



# TOUGHMesh

- Specification -

(CTI-TM-PS-001-A05)



### SECTION CTI-TM-PS0001

#### MESH CABLE TRAYS FOR ELECTRICAL INFRASTRUCTURE SYSTEMS

This section specifies mesh cable tray in accordance with NEMA VE 1

#### 1.0 GENERAL

##### 1.1 SUMMARY

- A. The works covered within this section includes the provision of all necessary materials, tests and services to execute a complete and compliant TOUGHMesh wire mesh cable tray system as described in this specification and as shown by the referenced drawings.
- B. TOUGHMesh wire mesh cable tray system forms a cable management mechanical support system, that is to safely secure, protect and support the cables as specified within the electrical infrastructure system.
- C. To warranty the performance of the TOUGHMesh wire mesh cable tray mechanical support system and the safety of the electrical infrastructure cables within the tray, this specification must be followed. Deviation to this specification is not permitted without prior written consent.

##### 1.2. DEFINITIONS

- A. TOUGHMesh wire mesh cable tray systems are to include, but are not limited to straight sections, fittings, engineered horizontal bends, covers, inlays, field fabricated horizontal and vertical bends, tees, crosses, dropouts, transitions, clamps, fixings, brackets, supports, accessories and hardware to form a cable management mechanical support system.
- B. TOUGHMesh wire mesh cable tray systems must be manufactured from materials as listed in [Section 2.2 A] of this specification.
- C. TOUGHMesh wire mesh cable tray system shall be furnished in the material finishes as listed in [Section 2.2 B] of this specification.

##### 1.3 CONSIDERATIONS

- A. TOUGHMesh wire mesh cable tray straight sections and bends must be manufactured from electro-welded wires which consistute or form a mesh of steel wire from materials and finishes as listed within this specification.
- B. TOUGHMesh wire mesh cable tray system stright sections and bends must be formed with a Safe-T-Curl top edge to protect the cables during installation and provide installer safety.
- D. TOUGHMesh wire mesh cable tray system horizontal bends shall be C2G engineered type fittings with fabricated horizontal tees and crosses constructed using a corner radius kit.



## 2.0 PRODUCTS

### 2.1 TOUGHMESH WIRE BASKET CABLE TRAY SYSTEM

- A. TOUGHMesh wire basket cable tray of the types and sizes indicated, shall be constructed of Electro-welded steel wires or threads which shall be rigid and continuous, that allow continuous ventilation of the cables, with engineered horizontal bends, splice plates, splice bars, clamp assemblies, fittings, fixings, hangers, supports and accessories as required to build a complete wire mesh cable tray system. Construct tray in accordance with the applicable manufacturing standards and the product construction features detailed within this section.
- B. TOUGHMesh straight sections and engineered horizontal bends shall be constructed with all lateral vertical wires being connected to the top continuous longitudinal wires by Safe-T-Curl safety edge. Exposed welding burrs and sharp protrusions are prohibited and shall not be used.
- C. TOUGHMesh straight section and engineered horizontal bends shall be constructed from steel wires or threads formed into a uniform rectangular 2 inches x 4 inches (50 x 100mm) wire mesh pattern. The mesh pattern intersecting wires are to be welded together.
- D. TOUGHMesh cable tray shall be manufactured to the following nominal dimensions:
1. [Lengths] straight sections: [10] feet [3.0] meters measured wire center to wire center.
  2. [Heights External] straight sections: [2.5] [4.5] [6.2] inches / [58] [116] [116] millimeters
  3. [Depths Internal] straight sections: [2.1] [4.1] [6.0] inches / [53] [104] [152] millimeters
  4. [Widths] straight sections: [2] [4] [6] [8] [10] [12] [14] [16] [18] [20] [24] inches  
: [50] [100] [150] [200] [250] [300] [350] [400] [450] [500] [600] millimeters
  5. [Superelevation Wires] a double wire shall be used on the vertical superelevation of the following tray types to optimize performance and rigidity the mesh cable tray.
    - a. Height [2.5] inches: widths [12] [14] [16] [18] [20] [24] inches  
: widths [300] [350] [400] [450] [500] [600] millimeters
    - b. Height [4.5] inches: widths [8] [10] [12] [14] [16] [18] [20] [24] inches  
: widths [200] [250] [300] [350] [400] [450] [500] [600] millimeters  
: applied only in the first step after the edge threads
    - c. Height [6.2] inches: widths [6] [8] [10] [12] [14] [16] [18] [20] [24] inches only in the first step  
: widths [150] [200] [250] [300] [350] [400] [450] [500] [600] millimeters  
: applied only in the first step after the edge threads
  6. [Wire Diameters] longitudinal, lateral, superelevation wires and threads have engineered diameters and properties for optimal mesh cable tray performance. The following mesh wires and thread diameter combinations shall be used:
    - a. Lateral cross thread  $\varnothing$  = [0.153"] [3.9mm] + Longitudinal thread  $\varnothing$  = [0.153"] [3.9mm]
    - b. Lateral cross thread  $\varnothing$  = [0.177"] [4.5mm] + Longitudinal thread  $\varnothing$  = [0.153"] [3.9mm]
    - c. Lateral cross thread  $\varnothing$  = [0.193"] [4.9mm] + Longitudinal thread  $\varnothing$  = [0.177"] [4.5mm]
    - d. Lateral cross thread  $\varnothing$  = [0.193"] [4.9mm] + Longitudinal thread  $\varnothing$  = [0.193"] [4.9mm]



### E. Engineered Fittings

C2G (crimped-to-go) engineered horizontal bends shall comply with Section 2.2 D2-D6 and shall be supplied manufacturer factory pre-formed.

### F. UL Classified

Mesh cable tray shall be UL Classified for use as a EGC (Equipment Grounding Conductor) in compliance to NEC Article 392.7 Grounding. The cable tray manufacturer's recommendations as listed within this section and [Section 2.7 B] of this specification must be followed.

### G. Splice Plates

Splice joints within the mesh cable tray system shall be designed and installed to provide the most expedient method of installation in accordance with the manufacturers recommendations:

1. [Posi-Lok Mini Splice] wire mesh tray widths [4] [6] [8] [10] inches.  
[100] [150] [200] [250] millimeters.
2. [Posi-Lok Splice] wire mesh tray widths [12] [14] [16] [18] [20] [24] inches.  
[300] [350] [400] [450] [500] [600] millimeters.
3. [Washer Splice Kit] all mesh tray widths of field fabricated fittings.
4. [Standard Splice Bar] all mesh tray widths to reinforce splice joints.
5. [HD Splice Bar] all mesh tray widths to heavily reinforce splice joints.

### H. Expansion Splice Plates

Thermal expansion and contraction splice joints within the mesh cable tray system shall be designed and installed in accordance with the following instructions:

6. [CTI-S65001] technical data sheet for expansion gap setting.
7. [CTI-S50006] installation instruction for expansion splice kit.
8. [NEMA VE 2, 4.3.2] expansion splice plates.

### I. Directional Transitions

Mesh cable tray systems, horizontal and vertical directional transitions and transition fittings may be fabricated and assembled in the field by means of cutting and bending straight sections of tray, dressing, polishing and recoating, in accordance with manufacturer's instructions. Mesh cable tray C2G engineered horizontal bends shall be used in place of field fabricated bends. Mesh cable tray corner radius kits must be installed to field fabricated tee and cross fittings.

### J. Fit and Function

All accessories and miscellaneous items shall be supplied by the same manufacturer; including but not limited to splice plates, clamps, hangers, supports and other accessories necessary to constitute a complete and continuously grounded cable management system.

### K. Compatibility

All mesh tray accessories must be compatible with the material or finish of the mesh cable tray, in accordance with manufacturers recommendations [CTI-S65002].



## 2.2 MATERIALS AND MATERIAL FINISHES

### A. MATERIALS

Mesh cable tray shall be manufactured from the following listed materials:

1. Steel Wire = [ASTM A510 / A510M]
2. Stainless Steel Wire = [ASTM A580]
3. Plain Steel Sheet and Strip = [ASTM A1011 / A1011M]
4. Stainless Steel Sheet and Strip = [ASTM A1011 / A1011M]

### B. MATERIAL FINISHES

Mesh cable tray shall be manufactured to the following listed material finishes:

1. [EG] = ELECTRO GALVANIZED
  - a. Electroplated zinc galvanized finish applied after product fabrication
  - b. ASTM B633
2. [PT] = PAINTED
  - a. Epoxy painted finish electrostatically applied after product fabrication
  - b. Paint must be applied over the [EG] or [TG] finish, not plain [PL] steel
  - c. ASTM is not applicable
3. [S4] = STAINLESS STEEL 304
  - a. Stainless steel grade 304 finish applied before fabrication
  - b. ASTM A580 / A580M
4. [TG] = TOUGH GALVANIZED
  - a. Tough galvanized finish applied before fabrication
  - b. ASTM A510 / A510M
5. [S6] = STAINLESS STEEL 316
  - a. Stainless steel grade 316 finish applied before fabrication
  - b. ASTM A580 / A580M

## 3.0 MANUFACTURERS

Subject to compliance with this specification, referenced standards, requirements, and tests; all TOUGHMesh wire mesh cable tray products must be manufactured by:

### A. CT INNOVATIONS.

Phone : +1-618-431-3111  
Web : [www.toughinnovations.com](http://www.toughinnovations.com)  
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### B. CHAROFIL - MANCILLA GRUPO.

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