

**TECHNICAL REQUIREMENTS FOR  
RAISED FLOOR SYSTEMS-NETWORK EQUIPMENT APPLICATION**

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**1. GENERAL**

**A. Scope**

1.01 This document provides requirements for the design and installation of a raised floor system or access floor system for the support of telecommunications equipment in a central office environment.

**B. Application**

1.02 The floor system shall be provided in the equipment environment where network equipment is installed elevated above the building floor. The equipment will be installed on a raised floor system with telecommunications, power and alarm cabling routed under the floor system. Interconnecting cable shall enter equipment frames from the base area rather than from overhead facilities as in traditional central office arrangement. ***The area under the floor is never to be used as an air plenum for providing cooling air to network equipment.***

1.03 Network equipment to be placed in this environment shall be compliant with Telcordia (formerly Bellcore) NEBS requirements, documents GR-63 and 1089 and SBC document TP76200MP, Network Equipment Power, Grounding, Environmental, and Physical Design Requirements.

## **Issue A, SECTION BSP 800-000-103MP**

1.04 Network equipment installed to requirements herein will meet earthquake bracing requirements for equipment installed on an elevated floor system if equipment has previously qualified for freestanding installation on building floor. For Pacific Bell/Nevada Bell, all equipment locations are designated "High Seismic Risk" sites. In some portions of Southwestern Bell, equipment locations in the New Madrid fault area are designated "High Seismic Risk" sites.

## **2. SITE REQUIREMENTS**

### **A. Floor Preparation**

2.01 Building floor must be smooth, level and free of floor protrusions. Floor coverings, such as tiles, linoleum sheeting shall be removed completely when torn, broken or unfit for use. Caution must be taken when removing asbestos floor coverings and adhesives. Use only telephone company approved methods and disposal procedures. All remaining floor covering adhesive shall be stripped to bare concrete.

2.02 Where abandoned anchors obstruct floor system pedestals or anchors, they shall be removed or leveled flush with floor surface. Anchor removal must be accomplished with methods that will not harm concrete integrity, methods such as core drilling may be used. Direct extraction of anchors is permitted only if anchors are embedded less than 2" and are low strength anchors, ie. lead alloy expansion, sleeve or wedge type anchors. Following anchor removal, holes shall be filled with epoxy mortar filler and finished flush to floor surface. For anchors 1/2" diameter or smaller the anchor may be ground flush and left in place if doing so does not interfere with new anchor installation.

2.03 Concrete floors with cracks greater than 1/32" wide shall be filled and leveled with an approved epoxy mortar or crack injection product, such as Hilti RM700EP, Epoxy Repair Mortar.

2.04 Seal bare concrete floor surface with plastic base sealant to prevent moisture seepage from floor cracks, joints and drilled holes. Sealant may be sprayed or roller applied. Sealant shall be transparent in color.

### **B. Building Services**

2.05 Identify and relocate electrical power outlets, telephone jacks, electrical switches, pipe valves, etc. to area above floor system level. Service devices are not to be hidden under floor system. Relocate electrical switches or outlets to location above new floor height level.

2.06 Windows, doors or other openings to room shall be moved or resized to new floor height prior to installation of floor system.

2.07 Ventilation ducts, grilles and returns located in existing walls are to be relocated to new floor height. Return air or air discharge shall not circulate to or from area under floor system. Building HVAC ductwork shall not be routed under floor area.

### **C. Wall Installation**

2.08 Prior to floor system installation, all permanent partitioning walls are to be installed and fastened to building floor and ceiling. Partitioning walls shall not be installed with wall materials supported on top of elevated floor system nor secured to floor system.

### 3. FLOOR SYSTEM

#### A. Access Floor

- 3.01 Conventional data access floor system shall be provided for all aisle spaces and open floor areas. Floor areas designated for future equipment lineups shall be provided with conventional access floor system unless otherwise instructed by telephone company engineer.
- 3.02 The conventional access floor system shall be a stringered recessed tile data type floor. Finished floor height shall be 24 inches measured from building floor to top finish surface of floor tile. Floor is to be level within +/- 1/16 inch across 30 feet over the entire floor area. All tile edges are to be within 1/32 inch between tiles. Tiles shall not rock, squeak or make noise when normal size person walks across floor.
- 3.03 Pedestals shall be minimum 1-1/2" diameter tube welded to a steel base. The base shall be minimum 3/16 inch thick, 6 inch by 6 inch dimension. The tube shall be welded to base with a minimum 3/16 inch continuous weld bead all around. Base shall have four 7/16" diameter anchor holes at corners. Pedestal base shall be secured to building floor with two (2) Hilti 3/8" Kwik Bolt II floor anchors embedded 2-1/2 inch into concrete. Install anchors at diagonally opposed corners and with anchors at every other pedestal rotated 90 degrees from adjacent pedestal. Torque anchor nuts to 20-25 ft. lbs. and cover remaining protruding threads with plastic cap. Floor adhesive shall not be used in place of embedded anchors. Minimum lateral strength of individual pedestal shall be 250 pounds at no more than 3" inch deflection.
- 3.04 Leveling head to be provided for pedestal with at least 10 inch threaded stud length. Adjustment nut will be provided to adjust for floor height. Stud diameter to fit into pedestal tube with diameter difference no greater than 3/16". Head shall be formed steel and full bead weld to stud. No resistance or spot welds permitted in joining head piece to stud. Cast aluminum heads are not permitted. Top stringer attachment holes to be tapped for stringer attaching screws. No sharp edges or corners shall be exposed from pedestal head when floor panel is removed.
- 3.05 Stringers shall be bolted to pedestal heads. Stringer height shall be 1-1/4". Stringer shall be rectangular steel tubing. All stringers shall be provided in 24" lengths between pedestals.
- 3.06 At floor perimeter, stringers running up to building walls may be longer than 24" with minimal cantilevered length over last field pedestal. Cantilevered section of stringers must support full floor load requirements.
- 3.07 Floor tiles shall be solid wood core formed steel panels with overall top surface of 24" by 24" dimension. Paint all steel panels with corrosion resistant paint. Top surface to be covered with 1/16" thick high pressure laminate of white with gray swirl pattern. All edges to be trimmed and finished by router cutting. Pressed on edging is not to be used in place of routed edges. Tiles to seat between stringers and flush to adjacent tiles.
- 3.08 Tile shall be rated for 1500 psi concentrated load and ultimate 3000 pound load applied anywhere without failure. Maximum deflection at these loads shall not exceed 1/300th of span across panel under these loads. Panel must recover to original shape when load is removed.
- 3.09 Class A fire rating is required for floor tile and floor system. The panels must be non flammable and capable of preventing flame spread between underfloor area and area above floor.

## **Issue A, SECTION BSP 800-000-103MP**

3.10 Ramps and steps are to be provided for transitioning to elevated floor areas if necessary.

Ramps are to be designed and installed to building code requirements and in conformance to American with Disabilities Act requirements. Hand rails are to be provided for ramp and step areas. Railings are to be installed where there is a drop in floor height. Railings shall be installed in conformance with building code requirements.

3.11 Perimeter of raised floor areas not covered by building walls, ramps, or steps shall be closed by skirt panels. Panels shall cover opening fully with finished edges free of sharp surfaces. Panels to be removable for access to area under floor. Panels shall be constructed of nonflammable materials.

### **B. Equipment Floors**

3.12 Network equipment shall be installed on telephone company approved modular floor system.

The modular floor system shall be fabricated and installed as shown on drawings provided with this document. No substitute floor designs shall be provided or equipment service integrity cannot be assured.

3.13 Location of network equipment shall be designated on network equipment layout drawings available from telephone company Equipment Engineers and Detail Engineering. Floor design must be coordinated with location of network equipment so modular floor areas can be provided to support the equipment.

3.14 The equipment floor system shall be fully modular and compatible with conventional access floor systems. The equipment floor system and open space access floor system shall be installed concurrently for common alignment and leveling of both floor systems. Floor installation contractors shall coordinate floor installation schedule with installation contractors of network equipment.

3.15 Pedestals shall be 3-1/2" by 3-1/2" square steel tubing with 1/4" walls welded to steel plate base. Base dimensions 8" by 8" by 3/8" thick steel. Weld tube to base with minimum 1/4" continuous bead all around. Base to have four (4) 3/4 inch diameter anchor holes drilled 1" offset from base centerlines. Corners of base rounded to 1" radius and all sharp edges eliminated. Base must be flat within 1/32" across full surface and tube vertical within 3/16" measured at top. Top of tube shall be covered with 3-1/2" by 3-1/2" by 1/4" steel plate with drilled and tapped holes in pattern for stringer bolts. The top plate to be spot welded to tube at centerlines of tube. Spot weld shall not protrude into tube facings. Each face of tubing to have seven (7) drilled and tapped 1/2" diameter holes.

3.16 Clean surface of all dirt, oils and slag. Prime and paint with a final finish coat of gloss white enamel.

3.17 Pedestal base to be anchored to building floor with two (2) Hilti HSLB M12/6 anchors in High Seismic Risk areas or two (2) Hilti 1/2" HDI anchors in Low Seismic areas. Install anchors in the front to back direction of equipment lineup (narrow dimension of lineup). Anchor embedment in concrete is 3-1/8" minimum depth. All anchors must be tightened to manufacturer's recommended preload values, for Hilti HSL 12mm. anchors preload equal 65 ft. lbs., for Hilti HDI 1/2" anchors 22 ft. lbs.

3.18 Level pedestal base to compensate for floor unevenness. Use steel shims under base with shim surface covering at least 1/4 base dimension. Shims must provide support out to edges of pedestal base. Stacking of shims is acceptable if shim design will not slip under equipment load or floor vibration.

3.19 All fastener hardware used for floor system shall be minimum Grade 5 material. Capscrews must have head markings showing grade. Tighten capscrews to torque values of: (1/2" 25-30 ft. lbs.) (3/8" 20-25 ft. lbs.).

- 3.20 A reinforcement plate shall be provided under floor tiles where network equipment will be placed. The 23 1/8" by 23 1/8" steel plate shall be 1/4" thick with corner cutouts and sixteen (16) 3/8" drilled and tapped holes and two (2) 1/4" holes. Sixteen (16) 3/8" studs are to be provided for insertion into tapped holes with 1 inch of exposed threads. In place of tapping holes and placing studs, welded studs may be provided on plate. Eight (8) additional holes are drilled at plate's outer edge for attaching plate to floor tile. Finish plate with gloss white enamel after cleaning and removing all sharp edges. Attach reinforcement plate to bottom of floor tile with eight (8) #12 self tapping screws.
- 3.21 Floor tiles and reinforcement plate shall be provided from floor manufacturer with precut cable access holes. Three (3) standard dimensioned cutouts are required with various network equipment to be installed on the floor system. The telephone company Equipment Engineer shall provide drawings for the cutout dimensions. This information may not be available at time floor systems are engineered.
- 3.22 Cable access holes shall be finished with trim to prevent cable cuts and insulation chafing. Trim around cutouts shall be flush or recessed with top surface of tile. Trim shall protect bottom as well as top edges of cutouts. Trim material shall be fire resistant.
- 3.23 Corner brackets to attach floor tile to pedestals shall be 1/4" thick steel wing brackets equal to Unistrut Part Number P2226. Attach one (1) bracket at each corner of the floor tile. Torque 3/8" capscrews to reinforcement plate to 20-25 ft. lbs. and 1/2" capscrews to pedestal tube to 25-30 ft. lbs..

### **C. Grounding Requirements**

- 3.24 The floor system shall be grounded in accordance to ground requirements of BSP 802-001-180MP, Grounding and Bonding Requirements. All ground leads and cables are to be secured and supported off building floor.

### **D. FireStop**

- 3.25 All openings through the floor system shall be closed to minimize smoke and flame spread between under floor and above floor areas. The openings shall be closed with minimum 14 gauge sheet metal plate and edges sealed with telephone company approved flame resistant putty. Fire rating is not required for closure, however, measures shall be provided to minimize migration of smoke and flames.
- 3.26 The floor tile reinforcement plate shall be provided with firestop slideplate fastened to floor tile reinforcement plate with two (2) 1/4 pan head screws. Plate shall be painted with white enamel after cleaning and deburring of edges.
- 3.27 Cable openings for vertical cableracks between area under floor and overhead area shall be protected in accordance with Common Systems Through Penetration Fire Stopping Requirements, BSP 800-005-200MP.

## **4. CABLE MANAGEMENT**

### **A. Cable Rack**

- 4.01 The following needs to be considered when planning and engineering cable rack layouts in the raised floor equipment environments.

## **Issue A, SECTION BSP 800-000-103MP**

(a) Cable racks must be installed within the space between pedestal bases. Accordingly, maximum cable width that may be used is 1'-3".

(b) Equipment front aisles shall be 4 feet wide minimum. This provides space for two parallel runs of cable racks between floor pedestals.

(c) Equipment rear aisles shall be 2 feet wide minimum with space for a single run of cable rack. Cable rack serving equipment lineup shall be placed in front aisle. Cable rack can be placed in rear aisle for heavily cabled equipment to relieve congestion of front aisles.

(d) Cable rack intersections shall be minimized to avoid cable crossing and need for bridging cable rack due to restricted vertical clearance.

(e) Unless otherwise indicated on equipment specific engineering drawings, the space directly under equipment frames shall be used for routing cable into equipment frames and cross aisle cable racks.

(f) Power cable racks shall be placed in main cross aisles and around the perimeter of equipment area to minimize number of intersections with general use cable racks. Accordingly, BDFB's and PDC's shall be at end aisles around perimeter of equipment area.

(g) Lineup cable racks shall be located at the front of equipment frames. Power cable racks shall be the lowest level of cable rack under the raised floors, closest to floor.

4.02 Traditional ladder type cable racks having 1-1/2 inch by 3/8 inch stringers and 1 inch by 1/2 inch straps, shall be used for equipment cabling in general.

4.03 Support for cables entering equipment frames shall be provided at the square equipment pedestals adjacent to lineup cable rack. Fasten a Unistrut P-3300T channel to the inside face of pedestal as shown on Fig. 9A & 9B. Cable shall be secured with cord or plastic ties.

4.04 At equipment frame bases cable shall be secured to a cable tie bar provided on the equipment frame.

4.05 Switchboard cable shall be run unsecured. Cable racks shall be equipped with metal pans and cable retaining brackets of rounded wire type or if flat bar type, rubber tip protectors must be provided. Cable pileup shall not exceed 12 inches for switchboard cable.

### **B. Cable Rack Support**

4.06 Cable racks on building floor shall be supported per Fig. 10A, 10B & 10C with Unistrut P-1000T channels. A length of channel shall be placed perpendicular to rack with channel ends resting on top of pedestal bases. Hilti Kwik Bolt II anchors, Hilti PN 000453639, at approximately 6 inches from each end of channel shall secure it to building floor.

4.07 At adjacent aisles where two parallel runs of cable racks are installed, a single length of Unistrut channel spanning across both aisles as shown of Fig. 11 shall be used. Anchor channel to building floor with two anchors at approximately 6 inches from ends of channel.

4.08 Channel are provided under cable rack at distance no greater than on 6 feet centers.

4.09 Shims may be required under Unistrut channel at conventional floor tile pedestal bases. Minimum 2 inch by 2 inch metal shims of appropriate thickness shall be used. Shims shall be placed before tightening floor anchors of channel.

4.10 A support shall be provided within 2 feet of a free end of cable rack.

**C. Junctions**

4.11 Each layer of cable rack shall be installed in the same horizontal plane. Cross aisle cable racks shall form junction per Fig. 12A and 12B.

4.12 Main cross aisle cable racks shall form junction per BSP 800-006-151MP, Fig. 6A. Supports shall be provided for cross aisle cable racks by attachment to lineup cable racks. Lineup cable racks shall be supported by providing Unistrut channel supports immediately in front and behind junction. Extend lineup cable rack at least to centerline of next set of pedestals, see Fig. 12A.

4.13 Vertical cable racks that transition cable from under the floor to overhead cable racks shall terminate at the building floor per BSP 800-006-151 MP, Fig. 9C. Horizontal cable rack under floor shall be placed perpendicular in front of vertical cable rack 1 inch away from vertical cable rack, Fig. 13. End of horizontal cable rack shall be supported with Unistrut channel within 6 inches from end. A #1/0 AWG bond shall be provided between horizontal cable rack and vertical cable rack.

**D. Cable Rack Bridging**

4.14 For cable rack that cross at an intersection of a special use cable rack such as power cable rack, one cable rack shall bridge over the other. The cable rack shall be elevated as shown in Fig. 14 and lower cable rack attached to crossing lower rack. The bridged section of cable rack shall be elevated above lower cable rack a maximum of 8 inches.

4.15 At bridged cable rack intersection, Unistrut channel supports shall be provided under cable rack forming the bridge.

4.16 All general use or switchboard cable rack shall bridge over power cable rack.

**E. Conduit Routing**

4.17 Conduits and electrical raceways in general shall be installed on building floor secured with one hole Jiffy type clip. Clip shall be anchored to building floor with Hilti Kwik Con II anchor, Hilti P/N 000820852. Conduit crossing cable rack shall run under cable rack.

4.18 Conduit and electrical raceway may be secured to free ends of cable rack support channels, where possible. Conduit shall be secured to channels with Unistrut conduit clip, Unistrut P-7606 to P-7614.

4.19 Junction boxes for AC power, smoke detection or alarm conductors shall be secured at building floor level. Wires and conductors to devices or outlets mounted above floor level shall be in metallic flexible conduit from junction box to device. Vertical conduit and device shall be secured to square tube pedestal with Jiffy clip and to round tube pedestal with clips clamped around pedestal tube.

4.20 AC power outlets for switching equipment lineup shall be integrated into the floor tile using standard access floor service boxes from Tate Access Floors or equal. AC power outlet shall be provided in service box. Service boxes shall be provided on each end of switch lineup, except where a

**Issue A, SECTION BSP 800-000-103MP**

continuous lineup exceeds 20 feet, an additional service box shall be provided between ends on floor tile in front of equipment frame.

4.21 For transport and miscellaneous equipment installed in unequal flange type framework, AC power outlets shall be provided at base of framework. The AC conductor shall be brought into the frame base from under floor junction box at the back outlet plate as shown in Fig. 15A and 15B.

4.22 Grounding conductors shall be secured to cable rack using conventional securing methods. Additional grounding and bonding requirements are provided on BSP 802-001-180MP Grounding and Bonding Requirements - Telecommunications Equipment.

**5. FRAMEWORK**

**A. Equipment Framework**

5.01 SBC approved Zone 4 unequal flange framework shall be applied for transport and miscellaneous equipment. Earthquake qualified framework manufactured by other vendor sources may be applied where base extension and end cover details have been developed for raised floor environment.

5.02 Hendry frameworks are available with the following details for use on raised floor:

**Table A**  
Framework Accessories for Extended Depth Framework

<i>Description</i>	<i>Hendry P/N</i>
Guard Box UF, 23" RR 25-15/16" x 6"H x 8"D	02320-1301
13" End Shield 7'-0"	02320-1304
13" End Shield 9'-0"	37565-01

5.03 All junction hardware normally used with the 12300 series framework shall be applied between adjacent frames. Fasten frameworks to floor tiles with 1/2-13 fasteners by through bolting.

5.04 Northern Telecom DMS-100 earthquake framework shall be equipped with 6 inch extension kit, NT0X25BB, and 24 inch deep end panels. Mechanical frames are not required when switch is installed on seismically qualified raised floor system when raised floor system is on ground level of building. ENET and Super Node cabinets do not require frame modification when applied to raised floor environment.

5.05 Lucent technologies 5ESS Switch frames do not require modifications for application on raised floor systems. Secure 5ESS frames to floor panel by through bolting with 1/2-13 fasteners.

5.05 Lucent provided Conventional Main Distributing Frame shall be installed per details on PBSD-ED-6804 Raised Floor Layout and Guidelines for Distributing Frames. Modular frames shall be installed to manufacturers' requirements for number and size of floor anchors, with through bolts to floor system in place of embedded concrete anchors.



**B. Spare Equipment Storage**

5.04 Spare equipment storage cabinets shall be installed in PICS Storage Room on concrete floor. Spare equipment storage cabinets placed on raised floor shall be installed on reinforced modular floor and through bolted to floor tile as described for framework in BSP 800-000-103MP. Only ESD and seismically approved cabinets with floor anchoring provisions shall be applied on the raised floor environment.

**Table B**  
Approved Storage Cabinets

<i>Vendor</i>	<i>Model</i>	<i>PID No</i>
Drake Telephone Products Represented by Silton Cases	Terminator 1115", P/N TS-I 1-15	000 408 229
	Terminator 1118", P/N TS-II-18	000 408 211
Hendry Telephone Products	Item 18117-01+64	000 408 195
	Item 18117-02+64	000 408 203
Electronic Enclosures	Item 29210-15" Deep	000 408 179
	Item 29210-18" Deep	000 408 187

**6. FLOOR ACCEPTANCE**

**A. Installation Requirements**

6.01 The floor systems shall be installed in accordance to manufacturer's requirements and telephone company requirements stated within this document. Procedures for working within a telecommunications equipment building must be in accordance with the TP76300 Installation Requirements.

6.02 Floor system manufacturer and installer shall provide drawings and installation instruction notes to telephone company for approval prior to production and installation. Floor start reference point will be designated by telephone company engineer. Use provided reference point for layout of floor.

6.03 Final acceptance of floor systems will be conducted upon completion of network equipment installation. Floor tiles or stringers that may have been moved, altered or otherwise modified shall be inspected for compliance to floor levelness, adjacent panel fit, rocking or noise. If adjustments are necessary, the floor installation contractor shall correct if determined to be initial floor installation problem or corrected by network equipment installation contractor if floor was modified. Prior to network equipment installation, floor installation contractor shall file a floor condition report and preliminary acceptance will be conducted by telephone company.

6.04 Following the installation of the floor systems, the area under the floor system shall be cleaned of all concrete dust and other debris. Concrete dust is to be removed with equipment that does not introduce concrete dust into room. Top surface of floor tiles are to be cleaned of dust, markings, scuffs and dirt. All extra installation materials are to be removed from under the floor and equipment room and disposed of. Extra pedestals, stringers, tiles and hardware are to be removed from site unless specific spare quantities have been designated for the project.

6.05 All floor systems shall be finished at walls, around columns, ramps and stairs with base coving to color specified by the telephone company Engineer. Coving material shall be installed so there are no exposed floor openings or gaps.

**B. Labels and Signs**

6.06 Underfloor equipment may require labeling or obvious identification on floor tiles to locate devices. Some of these devices include smoke detection heads, water valves, network equipment ground bar or shut off devices. The marking may be lettered sign hung overhead of device or color coded floor tile. The telephone company Engineer for the specific project will describe these requirements. The floor installation contractor shall provide the labeling as required.

**C. Spares and Floor Accessories**

6.07 A number of additional floor tiles with high pressure laminate of the same color and pattern of installed tiles shall be provided as spares. The quantity to be provided is ten (10) as a minimum for approximately every 3000 square feet. For larger floor areas the number of tiles shall be increased accordingly.

6.08 Additional numbers of conventional access floor pedestals and adjustment heads for aisle spaces shall also be provided. The quantity to be provided is four (4) for every 3000 square feet.

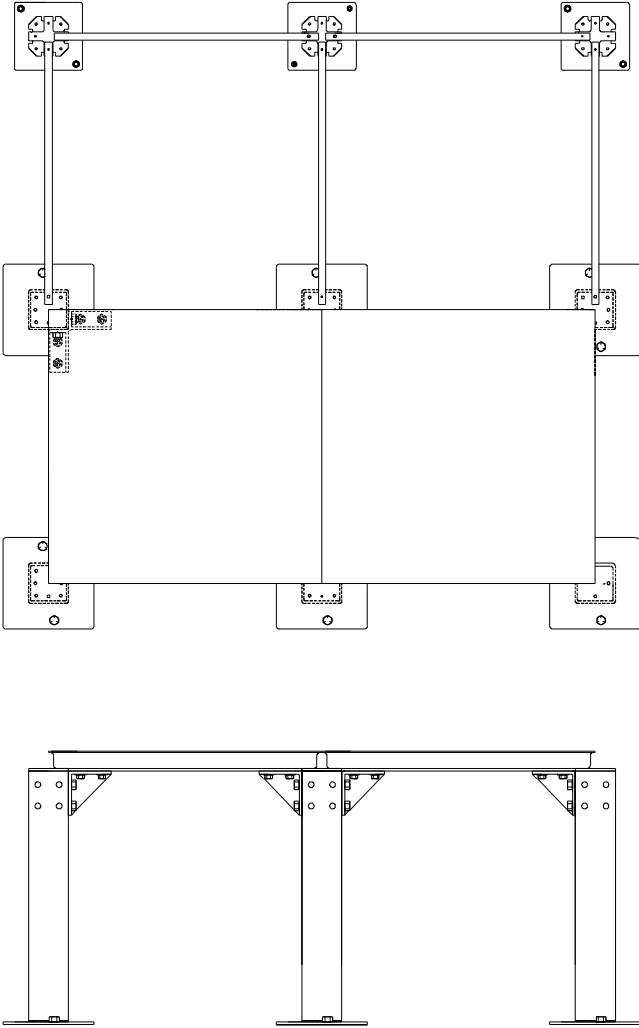
6.09 Floor tile pullers shall be provided for every site. A minimum of two (2) suction cup pullers shall be provided for every 3000 square feet. The floor tile pullers must be housed in a wall-mounted holder near each main entrance or door to room.

**7. REFERENCES**

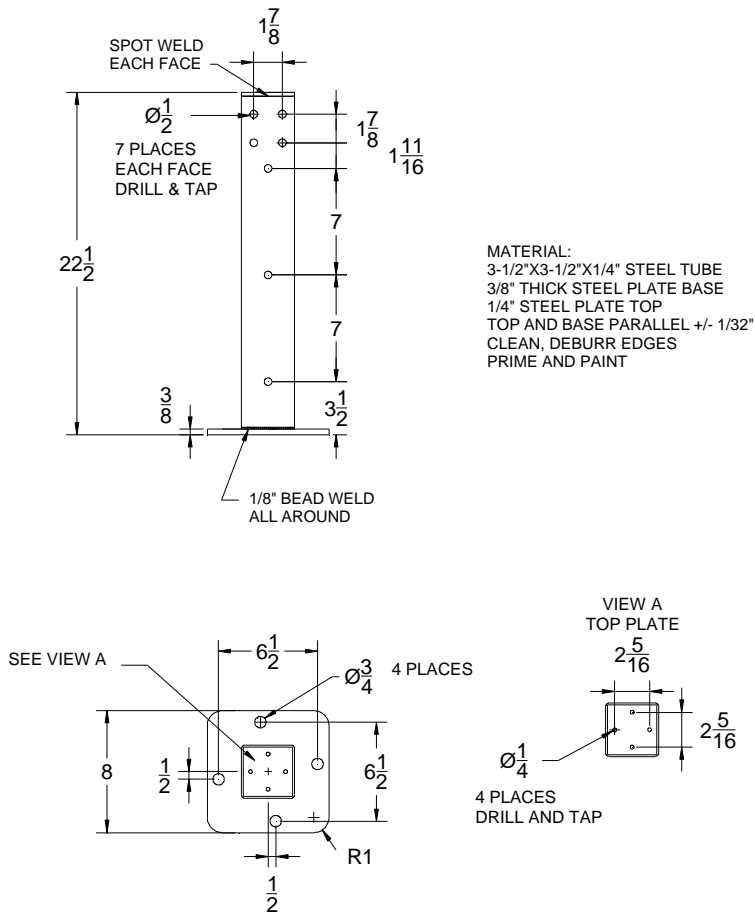
**A. Documents**

<b>TP76300MP</b>	Installation Requirements
<b>GR-63</b>	Network Equipment-Building System Generic Equipment Requirements
<b>TP76200MP</b>	Network Equipment Power, Grounding, Environmental and Physical Design Requirements
<b>BSP 802-001-180MP</b>	Grounding and Bonding Requirements
<b>BSP 800-005-200MP</b>	Common Systems-Through Penetration Firestopping Requirements

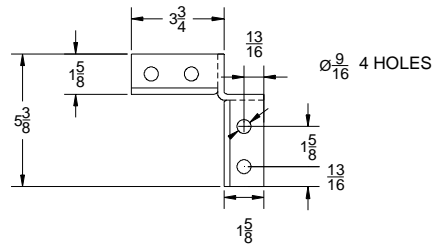
**B. Drawings**



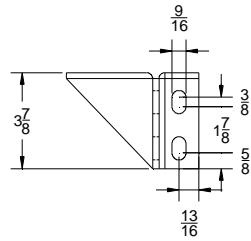
**Figure 1**  
Floor Assembly Drawing



**Figure 2**  
 Equipment Floor Pedestal



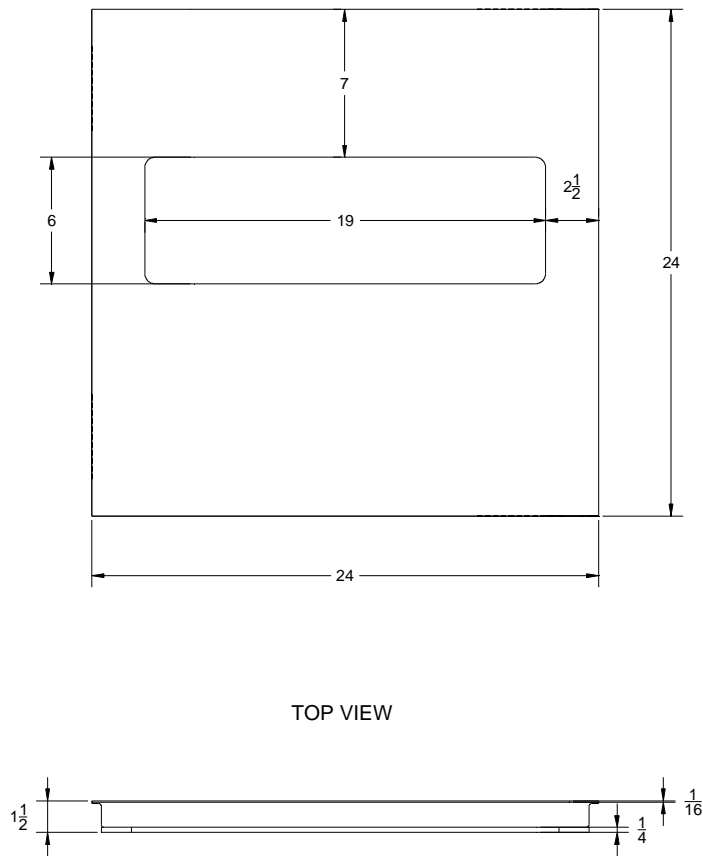
TOP VIEW



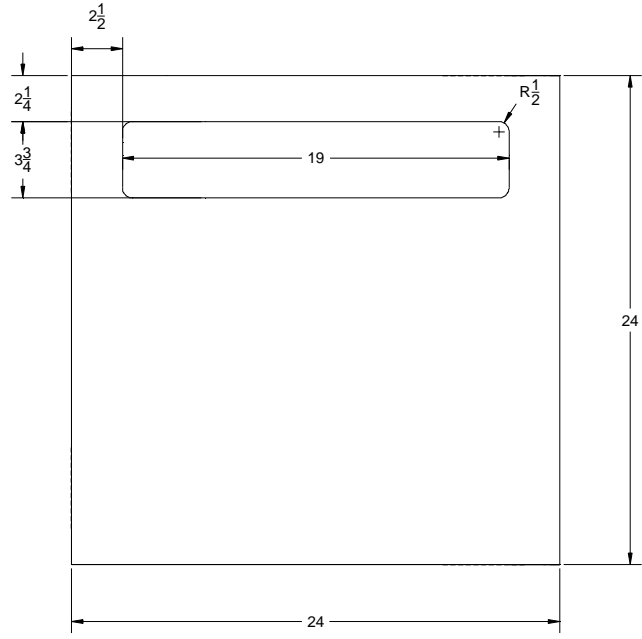
SIDE VIEW

MATERIAL 1/4" STEEL  
EQUAL TO UNISTRUT  
P/N P-2226 WING FITTING  
EXCEPT WITH SLOTTED  
HOLES IN VERTICALS

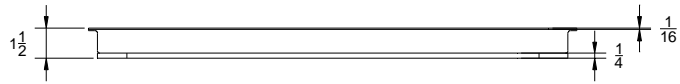
**Figure 3**  
Wing Bracket



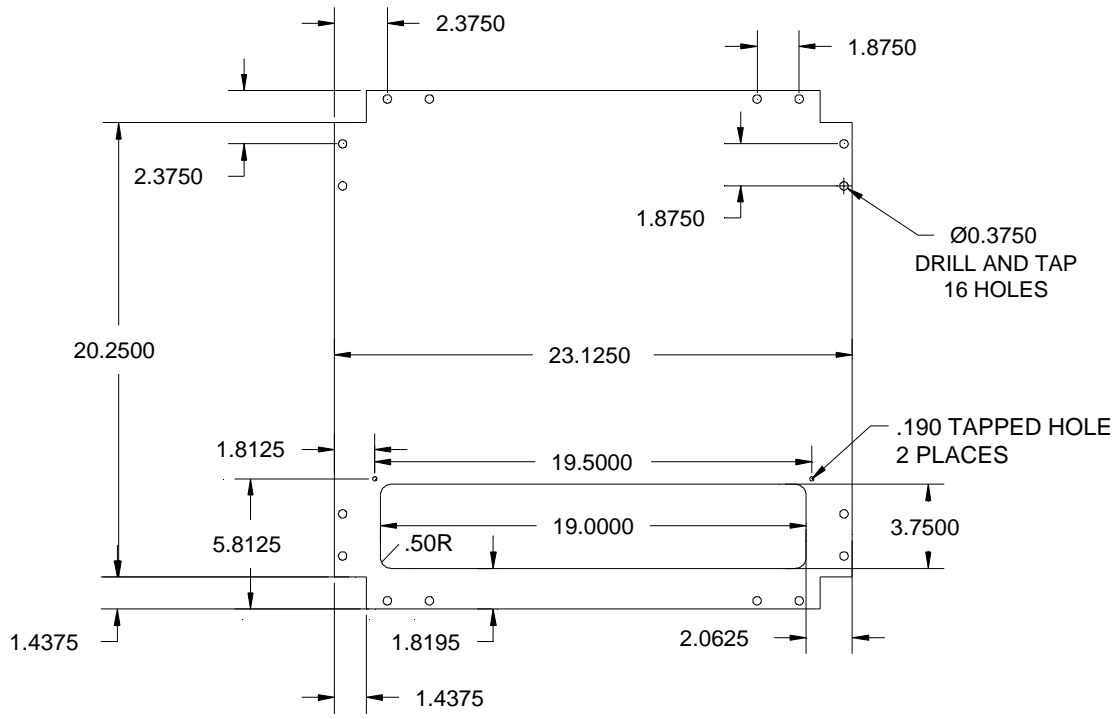
**Figure 4**  
Floor Panel – Transport and Common Systems Framework



TOP VIEW

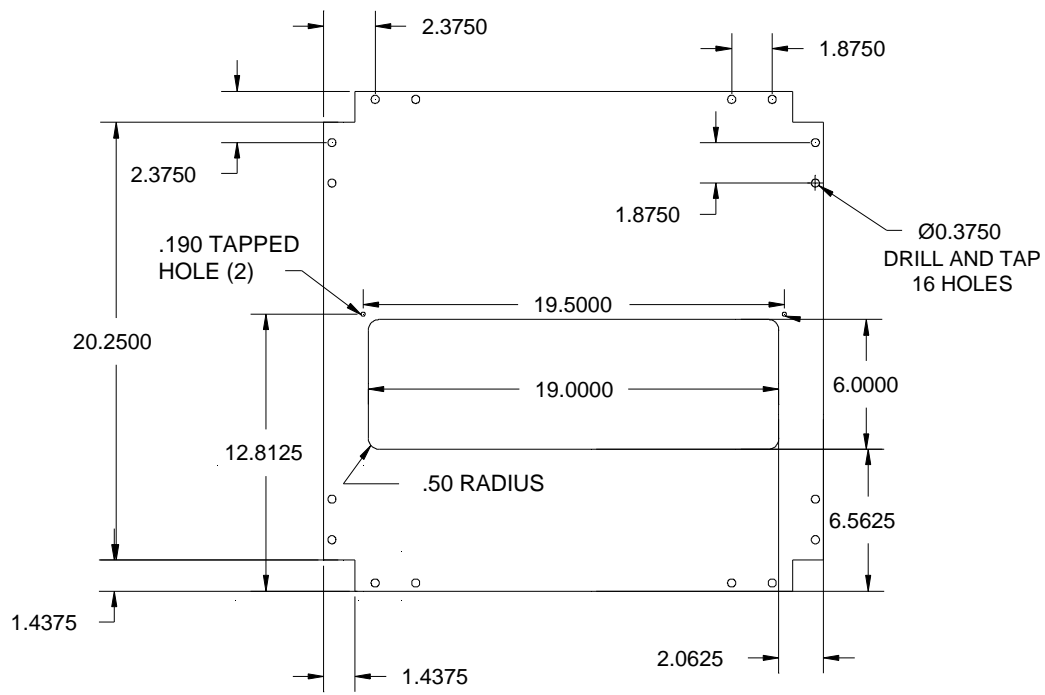


**Figure 5**  
Floor Panel – Nortel DMS Digital Switch Framework



**Figure 6A**  
Floor Panel Reinforcement Plate – DMS Application

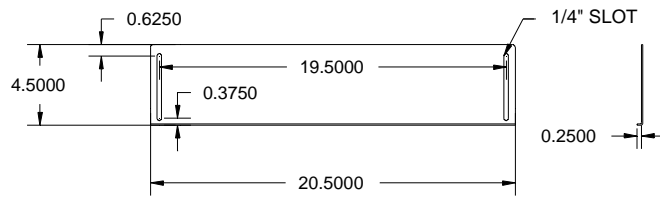




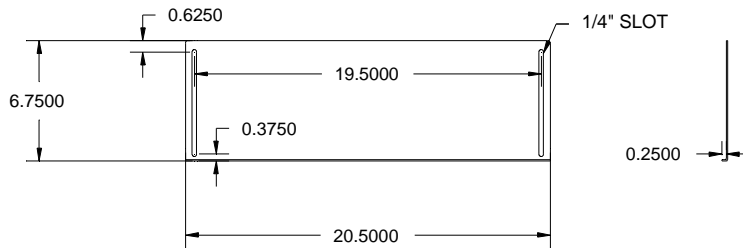
1/4" STEEL PLATE  
REMOVE SHARP EDGES  
PRIME AND PAINT

**Figure 6B**  
Floor Panel Reinforcement Plate – Transport Frame Application

MATERIAL 16 GA. SHEETMETAL  
ALL SHARP EDGES REMOVED  
PRIMED AND PAINTED



FIRESTOP FOR SWITCH FLOOR PANEL



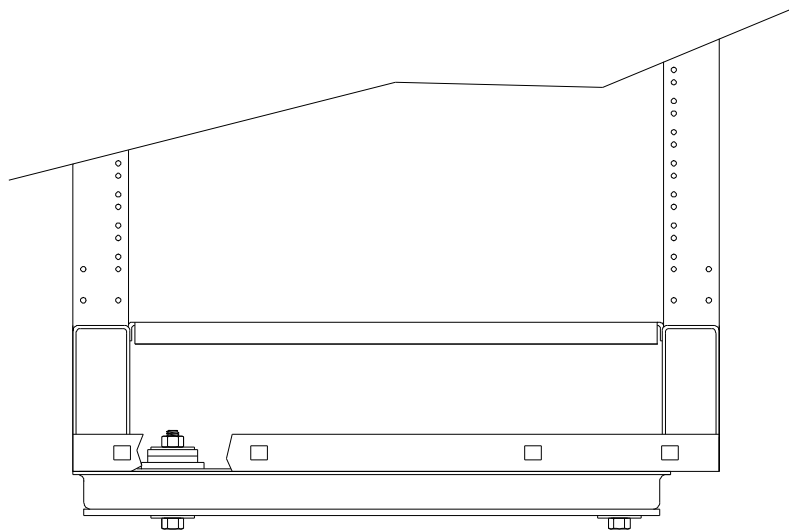
FIRESTOP FOR TRANSPORT FLOOR PANEL

**Figure 7**  
Fire/Smoke Stop Detail for Floor Panel

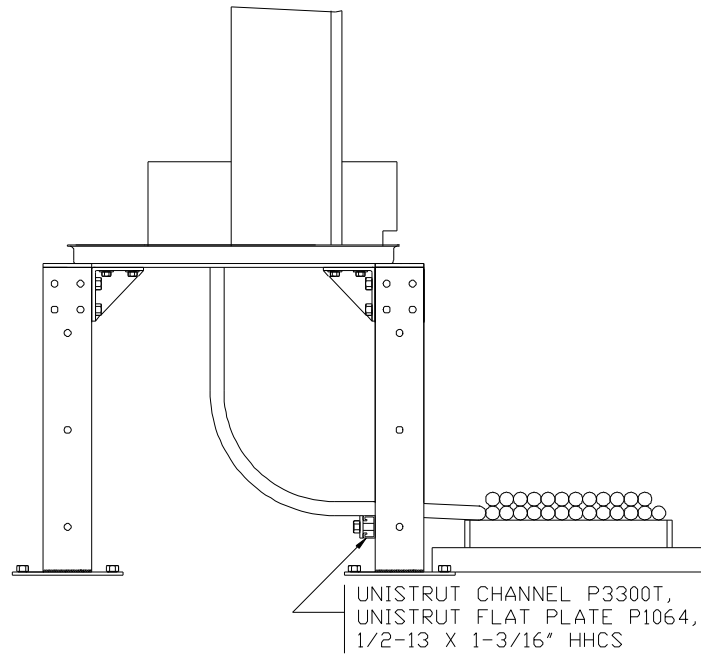
**FASTENING HARDWARE FOR  
EQUIPMENT FRAMEWORK**

1/2"-13 X 3 1/2" HHCS  
1/2" WIDE WASHERS (UNDER NUT, UNDER HEAD CAPSCREW)  
1/2"-13 HEX NUT  
FRAME MFR. SUPPLIED BASE HARDWARE  
ISOLATORS AS REQUIRED

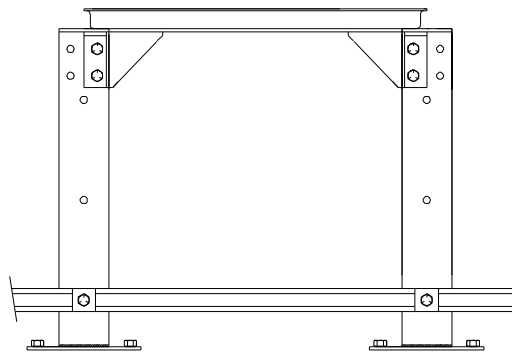
TORQUE FASTENERS 25-30 FT. LBS.



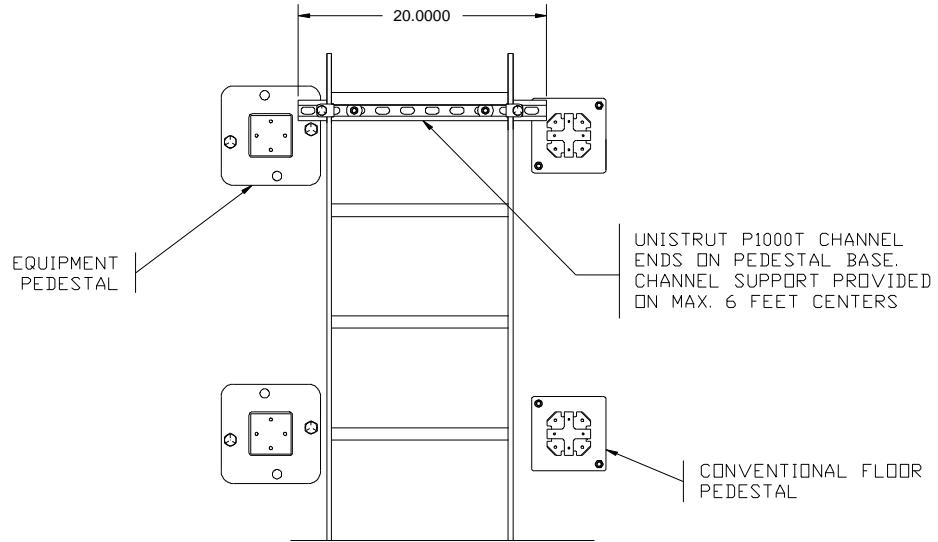
**Figure 8**  
Equipment Base Anchoring Detail



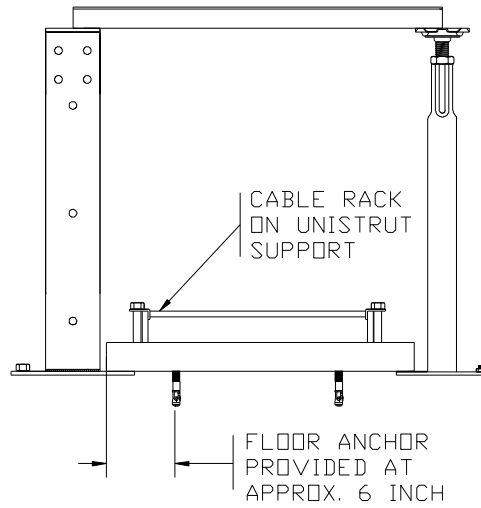
**Figure 9A**  
Cable Support Channel  
Pedestal Mounted



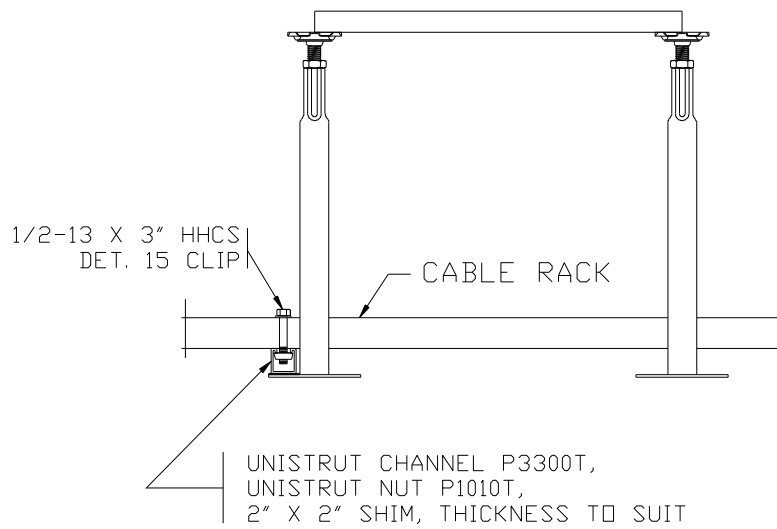
**Figure 9B**  
Cable Support Channel  
Pedestal Mounted



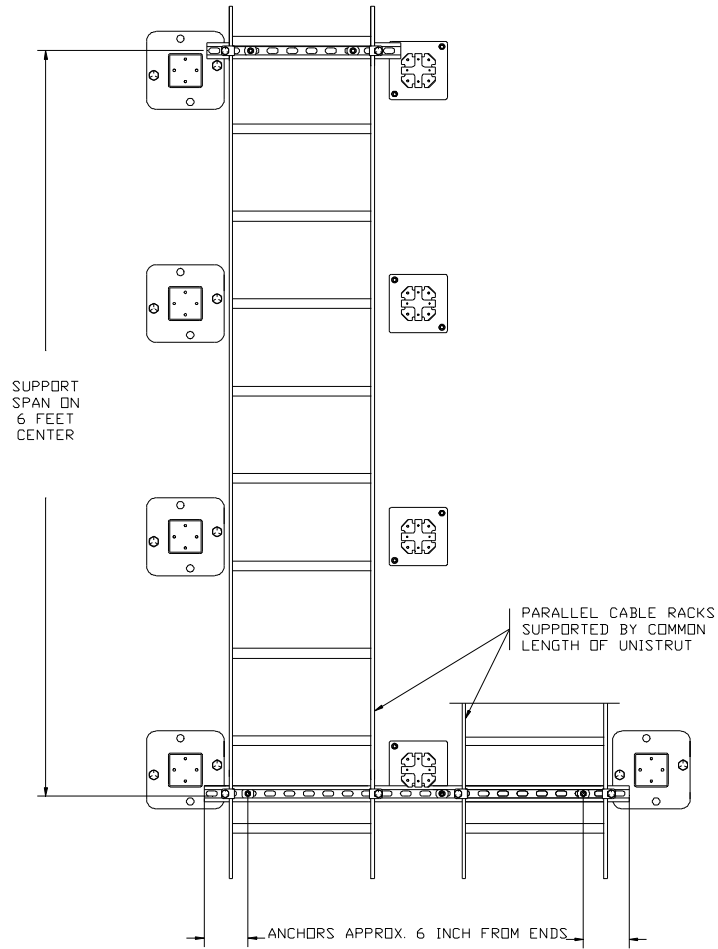
**Figure 10A**  
Cable Rack Supported By Channel



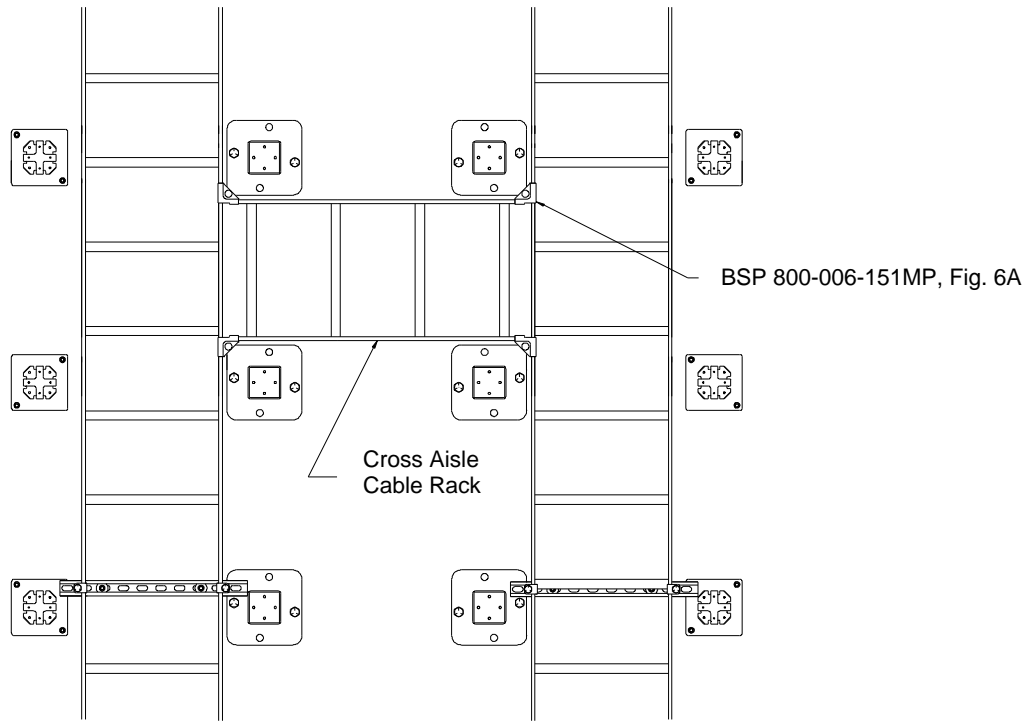
**Figure 10B**  
Cable Rack Supported By Channel



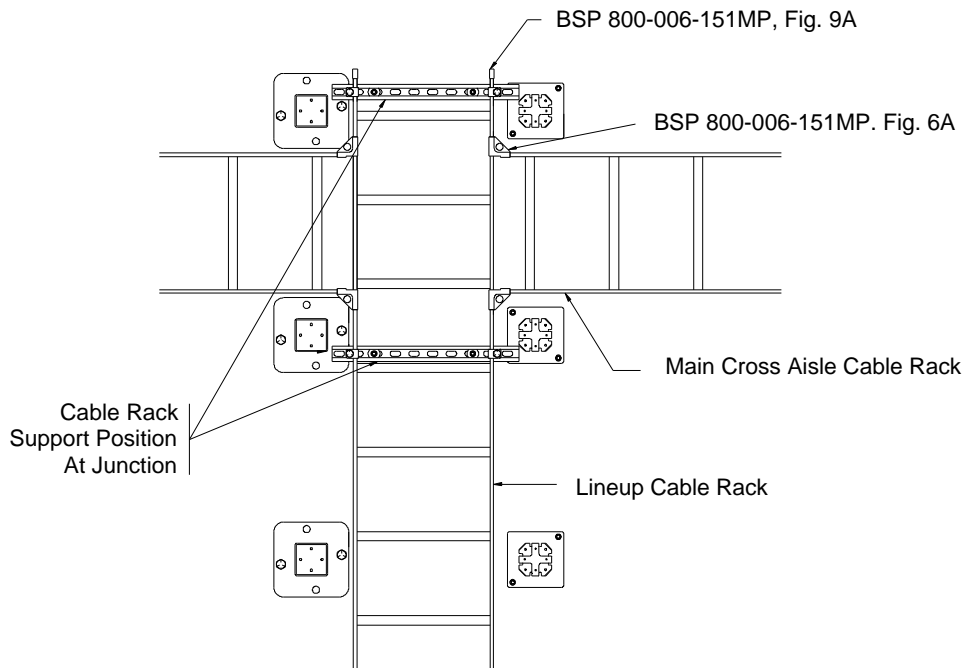
**Figure 10C**  
Cable Rack Securing Detail



**Figure 11**  
Cable Rack Support Details  
Parallel Aisles

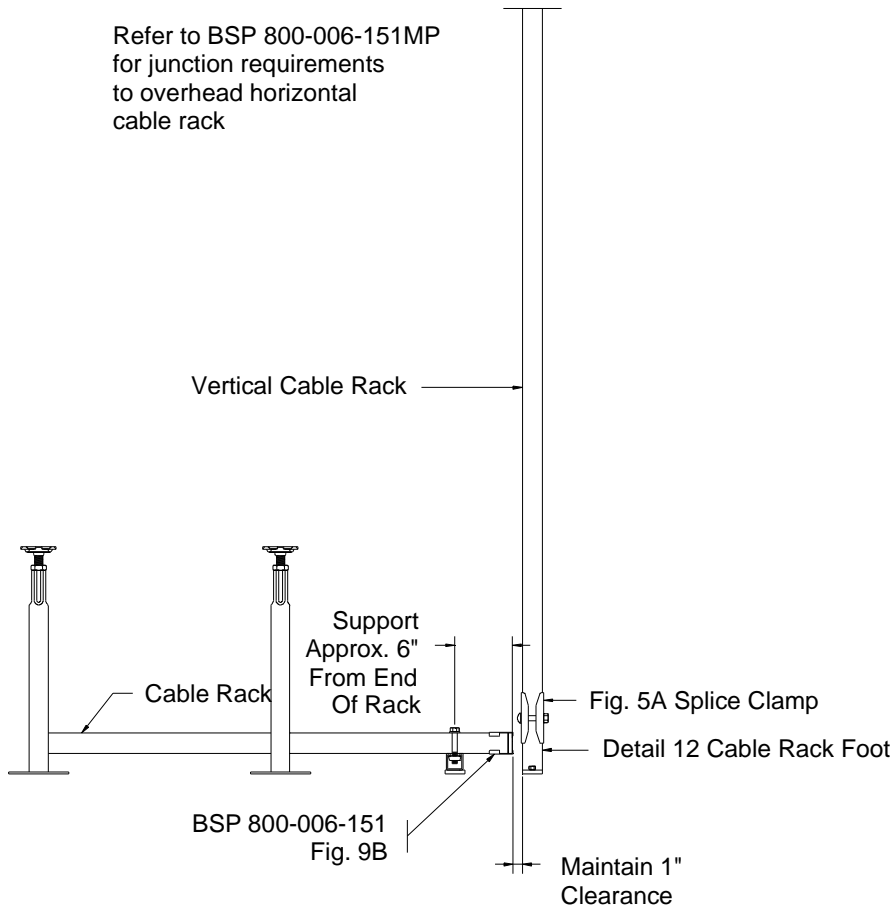


**Figure 12A**  
Cross Aisle Junction

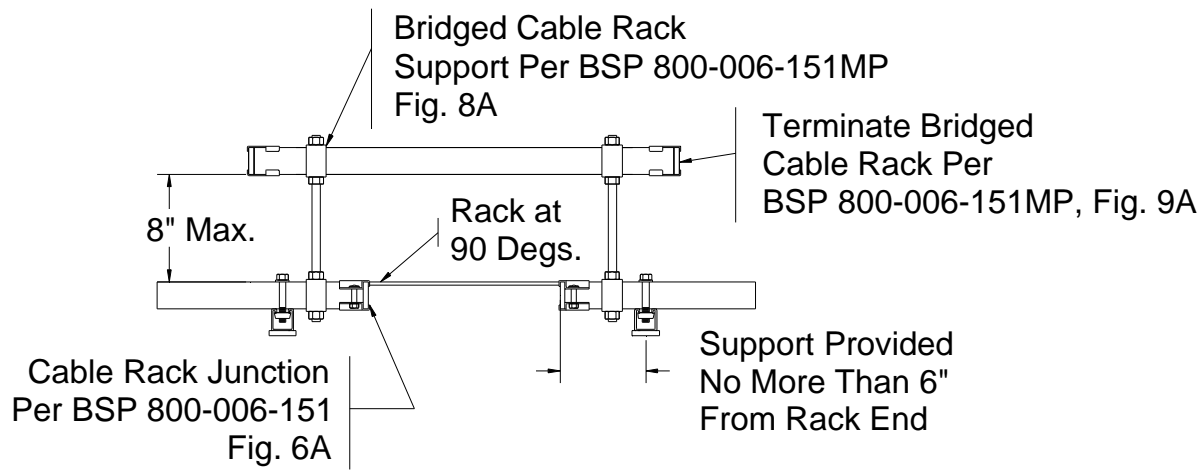


**Figure 12B**  
Main Cross Aisle Junction

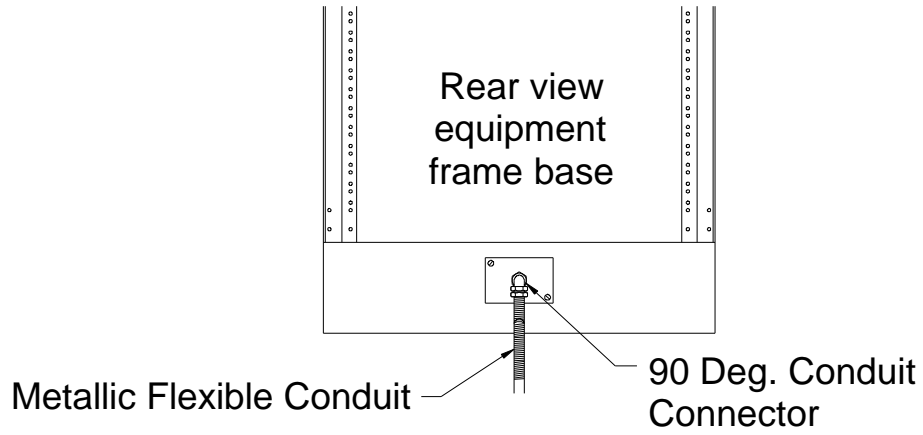




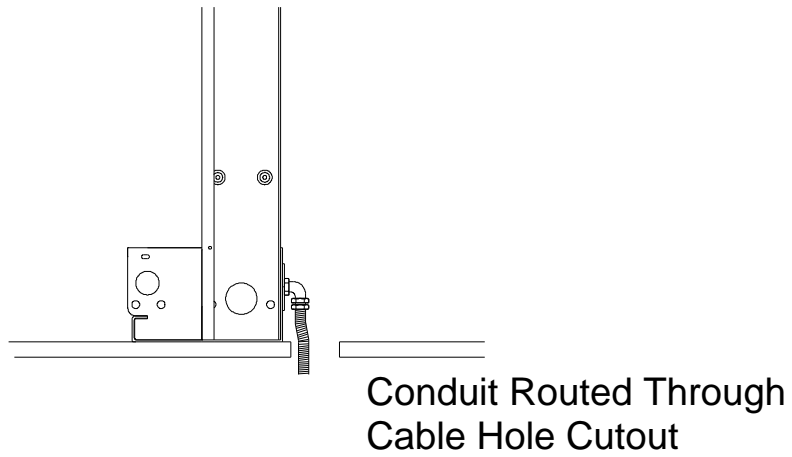
**Figure 13**  
Vertical Cable Rack Position



**Figure 14**  
Bridging Cable Rack



**Figure 15A**  
AC Service To Equipment Frame



**Figure 15B**  
AC Service From Floor Area