

## PART 1 GENERAL

### 1.01 SUMMARY OF WORK

- A. The extent and location of "Communications Systems Equipment Rooms" work is shown in the Contract Documents. Section includes, but is not limited to, requirements for Communications Systems Equipment Rooms (ER/TC rooms) at the Seattle-Tacoma International Airport.
- B. Work described in this section includes providing and installing:
  - 1. Termination Wallboards
  - 2. Termination panels for fiber optic cable and copper cables.
  - 3. Cable runways.
  - 4. Low-voltage grounding systems.
  - 5. Equipment racks.
- C. All rack assemblies shall be Seismic Zone D compliant (assume fully loaded with intended equipment).

### 1.02 COMMUNICATION ROOMS

- A. Communication rooms to be dedicated to designated equipment and services only. Space shall not be used for storage of equipment not related to designated equipment and services.
- B. Each communication room shall be equipped with fire detection, fire extinguishing system and prevention devices.
- C. Foreign piping systems such as water pipes, steam pipes, etc shall not be installed or pass through communication rooms.
- D. Communication rooms to have access control system at the door and at least one camera inside the room.
- E. Maintain communication rooms at an average of 75 +/- 3 degree F and a relative non condensing humidity of <60%
- F. Normal and emergency power source available and have enough power receptacles to support equipment and service.
- G. Provide uniform illumination of at least 50 foot-candles; do not install light fixtures over cable tray.
- H. Label all racks and equipment per section 27 05 53.13, Communication Standard for Labeling and Nomenclature.

### 1.03 SUBMITTALS

- A. Submit materials data in accordance with of Section 01 33 00 - Submittals. Furnish manufacturers' technical literature, standard details, product specifications, and installation instructions for all products.

## PART 2 PRODUCTS

### 2.01 CABLE RUNWAY

- A. General: The Contractor shall provide and install cable runways and supports in each communications room (ER/TC room) as shown on the Drawings and specified herein. Two levels of cable runway to be installed, bottom runway at 8 feet high from the floor and the upper runway at 9 feet high, Use upper runway for backbone cable run and the lower runway for horizontal cable run.
- B. Cable Runways: Cable runways shall have the following characteristics, at a minimum:
  - 1. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
    - a. Chatsworth (CPI)
    - b. Commscope
    - c. B-Line
    - d. Or Approved Equal.
  - 2. Type: 1½" tubular stringer trough with removable post
  - 3. Stringers: 3/8" x 1½" ASTM A513 steel tube
  - 4. Rungs: ½" x 1" ASTM A513 steel, welded rungs, welded on interior face of stringers at 9" spacing
  - 5. Finish: Black powder coat over zinc plating
  - 6. Listing compliance: UL labeled or Washington State Labor and Industry recognized.
  - 7. Retaining posts: Removable cable retaining posts, 7 inch height above stringer, and 14 posts supplied per runway section.
  - 8. Dimensions: 18" wide by 119½" long sections
  - 9. UL cross sectional area: 0.40 in<sup>2</sup>
  - 10. Design factors (2 rails):
    - a. Area = 0.210 in<sup>2</sup>
    - b. Sx = 0.066 in<sup>3</sup>
    - c. Ix = 0.050 in<sup>4</sup>
  - 11. Load ratings: [4 ft span @ 149 lbs/ft], [5 ft span @ 95 lbs/ft], [6 ft span @ 66 lbs/ft], [7 ft span @ 49 lbs/ft], [8 ft span @ 37 lbs/ft].
- C. Fittings:
  - 1. General: Provide fittings necessary for a complete installation, including but not limited to, stringer splices, horizontal tees, support brackets, and standoffs. Materials shall be UL listed or listed approved equal.
  - 2. Stringer splices: Heavy duty stringer splice kit, CPI, Commscope, B-Line, or Equal, ASTM A1011 structural steel, black over zinc dichromate finish, UL classified, for 1½" single stringers. Kit shall

include two clamps and ¼"-20 hardware, 4 bolts/nuts/lock washers per splice.

3. Horizontal tee splice: 90 degree horizontal tee splice kit, CPI, Commscope, B-Line, or Equal, ASTM A1011 structural steel, black over zinc dichromate finish, UL classified, for 1½" stringers. Kit shall include two clamps and 3/8"-16 hardware, 1 bolt/nut/lock washer per clamp.
4. Support bracket: Runway support bracket kit, CPI, Commscope, B-Line or equal [for 5/8" all threaded rod (ATR)] or SB-2116-D or equal (for ½" ATR) as required, ASTM A1011 structural steel, black over zinc dichromate finish, for 1½" stringers or equal. Kit shall include two hanger supports and hardware.
5. Standoff supports: CPI, Commscope, B-Line, or Equal, provides 12" spacing between decks, for parallel or perpendicular runways, kit includes two angle supports, four clamps, and 3/8"-16 hardware, ASTM A36 structural steel, black over zinc dichromate finish.

## 2.02 UTP COPPER CABLING

- A. Provide and install termination blocks, cabling, patch panels and accessories as shown on the drawings, and as specified in Section 27 13 00 - Backbone Cabling Requirements.

## 2.03 FIBER OPTIC CABLING

- A. Provide and install patch panels and accessories as shown on the drawings and as specified in Section 27 13 00 - Backbone Cabling Requirements. Install fiber optic cabling, to be provided by the Port.

## 2.04 GROUNDING SYSTEM AND CONDUCTORS

- A. Bonding and grounding shall meet the requirements specified in Section 27 05 26 – Grounding and per ANSI/TIA 606-A, 607 & 607B.

## 2.05 EQUIPMENT RACKS AND ACCESSORIES

- A. General: Provide and install 19 inch wide EIA standard equipment racks as shown in the drawings and specified herein. Racks shall be bolted to the floor and seismically braced. Label all racks with an engraved phenolic label attached to the top rail with screws.
- B. Provide galvanized steel plate between floor and rack such that there is no direct contact between aluminum and concrete.
- C. Equipment racks:
  1. Manufacturer: Subject to compliance with requirements, provide products by one of the following:
    - a. Commscope
    - b. Chatsworth universal rack
    - c. Mid-Atlantic (FTBS racks only)
    - d. Or Approved Equal.

2. Construction: 6061-T6 high strength aluminum extrusion, two top angles, self-support base, and heavy-duty assembly hardware.
3. Mounting holes: Roll-formed for stronger threads, universal 5/8" – 5/8" – 1/2" alternating hole pattern, holes back and front of side rail flanges, 12-24 threads, fifty 12-24 mounting screws with combination Phillips/slotted heads and pilot points included with each rack.
4. Channels: EIA channel, 3" x 1.265" x 1/4" thick flange.
5. Base angles: 3 1/2" x 6" x 3/8" thick, one pair per rack.
6. Top angles: 1 1/2" x 1 1/2" x 1/4" thick, one pair per rack.
7. Hardware: Assembly hardware included.
8. Listing: Washington State Labor and Industry recognized.
9. General dimensions: Seven feet high, 19" rack spacing unless otherwise shown on drawings.
10. Static Load ratings (min.)
  - a. 2-post rack; 1500 lbs
  - b. 4-post rack; 2000 lbs
  - c. Cabinet; 2500 lbs
  - d. Wall mount cabinet; 300 lbs
11. Design Team shall confirm with the Port the intended load onto a rack

#### 2.06 TERMINATION WALLBOARDS:

- A. Communication (ER/TC) rooms shall be furnished with communication distribution backboards and accessories on all wall surfaces. These products shall be installed in compliance with local, state and federal codes and industry standards. Coordinate power outlet locations prior to placement of plywood backboards and cable tray so that no surface mounted conduits.
- B. Furnish and install 8-foot x 4-foot x 3/4-inch AC Marine Grade plywood backboards as indicated. Paint each backboard with two coats of light-gray or white, non-conductive fire retardant paint, leave the fire rating stamp exposed. Backboards shall be free of surface defects such as knots and cracks. Unless detail drawings illustrate differently, each backboard shall be installed and oriented with the 8-foot dimension vertical. Each backboard shall be sufficiently anchored to the wall to support the expected load and seismic Zone 4 requirements. Backboard to be installed leaving 2 inches at the bottom and to a minimum 12 feet high or to the room height.
- C. Cabling restraints and routes: Each cable termination location shall be provisioned with industry standard, cable restraint hardware. Provide sufficient quantities to ensure cables routed on plywood backboards are restrained at intervals not exceeding 1 foot. All cables shall be routed

parallel and perpendicular to communication room floors. Two types of restraints are required for plywood backboards:

1. 6-inch D-Ring-type cable restraints shall be utilized for backbone and horizontal cabling on the wallboards.
2. Nylon saddles shall be used to secure the 25 pair cables to the backboards.

### PART 3 EXECUTION

#### 3.01 INSTALLATION

- A. The Contractor shall install system components and appurtenances in accordance with the manufacturer's installation instructions and as shown on plans and details.
- B. Each device shall be mounted such that its horizontal dimension is level and in no case out of level by .03" over 3 feet in any direction. In cases where more than one device is mounted, they shall be aligned vertically. Wiring blocks shall be terminated in accordance with the manufacturer's instructions and recommendations. Installation of accessories shall be conducted in accordance with the manufacturer's instructions and recommendations.
- C. Fiber and Copper Cables: Where fiber optic or UTP cable enters an equipment room it shall be neatly bundled and fastened. All cable runs shall be horizontal or vertical.
- D. Contractor shall provide structural support and seismic bracing for cable runways as specified in Section 27 05 28 - Communication Pathways.
- E. Contractor shall provide structural support and anchorage for racks and panels as shown on the plans and details.

End of Section

#### Revision History:

01/23/2017 Incorporated Wallboard installation details

01/01/2022 Added static load ratings for racks