

## University of Houston Master Specification

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### SECTION 27 1100 – NETWORK FACILITY FITTINGS

Maintain Section format, including the UH Master spec designation and version date in bold in the center columns in the header and footer. Complete the header and footer with Project Information.

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Designer is required to adhere to the University’s “Network Infrastructure Design Standards” and “Electronic Access Control Design Guide” available in Owner’s Design Guidelines on the University’s Facilities Planning and Construction web site.

This Section uses the term "Architect" or “Engineer.” Change this term to match that used to identify the design professional as defined in the General and Supplementary Conditions.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

Delete hidden text after this Section has been edited for the Project.

#### PART 1 - GENERAL

##### 1.1 RELATED DOCUMENTS

- A. Drawings and General Provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification sections, apply to work of this Section.
- B. The Contractor's attention is specifically directed, but not limited, to the following documents for additional requirements:
  - 1. The current version of the *Uniform General Conditions for Construction Contracts*, State of Texas available on the web site of the Texas Facilities Commission.
  - 2. The University of Houston’s Supplemental General Conditions and Special Conditions for Construction.

##### 1.2 SUMMARY

- A. Section Includes:

Revise subparagraph(s) below to suit Project.

- 1. Fittings for Network Facilities (NFs)
- 2. Installation and layout details

- B. This Section covers parts, manufacturers and installation practices for equipment in NFs.

Revise subparagraph(s) below to suit Project.

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### 1.3 SUBMITTAL ADMINISTRATIVE REQUIREMENTS

- A. Follow the Submittal Administrative Requirements as stated in Section 01 3300 "Submittal Procedures." Use electronic format only.

### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of product.
  - 1. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for equipment racks and cabinets.
  - 2. Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.
- B. Shop Drawings: For communications equipment room fittings. Include plans, elevations, sections, details, and attachments to other work.
- C. Grounding Plan and Details: Indicate location of grounding bus bar and its mounting detail showing standoff insulators and wall mounting brackets.

### 1.5 INFORMATIONAL SUBMITTALS – Not Used

## PART 2 - PRODUCTS

### 2.1 PARTS AND MANUFACTURERS

- A. Refer to Section 01 2500 "Substitution Procedures" for variations from approved manufacturers or parts. Obtain written approval for substitutions from both the Owner's Project Manager and the UIT Project Manager.
- B. Equipment Racks - Heavy duty aluminum 7 foot floor mounted racks with cable management channels on both sides and mounting rails for 19 inch equipment are required.
  - 1. Chatsworth Products Inc.
    - a. Relay Rack: 55053-703
    - b. Telecommunications Grounding Busbar (TGB) - #40156-012 ground busbar with #10622-000 busbar insulators or equivalent
  - 2. CommScope
    - a. 760082479 (RK3-45A)
  - 3. Panduit
    - a. R2P black
- C. Fiber Optic Enclosures

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1. Corning
  - a. 1U: CCH-01U
  - b. 2U: CCH-02U (use in IDFs)
  - c. 3U: CCH-03U
  - d. 4U: CCH-04U (use in BDFs)
2. CommScope
  - a. 1U: SD-1U
  - b. 2U: SD-2U (use in IDFs)
  - c. 3U: SD-4U (holds 6 panels; use in BDFs)
  - d. 4U: SD-4U

### D. Vertical Cable Management

1. Panduit Products
  - a. 6 in. Wide 7FT Double Sided Black W/Doors: PR2VD06
  - b. 8 in. Wide 7FT Double Sided Black W/ Doors: PR2VD08
  - c. 10 in. Wide 7FT Double Sided Black W/ Doors: PR2VD10
  - d. 12 in. Wide 7FT Double Sided Black W/ Doors: PR2VD12
2. CommScope
  - a. 6 in. Wide 7FT Double Sided Black W/ Doors: VCM-DS-84-6B 760072785
  - b. 8 in. Wide 7FT Double Sided Black W/ Doors: VCM-DS-84-8B 760089359
  - c. 10 in. Wide 7FT Double Sided Black W/ Doors: VCM-DS-84-10B 760089367
  - d. 12 in. Wide 7FT Double Sided Black W/ Doors: VCM-DS-84-12B 760089375

### E. Horizontal Cable Management

1. Panduit Products
  - a. 1U: NCMHF1
  - b. 2U: NCMHF2
2. Uniprise
  - a. 1U: 1375162-1
  - b. 2U: 1375162-2

### F. Basket Cable Tray

1. Cablofil
  - a. 12 inch x 2 inch - CF54 / 300 EZ
  - b. 12 inch X 4 inch - CF105 / 300 EZ
  - c. 18 inch x 4 inch – CF105/ 450 EZ
  - d. Cable drop out – CABLEEXIT100BL

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### G. Ladder Tray (Vertical Support Only)

1. Chatsworth
  - a. 12 inch – 10250-712
  - b. 18 inch – 10250-718
  - c. 24 inch – 10250-724
  - d. Vertical Wall Brackets – 10608-701
  - e. Protective End Caps – 10642-001

### H. Paint

1. Flame Control Coatings, LLC
  - a. NO. 20-20A - Fire Hazard Classification, ASTM E-84 (NFPA 255) Class “A”

### I. Uninterruptible Power Supply (UPS)

1. Tripp Lite
  - a. SMART1500LCD
  - b. SMART5000XFMRXL

### J. Power Distribution Unit

1. Tripp Lite
  - a. PDU1215
  - b. PDU1220

### K. Rack-mount Monitor Shelf

1. Tripp Lite
  - a. B020-U08-19-IP – NetDirector 8-Port 1U Rack-Mount Console KVM Switch with 19-inch LCD and IP Remote Access

### L. Firestopping Materials

Designer: coordinate with UIT Project Manager to include specific EZ-Path model(s) required for the Project.

1. Basis of Design Product: Specified Technologies EZ-Path firestop pathways.
2. Comply with requirements of Section 07 8413 “Penetration Firestopping.”

## 2.2 RELAY RACKS

- A. Use equipment racks that are capable of accepting 19 inch equipment, self-supporting and manufactured from high-strength aluminum with two top brackets included for additional strength.

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- B. Use racks with black finish color. Drill and tap mounting holes each side at 5/8 inch - 5/8 inch - 1/2 inch patterns compatible with EIA 1-1/4 inch- 5/8 inch alternating patterns.
- C. Include base flanges with mounting holes drilled through for securing the rack to the floor. Make each mounting hole at least 5/8 inch in diameter.
- D. Where the rack is to be mounted to VCT flooring or bare concrete, use an insulating pad, and take care that anchors used to secure the rack to the floor do not come in contact with any reinforcing steel embedded in the concrete slab.
- E. In the NFs, reserve space at the top of each rack for fiber enclosures: for BDFs, a minimum of eight Units (8U), and for IDFs, a minimum of six Units (6U).

### 2.3 CABLE MANAGEMENT

- A. Vertical cable management is to be double-sided and narrow or wide depending upon application requirements. Use manager sections with a black finish. Include lockable latching sections and protective edge guards.
- B. Use horizontal cable management capable of attachment to a 19 inch rack, maximum 6 inch deep and maximum 2.8 inch high. Use managers with a black finish.

### 2.4 CABLE RUNWAY

- A. Cable runway (basket tray) is required within the NF to provide a suitable pathway to route all cabling into and out of termination equipment, mounted in equipment racks or on backboards attached to walls, and pathway spaces beyond the NF.
- B. Ladder Trays: Provide UL classified ladder tray and components for vertical support of cabling from floor to basket tray and from basket tray to riser sleeves.

## PART 3 - EXECUTION

### 3.1 GENERAL

- A. NF
  1. Do not install IT network equipment in the NFs until they are completely built, cleaned and secured with Owner's approved lock.
  2. Interior walls: Cover interior walls floor to ceiling with fire-rated 3/4 inch plywood painted with two coats of a neutral color fire retardant paint. Leave the fire rated stamp visible. Have the Fire Marshall's Office inspect and approve the plywood before painting.
  3. Cabling within Racks and Enclosures: Provide adequate length of cabling. Train conductors to termination terminal points that follow manufacturer's installation procedures for maintaining cable performance specifications. Provide lacing/mounting bars to restrain

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cables, to prevent straining connections, and to stop bending cables to smaller radii than minimums recommended by manufacturer.

4. Equipment Racks: Provide 19-inch wide x 7-foot tall, floor-mounted equipment racks, installed per Drawings, with number of vertical rack sections as required to allow space for termination of all fiber and data/voice cabling plus mounting space for multi-port concentrators (Hub/Switches) required to cross-connect all data jacks.
5. Locate/space racks and enclosures according to EIA/TIA guidelines for front and around access.
6. Vertical wire management: Double-sided vertical rack cabling sections. Refer to Drawings.
7. Entrance: Arrange and coordinate locations of distribution frames, patch panels, cross-connections in NFs and racks to optimize space requirements of any service provider requirements, telephone system and LAN equipment.
8. Provide cable runway in equipment room above all racks and up to runway/conduits/sleeves entering room from corridors to form a complete runway system connecting all hardware installations. Attach grounding lugs to each rack/cable raceway, conduit, etc. Refer to Drawings for details.
9. Install trays overhead along the equipment rows, leading to the cross-connects. Coordinate tray locations with lighting, air-handling systems, and fire extinguishing systems so that fully loaded trays do not obstruct or impede their operation. Refer to NEC Article 392 for requirements for cable trays.
10. Provide horizontal cable runways. Equip each 19-inch rack with overhead basket style cable runway installed between the wall and horizontal/equipment racks. Refer to Drawings for proposed locations and sizing of each runway. Securely attach to wall studs with support brackets (and racks if applicable), in accordance with manufacturer's written instructions.
11. Install a grounding bar that measures 20 inches long (TMGB) or 12 inches long by 2 inches wide by 1/4 inch holes that accepts 2-hole lug connectors. Connect the bar to the main building ground using #2 or greater copper wire.
12. Provide ground lug for each 19-inch rack. Racks shall be grounded to wall mounted ground bus bar using #6 AWG stranded, green jacketed, insulated copper conductor. Furnish all required bonding material and hardware, and bond to building grounding electrode subsystem TMGB in ER. If crimp connectors are used to bond the #6 AWG wire, follow NEC bonding procedures/specifications.
13. Use an inert dielectric material to separate dissimilar metals apt to corrode through electrolysis under the environmental operating conditions specified.

### 3.2 CLOSE OUT DOCUMENTS

- A. Red Line Drawings: Contractor shall keep one full-size set of Drawings at the project site during working hours with installation progress marked and backbone cable labels noted. Red Line Drawings are required to be available for examination during construction meetings and field inspections.
- B. Provide files in .dwg, .rvt formats and .pdf formats showing floor plans with room numbers and actual outlet locations and labeling. Submit files within 5 business days of final cable testing.

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