

SECTION 20 70 19

INDOOR CABINETS, RACKS, FRAMES, AND ENCLOSURES

PART 1 - GENERAL

1.01 SECTION INCLUDES

- A. Equipment cabinets
- B. Cable entrance cabinets
- C. Cabinet identification

1.02 RELATED SECTIONS

- A. Interface and coordinate the work of this Section with Section 20 70 26 - Common Materials and Methods for Electrical Systems, and Section 20 70 13 - Common Materials and Methods for Electronic Services.

1.03 MEASUREMENT AND PAYMENT

- A. General: Indoor cabinets, racks, frames, and enclosures, as specified herein, will not be measured separately for payment but will be paid for as part of the Contract lump sum price for the related item of work as indicated in the Bid Schedule of the Bid Form.

1.04 REFERENCES

- A. American National Standards Institute (ANSI):
 - 1. ANSI/EIA-310
- B. American Railway Engineering and Maintenance-of-Way Association (AREMA)
 - 1. Signal Manual, Part 1.5.10

1.05 SUBMITTALS

- A. General: Refer to Section 01 33 00 - Submittal Procedures, and Section 01 33 23 - Shop Drawings, Product Data, and Samples, for submittal requirements and procedures.
- B. Submit the following:
 - 1. Product data for equipment cabinets.
 - 2. Shop drawings.
 - 3. Cabinet mounting details.
 - 4. Cabinet paint types and colors.

PART 2 – PRODUCTS**2.01 MANUFACTURING REQUIREMENTS**

- A. Equipment Cabinets. Equipment in communication rooms and train control rooms/houses shall be housed in free standing cabinets conforming to the following requirements:
1. General. Cabinet frame shall be constructed of 14-gauge cold rolled steel. Cabinet construction shall be as shown in the Contract Drawings.
 2. Cabinet structures shall have uniform dimensions. ATC equipment cabinets shall not exceed 48 inches in width and 24 inches in depth. A cabinet complex shall not exceed 72 inches in width.
 3. Enclosures: Cabinet enclosures shall be furnished complete. The front and rear of the cabinets shall be enclosed with captive full-length doors opening at least 120 degrees, closed with hand-operated key-locked catches, and with louvered openings, if required. Doors shall be removable without unscrewing.
 - a. Cabinets shall be designed for side-by-side mounting with provisions for running interconnection wiring within a complex in closed wire way between cabinets.
 - b. All non-used front spaces of cabinets shall be covered with blank panels.
 - c. Self-ventilation of cabinet enclosures shall be used. If fans or filters are required, shop drawings shall be submitted for approval before manufacture.
 4. Cabinet Hardware: Cabinets and appurtenances shall be designed and constructed to comply with ANSI/EIA-310. The frame weldment shall be designed to accept universally adjustable panel-mounting hardware. The panel-mounting angles shall be constructed of 12-gauge cold rolled steel with standard EIA hole spacing and structured to comply with ANSI/EIA-310.
 5. Cable Entry: Cable entry shall be through the top of the cabinet. Cable entry shall have provisions for protecting the cable. All cables shall be routed so as to protect them from damage during and after installation.
 6. Terminal Block Mounting Board: Mounting boards for terminal blocks and other items as required shall be made from flame retardant non-metallic, non-wood, insulating sheet material approved by the District.
 7. Supports: Chassis supports or guides shall be provided as required for auxiliary support of heavy equipment and for all PC card files or non-vital relay modules.
 8. Height: Overall cabinet height shall be uniform and shall not exceed 7 feet-2 inches, including mounting sill.
- B. Cable Entrance Cabinets. Cable entrance cabinets shall be equipped with front full-length removable doors with key-locked catches opening at least 120 degrees. The rear of the cabinet shall be accessible by a bolted removable panel or full-length removable door. The structure shall not exceed 60 inches in width or 24 inches in depth. Cable entrance cabinets shall meet the

requirements specified for equipment cabinets, with the exception of cabinet dimensions and door construction. Cable entrance cabinets shall be installed as indicated on the Contract Drawings.

C. Painting: Cabinets shall be painted in accordance with the requirements of Section 09 91 00 - Painting, as modified herein.

1. Train control equipment cabinets and racks shall be painted light gray with color number 2.5R/7N as selected from the Munsel Color Chart. Exterior rack surfaces shall have a textured finish.
2. Communications equipment cabinets shall be painted light blue conforming to Sinclair Chromatic and Sintone Color System for Sinclair Code CM 8751(light blue).
3. Quality: Painting shall conform to the requirements specified in AREMA Signal Manual, Part 1.5.10, or equivalent. Paint types and colors shall be submitted for approval.

D. Cabinet Identification: Each equipment cabinet/enclosure shall be provided with I.D. Nameplates. Free standing cabinets/enclosures shall be provided with two nameplates, one for the front and one for the rear. Wall mounted cabinets/enclosures shall be provided with one nameplate on the front. Nameplates shall be of 1/16 inch thick lamicoïd, with beveled edges, black background and white letters. Mounting hardware shall be stainless steel.

1. Nameplate sizes:
 - a. Nameplates 1-9/16 inches high by 18 or 12 inches wide shall have lettering in block letters 1/2 inch high.
 - b. Nameplates 3/4 inch high by 12 inches wide shall have lettering in block letters 3/16 inch high.
2. Nameplate text shall consist of two lines, unless otherwise approved by the District. The first line shall denote the cabinet/enclosure number, and the second line shall denote the name of the cabinet/enclosure.
3. Train Control equipment cabinet numbers shall consist of one letter to denote line location, digits to denote station location, and one or two digits to denote the cabinet number. For example, W20-R14 denotes the following:

<u>W</u>	<u>20</u>	<u>R14</u>
West Bay	South San Francisco	Interlocking Cabinet

- a. Location Control Number: The first three characters (W20) in the preceding example shall correspond to the location control numbers assigned to station, TCR, or TCH locations as indicated on the Contract Drawings.
- b. Cabinet Number: The cabinet number (14) in the preceding example shall correspond to the cabinet numbering indicated on the Contract Drawings, and shall be preceded by an R.

4. Communications cabinet name and number shall correspond with the designations indicated on the Contract Drawings.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Cabinet Mounting: Cabinets shall be mounted in accordance with BART Seismic Criteria. Provide 4.5 inches fiberglass I beam cabinet mounting sills. The sill structure shall be closed on four sides. Each sill structure shall be leveled to a maximum deviation not exceeding 1/8 inch over its total length and width.
 1. The equipment cabinets shall be mounted rigidly such that a 100-pound horizontal force applied to either side 6 feet from the floor shall cause less than 1/8-inch deflection of any part of the equipment cabinet. Cabinets shall be mounted plumb and level using captive shims as required.
 2. In addition to the cabinet deflection, a 1/16-inch deflection shall be allowed by the mounting channels after being rigidly mounted to the floor. Equipment cabinets shall be attached together but isolated one from the other and from the floor with insulating material. The equipment cabinet mounting details shall be submitted for approval.
 3. Cabinet fronts in adjacent rows shall face each other.
- B. Cabinet Grounding: Cabinet-grounding requirements including sill insulation and isolation between cabinets shall be as shown on the Contract Drawings.

END OF SECTION 20 70 19