissions.

(5) AQ-SOP-5: There will be no open burning of construction trash.

(6) AQ-SOP-6: Grading activities will cease during periods of high winds (as determined by local air quality management districts).

(7) AQ-SOP-7: Major operations will be avoided on days when the local Air Quality Index is expected to exceed 150.

(8) AQ-SOP-8: Include dust-control measures such as water or chemical suppressants.

(9) AQ-SOP-9: Re-seeding of ground surfaces that have been significantly disturbed to prevent wind dispersion of soil.

(10) AQ-SOP-10: Regular watering of exposed soils and unpaved access roads during maintenance activities.

(11) AQ-SOP-11: Use reasonably practicable methods and devices to control, prevent and otherwise minimize atmospheric emissions or discharges of air contaminants.

8. CONSERVATION OF BIOLOGICAL RESOURCES:

a. General: Federal law prohibits the "take" of endangered, threatened, proposed or candidate wildlife and plants and destruction or adverse modification of designated Critical Habitat. Federal law also prohibits the "take" of birds protected by the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act. "Take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect or attempt to engage in any such conduct with a protected animal or plant or any part thereof or attempt to do any of those things without a permit from U.S. Fish and Wildlife Service. The Contractor will take precautions to avoid harming all wildlife species and native plants. Contractor shall restrict all ground disturbing activities to areas that have been surveyed by WAPA for natural resources and as specified in accordance with Standard 1 – General Requirements, Sections 1.3.1 Rights-of-Way and 1.3.2 Access to the Work and Haul Routes.

b. Environmental Awareness Training: Prior to the start of project activities, all personnel will participate in environmental awareness training which will inform them of the sensitive habitats within the project area, the species that have the potential to occur in the project area and the avoidance and minimization measures that are to be adhered to during project activities. Any new crew members that start after project activities have commenced will be given the environmental awareness training prior to working onsite.

c. Known Occurrence of Protected Species or Habitat: Following issuance of the notice to proceed, and prior to the start of construction, WAPA will provide training to all Contractor and subcontractor personnel and others involved in the construction activity if there is a known occurrence of protected species or habitat in the construction area. Untrained personnel shall not be allowed in the construction area. WAPA will provide drawings or maps showing sensitive areas located on or immediately adjacent to the transmission line right-of-way and/or facility. These sensitive areas shall be considered avoidance areas. Prior to any construction activity, the avoidance areas shall be marked on the ground by WAPA. If access is absolutely necessary, the Contractor shall first obtain written permission from the COR, noting that a WAPA and/or other Federal or State government or tribal agency biologist may be required to accompany personnel and equipment. Ground markings shall be maintained through the duration of the contract. WAPA will remove the markings during or following final inspection of the project.

d. Unknown Occurrence of Protected Species or Habitat: On rare occasions a protected species or habitat may be discovered during the project. If evidence of a protected species is found in the project area, the Contractor shall immediately notify the COR and provide the location, date and nature of the findings. The Contractor shall stop all activity within 200-feet of the protected species or habitat and not proceed until directed to do so by the COR.

e. Migratory Birds and Raptors: Under the Migratory Bird Treaty Act of 1918, migratory bird species and their nests and eggs are protected from injury or death. Impacts to migratory bird nests shall be avoided during the nesting season(s) identified in Division 13 of the

Project Specifications. If construction activities occur during the nesting season, WAPA will survey the construction area for migratory bird nests prior to construction activities and establish appropriate buffers around any nests that may potentially be disturbed. If work must be conducted within these buffers, a WAPA-supplied biological monitor will be onsite for construction activities within the buffers. If the biological monitor determines that activities are likely to cause nest impacts or nest abandonment, then construction activities in the area shall be postponed until nestlings have fledged or the nest is no longer active.

9. LANDSCAPE PRESERVATION:

   a. General: Preserve landscape features in accordance with the contract clause titled "Protection of Existing Vegetation, Structures, Equipment, Utilities and Improvements." Exercise care to preserve the natural landscape and conduct activities to prevent any unnecessary destruction, scarring or defacing of the natural surroundings in the project vicinity. Except where clearing is required for permanent works, approved construction roads or excavation operations, vegetation shall be preserved and shall be protected from damage by project operations and equipment.

   b. Construction Facilities: Shop, office, material lay down and material and equipment storage areas and yard areas shall be located and arranged in a manner to preserve trees and vegetation to the maximum practicable extent and prevent impact on sensitive riparian areas and flood plains. Storage and construction buildings, including concrete footings and slabs, shall be removed from the site prior to contract completion. The area shall be re-graded as required so that all surfaces drain naturally, blend with the natural terrain and are left in a condition that will facilitate natural revegetation, provide for proper drainage and prevent erosion or transport of sediment and pollutants. If re-vegetation is required, use seed mixtures as recommended by Natural Resources Conservation Service or other land managing agency as appropriate.

10. PRESERVATION OF CULTURAL AND PALEONTOLOGICAL RESOURCES:

   a. General: Do not, at any time, remove, disturb or otherwise alter cultural artifacts or paleontological resources (fossils). Cultural artifacts may be of scientific or cultural importance and include, but are not limited to bones, pottery, projectile points (arrowheads), other stone or metal tools, surface features (stone circles, rock piles, etc.), glass, metal, ceramic or other historic objects, structures and buildings (including ruins). Paleontological resources can be of scientific importance and include mineralized animals and plants or trace fossils such as footprints. Both cultural and paleontological resources are protected by Federal Regulations during Federal construction projects. Contractor shall restrict all ground disturbing activities to areas reviewed/investigated and approved WAPA by the Regional Preservation Officer (RPO) and as specified in accordance with Standard 1 – General Requirements, Sections 1.3.1 Rights-of-Way and 1.3.2 Access to the Work and Haul Routes.

   b. Known Cultural or Paleontological Sites: The Contractor shall ensure that all construction activities avoid the boundaries of specific cultural, historic or scientific sites. Following issuance of notice to proceed, WAPA will provide drawings or maps that indicate the areas of avoidance in relation to the project area. Prior to any construction activity, the avoidance areas shall be marked on the ground in a manner approved by the COR in conjunction with the RPO. When avoidance is not possible, the Contractor shall provide WAPA a 90-day notice of their inability to avoid historic properties. WAPA will consult with the appropriate authorities and the Contractor will not be permitted to work within or near the boundaries of the historic property until the RPO approves of the work and the COR directs the Contractor to proceed. Instruct employees and subcontractors that vehicular or equipment access to these areas is prohibited. If access is absolutely necessary, first obtain approval from the COR in conjunction with the RPO. WAPA will remove the markings during or following final cleanup.

c. Unknown Cultural or Paleontological Sites: On rare occasions cultural or paleontological sites may be discovered during excavation or other earth-moving or other construction activities.

(1) Reporting: If evidence of a cultural or paleontological site is discovered, cease work in the area immediately and notify the COR of the location and nature of the findings. If a monitor is present, the monitor should also be notified. Stop all activities within a 200-foot radius of the discovery and do not proceed with work within that radius until directed to do so by the COR.

(2) Care of Evidence: Protect the area. Do not remove, handle, alter or damage artifacts or fossils uncovered during construction activities.

DIVISION 15 – DRAWINGS

A. GENERAL:

1. CONSTRUCTION DRAWINGS: After award of contract, WAPA will put all suitable for construction drawings on the SharePoint site. (No hard copies will be provided).

B. AS-BUILT DRAWINGS:

1. GENERAL: The Contractor shall keep one (1) complete set of full-size construction drawings at the jobsite solely for the purpose of recording as-built conditions. The Drawings shall be marked to show any change or variation in the actual construction, which does not match the construction drawings. The as-built set of drawings shall not be used for construction purposes.

2. RECORDING INFORMATION: Record information on the Drawings concurrently with construction progress. Do not conceal work until the required information is recorded. Mark all drawings affected by the actual work which varies from the construction drawings.

3. MARKING OF DRAWINGS: As-built drawing marking shall be as follows:

    a. Additions and notes in red.
    b. Deletions in green.
    c. Explanation notes in blue.

4. DRAWING REVIEW: The marked set of as-built drawings shall be available for inspection at all times. Prior to all progress payments, the Contractor and WAPA shall review the marked drawings to verify that all as-built conditions have been recorded. Progress payments may be withheld until the Drawings are updated.

5. AS-BUILT INFORMATION TO BE RECORDED: Mark drawings with all actual construction which does not match the construction drawings including:

    a. Field changes of dimension and detail.
    b. Changes made by modifications.
    c. Details not shown on original drawings.
    d. Other information required to describe the as-built construction.

6. SUBMITTALS: Deliver complete set of marked as-built drawings to the COR for approval prior to the date of submission of your final invoice.

Message from the Administrator

At Western Area Power Administration (WAPA), we show our commitment to safety every day through the actions we take, the training we offer and the work conditions we provide. We expect the same commitment to safety from each of our contractors who provide products or services to WAPA. In performing work for WAPA, all contractors must make the right decisions to ensure that the work environment is as safe as possible.

Our safety program is based on four points:

- Safety procedures or common sense must be applied by each Federal and contract employee. Safety should not be set aside to meet a project schedule or for personal convenience.

- Employees and contractors must believe that they have the right and the responsibility to identify and take action to reduce, if not eliminate, hazardous work environments and hazardous work practices.

- Managers and supervisors must lead by example and execute their responsibility to ensure each job is accomplished in a safe and healthy way.

- Safety is a personal responsibility. Each individual makes the decision on what action to take to accomplish a task.

By integrating these principles into every task we take, together we can ensure WAPA is a safe place to work.

Mark A. Gabriel
Administrator and CEO


DEPARTMENT OF ENERGY
UNITED STATES OF AMERICA