SECTION 271123 - CABLE MANAGEMENT AND LADDER RACKS/RUNWAY

This section is based on the products:

Chatsworth Products (CPI)

29899 Agoura Road, Suite 120

Agoura Hills, CA 91301

Phone: (800) 834-4969 / (818) 739-3400

Email: techsupport@chatsworth.com

Web: <http://www.chatsworth.com>Specifier Notes: This product guide specification is written according to the Construction Specifications Institute (CSI) 3-Part Format, including *MasterFormat, SectionFormat,* and *PageFormat,* as described in *The Project Resource Manual—CSI Manual of Practice, Fifth Edition.*

This section must be carefully reviewed and edited by the Architect or Engineer to meet the requirements of the project and local building code. Coordinate this section with other specification sections and the Drawings. Delete all “Specifier Notes” after editing this section.

Section numbers are from *MasterFormat 2016 Edition*.

1. GENERAL
   * + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

* + - 1. SUMMARY

Section Includes:

Vertical Cable Management for Racks and Frames.

Horizontal Cable Management for Racks and Frames.

Ladder Racks.

Related Requirements:

Retain subparagraph below to cross-reference requirements Contractor might expect to find in this Section but are specified in other Sections.

Section 271116 "Communications Cabinets, Racks, Frames, and Enclosures" for cabinets, racks, frames and enclosures.

Section 271126 "Communications Rack Mounted Power Protection and Power Strips" for rack-mounted power distribution units

Section 270536 "Cable Trays for Communications Systems" for cable trays and accessories serving communications systems.

* + - 1. DEFINITIONS

BICSI: Building Industry Consulting Service International

* + - * 1. EIA: Electronic Industries Alliance.
        2. TIA: Telecommunications Industry Association
        3. ANSI: American National Standard Institute
      1. REFERENCES

ANSI/TIA-569-D Telecommunications Pathways and Spaces, 2015

* + - * 1. ANSI/TIA-568-D.0 Generic Telecommunications Cabling for Customer Premises, 2015
        2. ANSI/TIA – 568-D.1 Commercial Building Telecommunications Cabling Standard, 2015.
        3. ANSI/NECA/BICSI 568-2006 – Standard for Installing Commercial Building Telecommunication Cabling
        4. ANSI/TIA-942-A Telecommunications Infrastructure Standard for Data Centers, 2014.
        5. ANSI/TIA – 606-B Administration Standard for Telecommunications Infrastructure, 2012.
        6. ANSI/TIA – 607-C Generic Telecommunications Bonding and Grounding (Earthing) for Customer Premises, 2015.
        7. NFPA 70 – National Electric Code, 2008, 2014.
      1. ACTION SUBMITTALS

Product Data: For each type of product.

Include construction details, material descriptions, dimensions of individual components and profiles, and finishes for cable management and ladder racks.

Include rated capacities, operating characteristics, electrical characteristics, and furnished specialties and accessories.

Shop Drawings: For communications equipment room fittings. Include plans, elevations, sections, details, and attachments to other work.

Detail equipment assemblies and indicate dimensions, weights, loads, required clearances, method of field assembly, components, and location and size of each field connection.

Include workspace requirements and access for cable connections.

Grounding: Indicate bonding requirements and location of bonding bus bar.

1. PRODUCTS
   * + 1. VERTICAL CABLE MANAGEMENT FOR RACKS AND FRAMES

Vertical cable manager used alongside open rack systems (two-post and four-post racks) to organize network cabling and patch cords in data centers, computer rooms and equipment rooms.

Motive has a unique central track system at the back of the manager that allows quick attachment and adjustment of cable management accessories. The accessories allow individual cable bundles to be separated and supported back to the central track. This makes it ideal for data center fiber and enterprise POE+/POE++ applications. It also allows quick adjustment of cable spools to match cable slack. There is a matching horizontal manager.

Motive is assembled on site and attached to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/Products/Cable-Management/Motive-Vertical/>

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/32610_motive_datasheet.pdf>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); Motive Vertical Cable Management.

Motive Single-Sided Vertical Cable Manager, for 3-inch-Deep and 6-inch-Deep Channel Racks:

Configuration: C-shaped trough with a front door. The single-sided trough shall provide a single cable pathway. The front sides of the cable manager shall have T-shaped cable guides separated by openings that align with each U space on the rack. The back of the manager shall have a vertical support member with an integrated vertical track that shall allow quick attachment and vertical adjustment of cable management accessories inside the manager. The back of the manager will also have openings along both sides of the support to allow easy cable pass-through. The door will be supported from the top and bottom of the cable manager and will open and secure in the closed position using a single lever/latch.

Width: [**6 inches (150 mm)**][**8 inches (203 mm)**][**10 inches (254 mm)**][**12 inches (305 mm)**][**15 inches (381 mm)**].

Depth: 15.5 inches (394 mm).

Height: [**72 inches (1.8 m)**][**78 inches (2.0 m)**][**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**][**102 inches (2.7 m)**].

Finishes and colors: Powder coat paint in [**black**][**white**]. T-shaped cable guides are black.

Accessories:

Accessory Rod Assembly.

Half Spool Kit.

Rotating Management Finger Kit.

Cable Bundle Swivel Kit.

Cable Ring Kit

Dual PDU Bracket.

Solid Side Panel.

Solid Rear Panel for Single-Sided Vision.

Motive Double-Sided Vertical Cable Manager, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: Double-sided H-shaped trough with a front door and a rear door. Trough provides independent front and rear cable pathways. The front and rear sides of the cable manager have T-shaped cable guides separated by openings that align with each U space on the rack. The middle of the manager shall have a vertical support member with an integrated vertical track that shall allow quick attachment and vertical adjustment of cable management accessories inside the manager. The center of the manager will also have openings along both sides of the support to allow easy cable pass-through. The doors will be supported from the tops and bottoms of the cable manager and will open and secure in the closed position using a single lever/latch.

Width: [**6 inches (150 mm)**][**8 inches (203 mm)**][**10 inches (254 mm)**][**12 inches (305 mm)**][**15 inches (381 mm)**].

Depth: 23.6 inches (600 mm).

Height: [**72 inches (1.8 m)**][**78 inches (2.0 m)**][**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**][**102 inches (2.7 m)**].

Finishes and colors: Powder coat paint in [**black**][**white**]. T-shaped cable guides are black.

Accessories:

Accessory Rod Assembly.

Half Spool Kit.

Rotating Management Finger Kit.

Cable Bundle Swivel Kit.

Dual PDU Bracket.

Solid Side Panel.

Solid Mid Panel for Double-Sided Vision.

Vertical cable manager used alongside open rack systems (two-post and four-post racks) to organize network cabling and patch cords in data centers, computer rooms and equipment rooms.

Evolution is a high density cable manager for use in data center applications. It is single-sided or double-sided with cable guide fingers and a latching door. There is a matching horizontal manager. Evolution ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

http://www.chatsworth.com/products/cable-management/evolution-vertical/

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/35514_datasheet.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-evolution_vertical_cable_management>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); Evolution Cable Management.

Evolution g1 Single-Sided Vertical Cable Manager, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: C-shaped trough with a front door. The single-sided trough shall provide a single cable pathway. The front sides of the cable manager shall have T-shaped cable guides separated by openings that align with each U space on the rack. The back of the manager shall be mostly open to allow easy cable pass-through. Three fixed position accessory mounting panels shall allow attachment of cable management accessories at the back of the manager.

Width: [**6 inches (150 mm)**][**8 inches (203 mm)**][**10 inches (254 mm)**][**12 inches (305 mm)**][**15 inches (381 mm)**].

Depth: 13.2 inches (335 mm).

Height: [**72 inches (1.8 m)**][**84 inches (2.1 m)**][**96 inches (2.4 m)**].

Finishes and colors: Powder coat paint in [**black**][**white**]. T-shaped cable guides and latch hardware is black.

Accessories:

Solid Rear Panel.

Cable Distribution Spools, Pack of 4, Black.

Fiber Segregation Kit.

Cable Lashing Bar Kit.

Evolution g2 Double-Sided Vertical Cable Manager, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: Double-sided H-shaped trough with a front door and a rear door. Trough provides independent front and rear cable pathways. The front and rear sides of the cable manager have T-shaped cable guides separated by openings that align with each U space on the rack. The middle of the managers shall be mostly open to allow easy cable pass-through. Three movable mid-sections allow the attachment of cable management accessories inside the cable manager. The movable mid-sections adjust front-to-rear to allow a 40/60, 50/50 or 60/40 front/rear split of the interior cable management space.

Width: [**6 inches (150 mm)**][**8 inches (203 mm)**][**10 inches (254 mm)**][**12 inches (305 mm)**][**15 inches (381 mm)**].

Depth: 24.5 inches (622 mm).

Height: [**72 inches (1.8 m)**][**84 inches (2.1 m)**][**96 inches (2.4 m)**].

Accessories:

Solid Side Panel.

Solid Mid Panel.

Cable Distribution Spools, Pack of 4, Black.

Fiber Segregation Kit.

Cable Lashing Bar Kit.

Evolution g3 Combination Vertical Cable Manager, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: Single-sided C-shaped trough with a front door and individual cable rings on the rear side. Trough and cable rings provide independent front and rear cable pathways. The front sides of the cable manager are T-shaped cable guides separated by openings that align with each U space on the rack. The back of the manager has individual rings with plastic spin-open latches. The rings will provide attachment points for cable management accessories inside the cable management trough. Openings between the rings will allow easy cable pass-through.

Width: [**6 inches (150 mm)**][**8 inches (203 mm)**][**10 inches (254 mm)**][**12 inches (305 mm)**][**15 inches (381 mm)**].

Depth: 20.2 inches (513 mm).

Height: [**72 inches (1.8 m)**][**84 inches (2.1 m)**][**96 inches (2.4 m)**].

Accessories:

Solid Rear Panel.

Cable Distribution Spools, Pack of 4, Black.

Fiber Segregation Kit.

Cable Lashing Bar Kit.

Vertical cable manager used alongside open rack systems (two-post and four-post racks) to organize network cabling and patch cords in data centers, computer rooms and equipment rooms.

Velocity is a basic, low density cable manager for use in enterprise cabling applications. There is a matching horizontal manager. Velocity ships partially assembled. It is plastic, snaps together and attaches to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/products/cable-management/velocity-vertical/>

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/13901_datasheet.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-velocity_vertical_cable_management>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); Velocity Cable Management.

Single-Sided Vertical Cable Manager, for 3 inch Deep Channel Racks:

Configuration: Single-sided C-shaped trough with a two-piece cover which provides a single pathway. The sides of the manager shall be made of plastic (not metal) and shall have T-shaped cable guides separated by openings that align with each U space on the rack. Four fixed position metal mid panels at the back of the manager shall allow attachment of cable management accessories (cable spools and management bars). The back/middle is mostly open to allow easy cable pass-through.

Width: [**3.6 inches (91 mm)**][**6 inches (150 mm)**][**10 inches (254 mm)**][**12 inches (305 mm)**].

Depth: [**9.7 inches (246 mm)**][**9.8 inches (249 mm)**][**10.3 inches (261 mm)**][**10.4 inches (264 mm).**

**Height: [72 inches (1.8 m)**][**84 inches (2.1 m)**][**96 inches (2.4 m)**].

Finishes and colors: Molded plastic, black.

Accessories:

Cable Ring Kit.

Double-Sided Vertical Cable Manager, for 3 inch Deep Channel Racks:

Configuration: Double-sided H-shaped trough with front and rear two-piece covers provides independent front and rear cable pathways. The sides of the manager shall be made of plastic (not metal) and shall have T-shaped cable guides separated by openings that align with each U space on the rack. Four fixed position metal mid panels will separate the front and rear cable pathways and will hold cable management accessories. The back/middle is mostly open to allow easy cable pass-through.

Width: [**3.6 inches (91 mm)**][**6 inches (150 mm)**][**10 inches (254 mm)**][**12 inches (305 mm)**].

Depth: [**16.4 inches (417 mm)**][**16.6 inches (422 mm)**][**17.5 inches (445 mm)**][**17.8 inches (452 mm).**

**Height: [72 inches (1.8 m)**][**84 inches (2.1 m)**][**96 inches (2.4 m)**].

Finishes and colors: Molded plastic, black.

Accessories:

Cable Spool Kit.

Cable Lashing Bar Kit.

Vertical cable manager used alongside open rack systems (two-post and four-post racks) to organize network cabling and patch cords in data centers, computer rooms and equipment rooms.

CCS Combination Cabling Section is a basic, medium density cable manager for use in enterprise cabling applications. CCS is a double-sided metal trough with fingers and cover on the front side and spin closure latches on the rear side. Used with the Universal Horizontal Cable Manager. CCS ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/products/cable-management/additional-products2/>

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/30161_cut.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-ccs_combination_cabling_section>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); CCS Combination Cabling Section.

Double-Sided CCS, for 3 inch Deep Channel Racks:

Configuration: The front of the vertical cable manager will have cable openings along both sides of the trough. The openings will be formed by evenly-spaced T-shaped cable guides. The T-shaped cable guides will be made from a composite plastic material (not metal) and will have rounded edges to protect cables. When the cable manager is attached to a rack/frame, each cable opening will align with a rack-mount space (RMU) on the rack/frame. Each opening will pass a minimum of 24 each 0.25 inch (6 mm) OD patch cords. The rear of the cable manager will be an open through with integrated evenly-spaced spinning latches to secure cables. The manager will include a front door that securely latches in the closed position.

Width: [**3.65 inches (92.7 mm)**] [**6 inches (150 mm)**][**10 inches (250 mm)**].

Depth: 12.24 inches (311 mm).

Height: [**72 inches (1.8 m)**][**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**][**108 inches (2.7 m)**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Double-Sided CCS, for 6 inch Deep Channel Racks:

Configuration: The front of the vertical cable manager will have cable openings along both sides of the trough. The openings will be formed by evenly-spaced T-shaped cable guides. The T-shaped cable guides will be made from a composite plastic material (not metal) and will have rounded edges to protect cables. When the cable manager is attached to a rack/frame, each cable opening will align with a rack-mount space (RMU) on the rack/frame. Each opening will pass a minimum of 24 each 0.25 inch (6 mm) OD patch cords. The rear of the cable manager will be an open through with integrated evenly-spaced spinning latches to secure cables. The manager will include a front door that securely latches in the closed position.

Width: [**3.65 inches (92.7 mm)**][**6 inches (150 mm)**][**10 inches (254 mm)**].

Depth: 14.6 inches (371 mm).

Height: [**72 inches (1.8 m)**][**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**][**108 inches (2.7 m)**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Vertical cable manager used alongside open rack systems (two-post and four-post racks) to organize network cabling and patch cords in data centers, computer rooms and equipment rooms.

CCS-EXF Combination Cabling Section with Extended Fingers is a basic, medium density cable manager for use in enterprise cabling applications. CCS-EFX is a double-sided metal trough with fingers and cover on the front side and spin closure latches on the rear side. Used with the Universal Horizontal Cable Manager. CC-EFX ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/products/cable-management/additional-products2/>

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/30161_cut.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-ccs-efx_combination_cabling_section>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); CCS-EFX Combination Cabling Section with Extended Fingers.

Double-Sided CCS-EFX, for 3 inch Deep Channel Racks:

Configuration: The front of the vertical cable manager will have cable openings along both sides of the trough. The openings will be formed by evenly-spaced T-shaped cable guides. The T-shaped cable guides will be made from a composite plastic material (not metal) and will have rounded edges to protect cables. When the cable manager is attached to a rack/frame, each cable opening will align with a rack-mount space (RMU) on the rack/frame. Each opening will pass a minimum of 48 each 0.25 inch (6 mm) OD patch cords. The rear of the cable manager will be an open trough with integrated evenly-spaced spinning latches to secure cables. The manager will include a front door that securely latches in the closed position.

Width: [**6 inches (150 mm)**][**10 inches (254 mm)**][**12 inches (305 mm)**].

Depth: 14.9 inches (378 mm).

Height: [**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Vertical cable manager used alongside open rack systems (two-post and four-post racks) to organize network cabling and patch cords in data centers, computer rooms and equipment rooms.

MCS-EXF-Master Cabling Section with Extended Fingers is a basic, medium density cable manager for use in enterprise cabling applications. MCS-EFX is a single-sided or double-sided metal trough with fingers and cover. Used with the Universal Horizontal Cable Manager. MCS-EFX ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/Products/Cable-Management/MCS-Master-Cabling-Section/>

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/40092_datasheet.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-mcs-efx_master_cabling_section>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); MCS-EFX Master Cabling Section with Extended Fingers.

Single-Sided MCS-EFX, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: The front of the vertical cable manager will have cable openings along both sides of the trough. The openings will be formed by evenly-spaced T-shaped cable guides. The T-shaped cable guides will be made from a composite plastic material (not metal) and will have rounded edges to protect cables. When the cable manager is attached to a rack/frame, each cable opening will align with a rack-mount space (RMU) on the rack/frame. Each opening will pass a minimum of 48 each 0.25 inch (6 mm) OD patch cords. The manager will include a front door that securely latches in the closed position.

Width: [**6 inches (150 mm)**][**10 inches (254 mm)**][**12 inches (305 mm)**].

Depth: 10.6 inches (270 mm).

Height: [**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Double-Sided MCS-EFX, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: The front of the vertical cable manager will have cable openings along both sides of the trough. The openings will be formed by evenly-spaced T-shaped cable guides. The T-shaped cable guides will be made from a composite plastic material (not metal) and will have rounded edges to protect cables. When the cable manager is attached to a rack/frame, each cable opening will align with a rack-mount space (RMU) on the rack/frame. Each opening will pass a minimum of 48 each 0.25 inch (6 mm) OD patch cords. The manager will include front and rear doors that securely latch in the closed positions.

Width: [**6 inches (150 mm)**][**10 inches (254 mm)**][**12 inches (305 mm)**].

Depth: 21.2 inches (539 mm).

Height: [**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Vertical cable manager used alongside open rack systems (two-post and four-post racks) to organize network cabling and patch cords in data centers, computer rooms and equipment rooms.

MCS-Master Cabling Section is a basic, medium density cable manager for use in enterprise cabling applications. MCS is a single-sided or double-sided metal trough with fingers and cover. Used with the Universal Horizontal Cable Manager. MCS ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/Products/Cable-Management/MCS-Master-Cabling-Section/>

Product Data Sheet:

<http://www.chatsworth.com/product_docs/30091_cut.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-mcs_master_cabling_section>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); MCS Master Cabling Section.

Single--Sided MCS, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: The front of the vertical cable manager will have cable openings along both sides of the trough. The openings will be formed by evenly-spaced T-shaped cable guides. The T-shaped cable guides will be made from a composite plastic material (not metal) and will have rounded edges to protect cables. When the cable manager is attached to a rack/frame, each cable opening will align with a rack-mount space (RMU) on the rack/frame. Each opening will pass a minimum of 24 each 0.25 inch (6 mm) OD patch cords. The manager will include a front door that securely latches in the closed position.

Width: [**4.4 inches (112 mm)**][**6 inches (150 mm)**][**10 inches (254 mm)**].

Depth: 8.1 inches (206 mm).

Height: [**66 inches (1.7 m)**][**72 inches (1.8 m)**][**78 inches (2 m)**][**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**][**108 inches (2.7 m)**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Double-Sided MCS, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: The front and rear of the vertical cable manager will have cable openings along both sides of the trough. The openings will be formed by evenly-spaced T-shaped cable guides. The T-shaped cable guides will be made from a composite plastic material (not metal) and will have rounded edges to protect cables. When the cable manager is attached to a rack/frame, each cable opening will align with a rack-mount space (RMU) on the rack/frame. Each opening will pass a minimum of 24 each 0.25 inch (6 mm) OD patch cords. The manager will include front and rear doors that securely latch in the closed positions.

Width: [**4.4 inches (112 mm)**][**6 inches (150 mm)**][**10 inches (254 mm)**].

Depth: 16.2 inches (410 mm).

Height: [**66 inches (1.7 m)**][**72 inches (1.8 m)**][**78 inches (2.0 m)**][**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**][**108 inches (2.7 m)**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Vertical cable manager used alongside open rack systems (two-post and four-post racks) to organize network cabling and patch cords in data centers, computer rooms and equipment rooms.

VCS Vertical Cabling Section is a basic, medium density cable manager for use in enterprise cabling applications. VCS is a single-sided or double-sided metal trough with spin closure latches. Used with the Universal Horizontal Cable Manager. VCS ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/Products/Cable-Management/Additional-Products2/>

Product Data Sheet:

<http://www.chatsworth.com/product_docs/11374_cut.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-vcs_vertical_cabling_section>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); VCS Vertical Cabling Section.

Single-Sided Narrow VCS, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: Single-sided C-shaped trough with evenly spaced spin-open latches on the front side. The front metal edges in between the latches shall be covered by plastic edge protectors to protect cables.

Width: 3.65 inches (92.7 mm).

Depth: 6.38 inches (162.1 mm).

Height: [**66 inches (1.7 m)**][**72 inches (1.8 m)**][**78 inches (2.0 m)**][**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**][**108 inches (2.7 m)**].

Finish and colors: Powder coat paint in color specified.[**black**][**gray**][**computer beige][white]**. Edge-protectors and latch hardware is black.

Accessories:

Cabling Section Cover: [**Tinted Plexiglass**][**Black Metal**]; 3.65 inches (92.7 mm) wide by 84 inches (2.1 m) high.

Finger Snaps Cable Guides: [**Black**]; retrofit T-shaped cable guides that snap onto the cabling section and provide openings that align with RMU on the rack. Each opening will pass a minimum of 24 each 0.25 inch (6 mm) OD patch cords.

Single-Sided, Wide VCS, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: Single-sided C-shaped trough with evenly spaced spin-open latches on the front side. The front metal edges in between the latches shall be covered by plastic edge protectors to protect cables.

Width: 6 inches (150 mm).

Depth: 6.38 inches (162.1 mm).

Height: [**66 inches (1.7 m)**][**72 inches (1.8 m)**][**78 inches (2.0 m)**][**84 inches (2.1 m)**][**90 inches (2.3 m)**][**96 inches (2.4 m)**][**108 inches (2.7 m)**].

Finish and colors: Powder coat paint in [**black**][**gray**][**computer beige][white**]Edge-protectors and latch hardware is black.

Accessories:

Cabling Section Cover: [**Tinted Plexiglass**][**Black Metal**]; 6 inches (150 mm) wide by 84 inches (2.1 m) high.

Finger Snaps Cable Guides: [**Black**]; retrofit T-shaped cable guides that snap onto the cabling section and provide openings that align with RMU on the rack. Each opening will pass a minimum of 24 each 0.25 inch (6 mm) OD patch cords.

Double-Sided, Narrow VCS, for 3 inch Deep and 6 inch Deep Channel Racks :

Configuration: Double-sided H-shaped trough with evenly spaced spin-open latches on the front and rear sides. The front and rear metal edges in between the latches shall be covered by plastic edge protectors to protect cables. The trough provides independent front and rear cable pathways and shall have multiple evenly-spaced edge-protected front-to-rear cable pass-through holes for cables in the center divider.

Width: 3.65 inches (92.7 mm).

Depth: 12.75 inches (324 mm).

Height: [**84 inches (2.1 m)**][**96 inches (2.4 m)**][**108 inches (2.7 m)**].

Finish and colors: Powder coat paint in [**black**][**gray**][**computer beige][white**]. Edge-protectors and latch hardware is black.

Accessories:

Cabling Section Cover: [**Tinted Plexiglass**][**Black Metal**]; 3.65 inches (92.7 mm) wide by 84 inches (2.1 m) high.

Finger Snaps Cable Guides: Black; retrofit T-shaped cable guides that snap onto the cabling section and provide openings that align with RMU on the rack. Each opening will pass a minimum of 24 each 0.25 inch (6 mm) OD patch cords.

Double-Sided, Wide VCS, for 3 inch Deep and 6 inch Deep Channel Racks:

Configuration: Double-sided H-shaped trough with evenly spaced spin-open latches on the front and rear sides. The front and rear metal edges in between the latches shall be covered by plastic edge protectors to protect cables. The trough provides independent front and rear cable pathways and shall have multiple evenly-spaced edge-protected front-to-rear cable pass-through holes for cables in the center divider.

Width: 6 inches (150 mm).

Depth: 12.75 inches (324 mm).

Height: [**84 inches (2.1 m)**][**96 inches (2.4 m)**][**108 inches (2.7 m)**].

Finish and colors: Powder coat paint in [**black**][**gray**][**computer beige][white**]. Edge-protectors and latch hardware is black.

Accessories:

Cabling Section Cover: [**Tinted Plexiglass**][**Black Metal**]; 6 inches (150 mm) wide by 84 inches (2.1 m) high.

Finger Snaps Cable Guides: [**Black**]; retrofit T-shaped cable guides that snap onto the cabling section and provide openings that align with RMU on the rack. Each opening will pass a minimum of 24 each 0.25 inch (6 mm) OD patch cords.

Vertical cable manager used alongside open rack systems (two-post and four-post racks) to organize network cabling and patch cords in data centers, computer rooms and equipment rooms.

GVCS-Global Vertical Cabling Section is a basic, medium density cable manager for use in enterprise cabling applications. GVCS is a single-sided or double-sided metal trough with fingers and snap on cover. Used with the Universal Horizontal Cable Manager. GVCS ships partially assembled. It attaches to a rack system then populated with cables.

Product webpage:

<https://catalog.chatsworth.com/cable-management/vertical-cable-management/gvcs-global-vertical-cabling-section-double-sided>

Product Data Sheet:

<http://www.chatsworth.com/UploadedFiles/Files/12831_cut.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-vcs_global_vertical_cabling_section>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); GVCS Global Vertical Cabling Section.

Single-Sided GVCS, for 3 inch Deep Channel Racks:

Configuration: C-shaped trough with a two-piece front cover. The single-sided trough shall provide a single cable pathway. The cable manager shall be made of metal. The front sides of the cable manager shall have plastic T-shaped cable guides separated by openings that align with each U space on the rack. The cover will snap onto the T-shaped cable guides and swing open to the right or left side.

Width: [**3.6 inches (91 mm)**][**6 inches (150 mm)**][**10 inches (254 mm**].

Depth: [**6.8 inches (172 mm)**][**9.3 inches (236 mm)**].

Height: [**84 inches (2.1 m)**].

Double-Sided GVCS, for 3 inch Deep Channel Racks:

Configuration: Double-sided H-shaped trough with front and rear two-piece covers provides independent front and rear cable pathways. The sides of the manager shall be metal. The front sides of the cable manager shall have plastic T-shaped cable guides separated by openings that align with each U space on the rack. The cover will snap onto the T-shaped cable guides and swing open to the right or left side.

Width: [**3.6 inches (91 mm)**][**6 inches (150 mm)**][**10 inches (254 mm)**].

Depth: [**6.8 inches (172 mm)**][**9.3 inches (236 mm)**].

Height: [**84 inches (2.1 m)**].

* + - 1. HORIZONTAL CABLE MANAGEMENT FOR RACKS AND FRAMES

Horizontal cable manager used in between patch panels on open rack systems (two-post and four-post racks) to organize patch cords in data centers, computer rooms and equipment rooms.

UHCM-Universal Horizontal Cable Manager is is a basic, medium density cable manager for use in enterprise cabling applications. UHCM is a single-sided or double-sided metal trough with fingers and snap on cover. Used with MCS, MCS-EFX, CCS, CCS-EFX, VCS, GVCS. UHCM ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/Products/Cable-Management/Universal-Horizontal/>

Product Data Sheet:

<http://www.chatsworth.com/product_docs/30130_cut.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-universal_horizontal_cable_manager>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); Universal Horizontal Cable Manager.

Single-Sided Manager:

Configuration: Single-sided C-shaped trough with a cover. The trough will have a slot or holes at the rear to facilitate front-to-rear cabling through the horizontal manager. The front of the cable manager will have T-shaped cable guides along the top and bottom surfaces of the cable manager. Evenly spaced cable openings in between the T-shaped cable guides will allow cables to enter/exit the cable manager into the rack-mount space. The openings will have rounded edges to protect cables. The cover will be removable, hinged to open up or down and will snap on to secure the cover in the closed position.

Width: 19 inches (482 mm).

RMU 1 select a depth of 5 inches (127 mm) or 6,2 inches (157 mm). For RMU 2 and 3 select a depth of 5.2 inches (130 mm) or 6.4 inches (163 mm).

Depth: [**5 inches (127 mm)**][**5.2 inches (130 mm)**][**6.2 inches (157 mm)**][**6.4 inches (163 mm)**]

RMU: [**1**][**2**][**3**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Double-Sided Manager:

Configuration: Double-sided H-shaped trough with front and rear covers. The trough will have a slot or holes at the rear to facilitate front-to-rear cabling through the horizontal manager. The front and rear of the cable manager will have T-shaped cable guides along the top and bottom surfaces of the cable manager. Evenly spaced cable openings in between the T-shaped cable guides will allow cables to enter/exit the cable manager into the rack-mount space. The openings will have rounded edges to protect cables. The covers will be removable, hinged to open up or down and will snap on to secure the cover in the closed position.

Width: 19 inches (482 mm).

Depth: 11.7 inches (298 mm).

RMU: [**1**][**2**][**3**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Horizontal cable manager used in between patch panels on open rack systems (two-post and four-post racks) to organize patch cords in data centers, computer rooms and equipment rooms.

HCM-Horizontal Cable Manager is is a basic, low density cable manager for use in enterprise cabling applications. HCM is single-sided with rings to hold cables. Used with VCS. HCM ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/products/cable-management/additional-products/>

Product Data Sheet:

<http://www.chatsworth.com/product_docs/13070_cut.pdf>

<http://www.chatsworth.com/product_docs/11564_cut.pdf>

<http://www.chatsworth.com/product_docs/11752_cut.pdf>

http://www.chatsworth.com/product\_docs/12183\_cut.pdf

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-19_horizontal_wire_management_panel>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-large_horizontal_ring_panel>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-rack_cabling_managers>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-jumper_and_transition_trays>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); Horizontal Cable Manager.

Single-Sided Ring Manager, Stand-Off Panel:

Configuration: Single-sided metal stand-off panel with C-shaped cable rings for managing cables. The panel shall have a 1.5 inch (38 mm) standoff from the rack-mount surface to allow for jacketed patch cords. C-shaped rings will have an opening in the front, center of the ring for adding and removing cables.

Width: 19 inches (482 mm).

Depth: 4 inches (100 mm) overall with 2.4 inch (60.9 mm) deep rings.

RMU: [**1**][**2**].

Finishes and colors: Powder coat paint in [**black**][**white**][**gray**][**computer gray**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Single-Sided Ring Manager, Flat Panel:

Configuration: Single-sided metal flat panel with C-shaped cable rings for managing cables. C-shaped rings will have an opening in the front, top of the ring for adding and removing cables.

Width: 19 inches (482 mm).

Depth: 6 inches (150 mm).

RMU: 2.

Finishes and colors: Powder coat paint in [**black**][**white**][**gray**][**computer gray**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Accessories: Clip-on covers, black.

Horizontal cable manager used in between patch panels on open rack systems (two-post and four-post racks) to organize patch cords in data centers, computer rooms and equipment rooms.

Motive Horizontal Cable Manager is a basic, medium density cable manager for use in data center and enterprise cabling applications. Motive is a single-sided metal trough with fingers and snap on cover. Available with a solid rear panel or with cable pass-through openings. Used with Motive. Ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/products/cable-management/motive-horizontal/>

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/32610_motive_datasheet.pdf>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); Motive Cable Management.

Motive Single-Sided Horizontal Cable Manager with cable pass-through ports:

Configuration: Single-sided C-shaped trough with a cover. 2U, 3U, and 4U high cable managers shall have three edge-protected oval openings at the rear to facilitate front-to-rear cabling through the horizontal manager. The front of the cable manager shall have T-shaped cable guides along the top and bottom surfaces of the cable manager. Evenly spaced cable openings in between the T-shaped cable guides shall allow cables to enter/exit the cable manager from/into the rack-mount space. The cover shall be removable, hinged to open up or down and shall snap on to secure the cover in the closed position.

Width: 19 inches (482 mm).

Depth: 8.2 inches (208 mm).

RMU: [**2**][**3**][**4**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Motive Single-Sided Horizontal Cable Manager with solid back:

Configuration: Single-sided C-shaped trough with a cover. 1U, 2U, 3U, and 4U high cable managers shall have a solid back that covers the U space to block airflow through the cable manager. The front of the cable manager shall have T-shaped cable guides along the top and bottom surfaces of the cable manager. Evenly spaced cable openings in between the T-shaped cable guides shall allow cables to enter/exit the cable manager from/into the rack-mount space. The cover shall be removable, hinged to open up or down and shall snap on to secure the cover in the closed position.

Width: 19 inches (482 mm).

Depth: 8.2 inches (208 mm).

RMU: [1][**2**][**3**][**4**].

Finishes and colors: Powder coat paint in [black][white]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Horizontal cable manager used in between patch panels on open rack systems (two-post and four-post racks) to organize patch cords in data centers, computer rooms and equipment rooms.

Evolution Horizontal Cable Manager is a basic, high density cable manager for use in data center and enterprise cabling applications. Evolution is a single-sided metal trough with fingers and snap on cover. Available with a solid rear panel or with cable pass-through openings. Used with Evolution g1, g2, g3 managers. Ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

http://www.chatsworth.com/products/cable-management/evolution-horizontal/

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/35514_datasheet.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-evolution_horizontal_cable_management>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); Evolution Cable Management.

Evolution Single-Sided Horizontal Cable Manager:

Configuration: Single-sided C-shaped trough with a cover. 2U, 3U, and 4U high cable managers shall have three edge-protected oval openings at the rear to facilitate front-to-rear cabling through the horizontal manager. The front of the cable manager shall have T-shaped cable guides along the top and bottom surfaces of the cable manager. Evenly spaced cable openings in between the T-shaped cable guides shall allow cables to enter/exit the cable manager from/into the rack-mount space. The cover shall be removable, hinged to open up or down and shall snap on to secure the cover in the closed position.

Width: 19 inches (482 mm).

Depth: 8.2 inches (208 mm).

RMU: [**1**][**2**][**3**][**4**].

Finishes and colors: Powder coat paint in [**black**][**white**]. Edge-protectors, T-shaped cable guides and latch hardware is black.

Horizontal cable manager used in between patch panels on open rack systems (two-post and four-post racks) to organize patch cords in data centers, computer rooms and equipment rooms.

Velocity Horizontal Cable Manager is a basic, low density cable manager for use in enterprise cabling applications. Velocity is a single-sided plastic trough with fingers and snap on cover. Available with cable pass-through openings. Used with Velocity. Ships fully assembled. It attaches to a rack system then populated with cables.

Product webpage:

<http://www.chatsworth.com/products/cable-management/velocity-horizontal/>

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/13901_datasheet.pdf>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); Velocity Cable Management.

Velocity Single-Sided Horizontal Cable Manager:

Configuration: Single-sided plastic C-shaped trough with a cover. Each manager will have two edge-protected openings at the rear to facilitate front-to-rear cabling. The front of the cable manager shall have T-shaped cable guides along the top and bottom surfaces of the cable manager. Evenly spaced cable openings in between the T-shaped cable guides shall allow cables to enter/exit the cable manager from/into the rack-mount space. The cover shall be removable, hinged to open up or down and shall snap on to secure the cover in the closed position.

Depth: 5.9 inches (150 mm).

RMU: [**1**][**2**][**3**].

Finishes and colors: Molded plastic, black.

* + - 1. LADDER RACKS

Ladder Rack (Cable Runway) is used overhead of open rack and cabinet systems to create a pathway for cables within the room for network cabling and power cords in data centers, computer rooms and equipment rooms.

Adjustable Cable Runway (ACR) has a unique cross member system that allows cross members to be moved up to 4 inches (100 mm) if the location of the cross member is blocking the natural cable pathway. The accessories allow exact positioning of radius drops when cables exit/enter the pathway and for easy addition and movement of pathway dividers that can separate cable bundles within the runway or add Ósides to the cable runway

ACR delivers assembled and is field modified to create the required cable pathway. It uses standard cable runway splices and supports.

Product webpage:

<http://www.chatsworth.com/Products/Cable-Pathway/Adjustable-Cable-Runway/>

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/14300_datasheet.pdf>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); Adjustable Cable Runway.

Description:

Stringers: 1.5 inches (38 mm) high by 0.4 inches (10 mm) wide roll-formed steel with 0.075 inch (1.90 mm) wall thickness; with repeating holes spaced at 12 inches (300 mm).

Cross Members: 1.5 inches (38 mm) wide by 0.80 inch (20 mm) deep extruded aluminum with 0.090 inch (2.29 mm) wall thickness.

Width: [**4 inches (102 mm)**][**6 inches (150 mm)**] [**9 inches (225 mm)**][**12 inches (300 mm)**][**15 inches (381 mm)**][**18 inches (450 mm)**][**24 inches (600 mm)**][**30 inches (750 mm)**][**36 inches (900 mm)**].

Fasteners: M8x20, Taptite, Thread-Forming Screws in Zinc Plated or Black-Zinc Plated Finish.

Finish and Color: Powder coat paint in [**gray**][**computer beige**][**black**][**glacier white**].

Ladder Rack (Cable Runway) is used overhead of open rack and cabinet systems to create a pathway for cables within the room for network cabling and power cords in data centers, computer rooms and equipment rooms.

Universal Cable Runway has industry standard 12 inch (300 mm) cross member spacing. Universal Cable Runway delivers assembled and is field modified to create the required cable pathway. It uses standard cable runway splices and supports.

Product webpage:

<http://www.chatsworth.com/products/cable-pathway/cable-runway-sections/>

Product Data Sheet:

http://www.chatsworth.com/uploadedfiles/files/10250\_cut.pdf

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-universal_cable_runway>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); Universal Cable Runway.

Description:

Size: 1.5 inches (38 mm) high by 0.4 inches (10 mm) wide high tubular steel with 0.065 inch (1.65 mm) wall thickness.

Stringers: 9 feet 11-1/2 inches (3 m) long.

Cross Members: Welded in between stringers on 12 inch (300 mm) intervals/centers beginning 5-3/4 inches (146 mm) with 10 cross members per ladder rack. Open space of 10-1/2 inches (267 mm) between each cross member.

Width: [**4 inches (102 mm)**][**6 inches (150 mm)**][**9 inches (225 mm)**] [**12 inches (300 mm)**][**15 inches (381 mm)**][**18 inches (450 mm)**] [**24 inches (600 mm)**][**30 inches (750 mm)**][**36 inches (900 mm)**].

Finish and Color: Powder coat paint paint in [**gray**][**black**][**glacier white**].

Ladder Rack (Cable Runway) is used overhead of open rack and cabinet systems to create a pathway for cables within the room for network cabling and power cords in data centers, computer rooms and equipment rooms.

Telco Cable Runway has traditional 9 inch (230 mm) cross member spacing. Telco Cable Runway delivers assembled and is field modified to create the required cable pathway. It uses standard cable runway splices and supports.

Product webpage:

<http://www.chatsworth.com/products/cable-pathway/cable-runway-sections/>

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/11252_cut.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-telco_cable_runway>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); TELCO Style Cable Runway.

Description:

Stringers: 1.5 inches (38 mm) high by 3/8 inches (9.5 mm) wide high tubular steel with 0.065 inch (1.65 mm) wall thickness. Each 9 feet 8-1/2 inches (2.9 m) long.

Cross Members: 1 inch (25.4 mm) wide by 1/2 inch (12.7 mm) high tubular steel with 0.065 inch (1.65 mm) wall thickness. Welded in 9 inch (228.6 mm) centers beginning 4-1/4 inches (107.9 mm) from one with thirteen cross members per ladder rack. Open space of 8 inches (203 mm) between each cross member.

Width: [**6 inches (150 mm)**][**9 inches (225 mm)**][**10 inches (250 mm)**][**12 inches (300 mm)**][**15 inches (381 mm)**][**18 inches (450 mm)**][**20 inches (510 mm)**].

Finish and Color: Powder coat paint in [**gray**][**black**][**glacier white**].

Ladder Rack (Cable Runway) is used overhead of open rack and cabinet systems to create a pathway for cables within the room for network cabling and power cords in data centers, computer rooms and equipment rooms.

UL Classified Cable Runway has traditional 9 inch (230 mm) cross member spacing. UL Classified Cable Runway is zinc plated and can be bonded using UL splice kits. It does not require an auxiliary ground strap across the splices. UL Classified Cable Runway delivers assembled and is field modified to create the required cable pathway. It uses UL Classified cable runway splices and supports.

Product webpage:

<http://www.chatsworth.com/products/cable-pathway/cable-runway-sections/>

Product Data Sheet:

<http://www.chatsworth.com/uploadedfiles/files/11275_cut.pdf>

Product AutoDesk Revit BIM model:

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-ul_cable_runway>

[Basis-of-Design Product](http://www.specagent.com/LookUp/?ulid=12512&mf=04&src=wd): Subject to compliance with requirements, provide Chatsworth Products (CPI); UL Classified Cable Runway.

Description: UL Classified for suitability as an equipment-grounding conductor only. Minimum combined cross sectional area of the stringers will be 0.40 square inches (260 square millimeters). A label affixed to the side stringer of the ladder rack will identify the manufacturer, the UL Classification and the minimum combined cross sectional area of the stringers.

Stringers: 1.5 inches (38 mm) high by 3/8 inches (9.5 mm) wide high tubular steel with 0.065 inch (1.65 mm) wall thickness. Each 9 feet 8-1/2 inches (2.9 m) long.

Cross Members: 1 inch (25.4 mm) wide by 1/2 inch (12.7 mm) high tubular steel with 0.065 inch (1.65 mm) wall thickness. Welded in 9 inch (228.6 mm) centers beginning 4-1/4 inches (107.9 mm) from one with thirteen cross members per ladder rack. Open space of 8 inches (203 mm) between each cross member.

Width: [**6 inches (150 mm)**][**9 inches (225 mm)**][**12 inches (300 mm)**][**15 inches (381 mm)**][**18 inches (450 mm)**][**20 inches (510 mm)**][**24 inches (600 mm)**].

Finish and Color: Gold over zinc plating.

* + - 1. LADDER RACK ACCESSORIES

Specifier should verify size availability of accessories based on ladder rack system selected above. Not all sizes listed are available for each system.

Product webpage:

Bends: http://www.chatsworth.com/products/cable-pathway/cable-runway-radii-and-bends/

Splices: <http://www.chatsworth.com/products/cable-pathway/junctions/>

Supports: <http://www.chatsworth.com/products/cable-pathway/support-kits/>

Product AutoDesk Revit BIM model:

https://bimobject.com/en-us/chatsworthproducts/product/cpi-cable\_runway\_corner\_bracket

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-l_bracket>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-radius_drop_cross_member>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-foot_kit_cable_runway>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-tall_pipe_stand>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-channel_rack-to-runway>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-threaded_ceiling_kit>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-wall_angle_support>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-cable_runway_elevation>

<https://bimobject.com/en-us/chatsworthproducts/product/cpi-patchrack_for_cable_runway>

Horizontal 90° Turns (Cable Runway E-Bend): 1-1/2 inches (38 mm) by 3/8 inch (9.5 mm) wide tubular steel with 0.065 inch (1.65 mm) wall thickness.

Width: [**4 inches (102 mm)**][**6 inches (150 mm)**][**9 inches (225 mm)**][**12 inches (300 mm)**][**15 inches (381 mm)**][**18 inches (450 mm)**][**24 inches (600 mm)**][**30 inches (750 mm)**][**36 inches (900 mm)**].

Finish and Color: Powder coat paint in [**gray**][**computer beige**][**black**][**glacier white**].

Vertical-To-Horizontal 90° Turns (Cable Runway Outside Radius Bend): 1-1/2 inches (38 mm) by 3/8 inch (9.5 mm) wide tubular steel with 0.065 inch (1.65 mm) wall thickness.

Width: [**4 inches (102 mm)**][**6 inches (150 mm)**] [**9 inches (225 mm)**] [**12 inches (300 mm)**][**15 inches (381 mm)**][**18 inches (450 mm)**][**24 inches (600 mm)**][**30 inches (750 mm)**][**36 inches (900 mm)**].

Finish and Color: Powder coat paint in [**gray**][**computer beige**][**black**][**glacier white**].

Horizontal-To-Vertical 90° Turns (Cable Runway Inside Radius Bend): 1-1/2 inches (38 mm) by 3/8 inch (9.5 mm) wide tubular steel with 0.065 inch (1.65 mm) wall thickness.

Width: [**4 inches (102 mm)**][**6 inches (150 mm)**][**9 inches (225 mm)**][**12 inches (300 mm)**][**15 inches (381 mm)**][**18 inches (450 mm)**][**24 inches (600 mm)**][**30 inches (750 mm)**][**36 inches (900 mm)**].

Finish and Color: Powder coat paint in [**gray**][**computer beige**][**black**][**glacier white**].

Corner Brackets (Cable Runway Corner Bracket): 1-1/2 inches (38 mm) by 3/8 inch (9.5 mm) wide tubular steel with 0.065 inch (1.65 mm) wall thickness.

Width: [**15 inches (381 mm)**][**24 inches (600 mm)**].

Finish and Color: Powder coat paint in [**gray**][**computer beige**][**black**][**glacier white**].

Ladder Rack Splices: Mechanically connects ladder rack sections and turns together end-to-end or side-to-end to form a continuous pathway for cables.

Finish and Color: Powder coat paint in [**black**][**gold**].

Select splices as required by project from list below.

Butt-Splice Kit.

Junction-Splice Kit.

Heavy-Duty Butt-Splice Kit.

Heavy-Duty Junction-Splice Kit.

Adjustable Junction-Splice Kit.

Runway-Splice Kit.

Butt Swivel Splice Kit.

Junction Swivel Splice Kit.

Vertical Swivel Splice Kit.

Grounding Kit, zinc.

Insulator Bar Kit, white.

Ladder Rack Supports: Sized to match the width of the ladder rack that is supported.

Finish and Color: Powder coat paint in [**gray**][**computer beige**][**black**][**glacier white**].

Select supports as required by project from list below.

Triangular Support Bracket.

Wall Angle Support Kit.

Foot Kit.

Adjustable Floor Support Channel.

Threaded Ceiling Kit.

Center Support Kit.

Rack-to-Runway Mounting Plate.

Cable Runway Elevation Kit.

Vertical Wall Brackets.

Miscellaneous Accessories:

Tool-less Pathway Dividers: 6.8 inches (173 mm) high by 1.5 inches (38 mm) wide by 2.2 inches (55.9 mm) deep Polycarbonate/Acrylonitrile Butadiene Styrene (PC/ABS) thermoplastic material.

Tool-less Cross Member Radius Drops: 0.060 inch (1.5 mm) thick Steel and measure 4.6 inches (117 mm) high by 6.1 inches (155 mm).

Tool-less Stringer Radius Drops: 0.060 inch (1.5 mm) thick steel and measure 4.6 inches (117 mm) high by 4.6 inches (117 mm) deep.

Saf-T-Grip Reusable Cable Management Straps: [**Open loop series**][**End Grommet and Buckle Series**].

Cable Retaining Post.

Cable Runway Protective End Caps.

Touch-Up Paint: Spray Can in [**gray**][**computer beige**][**black**][**glacier white**].

Miscellaneous Hardware: Includes [**cable runway support brackets**][**,**][ **ceiling support brackets**][**,**][**cable runway slotted support brackets**][**,**][ **slip-on cable runway support brackets**][**slip-on lock nuts**][**,**][ **hex nuts**][**,**][ **split lock washers**][**,**][ **washers**][**,**][ **hex lag screws**][**, and**][ **anchors**].

1. EXECUTION
   * + 1. VERTICAL CABLE MANAGER INSTALLATION

Attach vertical cable managers to the side of the rack/frame using the manufacturer’s installation instructions and included hardware.

* + - * 1. When a single vertical cable manager is used in between two racks/frames, attach the vertical cable manager to both racks/frames.
        2. When more than one cable manager is used on a rack/frame or group of racks/frames, use the same make and style of vertical cable manager on the rack/frame or in between racks/frames.
        3. The color of the rack(s)/frame(s) and cable manager(s) must match.
        4. Doors should be attached to the cable manager and in the closed position after cabling is complete.
      1. HORIZONTAL CABLE MANAGER INSTALLATION

When more than one horizontal cable manager is used on a rack/frame/cabinet or group of racks/frames/cabinets, use the same make, and style of cable manager on the rack/frame/cabinet or racks/frames/cabinets.

* + - * 1. The color of the rack(s)/frame(s)/cabinet(s) and cable manager(s) must match.
        2. Attach horizontal cable managers to the rack/frame/cabinet with four screws according to the manufacturer’s installation instructions. Each cable manager should be centered within the allocated rack-mount space (RMU or U).
        3. Horizontal managers will be located so that the number of ports (cables) they support will not exceed the cable fill capacity of the cable manager.
        4. Covers should be attached to the cable manager and in the closed position after cabling is complete.
      1. LADDER RACK INSTALLATION

Install with side stringers facing down so the runway forms an inverted U-shape and that the hardware between the stringers and cross members face away from cables.

Secure to the structural ceiling, building truss system, wall, floor or tops of equipment racks and/or cabinets using the manufacturer’s recommended supports and appropriate hardware, as defined by local code or the authority having jurisdiction (AHJ).

* + - * 1. Support requirements:

Ladder Rack (cable runway): 5 feet (1.5 m) or less in accordance with TIA-569-B.

Splices: Within 2 feet (0.6 m)

Intersections: Within 2 feet (0.6 m) on all sides of every intersection.

Changes in Elevation: Within 2 feet (0.6 m) on both sides.

Attached vertically to wall: 2 feet (0.6 m).

Secure to each support with included hardware with a minimum of two fasteners.

* + - * 1. Splices: Place mid-span, not over a support, with the manufacturer’s recommended splice hardware.
        2. Overhead installation clearances:

Above ladder rack: 12 inches (300 mm) minimum.

From building or ceiling structure: 12 inches (300 mm) minimum.

Between ladder rack and the tops of equipment racks and/or cabinets: 3 inches (75 mm).

Multiple ladder rack tiers: 12 inches (300 mm) minimum.

Above acoustical ceilings: 3 inches (75 mm).

Raised floor installation clearances:

From floor tile: 3 inches (75 mm).

Runway crossovers: 3 inches (75 mm).

Within each telecommunications room, bond ladder rack together, electrically continuous, and bonded to the telecommunications bonding busbar, unless otherwise noted. Bond ladder rack and turns across each splice with a UL Classified Splice Kit or other accepted method as recommended by the AHJ. Bond cable runway to the bonding busbar using an approved ground lug with a wire sized per local code, ANSI/TIA-607-C, or as recommended by the AHJ. Verify the bonds at splices and intersections between individual ladder rack sections and turns, as well as the bonding busbar.

* + - * 1. On Adjustable Cable Runway, use thread-forming screws to cut through paint in order to create a bond between the Cross Member and the Stringer.
        2. Cable fill tolerances:

Maximum: 6 inches (150 mm) high.

Over 2 inches (50 mm) or non-secured cables: Install 8 inch (200 mm) high cable retaining posts or 6 inch (150 mm) high pathway dividers.

Quantity of cables: Not to exceed a whole number value equal to 50 percent 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 inches (50 mm), unless cable retaining posts/pathway dividers are added to the runway. The interior area of ladder rack equipped with cable retaining posts/pathway dividers will be considered to be the width of the ladder rack multiplied by a height of 6 inch (150 mm). Actual cable fill for ladder rack that is not equipped with cable retaining posts/pathway dividers will not exceed 2 inches (50 mm) in height. Actual cable fill for ladder rack equipped with cable retaining posts/pathway dividers will not exceed 6 inch (150 mm) in height.

Weight of cables: Not to exceed the stated load capacity of the ladder rack as stated in the manufacturer’s product specifications or design tables.

* + - * 1. Secure cables (cable bundles) to the cross members with 3/4 inch (19 mm) wide reusable straps. Straps are not required when ladder rack is equipped with cable retaining posts/pathway dividers.
        2. Cover the exposed ends of the ladder rack that do not terminate against a wall, the floor or the ceiling with fire-retardant black colored end caps made from a rubberized material or an end closing kit consisting of a flat bar of ladder rack stringer material factory cut to the width of the ladder rack and secured to the ladder rack with a junction splice kit.
        3. Separate different cable media types within the ladder rack using pathway dividers. Treat each type of cable media separately when determining cable fill limits.
        4. Where cable exits or enters the end, middle or side of overhead ladder rack to access a rack, frame, cabinet or wall-mounted rack, cabinet or termination field, a radius drop shall be used to guide the cable.
        5. Maintain a minimum separation of 2 feet (0.6 m) between ladder rack used for communications cables and pathways for other utilities or building services.
        6. Touch-up paint color-matched to the finish on the component 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.

END OF SECTION 271123