

Section 27 11 00

COMMUNICATIONS EQUIPMENT ROOM FITTINGS

Section 27 11 23

Communications Cable Management and **Ladder Rack**

PART 1 – GENERAL

1.1 WORK INCLUDED

- A. Provide all labor, materials, and equipment for the complete installation of work called for in the contract documents.

1.2 SCOPE OF WORK

- A. This section includes the minimum requirements for the equipment and cable installations in telecommunications rooms.
- B. Included in this section are the minimum composition requirements and installation methods for the following:
 - 1. Ladder Rack.

1.3 QUALITY ASSURANCE

- A. All cable and equipment shall be installed in a neat and workmanlike manner. All methods of construction that are not specifically described or indicated in the contract documents shall be subject to the control and approval of the owner or owner representative.
- B. Equipment and materials shall be of the quality and manufacture indicated. The equipment specified is based upon the acceptable manufacturers listed. Where "approved equal" is stated or a substitution is requested, equipment shall be equivalent in every way to that of the equipment specified. All substitutions are subject to the control and approval of the owner or the owner representative.
- C. Strictly adhere to all Building Industry Consulting Service International (BICSI), Electronic Industries Alliance (EIA) and Telecommunications Industry Association (TIA) recommended installation practices when installing communications/data cabling.
- D. Material and work specified herein shall comply with the applicable requirements of:
 - 1. TIA – 569-B Commercial Building Standard for Telecommunications Pathways and Spaces, 2004
 - 2. ANSI/TIA – 568-C Commercial Building Telecommunications Cabling Standard, 2009
 - 3. ANSI/NECA/BICSI 568-2006 – Standard for Installing Commercial Building Telecommunications Cabling

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4. TIA – 606-A Administration Standard for Commercial Telecommunications Infrastructure, 2007
5. ANSI-J-STD – 607-A Joint Standard for Commercial Building Grounding (Earthing) and Bonding Requirements for Telecommunications, 2002
6. ANSI/TIA-942 Telecommunications Infrastructure Standard for Data Centers, 2005
7. NFPA 70 – National Electric Code, 2008
8. NEMA – VE 1 – Metal Cable Tray Systems, 2009
9. NEMA – VE 2 – Metal Cable Tray Installation Guidelines, 2006

1.4 SUBMITTALS

A. Provide product data for the following:

1. Manufacturers data/cut sheets, product drawing/specifications and installation instructions for all products (submit with bid).

PART 2 – PRODUCTS

2.1 LADDER RACK, SUPPORTS, AND ACCESSORIES

A. Ladder Rack (TELCO-Style Cable Runway)

1. Ladder rack shall be manufactured from tubular steel. Stringers (sides) will be made from 3/8" (9.5 mm) wide by 1-1/2" (38 mm) high tubular steel with .065" (1.65 mm) wall thickness. Cross members (rungs) will be made from 1" (25.4 mm) wide by 1/2" (12.7 mm) high tubular steel with .065" (1.65 mm) wall thickness.
2. Ladder rack (stringers) will be 9'-8 1/2" (2.9 m) long. Cross members will be welded in between stringers on 9" (228.6 mm) centers beginning 4-1/4" (107.9 mm) from one end so that there are thirteen cross members per ladder rack. There will be 8" (203.2 mm) of open space in between each cross member.
3. Ladder rack will be delivered individually boxed, and available in several widths as specified below and in the contract documents.
4. Finish shall be epoxy-polyester hybrid powder coat (paint) in the color(s) specified below.
5. Design Make:
Chatsworth Products, Inc. (CPI),
TELCO-Style Cable Runway:

Part Number 11252-106, TELCO-Style Cable Runway, 6" (150 mm) Wide, Gray.
Part Number 11252-109, TELCO-Style Cable Runway, 9" (230 mm) Wide, Gray.

Part Number 11252-110, TELCO-Style Cable Runway, 10" (250 mm) Wide, Gray.
Part Number 11252-112, TELCO-Style Cable Runway, 12" (300 mm) Wide, Gray.
Part Number 11252-115, TELCO-Style Cable Runway, 15" (380 mm) Wide, Gray.
Part Number 11252-118, TELCO-Style Cable Runway, 18" (460 mm) Wide, Gray.
Part Number 11252-120, TELCO-Style Cable Runway, 20" (510 mm) Wide, Gray.

Part Number 11252-206, TELCO-Style Cable Runway, 6" (150 mm) Wide, Gray.
Part Number 11252-209, TELCO-Style Cable Runway, 9" (230 mm) Wide, Computer White.
Part Number 11252-210, TELCO-Style Cable Runway, 10" (250 mm) Wide, Computer White.
Part Number 11252-212, TELCO-Style Cable Runway, 12" (300 mm) Wide, Computer White.
Part Number 11252-215, TELCO-Style Cable Runway, 15" (380 mm) Wide, Computer White.
Part Number 11252-218, TELCO-Style Cable Runway, 18" (460 mm) Wide, Computer White.
Part Number 11252-220, TELCO-Style Cable Runway, 20" (510 mm) Wide, Computer White.

Part Number 11252-706, TELCO-Style Cable Runway, 6" (150 mm) Wide, Black.
Part Number 11252-709, TELCO-Style Cable Runway, 9" (230 mm) Wide, Black.
Part Number 11252-710, TELCO-Style Cable Runway, 10" (250 mm) Wide, Black.
Part Number 11252-712, TELCO-Style Cable Runway, 12" (300 mm) Wide, Black.
Part Number 11252-715, TELCO-Style Cable Runway, 15" (380 mm) Wide, Black.
Part Number 11252-718, TELCO-Style Cable Runway, 18" (460 mm) Wide, Black.
Part Number 11252-720, TELCO-Style Cable Runway, 20" (510 mm) Wide, Black.

B. Horizontal 90° Turns (Cable Runway E-Bend)

1. Horizontal 90° turns shall be manufactured from 3/8" (9.5 mm) wide by 1-1/2" (38 mm) high tubular steel with .065" (1.65 mm) wall thickness.
2. Stringers (sides) will be formed in a 90° arc. Cross members will be welded in between stringers on approximate 23° increments so that there are 5 cross members per turn. The welded assembly will have a 15" (380 mm) inside radius and will create a smooth horizontal 90° turn.
3. Horizontal 90° turns will be available in the width(s) specified below.
4. Finish shall be epoxy-polyester hybrid powder coat (paint) in the color(s) specified below.

5. Design Make:
Chatsworth Products, Inc. (CPI),
Cable Runway E-Bend:

Part Number 10822-109, Cable Runway E-Bend, 9" (230 mm) Wide,
Black.
Part Number 10822-112, Cable Runway E-Bend, 12" (300 mm) Wide,
Black.
Part Number 10822-118, Cable Runway E-Bend, 18" (460 mm) Wide,
Black.

Part Number 10822-209, Cable Runway E-Bend, 9" (230 mm) Wide,
Computer White.
Part Number 10822-212, Cable Runway E-Bend, 12" (300 mm) Wide,
Computer White.
Part Number 10822-218, Cable Runway E-Bend, 18" (460 mm) Wide,
Computer White.

Part Number 10822-709, Cable Runway E-Bend, 9" (230 mm) Wide,
Black.
Part Number 10822-712, Cable Runway E-Bend, 12" (300 mm) Wide,
Black.
Part Number 10822-718, Cable Runway E-Bend, 18" (460 mm) Wide,
Black.
- C. Vertical-To-Horizontal 90° Turns (Cable Runway Outside Radius Bend)
 1. Vertical-to-horizontal 90° turns shall be manufactured from 3/8" (9.5 mm) wide by 1-1/2" (38 mm) high tubular steel with .065" (1.65 mm) wall thickness.
 2. Stringers (sides) will be formed in a 90° arc with a 12-1/2" (318 mm) outside radius. Cross members will be welded in between stringers on approximate 23° increments so that there are 3 cross members per turn. The welded assembly will create a smooth 90° vertical-to-horizontal turn.
 3. Vertical-to-horizontal 90° turns will be available in width(s) specified below.
 4. Finish shall be epoxy-polyester hybrid powder coat (paint) in the color(s) specified below.
 5. Design Make:
Chatsworth Products, Inc. (CPI),
Cable Runway Outside Radius Bend:

Part Number 10723-106, Outside Radius Bend, 6" (150 mm) Wide,
Black.
Part Number 10723-109, Outside Radius Bend, 9" (230 mm) Wide,
Black.
Part Number 10723-112, Outside Radius Bend, 12" (300 mm) Wide,
Black.
Part Number 10723-115, Outside Radius Bend, 15" (380 mm) Wide,
Black.

Part Number 10723-118, Outside Radius Bend, 18" (460 mm) Wide, Black.

Part Number 10723-120, Outside Radius Bend, 20" (510 mm) Wide, Black.

Part Number 10723-124, Outside Radius Bend, 24" (610 mm) Wide, Black.

Part Number 10723-206, Outside Radius Bend, 6" (150 mm) Wide, Computer White.

Part Number 10723-209, Outside Radius Bend, 9" (230 mm) Wide, Computer White.

Part Number 10723-212, Outside Radius Bend, 12" (300 mm) Wide, Computer White.

Part Number 10723-215, Outside Radius Bend, 15" (380 mm) Wide, Computer White.

Part Number 10723-218, Outside Radius Bend, 18" (460 mm) Wide, Computer White.

Part Number 10723-220, Outside Radius Bend, 20" (510 mm) Wide, Computer White.

Part Number 10723-224, Outside Radius Bend, 24" (610 mm) Wide, Computer White.

Part Number 10723-706, Outside Radius Bend, 6" (150 mm) Wide, Black.

Part Number 10723-709, Outside Radius Bend, 9" (230 mm) Wide, Black.

Part Number 10723-712, Outside Radius Bend, 12" (300 mm) Wide, Black.

Part Number 10723-715, Outside Radius Bend, 15" (380 mm) Wide, Black.

Part Number 10723-718, Outside Radius Bend, 18" (460 mm) Wide, Black.

Part Number 10723-720, Outside Radius Bend, 20" (510 mm) Wide, Black.

Part Number 10723-724, Outside Radius Bend, 24" (610 mm) Wide, Black.

D. Horizontal-To-Vertical 90° Turns (Cable Runway Inside Radius Bend)

1. Horizontal-to-vertical 90° turns shall be manufactured from 3/8" (9.5 mm) wide by 1-1/2" (38 mm) high tubular steel with .065" (1.65 mm) wall thickness.
2. Stringers (sides) will be formed in a 90° arc with a 12-1/2" (318 mm) outside radius. Cross members will be welded in between stringers on approximate 23° increments so that there are 3 cross members per turn. The welded assembly will create a smooth 90° horizontal-to-vertical turn.
3. Horizontal-to-vertical 90° turns will be available in the width(s) specified below.
4. Finish shall be epoxy-polyester hybrid powder coat (paint) in the color(s) specified below.
5. Design Make:

Chatsworth Products, Inc. (CPI),
Cable Runway Inside Radius Bend:

Part Number 10724-106, Inside Radius Bend, 6" (150 mm) Wide, Black.
Part Number 10724-109, Inside Radius Bend, 9" (230 mm) Wide, Black.
Part Number 10724-112, Inside Radius Bend, 12" (300 mm) Wide, Black.
Part Number 10724-115, Inside Radius Bend, 15" (380 mm) Wide, Black.
Part Number 10724-118, Inside Radius Bend, 18" (460 mm) Wide, Black.
Part Number 10724-120, Inside Radius Bend, 20" (510 mm) Wide, Black.
Part Number 10724-124, Inside Radius Bend, 24" (610 mm) Wide, Black.

Part Number 10724-206, Inside Radius Bend, 6" (150 mm) Wide, Computer White.
Part Number 10724-209, Inside Radius Bend, 9" (230 mm) Wide, Computer White.
Part Number 10724-212, Inside Radius Bend, 12" (300 mm) Wide, Computer White.
Part Number 10724-215, Inside Radius Bend, 15" (380 mm) Wide, Computer White.
Part Number 10724-218, Inside Radius Bend, 18" (460 mm) Wide, Computer White.
Part Number 10724-220, Inside Radius Bend, 20" (510 mm) Wide, Computer White.
Part Number 10724-224, Inside Radius Bend, 24" (610 mm) Wide, Computer White.

Part Number 10724-706, Inside Radius Bend, 6" (150 mm) Wide, Black.
Part Number 10724-709, Inside Radius Bend, 9" (230 mm) Wide, Black.
Part Number 10724-712, Inside Radius Bend, 12" (300 mm) Wide, Black.
Part Number 10724-715, Inside Radius Bend, 15" (380 mm) Wide, Black.
Part Number 10724-718, Inside Radius Bend, 18" (460 mm) Wide, Black.
Part Number 10724-720, Inside Radius Bend, 20" (510 mm) Wide, Black.
Part Number 10724-724, Inside Radius Bend, 24" (610 mm) Wide, Black.

E. Corner Brackets (Cable Runway Corner Bracket)

1. Corner brackets shall be manufactured from 3/8" (9.5 mm) wide by 1-1/2" (38 mm) high tubular steel with .065" (1.65 mm) wall thickness.
2. The inside stringers of the corner bracket will be formed at 90° with a small chamfer at the vertex. The outside stringer of the corner bracket will be formed in a 90° arc that is either 15" (380 mm) or 24" (610 mm) in radius. A single cross member will connect the chamfered portion of the inside stringer to the outside stringer. The welded assembly will create a

smooth 90° turn within the L-shaped corner created by two intersecting ladder racks.

3. Corner brackets will be available in the size(s) specified below. Installation hardware will be included with the corner bracket. Corner bracket installation hardware does not include the junction splice kit required to form the L-shaped intersection between two ladder racks.
4. Finish shall be epoxy-polyester hybrid powder coat (paint) in the color specified below.
5. Design Make:
Chatsworth Products, Inc. (CPI),
Cable Runway Corner Bracket:

Part Number 11959-115, Corner Bracket, 15" (380 mm) Radius, Black.
Part Number 11959-124, Corner Bracket, 24" (610 mm) Radius, Black.

Part Number 11959-215, Corner Bracket, 15" (380 mm) Radius,
Computer White.
Part Number 11959-224, Corner Bracket, 24" (610 mm) Radius,
Computer White.

Part Number 11959-715, Corner Bracket, 15" (380 mm) Radius, Black.
Part Number 11959-724, Corner Bracket, 24" (610 mm) Radius, Black.

F. Ladder Rack Splices

1. Splice kits will provide a method of mechanically connecting ladder rack sections and turns together end-to-end or side-to-end to form a continuous pathway for cables.
2. Grounding kits will provide a method of bonding ladder rack sections and turns together that is independent of the pathway splices. The grounding kit should be constructed of UL Listed components. The preferred solution is a #6 AWG green insulated stranded copper conductor connected on both ends to ladder rack using two-hole compression lugs and stainless steel hardware.
3. An insulator bar kit will provide a means of electrically isolating individual ladder rack sections through an end-to-end splice separated with a non-conductive material. The preferred solution is a 3/8" (9.5 mm) wide by 1-1/2" (38 mm) high by 5-1/2" (140 mm) long insulator bar made of Delrin® (by DuPont, Delrin is a registered trademark of E.I. du Pont de Nemours and Company).
4. Splices (splice plates) will be manufactured from steel. Splice, grounding and insulator bar kits will include installation hardware.
5. Finish (of splice plates and hardware) shall be zinc plate in the color(s) specified below. Colors are applied as a chem. film over the zinc plate.
6. Design Make:
Chatsworth Products, Inc. (CPI),
Cable Runway Splices:

Part Number 11301-001, Butt-Splice Kit, Gold.
Part Number 11301-701, Butt-Splice Kit, Black.
Compression splice for end-to-end connections.

Part Number 11302-001, Junction-Splice Kit, Gold.
Part Number 11302-701, Junction-Splice Kit, Black.
Compression splice for T- or L-connections.

Part Number 11299-001, Heavy-Duty Butt-Splice Kit, Gold.
Part Number 11299-701, Heavy-Duty Butt-Splice Kit, Black.
Bolted splice for end-to-end connections.

Part Number 11298-001, Heavy-Duty Junction-Splice Kit, Gold.
Part Number 11298-701, Heavy-Duty Junction-Splice Kit, Black.
Bolted splice for T- or L- connections.

Part Number 10616-001, Adjustable Junction-Splice Kit, Gold.
Part Number 10616-701, Adjustable Junction-Splice Kit, Black.
Compression splice for angled (non-90°) intersection connections.

Part Number 11314-001, 90° Runway-Splice Kit, Gold.
Part Number 11314-701, 90° Runway-Splice Kit, Black.
Compression splice for horizontal-to-vertical connections.

Part Number 11313-001, 45° Runway-Splice Kit, Gold.
Part Number 11313-701, 45° Runway-Splice Kit, Black.
Compression splice for horizontal-to-vertical connections.

Part Number 10487-001, Butt Swivel Splice Kit, Gold.
Part Number 10487-701, Butt Swivel Splice Kit, Black.
Compression splice for angled end-to-end connection (ramp up/down).

Part Number 10488-001, Junction Swivel Splice Kit, Gold.
Part Number 10488-701, Junction Swivel Splice Kit, Black.
Compression splice for angled T- or L- connection (ramp up/down).

Part Number 10489-001, Vertical Swivel Splice Kit, Gold.
Part Number 10489-701, Vertical Swivel Splice Kit, Black.
Compression splice for angled vertical connection (ramp up/down).

Part Number 12061-001, Grounding Kit, Zinc.
Bolted jumper that electrically bonds cable runway sections.

Part Number 10842-001, Insulator Bar Kit, White.
Compression splice for end-to-end connection that electrically isolates cable runway sections.

G. Ladder Rack Supports

1. Supports will be sized to match the width of the ladder rack that is supported. Some supports will work with all widths of ladder rack.
2. Each support will include a means of securing ladder rack to the support.
3. Supports will be manufactured from steel or aluminum.

4. Finish shall be epoxy-polyester hybrid powder coat (paint) in the color(s) specified below or zinc plate with a gold chem. finish specified gold. Included hardware shall be zinc plated with a gold chem. finish.

5. Design Make:
Chatsworth Products, Inc. (CPI),
Cable Runway Supports:

Part Number 11312-106, Triangular Support Bracket, For 4"-6" (100 mm - 150 mm) Wide Cable Runway (Ladder Rack), 100 lb (45.4 kg) Capacity, Aluminum, Gray.

Part Number 11312-112, Triangular Support Bracket, For 6"-12" (150 mm – 300 mm) Wide Cable Runway (Ladder Rack), 100 lb (45.4 kg) Capacity, Aluminum, Gray.

Part Number 11312-118, Triangular Support Bracket, For 12"-18" (300 mm – 460 mm) Wide Cable Runway (Ladder Rack), 100 lb (45.4 kg) Capacity, Aluminum, Gray.

Part Number 11312-206, Triangular Support Bracket, For 4"-6" (100 mm – 150 mm) Wide Cable Runway (Ladder Rack), 100 lb (45.4 kg) Capacity, Aluminum, Computer White.

Part Number 11312-212, Triangular Support Bracket, For 6"-12" (150 mm – 300 mm) Wide Cable Runway (Ladder Rack), 100 lb (45.4 kg) Capacity, Aluminum, Computer White.

Part Number 11312-218, Triangular Support Bracket, For 12"-18" (300 mm – 460 mm) Wide Cable Runway (Ladder Rack), 100 lb (45.4 kg) Capacity, Aluminum, Computer White.

Part Number 11312-706, Triangular Support Bracket, For 4"-6" (100 mm – 150 mm) Wide Cable Runway (Ladder Rack), 100 lb (45.4 kg) Capacity, Aluminum, Black.

Part Number 11312-712, Triangular Support Bracket, For 6"-12" (150 mm – 300 mm) Wide Cable Runway (Ladder Rack), 100 lb (45.4 kg) Capacity, Aluminum, Black.

Part Number 11312-718, Triangular Support Bracket, For 12"-18" (300 mm – 460 mm) Wide Cable Runway (Ladder Rack), 100 lb (45.4 kg) Capacity, Aluminum, Black.

Wall support for side of cable runway. Installation requires (3) 5/16" or 8 mm lag bolts and (3) flat washers or concrete wall hardware (ordered separately).

Part Number 11746-112, Triangular Support Bracket, For 6" (150 mm) or 12" (300 mm) Wide Cable Runway (Ladder Rack), 400 lb (181.4 kg) Capacity, Steel, Gray.

Part Number 11746-118, Triangular Support Bracket, For 18" (460 mm) Wide Cable Runway (Ladder Rack), 400 lb (181.4 kg) Capacity, Steel, Gray.

Part Number 11746-124, Triangular Support Bracket, For 24" (610 mm) Wide Cable Runway (Ladder Rack), 400 lb (181.4 kg) Capacity, Steel, Gray.

Part Number 11746-212, Triangular Support Bracket, For 6" (150 mm) or 12" (300 mm) Wide Cable Runway (Ladder Rack), 400 lb (181.4 kg) Capacity, Steel, Computer White.

Part Number 11746-218, Triangular Support Bracket, For 18" (460 mm) Wide Cable Runway (Ladder Rack), 400 lb (181.4 kg) Capacity, Steel, Computer White.

Part Number 11746-224, Triangular Support Bracket, For 24" (610 mm) Wide Cable Runway (Ladder Rack), 400 lb (181.4 kg) Capacity, Steel, Computer White.

Part Number 11746-712, Triangular Support Bracket, For 6" (150 mm) or 12" (300 mm) Wide Cable Runway (Ladder Rack), 400 lb (181.4 kg) Capacity, Steel, Black.

Part Number 11746-718, Triangular Support Bracket, For 18" (460 mm) Wide Cable Runway (Ladder Rack), 400 lb (181.4 kg) Capacity, Steel, Black.

Part Number 11746-724, Triangular Support Bracket, For 24" (610 mm) Wide Cable Runway (Ladder Rack), 400 lb (181.4 kg) Capacity, Steel, Black.

Wall support for side of cable runway. Installation requires (3) 5/16" or 8 mm lag bolts and (3) flat washers or concrete wall hardware (ordered separately).

Part Number 11421-104, Wall Angle Support Kit, For 4" (100 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 11421-106, Wall Angle Support Kit, For 6" (150 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 11421-109, Wall Angle Support Kit, For 9" (230 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 11421-112, Wall Angle Support Kit, For 12" (300 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 11421-115, Wall Angle Support Kit, For 15" (380 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 11421-118, Wall Angle Support Kit, For 18" (460 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 11421-120, Wall Angle Support Kit, For 20" (510 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 11421-124, Wall Angle Support Kit, For 24" (610 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 11421-204, Wall Angle Support Kit, For 4" (100 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 11421-206, Wall Angle Support Kit, For 6" (150 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 11421-209, Wall Angle Support Kit, For 9" (230 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 11421-212, Wall Angle Support Kit, For 12" (300 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 11421-215, Wall Angle Support Kit, For 15" (380 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 11421-218, Wall Angle Support Kit, For 18" (460 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 11421-220, Wall Angle Support Kit, For 20" (510 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 11421-224, Wall Angle Support Kit, For 24" (610 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 11421-704, Wall Angle Support Kit, For 4" (100 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Part Number 11421-706, Wall Angle Support Kit, For 6" (150 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Part Number 11421-709, Wall Angle Support Kit, For 9" (230 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Part Number 11421-712, Wall Angle Support Kit, For 12" (300 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Part Number 11421-715, Wall Angle Support Kit, For 15" (380 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Part Number 11421-718, Wall Angle Support Kit, For 18" (460 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Part Number 11421-724, Wall Angle Support Kit, For 24" (610 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Wall support for end of cable runway. Installation requires (2) 5/16" or 8 mm lag bolts and (2) flat washers or concrete wall hardware (ordered separately).

Part Number 11309-001, Foot Kit, Steel, Gold.

Floor support for end of cable runway. (2) L-shaped bracket and (1) butt-splice kit. Installation requires (2) 3/8" or 10 mm lag bolts and (2) flat washers or concrete wall hardware (ordered separately).

Part Number 11241-112, Adjustable Floor Support Channel, For 12" (300 mm) Wide Cable Runway (Ladder Rack), 3" to 8" (80 mm to 200 mm) High, Steel, Gray.

Part Number 11241-115, Adjustable Floor Support Channel, For 15" (380 mm) Wide Cable Runway (Ladder Rack), 3" to 8" (80 mm to 200 mm) High, Steel, Gray.

Part Number 11241-118, Adjustable Floor Support Channel, For 18" (460 mm) Wide Cable Runway (Ladder Rack), 3" to 8" (80 mm to 200 mm) High, Steel, Gray.

Part Number 11241-212, Adjustable Floor Support Channel, For 12" (300 mm) Wide Cable Runway (Ladder Rack), 3" to 8" (80 mm to 200 mm) High, Steel, Computer White.

Part Number 11241-215, Adjustable Floor Support Channel, For 15" (380 mm) Wide Cable Runway (Ladder Rack), 3" to 8" (80 mm to 200 mm) High, Steel, Computer White.

Part Number 11241-218, Adjustable Floor Support Channel, For 18" (460 mm) Wide Cable Runway (Ladder Rack), 3" to 8" (80 mm to 200 mm) High, Steel, Computer White.

Part Number 11241-712, Adjustable Floor Support Channel, For 12" (300 mm) Wide Cable Runway (Ladder Rack), 3" to 8" (80 mm to 200 mm) High, Steel, Black.

Part Number 11241-715, Adjustable Floor Support Channel, For 15" (380 mm) Wide Cable Runway (Ladder Rack), 3" to 8" (80 mm to 200 mm) High, Steel, Black.

Part Number 11241-718, Adjustable Floor Support Channel, For 18" (460 mm) Wide Cable Runway (Ladder Rack), 3" to 8" (80 mm to 200 mm) High, Steel, Black.

Floor support for the bottom of cable runway. 1 pair of channels (2 supports). Includes 5/8" installation hardware. Requires accessory anchor installation tool (P/N 06003-001) or substitute M16 threaded rod, (2) lock washers, (4) hex nuts and floor installation hardware (ordered separately).

Part Number 11310-001, Threaded Ceiling Kit, Includes 3/8" Diameter x 6'L Threaded Rod, Steel, Gold.

Part Number 11310-003, Threaded Ceiling Kit, Includes 5/8" Diameter x 6'L Threaded Rod, Steel, Gold.

Part Number 11310-093, Threaded Ceiling Kit, Includes M10 Diameter x 2 m L Threaded Rod, Steel, Gold

Part Number 11310-094, Threaded Ceiling Kit, Includes M16 Diameter x 2 m L Threaded Rod, Steel, Gold

Ceiling support for the side of cable runway. Kit includes (1) threaded rod, hardware and connectors for cable runway and a concrete ceiling. Use in pairs at each point of support. Ceiling installation hardware not included.

Part Number 12362-106, Center Support Kit, For 6" (150 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 12362-112, Center Support Kit, For 12" (300 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 12362-115, Center Support Kit, For 15" (380 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 12362-118, Center Support Kit, For 18" (460 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 12362-124, Center Support Kit, For 24" (610 mm) Wide Cable Runway (Ladder Rack), Steel, Gray.

Part Number 12362-206, Center Support Kit, For 6" (150 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 12362-212, Center Support Kit, For 12" (300 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 12362-215, Center Support Kit, For 15" (380 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 12362-218, Center Support Kit, For 18" (460 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 12362-224, Center Support Kit, For 24" (610 mm) Wide Cable Runway (Ladder Rack), Steel, Computer White.

Part Number 12362-706, Center Support Kit, For 6" (150 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Part Number 12362-712, Center Support Kit, For 12" (300 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Part Number 12362-715, Center Support Kit, For 15" (380 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Part Number 12362-718, Center Support Kit, For 18" (460 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Part Number 12362-724, Center Support Kit, For 24" (610 mm) Wide Cable Runway (Ladder Rack), Steel, Black.

Center Support Kit is used with a single threaded rod to support cable runway from the bottom to the ceiling. One support is included per kit. Includes 5/8" hex nuts and washers. Requires 5/8" rod and ceiling installation hardware or M16 rod, (2) hex nuts, (1) lock washer and ceiling installation hardware (ordered separately).

Part Number 10595-104, Rack-To-Runway Mounting Plate, For 4" (100 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Gray.

Part Number 10595-108, Rack-To-Runway Mounting Plate, For 5" to 8" (130 mm to 200 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Gray.

Part Number 10595-112, Rack-To-Runway Mounting Plate, For 9" to 12" (230 mm to 300 mm) Wide Cable Runway (Ladder Rack), for

Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Gray.

Part Number 10595-118, Rack-To-Runway Mounting Plate, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Gray.

Part Number 12408-124, Rack-To-Runway Mounting Plate, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Aluminum, Gray.

Part Number 10595-204, Rack-To-Runway Mounting Plate, For 4" (100 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Computer White.

Part Number 10595-208, Rack-To-Runway Mounting Plate, For 5" to 8" (130 mm to 200 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Computer White.

Part Number 10595-212, Rack-To-Runway Mounting Plate, For 9" to 12" (230 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Computer White.

Part Number 10595-218, Rack-To-Runway Mounting Plate, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Computer White.

Part Number 12408-224, Rack-To-Runway Mounting Plate, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Aluminum, Computer White.

Part Number 10595-704, Rack-To-Runway Mounting Plate, For 4" (100 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 10595-708, Rack-To-Runway Mounting Plate, For 5" to 8" (130 mm to 200 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 10595-712, Rack-To-Runway Mounting Plate, For 9" to 12" (230 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 10595-718, Rack-To-Runway Mounting Plate, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 12408-724, Rack-To-Runway Mounting Plate, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Aluminum, Black.

Rack-To-Runway Mounting Plate attaches cable runway to the top of 2-post freestanding racks in parallel or perpendicular orientation. Includes J-bolt installation hardware for 1-1/2" (38 mm) high cable runway and rack top angles. CPI recommends use with Cable Runway Elevation Kit.

Part Number 12121-109, Rack-To-Runway Mounting Plate, For 5" to 9" (130 mm to 230 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Gray.

Part Number 12121-112, Rack-To-Runway Mounting Plate, For 10" to 12" (250 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Gray.

Part Number 12121-118, Rack-To-Runway Mounting Plate, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Gray.

Part Number 12409-124, Rack-To-Runway Mounting Plate, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Aluminum, Gray.

Part Number 12121-209, Rack-To-Runway Mounting Plate, For 5" to 9" (130 mm to 230 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Computer White.

Part Number 12121-212, Rack-To-Runway Mounting Plate, For 10" to 12" (250 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Computer White.

Part Number 12121-218, Rack-To-Runway Mounting Plate, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Computer White.

Part Number 12409-224, Rack-To-Runway Mounting Plate, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Aluminum, Computer White.

Part Number 12121-709, Rack-To-Runway Mounting Plate, For 5" to 9" (130 mm to 230 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 12121-712, Rack-To-Runway Mounting Plate, For 10" to 12" (250 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 12121-718, Rack-To-Runway Mounting Plate, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 12409-724, Rack-To-Runway Mounting Plate, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Aluminum, Black.

Rack-To-Runway Mounting Plate attaches cable runway to the top of 2-post freestanding racks in parallel or perpendicular orientation. Includes J-bolt installation hardware for 1-1/2" (38 mm) high Cable Runway and rack top angles. CPI recommends use with Cable Runway Elevation Kit.

Part Number 12730-104, Rack-To-Runway Mounting Plate with Bracket, For 4" (100 mm) Wide Cable Runway (Ladder Rack), for

Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Gray.
Part Number 12730-108, Rack-To-Runway Mounting Plate with Bracket, For 5" to 8" (130 mm to 200 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Gray.
Part Number 12730-112, Rack-To-Runway Mounting Plate with Bracket, For 9" to 12" (230 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Gray.
Part Number 12730-118, Rack-To-Runway Mounting Plate with Bracket, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Gray.
Part Number 13730-124, Rack-To-Runway Mounting Plate with Bracket, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Aluminum, Gray.

Part Number 12730-204, Rack-To-Runway Mounting Plate with Bracket, For 4" (100 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Computer White.
Part Number 12730-208, Rack-To-Runway Mounting Plate with Bracket, For 5" to 8" (130 mm to 200 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Computer White.
Part Number 12730-212, Rack-To-Runway Mounting Plate with Bracket, For 9" to 12" (230 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Computer White.
Part Number 12730-218, Rack-To-Runway Mounting Plate with Bracket, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Computer White.
Part Number 13730-224, Rack-To-Runway Mounting Plate with Bracket, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Aluminum, Computer White.

Part Number 12730-704, Rack-To-Runway Mounting Plate with Bracket, For 4" (100 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Black.
Part Number 12730-708, Rack-To-Runway Mounting Plate with Bracket, For 5" to 8" (130 mm to 200 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Black.
Part Number 12730-712, Rack-To-Runway Mounting Plate with Bracket, For 9" to 12" (230 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Black.
Part Number 12730-718, Rack-To-Runway Mounting Plate with Bracket, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 13730-724, Rack-To-Runway Mounting Plate with Bracket, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard and Universal Racks with 3" (80 mm) Deep Equipment Mounting Channels, Aluminum, Black.

Rack-To-Runway Mounting Plate with Bracket attaches cable runway to the top of 2-post freestanding racks in parallel or perpendicular orientation. Includes U-shaped rack bracket and installation hardware for 1-1/2" (38 mm) high cable runway and rack top angles. CPI recommends use with Cable Runway Elevation Kit.

Part Number 12731-109, Rack-To-Runway Mounting Plate with Bracket, For 5" to 9" (130 mm to 230 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Gray.

Part Number 12731-112, Rack-To-Runway Mounting Plate with Bracket, For 10" to 12" (250 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Gray.

Part Number 12731-118, Rack-To-Runway Mounting Plate with Bracket, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Gray.

Part Number 13731-124, Rack-To-Runway Mounting Plate with Bracket, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Aluminum, Gray.

Part Number 12731-209, Rack-To-Runway Mounting Plate with Bracket, For 5" to 9" (130 mm to 230 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Computer White.

Part Number 12731-212, Rack-To-Runway Mounting Plate with Bracket, For 10" to 12" (250 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Computer White.

Part Number 12731-218, Rack-To-Runway Mounting Plate with Bracket, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Computer White.

Part Number 13731-224, Rack-To-Runway Mounting Plate with Bracket, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Aluminum, Computer White.

Part Number 12731-709, Rack-To-Runway Mounting Plate with Bracket, For 5" to 9" (130 mm to 230 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 12731-712, Rack-To-Runway Mounting Plate with Bracket, For 10" to 12" (250 mm to 300 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 12731-718, Rack-To-Runway Mounting Plate with Bracket, For 15" to 18" (380 mm to 460 mm) Wide Cable Runway (Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Steel, Black.

Part Number 13731-724, Rack-To-Runway Mounting Plate with Bracket, For 20" (510 mm) and 24" (610 mm) Wide Cable Runway

(Ladder Rack), for Standard Rack with 6" (150 mm) Deep Equipment Mounting Channels, Aluminum, Black.

Rack-To-Runway Mounting Plate with Bracket attaches cable runway to the top of 2-post freestanding racks in parallel or perpendicular orientation. Includes U-shaped rack bracket and installation hardware for 1-1/2" (38 mm) high cable runway and rack top angles. CPI recommends use with Cable Runway Elevation Kit.

Part Number 10506-102, Cable Runway Elevation Kit, 2" (50 mm), 2-1/2" (64 mm) or 3" (80 mm) High, for Racks, Steel, Gray.

Part Number 10506-202, Cable Runway Elevation Kit, 2" (50 mm), 2-1/2" (64 mm) or 3" (80 mm) High, for Racks, Steel, Computer White.

Part Number 10506-702, Cable Runway Elevation Kit, 2" (50 mm), 2-1/2" (64 mm) or 3" (80 mm) High, for Racks, Steel, Black.

Part Number 10506-106, Cable Runway Elevation Kit, 4" (100 mm), 5" (130 mm) or 6" (150 mm) High, for Racks, Steel, Gray.

Part Number 10506-206, Cable Runway Elevation Kit, 4" (100 mm), 5" (130 mm) or 6" (150 mm) High, for Racks, Steel, Computer White.

Part Number 10506-706, Cable Runway Elevation Kit, 4" (100 mm), 5" (130 mm) or 6" (150 mm) High, for Racks, Steel, Black.

Part Number 10506-112, Cable Runway Elevation Kit, 2" (50 mm), 2-1/2" (64 mm) or 3" (80 mm) High, for Cabinets, Steel, Gray.

Part Number 10506-212, Cable Runway Elevation Kit, 2" (50 mm), 2-1/2" (64 mm) or 3" (80 mm) High, for Cabinets, Steel, Computer White.

Part Number 10506-712, Cable Runway Elevation Kit, 2" (50 mm), 2-1/2" (64 mm) or 3" (80 mm) High, for Cabinets, Steel, Black.

Part Number 10506-116, Cable Runway Elevation Kit, 4" (100 mm), 5" (130 mm) or 6" (150 mm) High, for Cabinets, Steel, Gray.

Part Number 10506-216, Cable Runway Elevation Kit, 4" (100 mm), 5" (130 mm) or 6" (150 mm) High, for Cabinets, Steel, Computer White.

Part Number 10506-716, Cable Runway Elevation Kit, 4" (100 mm), 5" (130 mm) or 6" (150 mm) High, for Cabinets, Steel, Black.

Cable Runway Elevation Kit are L-shaped supports that elevate cable runway 2" (50 mm), 2-1/2" (64 mm), 3" (80 mm) or 4" (100 mm), 5" (130 mm), 6" (150 mm) above the rack or cabinet. May also be used to support cable runway vertically against a wall with a standoff from the wall. Kits for racks must be used with a Rack-To-Runway Mounting Plate. Includes installation hardware for Rack-To-Runway Mounting Plates or Cabinets. Order installation hardware for wall separately.

Part Number 31470-112, Cable Runway Standoff Kit, 12" (300 mm) High, Steel, Gray.

Part Number 31470-212, Cable Runway Standoff Kit, 12" (300 mm) High, Steel, Computer White.

Part Number 31470-712, Cable Runway Standoff Kit, 12" (300 mm) High, Steel, Black.

Support a second tier of cable runway 12" (300 mm) above the first tier of cable runway with Cable Runway Standoff Kit. Includes one pair of supports and installation hardware.

Part Number 10608-001, Vertical Wall Brackets, 1 pair, Steel, Gold.

Attach cable runway to the wall or floor with no standoff. 1/4" or M6 installation hardware not included.

Part Number 10684-101, Tall Pipe Stand, 2" (50 mm) Diameter x 79" (2010 mm) High, Gray. Use for 7' (2.1 m) high supports.

Part Number 10684-102, Tall Pipe Stand, 2" (50 mm) Diameter x 85" (2160 mm) High, Gray. Use for 7'-6" (2.3 m) high supports.

Part Number 10684-103, Tall Pipe Stand, 2" (50 mm) Diameter x 91" (2310 mm) High, Gray. Use for 8' (2.4 m) high supports.
Part Number 10684-104, Tall Pipe Stand, 2" (50 mm) Diameter x 103" (2620 mm) High, Gray. Use for 9' (2.7 m) high supports.

Part Number 10684-201, Tall Pipe Stand, 2" (50 mm) Diameter x 79" (2010 mm) High, Computer White. Use for 7' (2.1 m) high supports.
Part Number 10684-202, Tall Pipe Stand, 2" (50 mm) Diameter x 85" (2160 mm) High, Computer White. Use for 7'-6" (2.3 m) high supports.
Part Number 10684-203, Tall Pipe Stand, 2" (50 mm) Diameter x 91" (2310 mm) High, Computer White. Use for 8' (2.4 m) high supports.
Part Number 10684-204, Tall Pipe Stand, 2" (50 mm) Diameter x 103" (2620 mm) High, Computer White. Use for 9' (2.7 m) high supports.

Part Number 10684-701, Tall Pipe Stand, 2" (50 mm) Diameter x 79" (2010 mm) High, Black. Use for 7' (2.1 m) high supports.
Part Number 10684-702, Tall Pipe Stand, 2" (50 mm) Diameter x 85" (2160 mm) High, Black. Use for 7'-6" (2.3 m) high supports.
Part Number 10684-703, Tall Pipe Stand, 2" (50 mm) Diameter x 91" (2310 mm) High, Black. Use for 8' (2.4 m) high supports.
Part Number 10684-704, Tall Pipe Stand, 2" (50 mm) Diameter x 103" (2620 mm) High, Black. Use for 9' (2.7 m) high supports.
Pipe stands include concrete floor installation hardware. Use with cable runway center support kit and 5/8-11 threaded rod.

Part Number 11235-101, Adjustable Floor Support Stands, 5" to 6" (130 mm to 150 mm) High, 1 pair, Gray.
Part Number 11236-101, Adjustable Floor Support Stands, 6" to 8" (150 mm to 200 mm) High, 1 pair, Gray.
Part Number 11237-101, Adjustable Floor Support Stands, 8" to 10" (200 mm to 250 mm) High, 1 pair, Gray.

Part Number 11235-201, Adjustable Floor Support Stands, 5" to 6" (130 mm to 150 mm) High, 1 pair, Computer White.
Part Number 11236-201, Adjustable Floor Support Stands, 6" to 8" (150 mm to 200 mm) High, 1 pair, Computer White.
Part Number 11237-201, Adjustable Floor Support Stands, 8" to 10" (200 mm to 250 mm) High, 1 pair, Computer White.

Part Number 11235-701, Adjustable Floor Support Stands, 5" to 6" (130 mm to 150 mm) High, 1 pair, Black.
Part Number 11236-701, Adjustable Floor Support Stands, 6" to 8" (150 mm to 200 mm) High, 1 pair, Black.
Part Number 11237-701, Adjustable Floor Support Stands, 8" to 10" (200 mm to 250 mm) High, 1 pair, Black.
Adjustable floor support stands include framing bar clamps, threaded rod and hardware. Floor installation hardware is not included.

H. Ladder Rack Accessories

1. Cable straps used for attaching cable bundles to the ladder rack cross members must be reusable with a hook and loop-style closure, at least $\frac{3}{4}$ " (19 mm) wide, and sized for cable bundles that are 2" (50 mm), 3" (80 mm) or 4" (100 mm) in diameter.

2. Cable retaining posts used to keep cable from falling off of the side of the ladder rack shall be manufactured from 1" (25 mm) by 1/2" (12.7 mm) tubular steel with .065" (1.65 mm) wall thickness. Cable retaining posts will be 8" (200 mm) high and will attach to the side stringer of the ladder rack with included hardware. The top of the cable retaining posts will be fitted with a rubberized end cap to protect cables.
3. End caps used to cover the ends of ladder rack will be manufactured from a black fire-retardant rubberized material. End caps will be sized for 3/8" (9.5 mm) wide by 1-1/2" (38 mm) high side stringers and will be sold in pairs.
4. End closing kits used to cover the end of ladder rack will be manufactured from 3/8" (9.5 mm) wide by 1-1/2" (38 mm) high tubular steel with .065" (1.65 mm) wall thickness. Kits will consist of a bar cut to match the width of the ladder rack and the hardware required to attach the bar to the end of a length of ladder rack.
5. Radius drops used to create a radius to form cables over as the cables exit or enter the ladder rack will be manufactured from aluminum extrusion. The extrusion will be formed in a 90° arc with a minimum bend radius of 3" (75 mm). Radius drops will attach to either the side stringer or the cross member of the ladder rack using a clevis pin. Radius drops will include 1-1/2" (38 mm) high cable spools that attach to the top of the radius drop to guide cables.
6. Movable cross members used to support cross member radius drops in between welded cross members on ladder rack will be manufactured from 3/8" (9.5 mm) by 1-1/2" (38 mm) aluminum bar. Movable cross members will attach to ladder rack at the side stringers with included hardware so that the location of the movable cross member can be adjusted. Moveable cross member will support a cross member radius drop.
7. Cable spools used to separate ladder rack into multiple cable pathways will be made from a black flame retardant ABS. Cable spools will attach to the cross members with a clip that allows the width of the ladder rack to be divided into any proportion. The spools will be 3.94" (100 mm) tall, with a 1.94" (49 mm) diameter top, and a body that tapers from .88" (22 mm) diameter at the top to .62" (16 mm) diameter at the bottom.
8. Auxiliary support brackets used to support cables that should be physically separated from the cables in the ladder rack will be made from 1/8" (3 mm) x 1" (25 mm) steel bar. The bracket will be L-shaped and will attach to the side stringer of the ladder rack. The bracket will hang below the ladder rack a minimum of 4" (100 mm). The bracket support surface will be 4" (100 mm) long. The bracket will be zinc plated with a gold chem. finish.
9. Touch-up paint used on ladder rack and ladder rack system components will be color-matched to the finish on the ladder rack or component. A spray on and brush on option will be available.
10. Unless otherwise noted, finish on all metal components shall be epoxy-polyester hybrid powder coat (paint) in the color(s) specified below. Hardware will be zinc plated with a gold chem. finish.

11. Design Make:
Chatsworth Products, Inc. (CPI),
Cable Runway Accessories:

Part Number 02006-203, Saf-T-Grip Reusable Cable Management Straps, Open Loop Series, $\frac{3}{4}$ " (19 mm) Wide by 6" (150 mm) Long for 2" (50 mm) Diameter Cable Bundles, Package of 25, Royal Blue.
Part Number 02009-203, Saf-T-Grip Reusable Cable Management Straps, Open Loop Series, $\frac{3}{4}$ " (19 mm) Wide by 9" (230 mm) Long for 3" (80 mm) Diameter Cable Bundles, Package of 25, Royal Blue.
Part Number 02012-203, Saf-T-Grip Reusable Cable Management Straps, Open Loop Series, $\frac{3}{4}$ " (19 mm) Wide by 12" (300 mm) Long for 4" (100 mm) Diameter Cable Bundles, Package of 25, Royal Blue.

Part Number 05006-203, Saf-T-Grip Reusable Cable Management Straps, End Grommet & Buckle Series, $\frac{3}{4}$ " (19 mm) Wide by 6" (150 mm) Long for 2" (50 mm) Diameter Cable Bundles, Package of 25, Royal Blue.

Part Number 05009-203, Saf-T-Grip Reusable Cable Management Straps, End Grommet & Buckle Series, $\frac{3}{4}$ " (19 mm) Wide by 9" (230 mm) Long for 3" (80 mm) Diameter Cable Bundles, Package of 25, Royal Blue.

Part Number 05012-203, Saf-T-Grip Reusable Cable Management Straps, End Grommet & Buckle Series, $\frac{3}{4}$ " (19 mm) Wide by 12" (300 mm) Long for 4" (100 mm) Diameter Cable Bundles, Package of 25, Royal Blue.

Part Number 10596-108, Cable Retaining Post, 8" (200 mm) High, Gray.

Part Number 10596-208, Cable Retaining Post, 8" (200 mm) High, Computer White.

Part Number 10596-708, Cable Retaining Post, 8" (200 mm) High, Black.

Part Number 10642-001, Cable Runway Protective End Caps, 1 Pair, Black.

Part Number 11700-104, End Closing Kit, For 4" (100 mm) Wide Cable Runway (Ladder Rack), Gray.

Part Number 11700-105, End Closing Kit, For 5" (130 mm) Wide Cable Runway (Ladder Rack), Gray.

Part Number 11700-106, End Closing Kit, For 6" (150 mm) Wide Cable Runway (Ladder Rack), Gray.

Part Number 11700-109, End Closing Kit, For 9" (230 mm) Wide Cable Runway (Ladder Rack), Gray.

Part Number 11700-112, End Closing Kit, For 12" (300 mm) Wide Cable Runway (Ladder Rack), Gray.

Part Number 11700-115, End Closing Kit, For 15" (380 mm) Wide Cable Runway (Ladder Rack), Gray.

Part Number 11700-118, End Closing Kit, For 18" (460 mm) Wide Cable Runway (Ladder Rack), Gray.

Part Number 11700-120, End Closing Kit, For 20" (510 mm) Wide Cable Runway (Ladder Rack), Gray.

Part Number 11700-124, End Closing Kit, For 24" (610 mm) Wide Cable Runway (Ladder Rack), Gray.

Part Number 11700-204, End Closing Kit, For 4" (100 mm) Wide Cable Runway (Ladder Rack), Computer White.
Part Number 11700-205, End Closing Kit, For 5" (130 mm) Wide Cable Runway (Ladder Rack), Computer White.
Part Number 11700-206, End Closing Kit, For 6" (150 mm) Wide Cable Runway (Ladder Rack), Computer White.
Part Number 11700-209, End Closing Kit, For 9" (230 mm) Wide Cable Runway (Ladder Rack), Computer White.
Part Number 11700-212, End Closing Kit, For 12" (300 mm) Wide Cable Runway (Ladder Rack), Computer White.
Part Number 11700-215, End Closing Kit, For 15" (380 mm) Wide Cable Runway (Ladder Rack), Computer White.
Part Number 11700-218, End Closing Kit, For 18" (460 mm) Wide Cable Runway (Ladder Rack), Computer White.
Part Number 11700-220, End Closing Kit, For 20" (510 mm) Wide Cable Runway (Ladder Rack), Computer White.
Part Number 11700-224, End Closing Kit, For 24" (610 mm) Wide Cable Runway (Ladder Rack), Computer White.

Part Number 11700-704, End Closing Kit, For 4" (100 mm) Wide Cable Runway (Ladder Rack), Black.
Part Number 11700-705, End Closing Kit, For 5" (130 mm) Wide Cable Runway (Ladder Rack), Black.
Part Number 11700-706, End Closing Kit, For 6" (150 mm) Wide Cable Runway (Ladder Rack), Black.
Part Number 11700-709, End Closing Kit, For 9" (230 mm) Wide Cable Runway (Ladder Rack), Black.
Part Number 11700-712, End Closing Kit, For 12" (300 mm) Wide Cable Runway (Ladder Rack), Black.
Part Number 11700-715, End Closing Kit, For 15" (380 mm) Wide Cable Runway (Ladder Rack), Black.
Part Number 11700-718, End Closing Kit, For 18" (460 mm) Wide Cable Runway (Ladder Rack), Black.
Part Number 11700-720, End Closing Kit, For 20" (510 mm) Wide Cable Runway (Ladder Rack), Black.
Part Number 11700-724, End Closing Kit, For 24" (610 mm) Wide Cable Runway (Ladder Rack), Black.

End Closing Kit includes installation hardware - a Gold Junction Splice Kit.

Part Number 12100-106, Cross Member Radius Drop, 5" (130 mm) Wide, Gray. Fits 6" (150 mm) Wide Cable Runway (Ladder Rack).
Part Number 12100-109, Cross Member Radius Drop, 8" (200 mm) Wide, Gray. Fits 9" (230 mm) Wide Cable Runway (Ladder Rack).
Part Number 12100-112, Cross Member Radius Drop, 11" (280 mm) Wide, Gray. Fits 12" (300 mm) Wide Cable Runway (Ladder Rack).
Part Number 12100-118, Cross Member Radius Drop, 17" (430 mm) Wide, Gray. Fits 18" (460 mm) Wide Cable Runway (Ladder Rack).

Part Number 12100-206, Cross Member Radius Drop, 5" (130 mm) Wide, Computer White. Fits 6" (150 mm) Wide Cable Runway (Ladder Rack).
Part Number 12100-209, Cross Member Radius Drop, 8" (200 mm) Wide, Computer White. Fits 9" (230 mm) Wide Cable Runway (Ladder Rack).

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Part Number 12100-212, Cross Member Radius Drop, 11" (280 mm) Wide, Computer White. Fits 12" (300 mm) Wide Cable Runway (Ladder Rack).

Part Number 12100-218, Cross Member Radius Drop, 17" (430 mm) Wide, Computer White. Fits 18" (460 mm) Wide Cable Runway (Ladder Rack).

Part Number 12100-706, Cross Member Radius Drop, 5" (130 mm) Wide, Black. Fits 6" (150 mm) Wide Cable Runway (Ladder Rack).

Part Number 12100-709, Cross Member Radius Drop, 8" (200 mm) Wide, Black. Fits 9" (230 mm) Wide Cable Runway (Ladder Rack).

Part Number 12100-712, Cross Member Radius Drop, 11" (280 mm) Wide, Black. Fits 12" (300 mm) Wide Cable Runway (Ladder Rack).

Part Number 12100-718, Cross Member Radius Drop, 17" (430 mm) Wide, Black. Fits 18" (460 mm) Wide Cable Runway (Ladder Rack).

Part Number 12101-101, Side Stringer Radius Drop, Universal Cable Runway, Gray.

Part Number 12101-201, Side Stringer Radius Drop, Universal Cable Runway, Computer White.

Part Number 12101-701, Side Stringer Radius Drop, Universal Cable Runway, Black.

Part Number 12115-109, Movable Cross Member, For 9" (230 mm) Wide Cable Runway and 5" (130 mm) Wide Radius Drop, Gray.

Part Number 12115-112, Movable Cross Member, For 12" (300 mm) Wide Cable Runway and 8" (200 mm) Wide Radius Drop, Gray.

Part Number 12115-118, Movable Cross Member, For 18" (460 mm) Wide Cable Runway and 11" (280 mm) Wide Radius Drop, Gray.

Part Number 12115-209, Movable Cross Member, For 9" (230 mm) Wide Cable Runway and 5" (130 mm) Wide Radius Drop, Computer White.

Part Number 12115-212, Movable Cross Member, For 12" (300 mm) Wide Cable Runway and 8" (200 mm) Wide Radius Drop, Computer White.

Part Number 12115-218, Movable Cross Member, For 18" (460 mm) Wide Cable Runway and 11" (280 mm) Wide Radius Drop, Computer White.

Part Number 12115-709, Movable Cross Member, For 9" (230 mm) Wide Cable Runway and 5" (130 mm) Wide Radius Drop, Black.

Part Number 12115-712, Movable Cross Member, For 12" (300 mm) Wide Cable Runway and 8" (200 mm) Wide Radius Drop, Black.

Part Number 12115-718, Movable Cross Member, For 18" (460 mm) Wide Cable Runway and 11" (280 mm) Wide Radius Drop, Black.

Part Number 13392-711, Cable Runway Dividers, Package of 5, Black.

Part Number 13392-712, Cable Runway Dividers, Package of 25, Black.

Part Number 11268-001, L-Bracket, 4" (100 mm) High x 4" (100 mm) Long, Gold over Zinc.

Part Number 25400-100, Touch-Up Paint in Spray Can, Gray.

Part Number 25400-200, Touch-Up Paint in Spray Can, Computer White.

Part Number 25400-700, Touch-Up Paint in Spray Can, Black.

Paint in spray cans cannot be shipped by air.

Part Number 25401-100, Touch-Up Paint in 1oz. (30 g) Bottle, Gray.

Part Number 25401-200, Touch-Up Paint in 1oz. (30 g) Bottle, Computer White.

Part Number 25401-700, Touch-Up Paint in 1oz. (30 g) Bottle, Black.

I. Miscellaneous Hardware

1. Design Make:
Chatsworth Products, Inc. (CPI),
Miscellaneous Hardware:

Part Number 11440-001, Threaded Drop Rod, 3/8-16 UNC-2A rod, 6' Long, Gold.

Part Number 11440-002, Threaded Drop Rod, 5/8-11 UNC-2A rod, 6' Long, Gold.

Part Number 11440-003, Threaded Drop Rod, 3/8-16 UNC-2A rod, 12' Long, Gold.

Part Number 11440-004, Threaded Drop Rod, 5/8-11 UNC-2A rod, 12' Long, Gold.

Part Number 11440-005, Threaded Drop Rod, 5/8-11 UNC-2A rod, 8' Long, Gold.

Part Number 11440-006, Threaded Drop Rod, 5/8-11 UNC-2A rod, 4' Long, Gold.

Part Number 11440-007, Threaded Drop Rod, 5/8-11 UNC-2A rod, 6" Long, Gold.

Part Number 11440-008, Threaded Drop Rod, 5/8-11 UNC-2A rod, 8" Long, Gold.

Part Number 11440-009, Threaded Drop Rod, 5/8-11 UNC-2A rod, 5.5" Long, Gold.

Part Number 11440-012, Threaded Drop Rod, 5/8-11 UNC-2A rod, 1' Long, Gold.

Part Number 11440-024, Threaded Drop Rod, 5/8-11 UNC-2A rod, 2' Long, Gold.

Part Number 11440-036, Threaded Drop Rod, 5/8-11 UNC-2A rod, 3' Long, Gold.

Part Number 11440-091, Threaded Drop Rod, M10 x 1.5 Rod, 1 m Long, Gold

Part Number 11440-092, Threaded Drop Rod, M16 x 2 Rod, 2 m Long, Gold

Part Number 11440-093, Threaded Drop Rod, M10 x 1.5 Rod, 2 m Long, Gold

Part Number 11440-094, Threaded Drop Rod, M16 x 2 Rod, 2 m Long, Gold

Part Number 11440-095, Threaded Drop Rod, M10 x 1.5 Rod, 3 m Long, Gold

Part Number 11440-096, Threaded Drop Rod, M16 x 2 Rod, 3 m Long, Gold

Part Number 10697-001, Threaded Rod Coupling Kit, for 3/8-16 UNC-2A rods, Gold.

Part Number 10697-002, Threaded Rod Coupling Kit, for 5/8-11 UNC-2A rods, Gold.

Part Number 11085-001, Threaded Rod Cover, 10' (3 m) Long, Plastic, Black.

Part Number 10557-001, Threaded Rod I-Beam Clamps, for 3/8-16 UNC-2A rods, Gold.

Part Number 10557-003, Threaded Rod Coupling Kit, for 5/8-11 UNC-2A rods, Gold.

Part Number 03003-001, Slip-On Lock Nut, for 3/8-16 UNC-2A rods, Zinc plated.

Part Number 03003-002, Slip-On Lock Nut, for 5/8-11 UNC-2A rods, Zinc plated.

Part Number 11408-001, Cable Runway Support Bracket, for 3/8" or M10 drop rod and 1-1/2" (38 mm) High Cable Runway, Gold.

Part Number 11408-003, Cable Runway Support Bracket, for 5/8" or M16 drop rod and 1-1/2" (38 mm) High Cable Runway, Gold.

Part Number 11406-001, Ceiling Support Bracket, for 3/8" or M10 drop rod, Gold.

Part Number 11406-002, Ceiling Support Bracket, for 5/8" or M16 drop rod, Gold.

Part Number 10607-002, Cable Runway Slotted Support Bracket, for 3/8" or M10 drop rod and 1-1/2" (38 mm) High Cable Runway, Gold.

Part Number 10607-001, Cable Runway Slotted Support Bracket, for 5/8" or M16 drop rod and 1-1/2" (38 mm) High Cable Runway, Gold.

Part Number 10873-001, Slip-On Cable Runway Support Bracket, for 5/8" drop rod, Gold.

Part Number 20142-071, Hex Nut, 1/4-20, Gold.

Part Number 20142-081, Hex Nut, 5/16-18, Gold.

Part Number 20142-091, Hex Nut, 3/8-16, Gold.

Part Number 03001-001, Hex Nut, 1/2-13, Gold.

Part Number 20142-111, Hex Nut, 5/8-11, Gold.

Part Number 03003-001, Slip-On Lock Nut, 3/8-16, Zinc.

Part Number 03003-002, Slip-On Lock Nut, 5/8-11, Zinc.

Part Number 04003-002, Split Lock Washer, 1/4, Gold.

Part Number 20141-080, Split Lock Washer, 5/16, Gold.

Part Number 20142-090, Split Lock Washer, 3/8, Gold.

Part Number 20141-100, Split Lock Washer, 1/2, Gold.

Part Number 04003-001, Split Lock Washer, 5/8, Gold.

Part Number 04002-002, Washer, Type A Plain, 3/8, Gold.

Part Number 04002-001, Washer, Type A Plain, 5/8, Gold.

Part Number 02007-004, Hex Lag Screw, 1/4-10 x 2" Long, Gold

Part Number 02006-001, Hex Lag Screw, 1/2-6 x 2" Long, Gold.

Part Number 20098-832, Hex Lag Screw, 3/8-7 x 2" Long, Gold
Part Number 02006-002, Hex Lag Screw, 5/8-5 x 2" Long, Gold

Part Number 20067-001, Anchor, 3/8-16 x Expansion Shield, Zinc.
Part Number 06001-004, Anchor, 5/8-11 Multi-set, Zinc.
Part Number 06003-001, Anchor Setting Tool, for P/N 06001-004.

Part Number 20068-304, Stud Bolt, 3/8-16 x 3-1/2" Long, Zinc.
Part Number 08001-002, Stud Bolt, 5/8-11 x 3" Long, Zinc.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Ladder Rack

1. Provide all components of the ladder rack system (ladder rack, turns, splices, supports, and accessories) from a single manufacturer.
2. Ladder rack shall be installed with side stringers facing down so that the ladder forms an inverted U-shape and so that welds between the stringers (sides) and cross members (middle) face away from cables.
3. Ladder rack shall be secured to the structural ceiling, building truss system, wall, floor or the tops of equipment racks and/or cabinets using the manufacturer's recommended supports and appropriate installation hardware and methods as defined by local code or the authority having jurisdiction (AHJ).
4. Ladder rack splices will be made in mid-span, not over a support, with the manufacturer's recommended splice hardware.
5. Ladder rack shall be supported every 5' (1.5 m) or less in accordance with TIA-569-B. Ladder rack shall be supported within 2' (0.6 m) of every splice and within 2' (0.6 m) on both/all sides of every intersection. Support ladder rack within 2' (0.6 m) on both sides of every change in elevation. Support ladder rack every 2' (0.6 m) when attached vertically to a wall.
6. Heavy-duty splices are recommended for ladder rack in excess of 18" (460 mm) width. Heavy-duty splices are required for any splice formed in the vertical orientation including changes in elevation formed using vertical-to-horizontal 90° turns or horizontal-to-vertical 90° turns. Use heavy-duty splices to secure all overhead turns to the overhead horizontal pathway(s).
7. When the pathway is overhead, ladder rack shall be installed with a minimum clearance of 12" (300 mm) above the ladder rack. Leave a minimum of 12" (300 mm) in between ladder rack and ceiling/building truss structure. Leave a minimum of 3" (75 mm) in between ladder rack and the tops of equipment racks and/or cabinets. Multiple tiers of ladder rack shall be installed with a minimum clearance of 12" (300 mm) in between each tier of ladder rack. When located above an acoustical drop

ceiling, leave a minimum of 3" (75 mm) clearance between the top of the drop ceiling tiles and the bottom of the ladder rack.

8. When installed under a raised floor, ladder rack shall be installed with a minimum 3" (75 mm) clearance between the top of the ladder rack and the bottom of the floor tiles or floor system stringers, whichever is lower in elevation. Maintain a 3" (75 mm) clearance between ladder racks wherever ladder racks cross.
9. Within each telecommunications room, ladder rack should be bonded together, electrically continuous, and bonded to the TGB, unless otherwise noted in the specifications and contract documents. Ladder rack and turns shall be bonded across each splice with a bonding kit. Ladder rack shall be bonded to the Telecommunications Grounding Busbar (TGB) using an approved ground lug on the ladder rack and a minimum #6 grounding wire or as recommended by the AHJ. Remove paint from the ladder rack where bonding/ground lugs contact the ladder rack so that the lug will contact bare metal. Use antioxidant joint compound in between the bare metal on the ladder rack and ground lug. Use antioxidant joint compound in between the bus bar and the ground lug. Verify continuity through the bonds at splices and intersections between individual ladder rack sections and turns and through the bond to the TGB.
10. The quantity of cables within the ladder rack will not exceed a whole number value equal to 50% of the interior area of the ladder rack divided by the cross-sectional area of the cable. The interior area of ladder rack will be considered to be the width of the ladder rack multiplied by a height of 2" (50 mm), unless cable retaining posts are added to the ladder rack. The interior area of ladder rack equipped with cable retaining posts will be considered to be the width of the ladder rack multiplied by a height of 6" (150 mm). Actual cable fill for ladder rack that is not equipped with cable retaining posts will not exceed 2" (50 mm) in height. Actual cable fill for ladder rack equipped with cable retaining posts will not exceed 6" (150 mm) in height.
11. The combined weight of cables within the ladder rack will not exceed the stated load capacity of the ladder rack as stated in the manufacturer's product specifications or load/design tables.
12. Cables (cable bundles) will be secured to the cross members of ladder rack with $\frac{3}{4}$ " (19 mm) wide reusable straps. Straps are not required when ladder rack is equipped with cable retaining posts.
13. Add 8" (200 mm) high cable retaining posts to the open sides of ladder rack when cable fill exceeds 2" (50 mm) in height or when cable bundles cannot be secured directly to the ladder rack cross members with a strap. Cable fill within any ladder rack should not exceed 6" (150 mm) in height.
14. When a single ladder rack supports different types of cable media, the cable media will be separated within the pathway by cable spools that attach to the cross members on the ladder rack. Treat each type of cable media and divided area of the ladder rack separately when determining cable fill limits.

15. Use a radius drop to guide cables wherever cable exits overhead ladder rack to access a rack, cabinet or wall-mounted rack, cabinet or termination field. Provide a moveable cross member also to attach and align the radius drop in between the welded cross members of a ladder rack.
16. Cover the exposed ends of cable runway that do not terminate against a wall, the floor or the ceiling with end caps or an end closing kit.
17. Use auxiliary support brackets that attach to the side stringer of the ladder rack to support interconnect cabling (patch cords, equipment cords, jumper cords) that is routed between racks using the ladder rack. Auxiliary support brackets can be used to support other conductors that should be physically separated from cables within the ladder rack as defined by local code or the authority having jurisdiction (AHJ).
18. Whenever possible, maintain a 2' (0.6 m) separation between ladder rack used for communications cables and pathways for other utilities or building services.
19. The installer will provide touch-up paint color-matched to the finish on the ladder rack and will correct any minor cosmetic damage (chips, small scratches, etc.) resulting from normal handling during the installation process prior to delivery to the owner. If a component is cosmetically damaged to the extent that correction in the field is obvious against the factory finish, the component will be replaced with a new component finished from the factory. If a component is physically damaged due to mishandling or modification during the installation process, it shall not be used as part of the ladder rack system.