DWORSHAK DAM
TECHNICAL SPECIFICATION
SQUARE D CR PANELBOARDS, LOAD CENTERS, AND BREAKERS

1.0 SCOPE

The specification pertains to the purchase of nine (9) new Schneider Electric/Square D (hereafter Square D) NQ 208Y/120 VAC panel interiors and covers, two (2) new Square D NQ 208Y/120 VAC panel interiors, covers and exterior cans, three (3) new Square D QO 240/120 VAC load center conversions and one (1) Square D 22 kA breaker kit to replace existing 10 kA breakers for the Dworshak Dam Powerhouse, U.S. Army Corps of Engineers, Walla Walla District, in Ahsahka, Idaho. Each panelboard shall meet the salient characteristics and general requirements listed below. The Contractor shall deliver the panel components to the Dworshak Dam Powerhouse by the date shown in the "Shipment and Delivery" section.

2.0 GENERAL REQUIREMENTS

1. Reference Standards
   A. ANSI Z535.4 - American National Standard for Product Safety Signs and Labels; 2023.
   B. NECA 1 - Standard for Good Workmanship in Electrical Construction; 2023.
   C. NEMA PB 1 - Panelboards; 2011.
   D. NFPA 70 - National Electrical Code; Most Recent Edition Adopted by Authority Having Jurisdiction, Including All Applicable Amendments and Supplements.
   E. NFPA 70E - Standard for Electrical Safety in the Workplace; 2024.
   F. UL 50 - Enclosures for Electrical Equipment, Non-Environmental Considerations; Current Edition, Including All Revisions.
   G. UL 50E - Enclosures for Electrical Equipment, Environmental Considerations; Current Edition, Including All Revisions.
   H. UL 67 - Panelboards; Current Edition, Including All Revisions.
   I. UL 489 - Molded-Case Circuit Breakers, Molded-Case Switches and Circuit Breaker Enclosures; Current Edition, Including All Revisions.
   J. ISO 9001 - Quality Management Systems — Requirements; 2015.

2. Panelboards

Each panelboard interior and cover shall meet the following general requirements and characteristics:

   A. Comply with NEMA PB 1; listed and labeled as complying with UL 67.
   B. Short Circuit Current Rating: Where not specified, provide panelboards with listed short circuit current rating at 22 kA.
   C. Provide panelboards marked for use as service equipment where required for application.
   D. Panelboard Interiors:
      1. 208Y/120 VAC and 240/120 VAC Maximum Panelboards:
         a. Continuous main current ratings up to 250 A.
         b. Available Circuit Capacity: Up to 54 circuits.
         c. Minimum Short Circuit Current Rating:
            1) 120/240 VAC:
               (a) Series Rated: 22 kA.
               (b) Fully Rated: 22 kA.

2) 120/208 VAC: 22 kA.

E. Source Limitations: Furnish products produced by single manufacturer

F. Bussing:
   1. Provide sequentially phased branch circuit connectors for each bus bar.
   2. Provide fully rated bussing with one continuous bus bar per phase, unless otherwise indicated.
   3. Determine bus current ratings in accordance with UL 67 heat-rise tests.
   4. Maximum current ratings apply for main-lug-only or main-circuit-breaker panelboards.
      a. Rated 100 A to 400 A: Plated copper.
      b. Run bus bar plating entire length of bus bar.

G. Neutral:
   1. Panelboards 20 inches (508 mm) Nominal and Wider: Plated, solid, and split.
   2. Panelboards 14 inches (355 mm) Wide and Column Width: Plated and solid.

H. Ground:
   a. Provide solidly bonded copper equipment ground bar.

I. Interiors in Type 1 and 2 Enclosures:
   a. Field convertible for top or bottom incoming feed.
   b. Provide interior leveling provisions for flush mounting applications.

J. Interior Trim: Dead-front construction to shield energized parts, with filler plates to cover unused mounting spaces.

K. Main-Lug Interiors up to 600 A: Field-convertible to main circuit breaker.

L. Enclosures:
   1. Comply with UL 50 and UL 50E.
   2. Key all lock assemblies alike.
      a. Provide a set of five (5) keys.
   3. Mount clear plastic directory cardholder or welded metal frame directory cardholder on inside of door.
   4. Type 1 Enclosures:
      a. Provide surface-mounted or flush-mounted enclosures as indicated.
      b. Boxes:
         1) Hot zinc dipped galvanized steel; unpainted galvannealed steel is not acceptable.
         2) Provide removable end walls with knockouts at both ends.
         3) Provide standard 5.75-inch (146 mm) deep enclosures with permanently affixed interior mounting studs; provide interior mounting brackets as required.
      c. Fronts:
         1) Finish: ANSI 49 gray enamel paint baked onto cleaned, phosphatized steel.
         2) Provide hinged one-piece fronts with door.
         3) Provide doors with rounded corners and edges, free of burrs.
         4) Provide cylindrical tumbler-type lock with catch and spring-loaded steel door pull, quarter-turn fasteners, or three-point latch with all panels keyed the same.
      d. Markings and Labeling:
         1) Provide identification and warning labels/nameplates exterior to equipment resistant to weather, UV, and intended installation environment.
         2) Provide engraved nameplate identifying project-specific equipment tag and service description.

3) Provide warning labels/nameplates complying with ANSI Z535.4 at access locations to advise personnel of possible hazards in accordance with listing, NFPA 70, NFPA 70E, and other applicable standards.
4) Provide nameplates containing system information and catalog number or factory order number.
5) Display interior wiring diagram, neutral wiring diagram, and short circuit current rating on interior or in booklet format.

3.0 208Y/120 VAC Square D NQ Panelboard Interiors and Covers (CLIN 0001)

The Contractor shall supply nine (9) 208Y/120 VAC Square D NQ Panelboard Interiors and Covers with Square D breakers to be installed in existing outer cans that meet the following requirements:

3.1. Panelboard CR01:
The flush-mount main lug panelboard interior with cover shall be rated 22 kA with 20 circuits and a 100 amp main bus.

Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
   a. 22” Width
   b. 5 ¾” Depth
   c. 28 ¾” Height
2. Physical dimensions (Panel Interior):
   a. 14” Width
   b. 18” Height
3. Physical dimensions (Cover):
   a. 23 ½” Width
   b. 30” Height
4. Minimum Breaker Configuration:
   a. Single Pole Breakers – 20-20 amp

3.2. Panelboard CR02:
The flush-mount main lug panelboard interior with cover shall be rated 22 kA with 24 circuits and a 100 amp main bus.

Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
   a. 22” Width
   b. 5 ¾” Depth
   c. 31 ½” Height
2. Physical dimensions (Panel Interior):
   a. 14” Width
   b. 21 ½” Height
3. Physical dimensions (Cover):
   a. 23 ½” Width
   b. 33” Height
4. Minimum Breaker Configuration:
   a. Single Pole Breakers – 18-20 amp
   b. Two Pole Breakers – 2-30 amp,1-50 amp

3.3. Panelboard CR03:

The flush-mount main lug panelboard interior with cover shall be rated 22 kA with 24 circuits and a 100 amp main bus.

Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
   a. 22” Width
   b. 5 ¾” Depth
   c. 31 ½” Height
2. Physical dimensions (Panel Interior):
   a. 14” Width
   b. 21 ½” Height
3. Physical dimensions (Cover):
   a. 23 ½” Width
   b. 37 ½” Height
4. Minimum Breaker Configuration:
   a. Single Pole Breakers – 21-20 amp, 1-30 amp
   b. Two Pole Breakers – 1-15 amp

3.4. Panelboard CR04:

The flush-mount main lug panelboard interior with cover shall be rated 22 kA with 30 circuits and a 225 amp main bus.

Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
   a. 22” Width
   b. 5 ¾” Depth
   c. 37” Height
2. Physical dimensions (Panel Interior):
   a. 14” Width
   b. 27” Height
3. Physical dimensions (Cover):
   a. 23 ½” Width
   b. 37” Height
4. Minimum Breaker Configuration:
   a. Single Pole Breakers – 1-15 amp, 27-20 amp, 1-25 amp
   b. Two Pole Breakers – 1-20 amp

3.5. Panelboard CR05:

The flush-mount main lug panelboard interior with cover shall be rated 22 kA with 36 circuits and a 225 amp main bus.

Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
   a. 22” Width
   b. 5 ¾” Depth
   c. 39 ¾” Height
2. Physical dimensions (Panel Interior):
   a. 14” Width
   b. 29” Height
3. Physical dimensions (Cover):
   a. 23 ½” Width
   b. 41” Height

4. Minimum Breaker Configuration:
    a. Single Pole Breakers – 28-20 amp
    b. Three Pole Breakers – 1-20 amp and 1-30 amp

3.6. Panelboard CR11:

The flush-mount main lug panelboard shall be rated 22 kA with 44 circuits and a 225 amp main bus.

Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
    a. 22" Width
    b. 5 ¾" Depth
    c. 45 ¼" Height
2. Physical dimensions (Panel Interior):
    a. 14" Width
    b. 35" Height
3. Physical dimensions (Cover):
    a. 23 ½" Width
    b. 47" Height
4. Minimum Breaker Configuration:
    a. Single Pole Breakers – 1-15 amp, 31-20 amp, 4-30 amp,
    b. Two Pole Breakers – 3-20 amp and 1-30 amp

3.7. Panelboard CR21:

The flush-mount main lug panelboard shall be rated 22 KA with 36 circuits and a 225 amp main bus.

Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
    a. 22" Width
    b. 5 ¾" Depth
    c. 39 ¾" Height
2. Physical dimensions (Panel Interior):
    a. 14" Width
    b. 30" Height
3. Physical dimensions (Cover):
    a. 23 ½" Width
    b. 41" Height
4. Minimum Breaker Configuration:
    a. Single Pole Breakers –31-20 amp, 3-30 amp
    b. Two Pole Breakers – 1-30 amp

3.8. Panelboard CR31:

The flush-mount main lug panelboard shall be rated 22 KA with 36 circuits and a 225 amp main bus.

Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
    a. 22" Width
    b. 5 ¾" Depth
    c. 39 ¾" Height
2. Physical dimensions (Panel Interior):
    a. 14" Width
    b. 31" Height
3. Physical dimensions (Cover):
    a. 23 ½" Width

b. 41” Height
4. Minimum Breaker Configuration:
   a. Single Pole Breakers – 30-20 amp and 1-30 amp
   b. Two Pole Breakers – 1-30 amp
   c. Three Pole Breakers – 1-15 amp

3.9. Panelboard FCR1:
The flush-mount main lug panelboard shall be rated 22 KA with 30 circuits and a 225 amp main bus.
Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
   a. 22” Width
   b. 5 ¾” Depth
   c. 37” Height
2. Physical dimensions (Panel Interior):
   a. 14” Width
   b. 27” Height
3. Physical dimensions (Cover):
   a. 23 ½” Width
   b. 38 ½” Height
4. Minimum Breaker Configuration:
   a. Single Pole Breakers – 24-20 amp
   b. Two Pole Breakers – none
   c. Three Pole Breakers – 2-20 amp

4.0 208Y/120 VAC Square D NQ Panelboard Interiors, Covers and Exteriors (Cans) (CLIN 0002)

The Contractor shall supply two (2) 208Y/120 VAC Square D NQ Panelboard Interiors, Covers and Exterior (Cans) with Square D breakers to be installed in existing outer cans that meet the following requirements:

4.1. Panelboard FCR2:
The surface-mount panelboard shall be rated 22 kA with 30 circuits and a 225 amp main breaker and bus.
Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
   a. 22” Width
   b. 5 ¾” Depth
   c. 37” Height
2. Physical dimensions (Panel Interior):
   a. 14” Width
   b. 27” Height
3. Physical dimensions (Cover):
   a. 23 ½” Width
   b. 38 ½” Height
4. Minimum Breaker Configuration:
   a. Single Pole Breakers – 21-20 amp
   b. Two Pole Breakers - None
   c. Three Pole Breakers – 1-15 amp, 2-20 amp

4.2. Panelboard FR1:

The surface-mount panelboard shall be rated 22 kA with 40 circuits and a 225 amp main breaker and bus.

Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.

1. Physical dimensions (Outer Can):
   a. 23" Width
   b. 5 ¾" Depth
   c. 57" Height
2. Physical dimensions (Panel Interior):
   a. 13 ½" Width
   b. 40" Height
3. Physical dimensions (Cover):
   a. 23 ½" Width
   b. 52" Height
4. Minimum Breaker Configuration:
   a. Single Pole Breakers – 23-20 amp
   b. Two Pole Breakers – 4-20 amp, 1-30 amp and 1-50 amp

5.0 Square D QO Load Center Conversions (CLIN 0003)

The Contractor shall supply three (3) Square D QO Load Center Conversions kits with Square D breakers to convert from existing load center to a load center that meets the following requirements:

5.1. Panelboard CR06:

The flush-mount load center (replacing Siemens load center G1224ML1125) with cover shall be rated 22 kA with 16 circuits and a 125 amp rated main breaker and bus.

Voltage: Single phase 240/120 VAC., 3-wire, 60 Hz.

1. Physical dimensions (Outer Can):
   a. 15.5" Width
   b. 22" Height
2. Minimum Breaker Configuration:
   a. Single Pole Breakers – 10-20 amp
   b. Two Pole Breakers – 1-100 amp, 2-20 amp

5.2. Panelboard CR07:

The flush-mount load center (replacing Cutler-Hammer load center with CH8JF cover) with cover shall be rated 22 kA with 32 circuits and a 125 amp main breaker and bus.

Voltage: Single phase 240/120 VAC., 3-wire, 60 Hz.

1. Physical dimensions (Panel Interior):
   a. 14" Width
   b. 34" Height
2. Minimum Breaker Configuration:
   a. Single Pole Breakers – 16-20 amp
   b.

5.3. Panelboard FCR3:

The flush-mount load center (replacing Siemens load center G1224MB1100CU) shall be rated 22 kA with 14 circuits and a 100 amp main breaker and bus

Voltage: Single Phase 240/120 VAC., 3-wire, 60 Hz.

1. Physical dimensions (Outer Can):
    a. 6” Width
    b. 13” Height
2. Minimum Breaker Configuration:
    a. Single Pole Breakers – 10-20 amp
    b. Two Pole Breakers – 1-20 amp and 1-50 amp

5.0 22 kA Square D Breakers (CLIN 0004)

The Contractor shall supply eight-three (83) 22 kA breakers as follows:

5.1. Voltage: Single phase 240/120 VAC., 3-wire, 60 Hz.
1. Breaker Configuration:
    a. Single Pole Breakers – 6-15 amp and 24-20 amp and 4-30 amp
    b. Two Pole Breakers – 5-20 amp and 5-30 amp
    c. Two Pole Main Breaker – 1-125 amp

5.2. Voltage: Three phase 208Y/120 VAC., 4-wire, 60 Hz.
1. Breaker Configuration:
    a. Single Pole Breakers – 22-20 amp
    b. Two Pole Breakers – 2-20-amp, 2-30 amp, 2-50 amp, 1-100 amp
    c. Three Pole Breaker – 3-40 amp, 2-50 amp
    d. Three Pole Main Breaker – 1-100 amp, 1-225 amp

2.0 **Molded Case Circuit Breakers**

A. Breaker characteristics: Quick-make, quick-break circuit breakers with over-center, trip-free toggle mechanism; ratings, configurations, and features/accessories on all panels.
B. Comply with FS W-C-375; listed and labeled as complying with UL 489.
C. Interrupting Capacity: 22 kA.
D. Multi-Pole Circuit Breakers: Provide common tripping for all poles.
E. 208/120 VAC Main Circuit Breakers:
    1. Trip Units:
        a. Up to 400 A: Thermal magnetic.
    2. Provide push-to-trip button for maintenance and testing purposes.
    3. Indicate rated ampacity on circuit breaker handle and faceplate.
    4. Listed for reverse connection without restrictive line or load markings.
    5. Frame Sizes Above 125 A: Provide single magnetic trip adjustment on front of circuit breaker to simultaneously select desired trip level of all poles.
    6. Provide escutcheon with international I/O markings in addition to standard ON/OFF markings.
    7. Lugs:
        a. Listed to accept solid or stranded copper and aluminum conductors.
        b. Listed to accept 90 degree C rated wire, sized according to 75 degree C rating in accordance with NFPA 70.
        c. Bolt lug body in place; snap-in designs are not acceptable.
    8. Listed for use with the following accessories:
        a. Shunt trip.
        b. Undervoltage trip.
        c. Ground fault shunt trip.
        d. Auxiliary switch.

e. Alarm switch.
f. Mechanical lug kits.
g. Compression lug kits.
h. Handle Locking Provisions: For locking handle in ON or OFF position.

F. 240/120 VAC Main Circuit Breakers:
1. Trip Units: Thermal magnetic.
2. Operating Range: Between 14 degrees F (-10 degrees C) and 140 degrees F (60 degrees C).
3. Branch Circuit Breakers in 240 VAC Panelboards:
   a. Mounting: Bolt on to bus, without requiring additional external mounting hardware.
   b. Available Nominal Current Ratings:
      1) Single-Pole Breakers: From 10 A to 70 A.
      2) 2-Pole Breakers: From 15 A to 125 A; up to 200 A in single-phase panelboards.
      3) 3-Pole Breakers: From 15 A to 125 A; up to 150 A.
4. Provide two forms of visible trip indication:
   a. Circuit breaker handle resides in position between ON and OFF.
   b. Red trip indicator appears in clear window of circuit breaker housing.
5. Lugs:
   a. Listed to accept solid or stranded copper and aluminum conductors.
   b. Listed to accept 90 degree C rated wire, sized according to 75 degree C rating in accordance with NFPA 70.
6. Listed for use with the following factory-installed accessories:
   a. Shunt trip.
   b. Auxiliary switch.
   c. Alarm switch.

8.0 OPERATION AND MAINTENANCE MANUALS (O&M)

The Contractor shall assemble and deliver one (1) electronic copy of the O&M manual. The manual shall be titled with the Contract Name and Number. The O&M shall provide detailed information on system operation, equipment installation, recommended maintenance procedures and intervals, replacement parts lists, and complete warranty information. The manual shall be sectionalized by panel with each section containing all the relevant information for the respective panel. The O&M manual shall be delivered on or before the delivery date of the panel components.
Each section shall contain the following information, at a minimum:

1.2. Installation instructions/guide
1.3. Product data sheets and/or catalog sheets
1.4. Shop drawings, including:
   A. Outline dimensions
   B. Specified ratings and materials

9.0 DRAWINGS

The Contractor shall provide all shop drawings of the panelboards, load centers and other modeled equipment in .DXF or .DWG CADD format extension. The CADD files will be provided to the Government via email. If file sizes exceed email limitations, then DOD SAFE shall be used for file transfers.

10.0 SUBMITTALS

The Offeror shall provide with their quote sufficient product information (e.g., brochures, cut sheets, options available and offered, etc.) for the Government to determine whether the offered product meets the salient requirements. Items in the documentation not related to the offer should be crossed or blackened out. A checklist of this specification alone will not be considered a sufficient offer.

1. Pre-Award:
    a. Installation instructions/guide
    b. Product Data: Provide manufacturer's standard catalog pages and data sheets for panelboards, enclosures, overcurrent protective devices, components, and accessories.
    c. Shop Drawings:
        a. Indicate dimensions, voltage, bus ampacities, overcurrent protective device arrangement and sizes, short circuit current ratings, conduit entry locations, conductor terminal information, instruments, features, and accessories.
        b. Include details for interior mounting dimensions and wiring gutter dimensions.
        c. Indicate location of main, branch circuits, and solid neutral, where applicable.
        d. Include documentation of listed series ratings.
        e. Include the following to demonstrate the manufacturer's qualifications:
            i. A copy of the manufacturer's current, valid ISO 9001 certificate issued by an accredited third-party registrar.

2. Post-Award:
    a. Operation and Maintenance Manuals
    b. Manufacturer's installation instructions in accordance with NEMA PB 1.1.
    c. Warranty Information

11.0 WARRANTY

All furnished equipment shall be covered by a minimum one-year warranty on all parts, labor, and workmanship from factory defects. All warranty work will be done without delivery or shipment fees (including travel or on-site work). All parts and components covered by a manufacturer’s warranty greater than one (1) year shall prevail.

12.0 SHIPMENT AND DELIVERY

All items shall be delivered FOB Destination to the Dworshak Dam Powerhouse within twelve (12) weeks of contract award. The Contractor shall be responsible for packing and shipping the components in a manner that will ensure undamaged and complete arrival to Dworshak Dam Powerhouse. Offload locations for equipment to be coordinated with onsite USACE point of contact (POC). All deliveries to be coordinated a minimum of fourteen (14) in advance. Deliveries shall be made during normal Dworshak Dam Powerhouse operating hours of Monday–Thursday, 7:00 a.m. – 4:30 p.m., excluding federal holidays.

Shipment shall be to:
Dworshak Dam Powerhouse

Attn: Contract Performance Specialist
1428 Northfork Drive
Ahsahka, ID 83520
Ph. (208) 476-1296