

SPECIFICATIONS FOR WAYSIDE POWER CABINETS

PART 1 – GENERAL REQUIREMENTS

1.01 **Scope:**

- A. Contractor shall furnish, deliver, install and test the Wayside Power Cabinets as specified herein and in accordance with the drawings.

1.02 **Quality Assurance:**

- A. Wayside Power Cabinets shall comply with NFPA 70 and shall meet requirements of latest edition of Amtrak Specification AM-800.
- B. Components used in Wayside Power Cabinets shall be, wherever applicable, Listed by CSA and/or UL for purpose specified.
- C. Wayside Power Cabinet manufacturer shall provide complete, factory assembled and tested wayside power cabinets.

1.03 **Submittals:**

- A. Contractor shall submit manufacturer's drawings and catalog data of wayside power cabinets for Engineer's approval prior to start of fabrication. Drawings and data shall include, as a minimum:
 - a. Manufacturer qualifications, including fab shop location and list of (3) separate facilities where manufacturer's wayside power cabinets are currently in use.
 - b. Manufacturer's dimensioned general arrangement drawings and wiring diagrams.
 - c. Manufacturer's data for all components.
 - d. Material callouts (type, thickness, plating, coating) for all fabricated items.
 - e. Mounting provisions and installation instructions.
 - f. Conduit entry locations.

1.04 **Warranty:**

- A. Wayside Power Cabinets shall be covered by manufacturer's warranty for a minimum period of (1) one year after shipment from manufacturer.

SECTION 2 - PRODUCTS

2.01 **General:**

- A. All equipment shall be new.
- B. Wayside Power Cabinet manufacturer must have produced and sold wayside power cabinets as a standard product for a minimum of (3) years.
- C. Contractor shall be responsible for the equipment until it has been installed and is finally inspected, tested and accepted in accordance with the requirements of this Specification.
- D. Wayside Power Cabinets shall be as manufactured by ESL Power Systems, Inc. (800) 922-4188 or equal as approved by the Engineer.

2.02 **Enclosure:**

- A. Enclosure shall be CSA and/or UL Listed and labeled type 4X, constructed of continuous seam-welded, Stainless Steel in thicknesses as shown on the drawings and conforming to ASTM 167. Enclosure shall be designed for severe service in an outdoor rail yard environment.
- B. Enclosure size shall be as shown on the drawings. Enclosure shall be designed to accommodate the HEP receptacles as shown on the drawings, along with all required power and control equipment as shown on the drawings. Enclosure shall have a single door with 3-point latch mechanism and heavy-duty SS padlockable handle. Enclosure shall be designed for mounting to a concrete pad.

2.03 **Head End Power (HEP) Receptacles:**

- A. HEP Receptacles at Wayside Power Cabinets shall be Cadillac 480V HEP series as manufactured by Clements.

2.04 **Voltage Monitoring System:**

- A. Voltage Monitor System shall be capable of sensing 480 volts nominal, 3 phase, 3 wire. The system shall trip the main circuit breaker after an adjustable time delay sensing of voltage imbalance, drop or loss of phase.
- B. CT's shall be provided within the enclosure as required to ensure proper and accurate operation of the Voltage Monitor System.

2.05 **Main Circuit Breaker:**

- A. Main Circuit Breaker shall be 3P 800A Frame, 600VAC, UL listed at 50KAIC @ 480VAC, with 800A Electronic Trip and shall include shunt trip and auxiliary contact.
- B. Power circuit components downstream of Main Circuit Breaker shall be rated 480VAC unless noted otherwise.

2.06 **Main Contactor**

- A. Main contactor shall be 800A rated with 120VAC coil, N/O and N/C contacts
- B. Wire main contactor per drawings and plans

2.07 **Digital Ground Fault Relay**

- A. Digital ground fault relay with zero sequence CT
- B. Wire digital ground fault relay per drawings and plans

2.08 **Voltage Sensing Relays**

- A. Supply voltage sensing relays as shown in drawings
- B. Wire as shown in drawings

2.09 **Provide “welded contact” Detection Scheme for Main Contactor**

2.10 **Electrical Controls, Devices, Terminals, and Operators:**

- A. All electrical controls, terminals and operators shall be industrial grade, CSA and/or UL Listed devices suitable for heavy duty use.
- B. Operators shall be Type 4X, 30mm size, and shall be manufactured by Allen Bradley, Square D or Cutler Hammer. All indicator lights shall be LED type.

2.11 **Wiring:**

- A. Power Wiring shall be flexible, stranded, rated for 600volts @ 90 degrees C, size as shown on drawings.
- B. Control wiring shall be stranded, 600 volt, UL type MTW, 14 gauge or larger as required.

2.12 **Labeling:**

- A. Exterior labels and legends shall be engraved multi-layer laminated plastic label plates, black letters on white background, affixed with SS screws. Use 1/8-inch minimum lettering.
- B. All wiring and cabling in the cabinet shall be identified with heat-shrink computer-printed white wire markers affixed on each end of each wiring conductor with wire number or designation as indicated on manufacturer’s drawings.
- C. All terminal strip blocks shall be individually identified with computer-printed labels as indicated on manufacturer’s drawings.

SECTION 3 - EXECUTION

3.01 **Installation:**

- A. Prior to installation of Wayside Power Cabinets, Contractor shall examine the areas and conditions under which the wayside power cabinets are to be installed and notify the Engineer in writing if unsatisfactory conditions exist.
- B. Wayside Power Cabinets shall be installed as shown on the drawings and per the manufacturer's written instructions.
- C. Conduit entry into the wayside power cabinet shall be by Contractor; Contractor shall furnish and install listed watertight conduit hubs, as manufactured by MYERS or T&B, for each conduit entry on the Wayside Power Cabinet. The hub size shall match the conduit size for conductors and ground as shown on the drawings. Hubs shall be properly installed and tightened to maintain Type 4X integrity of the Wayside Power Cabinet.
- D. Contractor shall terminate conductors and ground per the manufacturer's instructions. All field wiring terminations in the Wayside Power Cabinet shall be torqued as required per the instructions on the Wayside Power Cabinet.
- E. Once all wiring and field testing is complete, Contractor shall completely seal the interior of all conduits at the hubs where the conduits enter the Wayside Power Cabinet. Conduit sealant shall be Handi-Foam polyurethane expanding sealant; Duct Seal is not acceptable.

3.02 **Field Testing:**

- A. Prior to energizing the Wayside Power Cabinet, the Contractor shall perform the following checks and tests as a minimum:
 - 1. Verify mounting and connections are complete and secure.
 - 2. Verify internal components and wiring are secure.
 - 3. Perform continuity check of all circuits.
 - 4. Perform 1,000 VDC megger test on phase and ground cables.
 - 6. Confirm operation of the Wayside Power Cabinet by inserting a male HEP Test Plug into the HEP receptacles, energizing the control and power By following the Operating Instructions, and then verifying that male plug is properly energized with 3-phase 480VAC power.

End of Section