



CABLE MANAGEMENT SOLUTIONS, INC.

CABLE MANAGEMENT AND POWER DISTRIBUTION

## SECTION 27XXXX

### PATHWAYS FOR COMMUNICATIONS SYSTEMS

#### Part 1. GENERAL

##### 1.1 SECTION INCLUDES:

- A The work under this section shall consist of the furnishing of all necessary material, labor and associated services required to complete the installation of the wire runway cable management system as shown on the drawings.
- B A wire runway cable management system shall be defined as a welded steel wire cable conveyance system consisting of flexible linear or module sections designed to support, but are not limited to fiber optic and voice/data telecommunication cables. Where field formed bends are required, the linear sections shall be hand bendable in any direction along any plane without tools, cutting, clipping or modifications of the pathway in order to complete the bend. Pathway shall be constructed from cold rolled steel in accordance with ASTM A510 and, shall be zinc plated in accordance with ASTM B633 SC2. Pathway shall also be designed in such a way as to allow cables to enter or exit the pathway in any direction at any point along the length of the pathway while also allowing cables to be added or removed without modification or manipulation of the pathway system, including hanging hardware.

##### 1.2 REFERENCES:

- A ANSI/NFPA 70/250 - *National Electric Code – Ground and Bonding*
- B ANSI/NFPA 70/318 – *National Electric Code – Cable Trays*
- C CANSI/NFPA 70/645 – *National Electric Code – Information Technology Equipment*
- D ANSI/NFPA 70/770 – *National Electric Code – Optical Fiber Cables and Raceways*
- E ASTM A 510 - *Specifications for General Requirements for Wire Rods and Coarse Round Wire, Carbon Steel*
- F ASTM B 633 - *Specifications for Electrodepositing Coatings of Zinc on Iron and Steel, Sections SC2 and SC3.*
- G ASTM A653 - *Specifications for Steel Sheet, Zinc-Coated (Galvanized) by Hot Dip Process*
- H ASTM A123 -*Specifications for Zinc (Hot Galvanized) Coatings on Iron and Steel.*
- I ANSI/TIA/EIA - 568-B *Commercial Building Telecommunications Cabling Standard.*
- J ANSI/TIA/EIA – 569-A *Commercial Building Standard for Telecommunications Pathways and Spaces*
- K ASTM – A276-06 *Standard Specification for Stainless Steel Bars and Shapes*
- L ASTM A580/A580M-06 *Standard Specification for Stainless Steel Wire*
- M NEMA VE 2-2006 *Cable Tray Installation Guidelines*
- N NEMA VE-1/CSA C22.2 No 126 1-02 *Metal Cable Tray Systems*

O *UL and cUL E209183*

### 1.3 QUALITY ASSURANCE:

- A National Electric Code Compliance: Comply with all NEC articles that apply to construction and installation practices applicable to this section
- B American National Standards Institute: Comply with all ANSI articles that apply to construction and installation practices applicable to this section
- C UL Compliance: Provide products that are UL and or cUL-classified.
- D NFPA Compliance: Comply with NFPA 70B, "Recommended Practice for Electrical Equipment Maintenance" pertaining to cable tray systems.

### 1.4 DRAWINGS:

- A The drawings included as part of the specifications show the approximate location and routes of the wire runway cable management system as presented. The data presented on the drawings is as accurate as obtainable surveys can determine. Accuracy is not guaranteed and field measurements and verifications are required.

### 1.5 SUBMITTALS:

- A Comply with requirements of Section XXX – Submittal Procedures.
- B Product Data: Submit manufactures product data, including UL classification.
- C Shop Drawings: Submit shop drawings indicating materials, finish, dimensions and accessories. Show layout, support and installation details.

### 1.6 DELIVERY STORAGE AND HANDLING:

- A Delivery: Deliver materials to site in manufacturer's original un-opened containers and packaging, with labels clearly indication manufacturer and material.
- B Storage: Store materials in a dry area indoors, protected from damage and in accordance with manufacturer's instructions.
- C Handling: Protect materials and finishes during handling and installation to prevent damage.

## Part 2. PRODUCTS

### 2.1 ACCEPTABLE MANUFACTURES:

- A Cable Management Solutions, 291 Skip Lane, Bay Shore, NY 11706, shall manufacture the cable management system. Other manufactures can only be considered equal if, in the opinion, and the written approval of the Senior Project Engineer, they meet all the performance and design standards specified herein

### 2.2 GENERAL

- A Pathways shall either:

- 1 Have a single spine wire,
  - 2 Be assembled from manufactured sections, turns, and intersections such that fabrication on the job site is not required.
- B Linear single-spine pathway shall be hand bendable in any direction along any plane, and will not require tools, cutting, clipping or modifications to the structure of the pathway to create the bend.
- C Pathway shall be field formed as needed.
- D UL Compliance: Provide products that are UL-Listed.
- E Linear single-spine pathway shall be designed in such a way as to be secured to the following, but not limited to: wall, rod, floor; every four (4) feet via built-in integrated mounting rings or double rail.
- F Splicing of pathways shall be accomplished by using a single manufacturer supplied UL classified connector bolt or splice plate.
- G The terminal ends of the **Linear single-spine pathway** shall be considered jumpers and when properly joined to another via an approved connection bolt provide a proper bond link between pathways.

### 2.3 FINISHES

- A Electrodeposited Clear Zinc plated in accordance with ASTM B633 type III SC1
- B Electrodeposited Zinc Dichromate plated in accordance with ASTM A633 type II SC2.
- C Electrodeposited Yellow Zinc Dichromate plated in accordance with ASTM A633 type II SC2.
- D Color coated surface treatment over Electrodeposited Zinc Plating. Contact CMS for color information.
- E Stainless steel in accordance with ASTM A580/A580M-06 Standard Specification for Stainless Steel Wire
- F ASTM A123 / A123M - 12 Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

### 2.4 CMS/Snake Tray Series 101

- A Pathway shall maintain a minimum clearance of one (1) inch between the sub floor and the cable installed in the pathway, without the use of additional offset brackets.
- B Pathway shall provide a means of securing the pathway to the floor every four (4) inches on both sides.
- C All dimensions are for available cable pathway. Overall physical dimension may or may not be greater than the cable pathway.
- D Depth: Pathway depth shall be (unless otherwise shown on the drawings)
- 1 [2.0 inches (50mm)]
  - 2 [3.5 inches (90mm)]
  - 3 [4.0 inches (100mm)]
- E Width: Pathway width shall be (unless otherwise shown on the drawings)
- 1 [3.0 inches (76mm)]
  - 2 [6.0 inches (150mm)]
  - 3 [12.0 inches (300mm)]
  - 4 [18.0 inches (450mm)]
  - 5 [21.0 inches (535mm)]

F Length: Pathway section length will be [98 inches (2500mm)] unless otherwise shown on the drawings.

- 1 Part Number CM 101-3-8, Floor Mount Snake Tray, 3" wide x 3 1/2" Deep, x 8' long,
- 2 Part Number CM 101-6-8, Floor Mount Snake Tray, 6" wide x 3 1/2" Deep, x 8' long,
- 3 Part Number CM 101-12-8, Floor Mount Snake Tray, 12" wide x 3 1/2" Deep, x 8' long,
- 4 Part Number CM 101-18-8, Floor Mount Snake Tray, 18" wide x 4" Deep, x 8' long,
- 5 Part Number CM 101-4-21-8-RS Floor Mount Snake Tray, 21" wide x 4" Deep x 8' long, 6" Vertical offset
- 6 Part Number CM 101-12-8-LS, Floor Mount Snake Tray, 12" wide x 2" Deep, x 8' long,
- 7 Part Number CM 101-18-8-LS, Floor Mount Snake Tray, 18" wide x 2" Deep, x 8' Long

G 101 Series Accessories

- 1 Turning Fences shall maintain approved bend radius and be constructed from sheet steel and plated in accordance with applicable ASTM standards.
- 2 Intersections shall be made from high strength steel, welded and plated in accordance with applicable ASTM standards.
- 3 Special accessories shall be furnished as required to install the pathway system.
  - a Part Number TF-101, Turning Fence, 3" High x 7" long
  - b Part Number CM 0303, 3" x 3" Intersection, 8" Wide x 8" long
  - c Part Number CM 0306, 3" x 6" Intersection, 8" Wide x 11" long
  - d Part Number CM 0312, 3" x 12" Intersection, 8" Wide x 17" long
  - e Part Number CM 0606, 6" x 6" Intersection, 11" Wide x 11" long
  - f Part Number CM 0612, 6" x 12" Intersection, 11" Wide x 17" long
  - g Part Number CM 1212, 12" x 12" Intersection, 17" Wide x 17" long
  - h Part Number CM 1218, 12" x 18" Intersection, 17" Wide x 22" long
  - i Part Number CM 1818, 18" x 18" Intersection, 22" Wide x 22" long
  - j Part Number CM 2121, 21" x 21" Intersection, 26" Wide x 26" long
  - k Part Number CB-10, Universal Connector Bolt, Bolted and Grounded Connection as per ANSI/NFPA 70/250 - National Electric Code – Ground and Bonding
  - l Part Number CB-12, Universal Inline Connector Bolt

## 2.5 CMS/Snake Tray Series 201

- A Pathway shall be hand bendable along the center rod in all planes without tools. No additional parts are required to complete the directional change.
- B Available in both single and double sided pathways
- C Pathway shall have a single wire spine located above the cable path allowing the tray to self-level as it is loaded, and allow cables to be installed or removed from either the top or side without removing any component.
- D Pathway shall be designed in such a way as to be suspended every four (4) feet via built-in integrated horizontal mounting rings spaced every four (4) inches along the center spine. Without additional brackets.

- E Pathway shall be designed in such a way as to allow the pathway to be suspended from above the cable pathway via minimum 3/8-inch diameter rod, attached to a wall or attached to floor pedestals beneath a raised floor.
- F All dimensions are for available cable pathway. Overall physical dimension may or may not be greater than the cable pathway.
- G Depth: Pathway depth shall be (unless otherwise shown on the drawings)
- 1 [2.0 inches (50mm)]
  - 2 [3.0 inches (75mm)]
  - 3 [4.0 inches (100mm)]
  - 4 [4 1/4 inches (110mm)]\*
  - 5 [5.0 inches (130mm)]\*
- \*Available in both single and double sided configurations.
- H Width: Pathway width shall be (unless otherwise shown on the drawings)
- 1 [3.0 inches (75mm)]
  - 2 [4.0 inches (100mm)]
  - 3 [4 1/4 inches (110mm)]\*
  - 4 [5.0 inches (130mm)]\*
  - 5 [6.0 inches (150mm)]
- \*Available in both single and double sided configurations.
- I Length: Pathway section length will be [98 inches (2500mm)] unless otherwise shown on the drawings.
- 1 Part Number CM 201-24-8, Universal Mount Snake Tray, 4" wide x 2" deep, x 8' long,
  - 2 Part Number CM 201-3-8, Universal Mount Snake Tray, 3" wide x 3" deep, x 8' long,
  - 3 Part Number CM 201-425-8, Universal Mount Snake Tray, 4 1/4" wide x 4 1/4" deep, x 8' long
  - 4 Part Number CM 201-6-8, Universal Mount Snake Tray, 6" wide x 4" deep, x 8' long,
  - 5 Part Number CM 201-425D-8, Universal Mount Snake Tray, Double sided pathway, 2 - [4 1/4" wide x 4 1/4" deep], x 8' long,
  - 6 Part Number CM 201-5D-8, Universal Mount Snake Tray, Double sided pathway, 2 - [5" wide x 5" deep], x 8' long,
- J 201 Series Accessories
- 1 To include, but not limited to mounting brackets, turnout components and support rods. Components shall be made from high strength steel wires and/or sheet steel formed, welded and plated as required as per applicable ASTM standards. Special accessories shall be furnished as required to install the pathway system.
  - 2 Intersections
    - a Part Number CM 0303H, Single Sided Pathway Intersection, 5 1/2" wide x 5 1/2" long
    - b Part Number CM 201Y, Single Sided Pathway "Y" Intersection, 5" wide x 6" long
    - c Part Number CM 201/501T, Single Sided Pathway/Wall Snake Transition, 5 1/4" wide x 5 1/4" long
    - d Part Number CM 201-ES, Wall End Plate, 3 1/2" wide x 3 1/2" long
    - e Part Number CM 425D/5D, Double Sided Pathway Intersection, 12" wide x 12" long
    - f Part Number CM 425/425D, Single Sided Pathway/Double Sided Pathway Intersection, 7 1/2" wide x 20" long
    - g Part Number CB-10, Universal Connector Bolt, Bolted and Grounded Connection as per ANSI/NFPA 70/250 - National Electric Code – Ground and Bonding

h Part Number CB-12, Universal Inline Connector Bolt

### 3 Brackets

- a Part Number WBN-201, Wall Mount Bracket for single sided pathways, 4" wide x 5" long
- b Part Number WBN-201D, Wall Mount Bracket for 4 1/4" Double Pathway, 4" wide x 5" long
- c Part Number WBN-2015D, Wall Mount Bracket for 5" Double Pathway, 5" wide x 6" long
- d Part Number RBN-201, Rack Mount Bracket for single sided pathways, 4" wide x 5" long
- e Part Number RBN-201D, Rack Mount Bracket for double sided pathways, 4" wide x 5" long
- f Part Number CBN-201, Cabinet Mount Bracket for single sided pathways, 4" wide x 5" long
- g Part Number CBN-201D, Cabinet Mount Bracket for double sided pathways, 4" wide x 5" long
- h Part Number ST-201, Under Floor Mount Bracket for single sided pathways, 4" wide x 5" long
- i Part Number ST-201D, Under Floor Mount Bracket for 4 1/4" Double Pathway, 4" wide x 5" long
- j Part Number ST-2015D, Under Floor Mount Bracket for 5" Double Pathway, 5" wide x 6" long

### 4 Cable Drop-out

- a Part Number TO-2, 2" Wide cable drop out, 2" wide x 9" long
- b Part Number TO-3, 3" Wide cable drop out, 3" wide x 9" long
- c Part Number TO-425, 4 1/4" Wide cable drop out, 4 1/4" wide x 9" long
- d Part Number TO-5, 5" Wide cable drop out, 5" wide x 9" long
- e Part Number TO-6, 6" Wide cable drop out, 6" wide x 9" long

## 2.6 CMS/Snake Tray Series 205 (Rail Snake)

- A Pathway shall be hand bendable along the center rod in all planes without tools. No additional parts are required to complete the directional change.
  - B Available in both single and double sided pathways
  - C Pathway shall have a single wire spine located above the cable path allowing the tray to self-level as it is loaded, and allow cables to be installed or removed from either the top or side without removing any component.
  - D Pathway shall be designed in such a way as to be suspended every four (4) feet via built-in integrated horizontal mounting rings spaced every four (4) inches along the center spine. Without additional brackets.
  - E Pathway shall be designed in such a way as to allow the pathway to be suspended from above the cable pathway via minimum 3/8-inch diameter rod or attached directly to a wall or ceiling.
  - F All dimensions are for available cable pathway. Overall physical dimension may or may not be greater than the cable pathway.
  - G Depth: Pathway depth shall be (unless otherwise shown on the drawings)
    - 1 [3.0 inches (75mm)]
    - 2 [6.0 inches (150mm)]\*
- \*Available in both single and double sided configurations.
- H Width: Pathway width shall be (unless otherwise shown on the drawings)
    - 1 [5.0 inches (130mm)]\*
    - 2 [6.0 inches (150mm)]

- \*Available in both single and double sided configurations.
- \*Other size configurations are available upon request

I Length: Pathway section length will be [120 inches (3050)] unless otherwise shown on the drawings.

- 1 Part Number CM 205-SK-0207-10-SS-304, Single sided pathway, 6" wide x 6" deep, x 10' long,
- 2 Part Number CM 205-SK-0201-10-SS-304, Double sided pathway 2 -3" wide x 6" deep, x 10' long,

J 205 Series Accessories

- 1 To include, but not limited to mounting brackets, turnout components and support rods. Components shall be made from high strength steel wires and/or sheet steel formed, welded and plated as required as per applicable ASTM standards. Special accessories shall be furnished as required to install the pathway system.
- 2 Intersections
  - a Part Number CM 0303H, Single Sided Pathway Intersection, 5 1/2" wide x 5 1/2" long
  - b Part Number CM 201-ES, Wall End Plate, 3 1/2" wide x 3 1/2" long
  - c Part Number CB-10, Universal Connector Bolt, Bolted and Grounded Connection as per ANSI/NFPA 70/250 - National Electric Code – Ground and Bonding
  - d Part Number CB-12, Universal Inline Connector Bolt
  - e Part Number RP-12, Retention Plate

## 2.7 CMS/Snake Tray Series 301 (Snake Canyon)

A General

- 1 Tray shall be modular in design
- 2 Tray shall be a grid construction welded wire basket with steel support runners (stringers) welded to the vertical member, specific to individual raised floor systems. Additional styles shall allow for, but not limited to, integrated scissor latching, LATCH-LOC, around the vertical pedestals and mechanical connections, CAM-LOC, to specific stringers.
- 3 Snake Canyon 'Plus' shall be installed with snap on vertical pedestal riser tubes that are completely independent of the floor structure requiring no tools for assembly. These shall be one-piece static stands. Floor stands shall also have the ability to be stacked on top of each other to allow for multiple tiers of wire basket while remaining independent of the floor structure.
- 4 Intersections shall be modular, interface with straight sections without modification and will be self-supporting, available for all tray variants.
- 5 Tray shall be designed in such a way as to allow it to fit into standard floor grid systems without modification or manipulations to both the tray and floor structure, and without additional brackets or supports.
- 6 Tray shall not require any additional mounting hardware to complete the installation.
- 7 Wire Mesh: Standard 4.8 inch by 4.8 inch welded wire mesh welded at each intersection.
- 8 Half baskets shall provide a sliding basket insert equal to approximately half the size of a full basket model.

- 9 Cantilevered Snake Canyon shall provide for an un-interrupted cable pathway equal to approximately half the size of a full basket model, and can be installed using standard Snake Canyon mounting technology.
- 10 Snake Canyon shall meet NEMA VE1-2002/CSA C22.2 No 126.1-02 standards
- B Depth: Tray depth shall be (unless otherwise shown on the drawings)
- 1 [2.0 inches (50mm)]
  - 2 [4.0 inches (100mm)]
  - 3 [6.0 inches (150mm)]
  - 4 [8.0 inches (200mm)]
  - 5 [12.0 inches (300mm)]
- C Width: Tray width shall be (unless otherwise shown on the drawings)
- 1 [12.0 inches (300mm)]
  - 2 [23.0 inches (585mm)]
- D Length: Tray section length will be [24 inches (600mm)]
- E Straight Sections, Full Width Basket
- 1 Part Number CM 301-2-X, Snake Canyon, 23" wide, 2" deep, 24" long
  - 2 Part Number CM 301-4-X, Snake Canyon, 23" wide, 4" deep, 24" long
  - 3 Part Number CM 301-6-X, Snake Canyon, 23" wide, 6" deep, 24" long
  - 4 Part Number CM 301-8-X, Snake Canyon, 23" wide, 8" deep, 24" long
  - 5 Part Number CM 301-12-X, Snake Canyon, 23" wide, 12" deep, 24" long
  - 6 The "X" in the above part numbers designates the stringer type, Scissor size, LATCH-LOC, or CAM, CAM-LOC, size. Contact CMS for floor designations.
- F Straight Sections, Half Width Basket
- 1 Part Number CM 301-2-X-HS, Snake Canyon, 12" wide, 2" deep, 24" long
  - 2 Part Number CM 301-4-X-HS, Snake Canyon, 12" wide, 4" deep, 24" long
  - 3 Part Number CM 301-6-X-HS, Snake Canyon, 12" wide, 6" deep, 24" long
  - 4 Part Number CM 301-8-X-HS, Snake Canyon, 12" wide, 8" deep, 24" long
  - 5 Part Number CM 301-12-X-HS, Snake Canyon, 12" wide, 12" deep, 24" long,
  - 6 The "X" in the above part numbers designates the stringer type, Scissor size, LATCH-LOC, or CAM-LOC, size. Contact CMS for floor designations.
- G Cantilevered Sections, Half Width Baskets
- 1 Part Number CM 301-2-X-CL-DC, Cantilevered Snake Canyon, 12" wide, 2" deep, 24" long
  - 2 Part Number CM 301-4-X-CL-DC, Cantilevered Snake Canyon, 12" wide, 4" deep, 24" long
  - 3 Part Number CM 301-6-X-CL-DC, Cantilevered Snake Canyon, 12" wide, 6" deep, 24" long
  - 4 Part Number CM 301-8-X-CL-DC, Cantilevered Snake Canyon, 12" wide, 8" deep, 24" long
  - 5 The "X" in the above part numbers designates the stringer type, Scissor size, LATCH-LOC, or CAM-LOC, size. Contact CMS for floor designations.
- H Turning Components, Creates either a 90° or TEE intersection
- 1 Part Number CM 301-2-TC-X, Snake Canyon, 23" wide, 2" deep, 24" long
  - 2 Part Number CM 301-4-TC-X, Snake Canyon, 23" wide, 4" deep, 24" long
  - 3 Part Number CM 301-6-TC-X, Snake Canyon, 23" wide, 6" deep, 24" long
  - 4 Part Number CM 301-8-TC-X, Snake Canyon, 23" wide, 8" deep, 24" long
  - 5 Part Number CM 301-12-TC-X, Snake Canyon, 23" wide, 12" deep, 24" long



- 6 The "X" in the above part numbers designates the stringer type, Scissor size, LATCH-LOC, or CAM-LOC, size. Contact CMS for floor designations.

#### I 301 Series Accessories

- 1 Part Number CM 301-CG, Universal Crossing Grid, 31" wide x 31" long
- 2 Part Number CM 301-DG-2, 2" Snap-In Divider Fence, 2" tall x 24" long
- 3 Part Number CM 301-DG-4, 4" Snap-In Divider Fence, 4" tall x 24" long
- 4 Part Number CM 301-DG-6, 6" Snap-In Divider Fence, 6" tall x 24" long
- 5 Part Number CM 301-DG-8, 8" Snap-In Divider Fence, 8" tall x 24" long
- 6 Part Number CM 301-TR, Transition Component, 23" wide x 31" long
- 7 Part Number CM 301-TO, Cable Drop Out, 23" wide x 7" long
- 8 Part Number CM 301-X-TCS-CAM, CAMLOC Bridge Support, 23" wide
- 9 Part Number CM 301-TS-2, 2' Snake Canyon Bridge Support, 1" wide x 30" long
- 10 Part Number CM 301-TS-4, 4' Snake Canyon Bridge Support, 1" wide x 30" long
- 11 Part Number CM 301-TRCB, Snake Canyon Pedestal Bridge, 34" wide x 25" long
- 12 Part Number A50-X-Riser, A50 Riser Tube, "X" determines length

#### 2.8 CMS/Snake Tray Series 401 (Snake Race)

- A Pathway shall have a single wire spine located above the cable pathway.
- B Pathway shall be hand bendable along the center rod in all planes without tools. No additional parts are required to complete the directional change.
- C Pathway shall be designed in such a way as to allow the pathway to be attached to threaded rod every four (4) feet via built-in integrated vertical mounting rings without additional mounting brackets for suspended installations.
- D All dimensions are for available cable pathway. Overall physical dimension may or may not be greater than the cable pathway.
- E Depth: Pathway depth shall be (unless otherwise shown on the drawings)
  - 1 [2.0 inches (50mm)]
  - 2 [3.0 inches (90mm)]
  - 3 [4.0 inches (90mm)]
- F Width: Pathway width shall be (unless otherwise shown on the drawings)
  - 1 [2.0 inches (50mm)]
  - 2 [3.0 inches (90mm)]
  - 3 [4.0 inches (90mm)]
- G Length: Pathway section length will be [98 inches (2500mm)] unless otherwise shown on the drawings.
  - 1 Part Number CM 401-2-8, Snake race Snake Tray, 2" wide x 2" deep, x 8' long,
  - 2 Part Number CM 401-3-8, Snake race Snake Tray, 3" wide x 3" deep, x 8' long,
  - 3 Part Number CM 401-4-8, Snake race Snake Tray, 4" wide x 3" deep, x 8' long,
- H 401 Series Accessories
  - 1 Part Number CB-10, Universal Connector Bolt, Bolted and Grounded Connection as per ANSI/NFPA 70/250 - National Electric Code – Ground and Bonding
  - 2 Part Number CB-12, Universal Inline Connector Bolt

#### 2.9 CMS/Snake Tray Series 405 (Rail Snake for Messenger Wire)

- A Pathway shall be hand bendable along the center rod in all planes without tools. No additional parts are required to complete the directional change.
- B Available in both single and double tiered pathways, "Over/Under"
- C Pathway shall have a single wire spine located above the cable path allowing the tray to self-level as it is loaded, and allow cables to be installed or removed from either the top or side without removing any component.
- D Pathway shall be designed in such a way as to be suspended from messenger wire via built-in integrated horizontal mounting hooks spaced every four (4) inches along the center spine. Without additional brackets. Pathway shall be suspended from above the cable pathway.
- E All dimensions are for available cable pathway. Overall physical dimension may or may not be greater than the cable pathway.

- F Depth: Pathway depth shall be (unless otherwise shown on the drawings)
  - 1 [5.0 inches (130mm)]\*

\*Available in both single and double sided configurations.

- G Width: Pathway width shall be (unless otherwise shown on the drawings)
  - 1 [6.0 inches (150mm)]\*

\*Available in both single and double sided configurations.

\*Other size configurations are available upon request

- H Length: Pathway section length will be [120 inches (3050)] unless otherwise shown on the drawings.

- 1 Part Number CM 405-65-10-MW-SS-304, Single sided pathway, 6" wide x 5" deep, x 10' long,
- 2 Part Number CM 405-65-OU-D-10-MW-SS-304, Double tiered pathway, 2 -6" wide x 5" deep, x 10' long, Over Under configuration

- I 405 Series Accessories

- 1 To include, but not limited to mounting brackets, turnout components and support rods. Components shall be made from high strength steel wires and/or sheet steel formed, welded and plated as required as per applicable ASTM standards. Special accessories shall be furnished as required to install the pathway system.

- 2 Connectors

- a Part Number CB-10, Universal Connector Bolt, Bolted and Grounded Connection as per ANSI/NFPA 70/250 - National Electric Code – Ground and Bonding
- b Part Number CB-12, Universal Inline Connector Bolt

## 2.10 CMS/Snake Tray Series 407 (Solar Snake Tray)

- A Pathway shall have a single wire spine located above the cable pathway.
- B Cable pathway rungs shall overlap "trapping" cables once installed.

- C Pathway shall be designed in such a way as to be secured to the wall every four (4) feet via built-in integrated vertical mounting rings spaced every four (6) inches along the center spine.
- D Pathway shall be designed in such a way as to allow the pathway to attach directly to a vertical or horizontal surface without additional mounting brackets.
- E Pathway available in either Hot Dipped galvanized Steel or Stainless Steel in accordance with applicable ASTM standards.
- F All dimensions are for available cable pathway. Overall physical dimension may or may not be greater than the cable pathway.
- G Depth: Pathway depth shall be (unless otherwise shown on the drawings)
  - 1 [2.0 inches (50mm)]
  - 2 [3.0 inches (75mm)]
  - 3 [4.0 inches (100mm)]
- H Width: Pathway width shall be (unless otherwise shown on the drawings)
  - 1 [2.0 inches (50mm)]
  - 2 [3.0 inches (75mm)]
  - 3 [4.0 inches (100mm)]
- I Length: Pathway section length will be [120 inches (3050mm)] unless otherwise drawings.
  - 1 Part Number CM 407-22-10-90-S6, 908 mount Solar Snake tray, 2" wide x 2" deep, x 10' long,
  - 2 Part Number CM 407-33-10-90-S6, 908 mount Solar Snake tray, 3" wide x 3" deep, x 10' long,
  - 3 Part Number CM 407-34-10-90-S6, 908 mount Solar Snake tray, 3" wide x 4" deep, x 10' long,
  - 4 Part Number CM 407-22-10-180-S6, 1808 mount Solar Snake tray, 2" wide x 2" deep, x 10' long,
  - 5 Part Number CM 407-33-10-180-S6, 1808 mount Solar Snake tray, 3" wide x 3" deep, x 10' long,
  - 6 Part Number CM 407-34-10-180-S6, 1808 mount Solar Snake tray, 3" wide x 4" deep, x 10' long,
  - 7 Part Number CM 407-22-10-S6-MW, Solar Snake Tray Messenger Wire Mount, 2" wide x 2" deep, x 10' long,
  - 8 Part Number CM 407-33-10-S6-MW, Solar Snake Tray Messenger Wire Mount, 3" wide x 3" deep, x 10' long,
  - 9 Part Number CM 407-34-10-S6-MW, Solar Snake Tray Messenger Wire Mount, 3" wide x 4" deep, x 10' long,
- J 407 Series Accessories
  - 1 Part Number CM 407-T-SS-KIT, Single TEE Intersection for Solar Snake Tray, Stainless Steel
  - 2 Part Number CB-10, Universal Connector Bolt, Bolted and Grounded Connection as per ANSI/NFPA 70/250 - National Electric Code – Ground and Bonding
  - 3 Part Number CB-12-SS, Universal Inline Connector Bolt, Stainless Steel

## 2.11 CMS/Snake Tray Series 501 (Wall Snake)

- A Pathway shall have a single wire spine located above the cable pathway.
- B Pathway shall be designed in such a way as to be secured to the wall every four (4) feet via built-in integrated vertical mounting rings spaced every four (4) inches along the center spine.
- C Pathway shall be designed in such a way as to allow the pathway to attach directly to a wall without additional mounting brackets.

- D All dimensions are for available cable pathway. Overall physical dimension may or may not be greater than the cable pathway.
- E Depth: Pathway depth shall be (unless otherwise shown on the drawings)
  - 1 [2.0 inches (50mm)]
  - 2 [3.0 inches (90mm)]
  - 3 [5.0 inches (100mm)]
  - 4 [6.0 inches (150mm)]
- F Width: Pathway width shall be (unless otherwise shown on the drawings)
  - 1 [2.0 inches (50mm)]
  - 2 [3.0 inches (90mm)]
  - 3 [5.0 inches (100mm)]
  - 4 [6.0 inches (150mm)]
- G Length: Pathway section length will be [98 inches (2500mm)] unless otherwise shown on the drawings.
  - 1 Part Number CM 501-2-8, Wall Mount Snake Tray, 2" wide x 2" deep, x 8' long,
  - 2 Part Number CM 501-3-8, Wall Mount Snake Tray, 3" wide x 3" deep, x 8' long,
  - 3 Part Number CM 501-5-8, Wall Mount Snake Tray, 5" wide x 5" deep, x 8' long,
  - 4 Part Number CM 501-6-8, Wall Mount Snake Tray, 6" wide x 6" deep, x 8' long,
- H 501 Series Accessories
  - 1 Part Number CM 201/501T, Single Sided Pathway/Wall Snake Transition, 5 1/4" wide x 5 1/4" long
  - 2 Part Number CB-10, Universal Connector Bolt, Bolted and Grounded Connection as per ANSI/NFPA 70/250 - National Electric Code – Ground and Bonding
  - 3 Part Number CB-12, Universal Inline Connector Bolt

## 2.12 CMS/Snake Race Way Series 652

- A Wireway system straight sections and fittings shall be constructed from [16 gauge galvanized steel (ASTMA653, A60)] [16 gauge aluminum (ASTM B209)]
- B Wireway straight sections shall provide a removable hinge cover with a self tapping screw down fastening connection opposite the hinge.
- C Wireway fittings shall provide a removable cover with self tapping screw down fastening connection.
- D Wireway fittings shall maintain inside radius of [12 (25mm)] inches (unless otherwise shown on the drawings)
- E Depth: Wireway depth shall be (unless otherwise shown on the drawings)
  - 1 [4.0 inches (100mm)]
  - 2 [6.0 inches (150mm)]
  - 3 [8.0 inches (200mm)]
- F Width: Wireway width shall be (unless otherwise shown on the drawings)
  - 1 [4.0 inches (100mm)]
  - 2 [6.0 inches (150mm)]
  - 3 [8.0 inches (200mm)]

- G Length: Wireway section length will be unless otherwise shown on the drawings.
  - 1 [12 inches (25mm)]
  - 2 [60 inches (1525mm)]
  - 3 [120 inches (3050mm)]
- H Wireway systems shall be [ANSI 61 electro-coated painted finish] [brushed aluminum] inside and out
- I Wireway systems available with or without knockouts

## 2.13 CMS/Snake Tray Series 701 MC SNAKE

- A Pathway shall be hand bendable along the center rod in all planes without tools. No additional parts are required to complete the directional change.
- B Available in both single and double sided pathways
- C Pathway shall have a single wire spine located above the cable path allowing the tray to self-level as it is loaded, and allow cables to be installed or removed from either the top or side without removing any component.
- D Pathway shall be designed in such a way as to be suspended every four (4) feet via built-in integrated horizontal mounting rings spaced every four (12) inches along the center spine. Without additional brackets.
- E Pathway shall be designed in such a way as to allow the pathway to be suspended from above the cable pathway via 3/8-inch diameter rod, directly attached to the ceiling or attached to a wall.
- F All dimensions are for available cable pathway. Overall physical dimension may or may not be greater than the cable pathway.
- G Depth: Pathway depth shall be (unless otherwise shown on the drawings)
  - 1 [2.0 inches (50mm)]
  - 2 [4.0 inches (100mm)]
  - 3 [6.0 inches (150mm)]
- H Pathway shall be designed in such a way as to mount directly to the ceiling and allow jacketed cables to be installed by snapping over the wire rings thereby captivating the jacketed cables within the pathway and ceiling.
  - 1 [2.0 inches (50mm)]
  - 2 [4.0 inches (100mm)]
  - 3 [6.0 inches (150mm)]
- I Width: Pathway width shall be (unless otherwise shown on the drawings)
  - 1 [5.0 inches (130mm)]\*
  - 2 [6.0 inches (150mm)]
  - 3 [10 1/4 inches (250mm)]\*

\*Available in both single and double sided configurations.
- J Length: Pathway section length will be [120 inches (3050mm)] unless otherwise shown on the drawings.

- 1 Part Number CM 701-25D-8, Double MC Snake Tray, Double sided pathway, 2-5"wide x 2"deep x 120".
- 2 Part Number CM 701-210D-8, Double MC Snake Tray, Double sided pathway, 2-10"wide x 2"deep x 120".
- 3 Part Number CM 701-6-6-120-WM, Wall Mount MC Snake, Single pocket, 6"wide x 6"deep x 120" long.
- 4 Part Number CM 701-SK-0269, Double Tier MC Snake, Double Tier, 4.5"wide x 2.5"deep x 120"long top tier, 5"wide x 3"deep, x 120"long lower tier.

## 2.14 CMS/Snake Tray Series 801 (Mega Snake)

### A General

- 1 Tray shall be a grid construction welded wire linear mesh. The top edge of the tray shall be bent 90 degrees perpendicular to the vertical sides providing a return, which allows for two ¼" linear wires to run the entire length of the tray forming a double rail, This double wire configuration shall allow for attachment of accessories, splice connections and threaded rod without additional brackets or components. Additionally, the double rail configuration with its return design, allows for the accessory attachment of a section of standard strut to be attached whereas the tray can now span upwards of ten (10) feet without intermediate supports.
- 2 Turns, TEE's and Intersections shall be modular, interface with straight sections without modification and be self aligning
- 3 Tray shall not require any additional mounting brackets when mounted via threaded rod.
- 4 Wire Mesh: Standard 4 inch by 4 inch welded ¼" wire mesh welded at each intersection.
- 5 Tray sections, Turns, TEE's and Intersections shall be joined together with two (2) splice plates per junction. Splice plates shall align each section.

### B Depth: Tray depth shall be (unless otherwise shown on the drawings)

- 1 [2.0 inches (50mm)]
- 2 [4.0 inches (100mm)]
- 3 [6.0 inches (150mm)]

### C Width: Tray width shall be (unless otherwise shown on the drawings)

- 1 [6.0 inches (150mm)]
- 2 [12.0 inches (305mm)]
- 3 [18.0 inches (460mm)]
- 4 [24.0 inches (610mm)]

### D Length: Tray section length will be [120 inches (3050mm)]

### E Straight Sections, Full Width Basket

- 1 Part Number CM 801-2-6-10, Megasnake, 6" wide, 2" deep, 120" long
- 2 Part Number CM 801-4-6-10, Megasnake, 6 "wide, 4" deep, 120" long
- 3 Part Number CM 801-2-12-10, Megasnake, 12" wide, 2" deep, 120" long
- 4 Part Number CM 801-4-12-10, Megasnake, 12 "wide, 4" deep, 120" long
- 5 Part Number CM 801-6-12-10, Megasnake, 12 "wide, 6" deep, 120" long

- 6 Part Number CM 801-2-18-10, Megasnake, 18" wide, 2" deep, 120" long
  - 7 Part Number CM 801-4-18-10, Megasnake, 18" wide, 4" deep, 120" long
  - 8 Part Number CM 801-6-18-10, Megasnake, 18" wide, 6" deep, 120" long
  - 9 Part Number CM 801-2-24-10, Megasnake, 24" wide, 2" deep, 120" long
  - 10 Part Number CM 801-4-24-10, Megasnake, 24" wide, 4" deep, 120" long
  - 11 Part Number CM 801-6-24-10, Megasnake, 24" wide, 6" deep, 120" long
- F Turning Components, Creates Horizontal changes of direction
- 1 Part Number CM 801-2-6-90, Mega Snake, 6" wide, 2" deep, 90 degree turn
  - 2 Part Number CM 801-4-6-90, Mega Snake, 6" wide, 4" deep, 90 degree turn
  - 3 Part Number CM 801-2-12-90, Mega Snake, 12" wide, 2" deep, 90 degree turn
  - 4 Part Number CM 801-4-12-90, Mega Snake, 12" wide, 4" deep, 90 degree turn
  - 5 Part Number CM 801-6-12-90, Mega Snake, 12" wide, 6" deep, 90 degree turn
  - 6 Part Number CM 801-2-18-90, Mega Snake, 18" wide, 2" deep, 90 degree turn
  - 7 Part Number CM 801-4-18-90, Mega Snake, 18" wide, 4" deep, 90 degree turn
  - 8 Part Number CM 801-6-18-90, Mega Snake, 18" wide, 6" deep, 90 degree turn
  - 9 Part Number CM 801-2-24-90, Mega Snake, 24" wide, 2" deep, 90 degree turn
  - 10 Part Number CM 801-4-24-90, Mega Snake, 24" wide, 4" deep, 90 degree turn
  - 11 Part Number CM 801-6-24-90, Mega Snake, 24" wide, 6" deep, 90 degree turn
- G TEE Intersection, Creates TEE Intersection
- 1 Part Number CM 801-2-6-T, Mega Snake, 6" wide, 2" deep, Three way intersection
  - 2 Part Number CM 801-4-6-T, Mega Snake, 6" wide, 4" deep, Three way intersection
  - 3 Part Number CM 801-2-12-T, Mega Snake, 12" wide, 2" deep, Three way intersection
  - 4 Part Number CM 801-4-12-T, Mega Snake, 12" wide, 4" deep, Three way intersection
  - 5 Part Number CM 801-6-12-T, Mega Snake, 12" wide, 6" deep, Three way intersection
  - 6 Part Number CM 801-2-18-T, Mega Snake, 18" wide, 2" deep, Three way intersection
  - 7 Part Number CM 801-4-18-T, Mega Snake, 18" wide, 4" deep, Three way intersection
  - 8 Part Number CM 801-6-18-T, Mega Snake, 18" wide, 6" deep, Three way intersection
  - 9 Part Number CM 801-2-24-T, Mega Snake, 24" wide, 2" deep, Three way intersection
  - 10 Part Number CM 801-4-24-T, Mega Snake, 24" wide, 4" deep, Three way intersection
  - 11 Part Number CM 801-6-24-T, Mega Snake, 24" wide, 6" deep, Three way intersection
- H Crossing Grids, Creates a four way intersection
- 1 Part Number CM 801-2-6-CG, Mega Snake, 6" wide, 2" deep, Four way Intersection
  - 2 Part Number CM 801-4-6-CG, Mega Snake, 6" wide, 4" deep, Four way Intersection
  - 3 Part Number CM 801-2-12-CG, Mega Snake, 12" wide, 2" deep, Four way Intersection
  - 4 Part Number CM 801-4-12-CG, Mega Snake, 12" wide, 4" deep, Four way Intersection
  - 5 Part Number CM 801-6-12-CG, Mega Snake, 12" wide, 6" deep, Four way Intersection
  - 6 Part Number CM 801-2-18-CG, Mega Snake, 18" wide, 2" deep, Four way Intersection
  - 7 Part Number CM 801-4-18-CG, Mega Snake, 18" wide, 4" deep, Four way Intersection
  - 8 Part Number CM 801-6-18-CG, Mega Snake, 18" wide, 6" deep, Four way Intersection
  - 9 Part Number CM 801-2-24-CG, Mega Snake, 24" wide, 2" deep, Four way Intersection
  - 10 Part Number CM 801-4-24-CG, Mega Snake, 24" wide, 4" deep, Four way Intersection
  - 11 Part Number CM 801-6-24-CG, Mega Snake, 24" wide, 6" deep, Four way Intersection
- I 801 Series Accessories
- 1 Part Number CM 801-12-TO, 12" wide Cable Drop Out
  - 2 Part Number CM 801-18-TO, 18" wide Cable Drop Out
  - 3 Part Number CM 801-24-TO, 24" wide Cable Drop Out
  - 4 Part Number CM801-TO-SM, Universal Side Mount Over Rail Cable Drop Out

- 5 Part Number CM 801-TO-3.5, Side Mount Cable Drop Out
- 6 Part Number CM 801-WTK, Wall Termination Kit
- 7 Part Number CM 801-X-X-CS, Center Support Bracket, 'X-X' denotes width and depth of tray
- 8 Part Number CM 801-X-X-CBN, Cabinet Mount Bracket, 'X-X' denotes width and depth of tray
- 9 Part Number CM 801-X-X-WB, Wall Bracket, 'X-X' denotes width and depth of tray
- 10 Part Number CM 801-X-X-RBN, Rack Mount Bracket, 'X-X' denotes width and depth of tray
- 11 Part Number CM 801-PP/19, 19" Patch Panel Adapter
- 12 Part Number CM 801-DG-2, 2" Snap-In Divider Fence, 2" tall x 60" long
- 13 Part Number CM 801-DG-4, 4" Snap-In Divider Fence, 4" tall x 60" long
- 14 Part Number CM 801-DG-6, 6" Snap-In Divider Fence, 6" tall x 60" long
- 15 Part Number CM 801-X-R6, 6" size adapters, 'X' denotes depth of tray
- 16 Part Number CM 801-X-R12, 12" size adapters, 'X' denotes depth of tray
- 17 Part Number CM 801-X-C, Solid Tray Cover, 'X' denotes width of tray, 60" long
- 18 Part Number CM 801-X-TI, Solid Tray Insert Liner, 'X' denotes width of tray, 60" long
- 19 Part Number CM 801-SP, Mega Snake Splice Kit
- 20 Part Number CM 801-X-X-H-SP, Mega Snake Hinge Splice Plate, Elevation Change, 'X-X' denotes width and depth of tray

### Part 3. EXECUTION

#### 3.1 Examination

- A Examine areas to receive cable management system. Notify the Engineer of conditions that would adversely affect the installation or subsequent utilization of the system.
- B Do not proceed with installation until unsatisfactory conditions are corrected.

#### 3.2 Installation

- A Install pathway/trays in accordance with recognized industry practices, to ensure that the cable pathway/tray equipment complies with requirements of the NEC, and applicable portions of NFPA 70B and NECA "Standards of Installation" pertaining to general electrical
- B Installation practice.
- C Coordinate installation with other trades.
- D Field verification is required before installation.
- E Install cable management system at locations indicated on the drawings and in accordance with manufacturer's instructions.
- F All open pathway/trays shall be installed a minimum of six (6) inches away from any light fixture or other source of EMI (Electromagnetic Interference).
- G All pathways shall be grounded per NEC Article 250.
- H Provide external grounding strap at expansion joints, sleeves and crossover and at other locations where pathway/tray continuity is interrupted.
- I Support all pathways from building construction. Do not support pathways from ductwork, piping, or equipment hangers.
- J Install cable tray level and straight unless noted on the construction drawings.