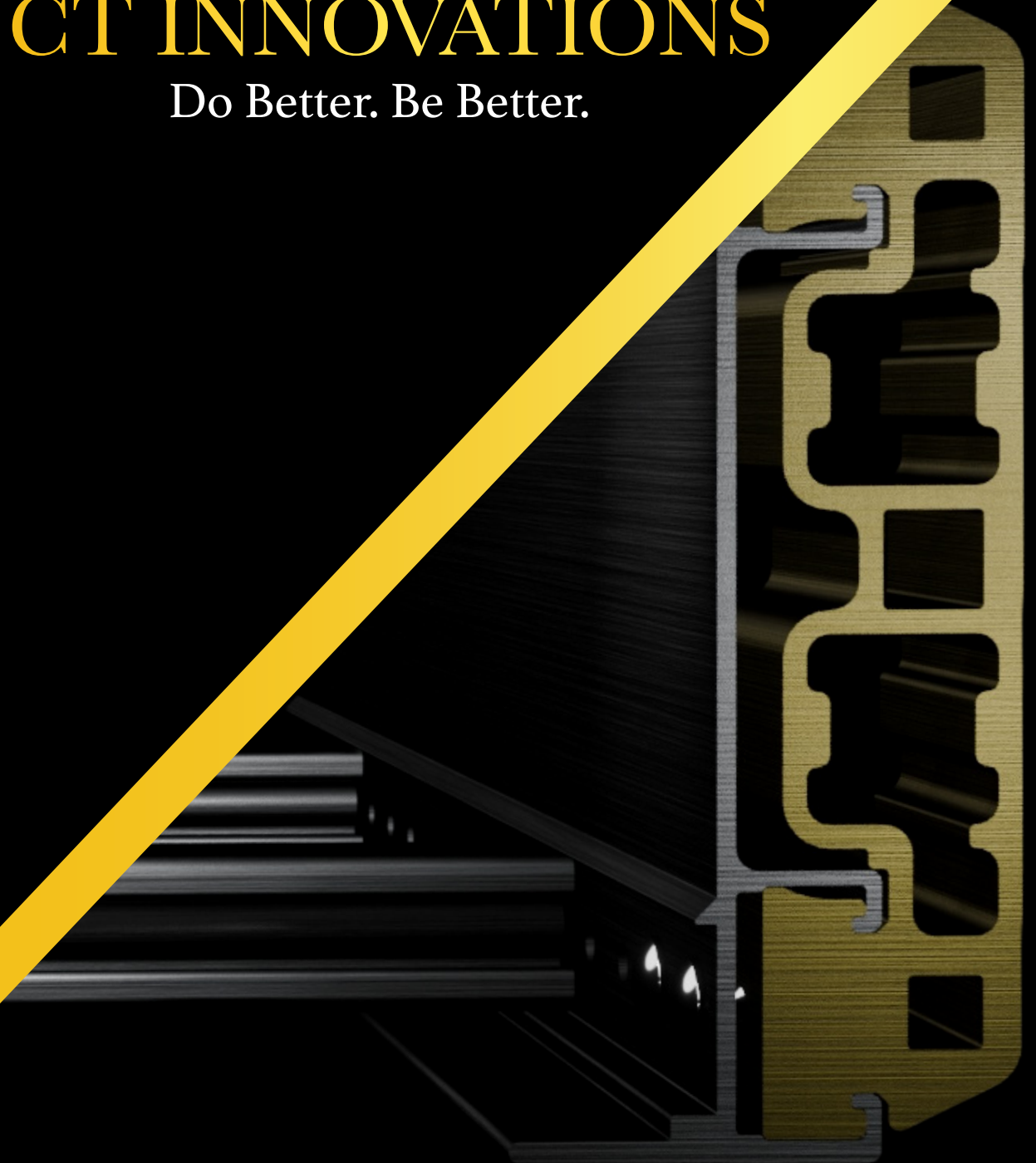




CT INNOVATIONS

Do Better. Be Better.



TOUGHTray

# Our DNA

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With over 130 years of combined electrical and mechanical support systems experience, the CT Innovations leadership team set out to build an agile company that's focused on and dedicated to customers, not shareholders. In our view, great service is not a luxury. It is a necessity that too few deliver.

At CT Innovations, we focus on one thing and one thing only—our customers' needs. We believe in taking action, being easy to do business with, and being held accountable by those we serve. We are not all things to all people. We will; however, always strive to be our customers' preferred supplier in our space, and to be recognized as a company that consistently provides superior value, service, and innovation.

---

Company Motto:

“Do Better. Be Better.”



# CTI Model

## Actions over Buzzwords

Responsiveness

Flexibility

Experience

All too often, suppliers try to make their product fit a bucket with fancy words and charts, delivering little actual value to the customer. At CTI we flipped that script. We started with the customer's needs, and built the product around it.



### Project Savings

Product value is often determined by a project's success. Whether its material, installation efficiency, engineering support, product availability, or just the ease of doing business, CT Innovations represents maximum savings.

### Innovation

With engineering and field installation at our core, CT Innovations is focused on bringing value back to a stagnant market place. There is buzzword innovation, and there's innovation that actually delivers value.

### Market Awareness

With more than 130yrs of electrical and mechanical field experience, CT Innovations has built its reputation by directly engaging with the market to continuously address limitations and proactively provide solutions.

### Time Savings

With an ever increasing shortage of skilled workers, time management is more important than ever. From preliminary layouts and BOM building, to procurement and product installation, CTI can provide solutions.

### Accountability

While most manufacturers today like to point fingers and avoid ownership, CT Innovations believes in accepting responsibility for one's actions and finding solutions to best service our customers' needs.

### Subject Matter Experts

Would you like to talk to a manufacturer with actual experience? With experts skilled in product design, project coordination and field installation, CTI believes educating customers on relevant products and solutions dramatically improves a project's success.





## Ensure Your Success

Who is more passionate and motivated to see your project succeed, you and your immediate team or a random supplier's customer service provider? The answer is easy, you care far more than a disconnected entity. Yet in today's electrical and mechanical industry, we are still 100% reliant on the actions and initiative of our suppliers. Let that sink in. Remembering that employee turnover is at an all-time high and skilled labor is at an all-time low, how do you de-risk your project schedules with items outside your control?

At CTI we want to empower our customers by providing the essential tools needed to be successful and self-sufficient. That is why we have and will continue to invest heavily in providing an easy-to-use, fully integrated e-commerce platform. These online interfaces provide important features such as resource dashboards, secure messaging, shipment notifications, and other self-service tools at your fingertips. Our priority is the customer and customers require a better class of service, with timely, accurate, and easy-to-access information.





## ▶ **Web Based Portals**

A streamlined and convenient way to access information, products, and services. By providing a centralized online platform, web portals enable our customers to easily find and access relevant information and resources, such as account details, product catalogs, support materials, and more.



## ▶ **Instant Tracking**

Stay informed about the status and whereabouts of shipments in real-time. This technology provides the status, location, expected delivery date & time, and any potential delays or issues that may arise during the order process. Increased visibility provides our customers greater control and peace of mind, knowing that they are always in the loop.



## ▶ **Automated Documentation**

Eliminate the need to navigate numerous web pages and call multiple different people to retrieve project documentation. With 24/7 availability, CTI customers can access the resources and information they need at any time, without having to wait for support staff to be available.



## ▶ **Simplified Transactions**

Our customers now have the ability to easily and intuitively build out or upload a project BOM and submit it for quote. Build with peace of mind as CTI put safeguards and checks in place to ensure the accuracy of your BOMs. In addition, every line item on a RFQ will generate a submittal or cutsheet for individual or bulk download.





CT INNOVATIONS







# Experience That Applies

Staying ahead of the competition requires more than just a product or service – it demands a partnership with a company that embodies responsiveness and experience. At CT Innovations, we take pride in being your trusted ally in achieving unparalleled success. Experience the difference with CT Innovations:

- 1. Real-Time Solutions:** In a world where market dynamics change at the speed of light, responsiveness is key. Our team is always ready to adapt and provide swift solutions to your challenges. Whether it's a last-minute change in project scope or a sudden market shift, we're here to keep you one step ahead.
- 2. Proven Expertise:** Experience isn't just about the number of years in business; it's about the depth of knowledge gained over time. With over 130 years of industry experience, we have honed our skills, mastered industry trends, and amassed a wealth of knowledge to serve you better. Our seasoned professionals bring unparalleled expertise to every project, to ensure superior outcomes.
- 3. Reliable Support:** When you choose CT Innovations, you gain a partner who is committed to your success. Our track record of reliability and consistency speaks volumes. Count on CTI to meet deadlines, exceed expectations, and provide dependable support every step of the way.
- 4. Risk Mitigation:** Experience equips the CTI team to foresee potential risks and develop strategies to mitigate them. By partnering with CT Innovations, you're investing in proactive risk management, reducing costly setbacks, and ensuring a smoother journey toward your project goals.
- 5. Customized Solutions:** Responsiveness doesn't mean one-size-fits-all solutions. We understand that each client has unique needs. Our team listens intently to your specific requirements and tailors solutions to fit your business. Your success is our top priority, and we leave no stone unturned in crafting bespoke strategies for you.
- 6. Industry Connections:** Over the years, we've built a robust network of industry connections and collaborations. This network provides CTI with valuable resources and insights that we pass on to you. By working with us, you gain access to a world of opportunities and partnerships that can drive your business forward.
- 7. Future-Proofing:** With a responsive and experienced partner like CTI, you can future-proof your business. CTI continuously adapts to emerging trends and technologies, ensuring that your business strategies remain relevant, competitive, and profitable.





# Engineering Services:

## Optimization Delivered

Engineering Services is a highly experienced group of engineers dedicated to better servicing our customer's needs and providing turnkey solutions. With extensive backgrounds in electrical, structural, and mechanical engineering, this globally integrated team is ready to help deliver projects on schedule and to budget.



### Discover Massive Savings with CTI's TSS Calculator



#### 1. Improve Critical Path Schedules



### 602 Hours Saved

✓ Condense project duration, and enhances the ability to meet deadlines by identifying and prioritizing the design & installation tasks that directly influence project completion time.

#### 2. Reduce Construction Complexity



### 38.8K Pieces Removed

✓ Minimize the potential for errors, facilitate better resource allocation, and increase project manageability by drastically

#### 3. Minimize Project Expenditures

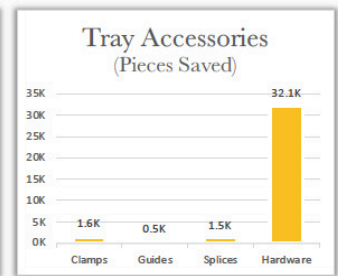
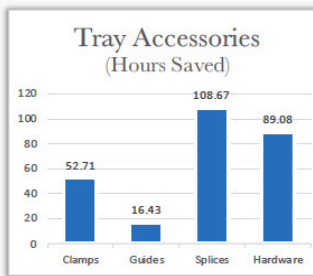
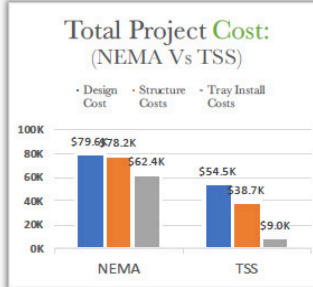
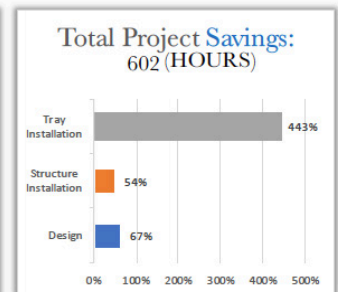
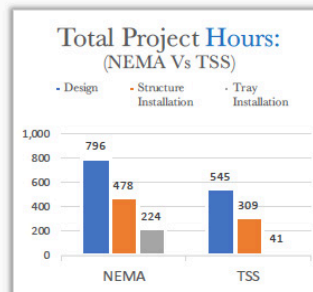


### \$124.0K Dollars Saved

✓ Maximize profitability, resource utilization, and enhance the project's resilience against unforeseen challenges or budget constraints through material and labor management.

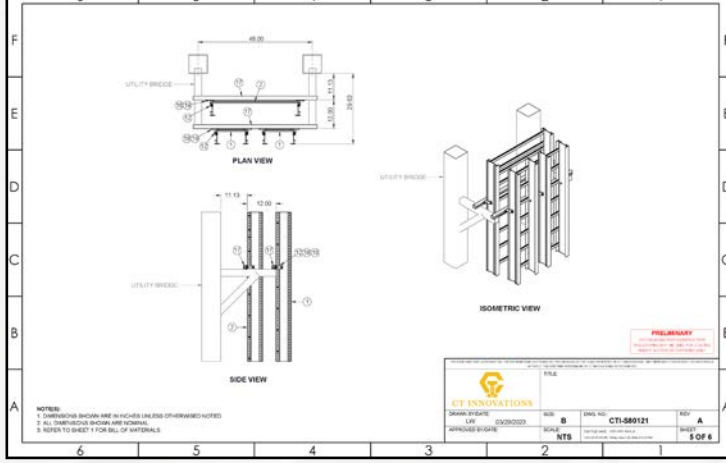
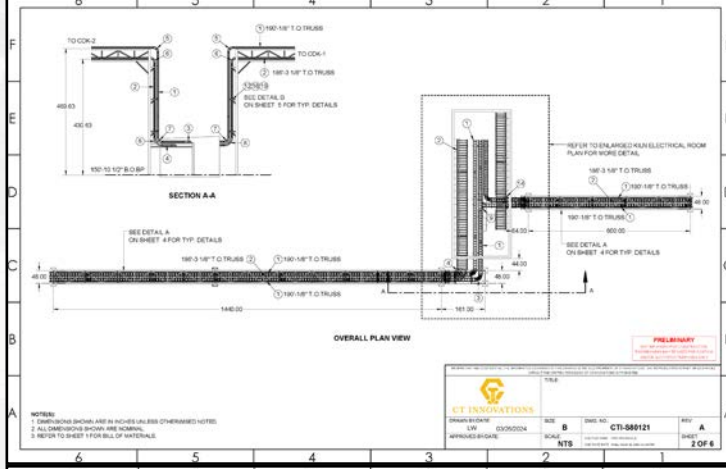
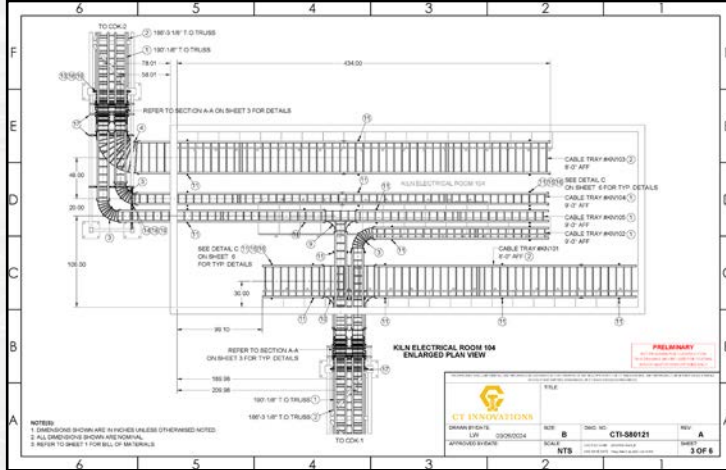
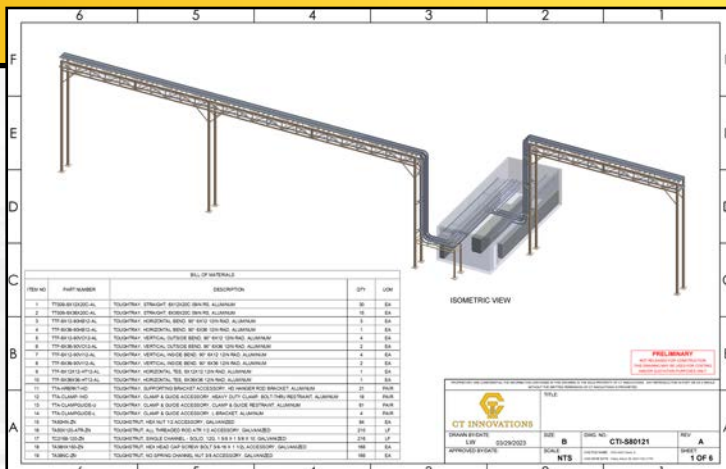


CT INNOVATIONS



# Services Available:

- Dynamic Load Calculations
- Static Load Calculations
- Support Optimization
- Shop Drawings
- Installation Details
- BOM Take-Offs
- Plan Drawings
- PE Stamps
- Cable Tray Layout
- Trayfill Calculation
- Specification Review
- Site Support
- 3D Model Generation
- Pipe Rack Design
- HVAC Rack Design
- MEP Rack Design
- ETO Product Design
- Seismic & NF Certification
- NEMA Certification
- IEC Certification
- UL Certification
- Pull & Slip Tests
- Salt Spray Tests
- Wind Certification







Minimize Risk  
**MAXIMIZE**  
Profitability

# **TOUGH**

## **SUPPORT SAVINGS**

### **Civil Structure & Design**

---

- Modular Span Solutions
- Self Supporting Solutions
- Dynamic Load Certified
- Minimize Civil Structure
- Structural Design Services

### **Installers & Construction**

---

- Eliminate Splice Plates
- Preinstalled Link Connectors
- 50% Less Hardware
- Maximum Site Adaptability
- Modular Assembly Solutions





## Value & Simplicity

TOUGH Support Savings represents CTI's project optimization recommendations. Derived from years of working alongside end users, EPC's, engineers, distribution, and cable tray installers, CTI set out to create customer value from customer feedback. These manufacturer recommendations are fully compliant with NEMA VE 2 guidelines and supersede industry standard practices. Rest assured that each recommendation underwent extensive application testing to validate product longevity and project practicality.

## Project Optimization

- Engineering Resources
- Design Hours
- Logistic Costs
- Material Handling
- Construction Schedule
- Site Resources
- Project Schedule
- Raw Material Content

### Inspection & Review

---

- No Weld Standards & NDT
- Eliminate Heat Stain
- Eliminate Weld Smoke
- Eliminate Weld Cracks
- Eliminate Weld Uncertainty

### Procurement & Expediting

---

- Estimate Quicker
- Quantify Less To Buy Less
- Ship & Expedite Less
- Coordinate & Manage Less
- Instant Project Tracking



# TOUGHTray:

## Innovation

The embodiment of a cable tray system without limitations: With a modular platform this aluminum ladder tray is engineered to provide superior support solutions and maximum flexibility. Derived from years of working alongside engineers and installers, CTI set out to create customer value from customer feedback. Built from the ground up around project solutions, this cable ladder system represents the GOLD standard of cable support solutions.





## Key Benefits

- Eliminate Supports / Minimize Civil Structure
- Eliminate Splice Plates / Reduce Wasted Labor
- Dynamic Load Certified: Wind / Snow / Ice / G-Force
- Superior Site Flexibility / Modular Assembly
- Eliminate Custom Hangers / Universal Mounting
- Maximize Safety / No Hot Work





# TOUGHTray Standards

## Underwriters Laboratories (UL)

CT Innovations cable tray systems are UL Classified for use as an equipment grounding conductor as denoted by the UL logo on the label below. CTI product labels are supplied affixed to every straight section and fitting.

When a separate grounding cable wire is installed with the cable tray system; the tray is not required to be UL Classified.

A cable tray system meeting the requirements of NEMA VE 1 Section 5.1 may provide adequate safe electrical performance. Consult CT Innovations for product recommendations on the correct methods of bonding and grounding our cable tray systems to NFPA 70 (NEC).

|                |   |      |  |   |   |   |
|----------------|---|------|--|---|---|---|
| CT INNOVATIONS | <b>TTS09-6X12X20C-AL</b>  | PO#: |  | CLASSIFIED<br>UL  | WARNING: Cancer & Reproductive Harm<br>www.P65Warnings.ca.gov |  |
|                |  PRODUCT: <b>TOUGHTray</b><br>LOAD (lbs/ft): <b>100</b><br>SPAN (ft): <b>20</b><br>MINIMUM AREA (SQ IN): <b>1.5</b><br>MATERIAL: <b>ALUMINUM</b><br>LOAD CLASS: <b>20C</b> | SN#: |  |   |   |   |
|                |   | TAG: |  | TRANSPORT, HANDLE, AND STORE IN ACCORDANCE WITH NEMA VE 2<br><b>CAUTION, DO NOT USE AS A WALKWAY OR LADDER FOR BRACE SUPPORTS</b><br>ITS USE IS ONLY AS A METAL SUPPORT FOR CONDUCTORS AND CHANNELING |   |   |

## NFPA 70 : National Electrical Code (NEC)

CT Innovations cable tray systems comply with the requirements of NFPA 70. Cable tray systems have been tested to Section 318-3(c) as suitable use as an electrical equipment grounding conductor (E.G.C.)

## NEMA VE 1 : Testing & Certification

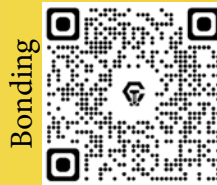
CT Innovations cable tray systems are manufactured, tested, and certified in accordance with and compliance to industry standard NEMA VE-1.

Our published cable tray design loads are based upon testing in compliance with NEMA VE 1, Section 5.2 Load Testing, loading to destruction and include the specified 1.5 factor of safety.

Ladder tray rungs are tested to NEMA VE 1, Section 5.4 Rung Load Capacity. Although this test is optional, CT Innovations believes it important to verify the performance of the rung to ensure the safe and reliable restraint of the cables. CT Innovations has load tested both faces of the rung to ensure good performance when installed horizontally and vertically.

Link Connector and other connecting plates are tested for electrical continuity in compliance with NEMA VE 1 Section 4.7 Bonding and Section 5.1 Electrical Continuity of Connections. Measured resistance is across the joint is less than 0.00033W meeting specified NEMA VE 1 electrical continuity performance.

## Product Data Sheets:



# TOUGHTray Properties

## Specification & Compliance:



Loading: NEMA VE 1  
Values based on simple beam tests

Tray Safety Factor: 1.5  
\*Support Safety Factor: 5

## Quality & Inspection:



Complexity: Understanding challenges in manufacturing

Control: Understanding Procedure vs Chance

\*unless otherwise stated

## Torque Information:

T30  
(8ft-lbs)

1/4"  
(12ft-lbs)

3/8"  
(19ft-lbs)

1/2"  
(50ft-lbs)

## Finish Information:



Aluminum Extrusions:  
Aluminum Alloy Grade 6063-T6  
Recommended Application: Indoor / Outdoor / Industrial / Offshore



Aluminum Sheets:  
Aluminum Alloy Grade 5052-H32  
Recommended Application: Indoor / Outdoor / Industrial / Offshore



Aluminum Accessories:  
Aluminum Alloy Grade 5052-H32  
Recommended Application: Indoor / Outdoor / Industrial / Offshore



Stainless Hardware:  
Stainless steel 316, ASTM: F593  
Recommended Application: Indoor / Outdoor / Industrial / Offshore



Stainless Accessories:  
Stainless steel 316, ASTM: A240  
Recommended Application: Indoor / Outdoor / Industrial / Offshore

## Design Recommendations:



TSS

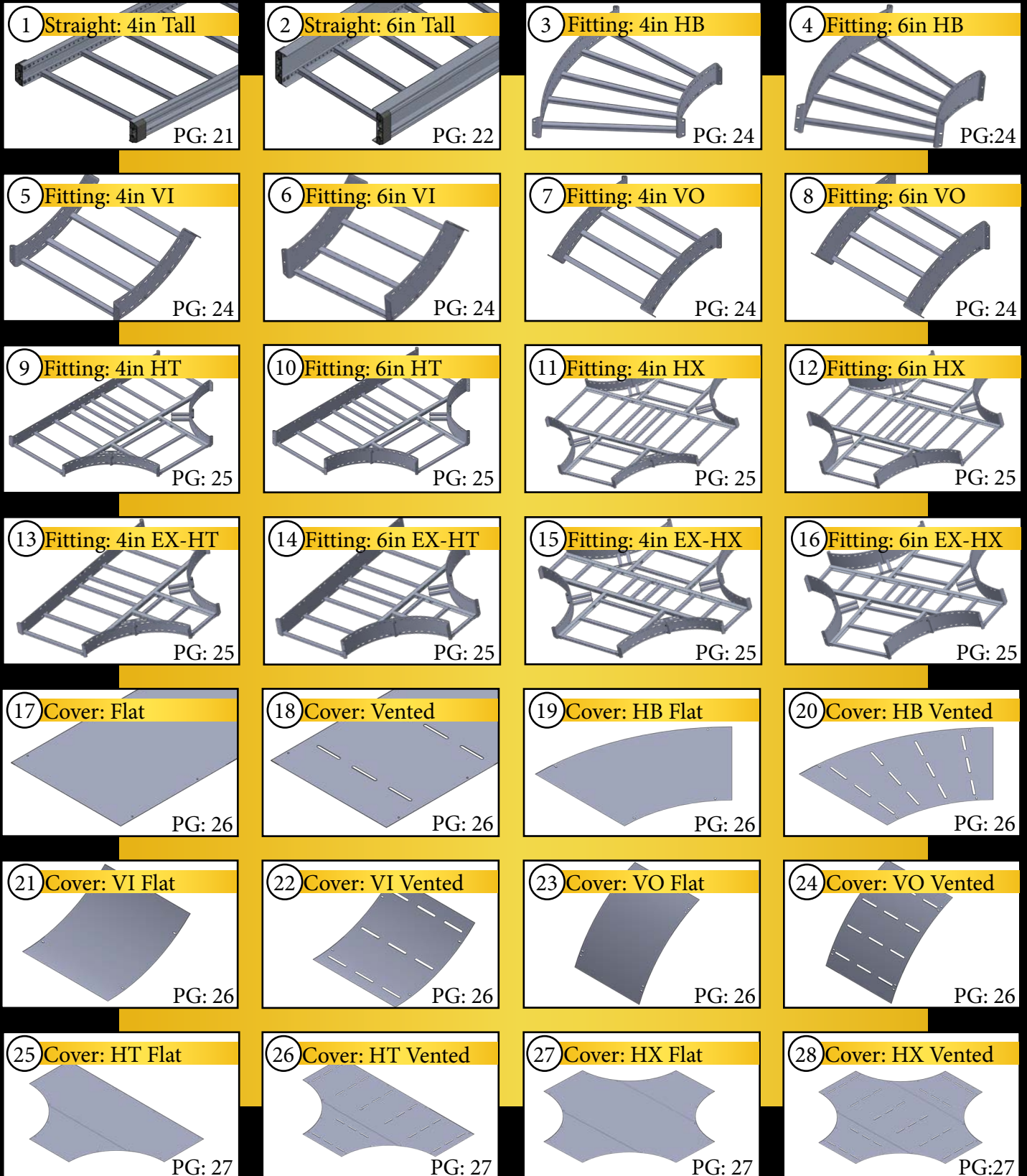
TOUGH Support Savings (TSS) represents the most optimal blueprint for tray installation & design ensuring you get the most out of our product.



Resources

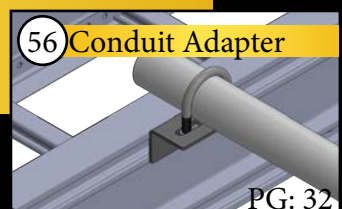
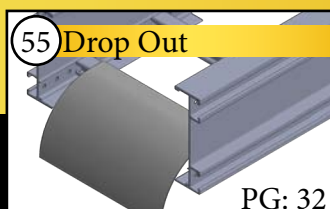
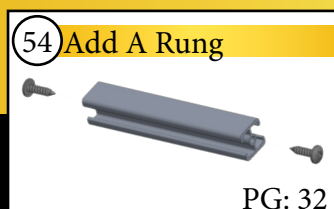
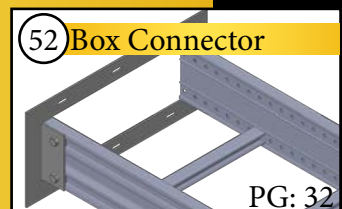
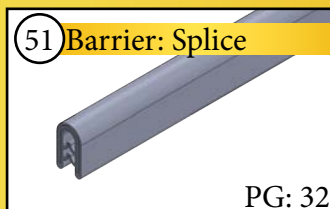
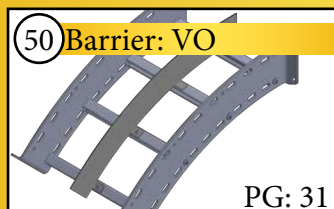
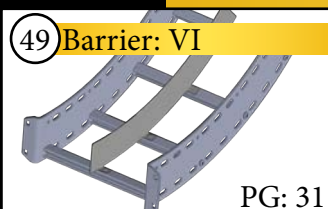
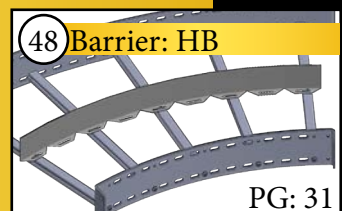
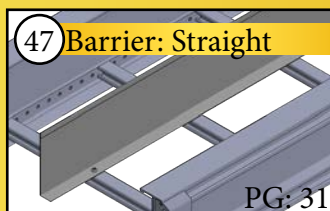
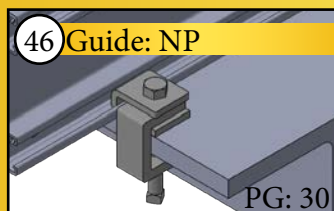
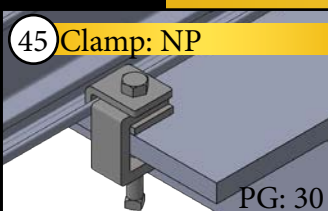
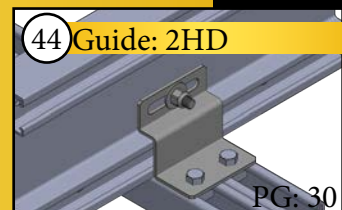
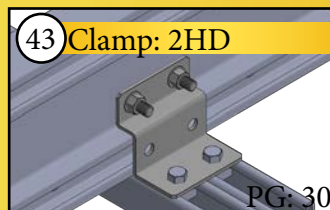
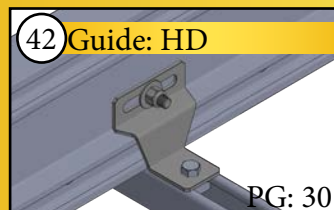
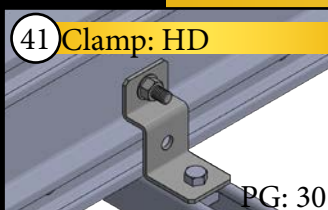
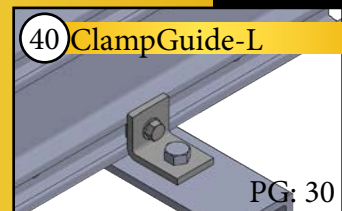
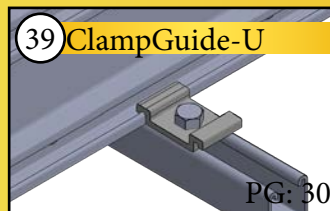
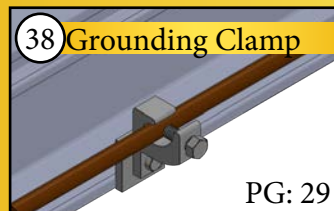
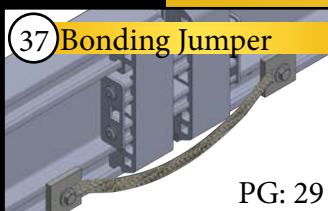
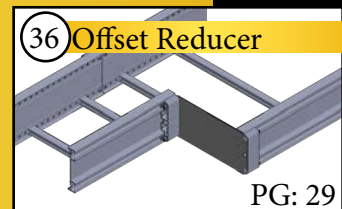
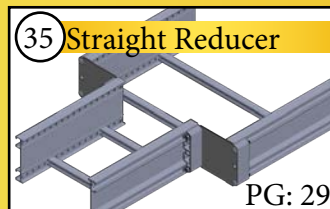
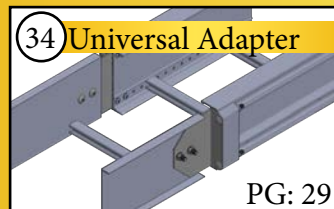
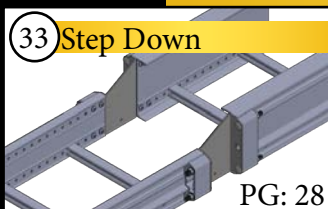
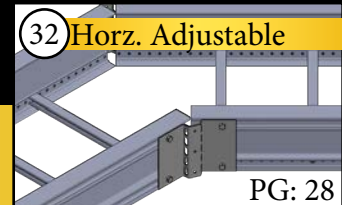
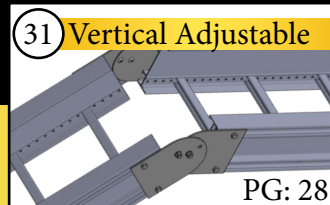
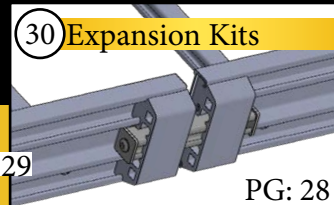
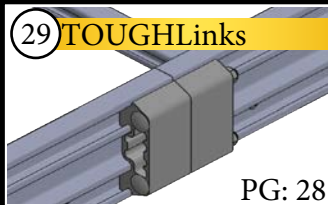
Optimize your next project: The TSS Calculator breaks down the CTI advantage around material savings, complexity reduction, and the removal of labor hours.

# Picture Index





# Picture Index

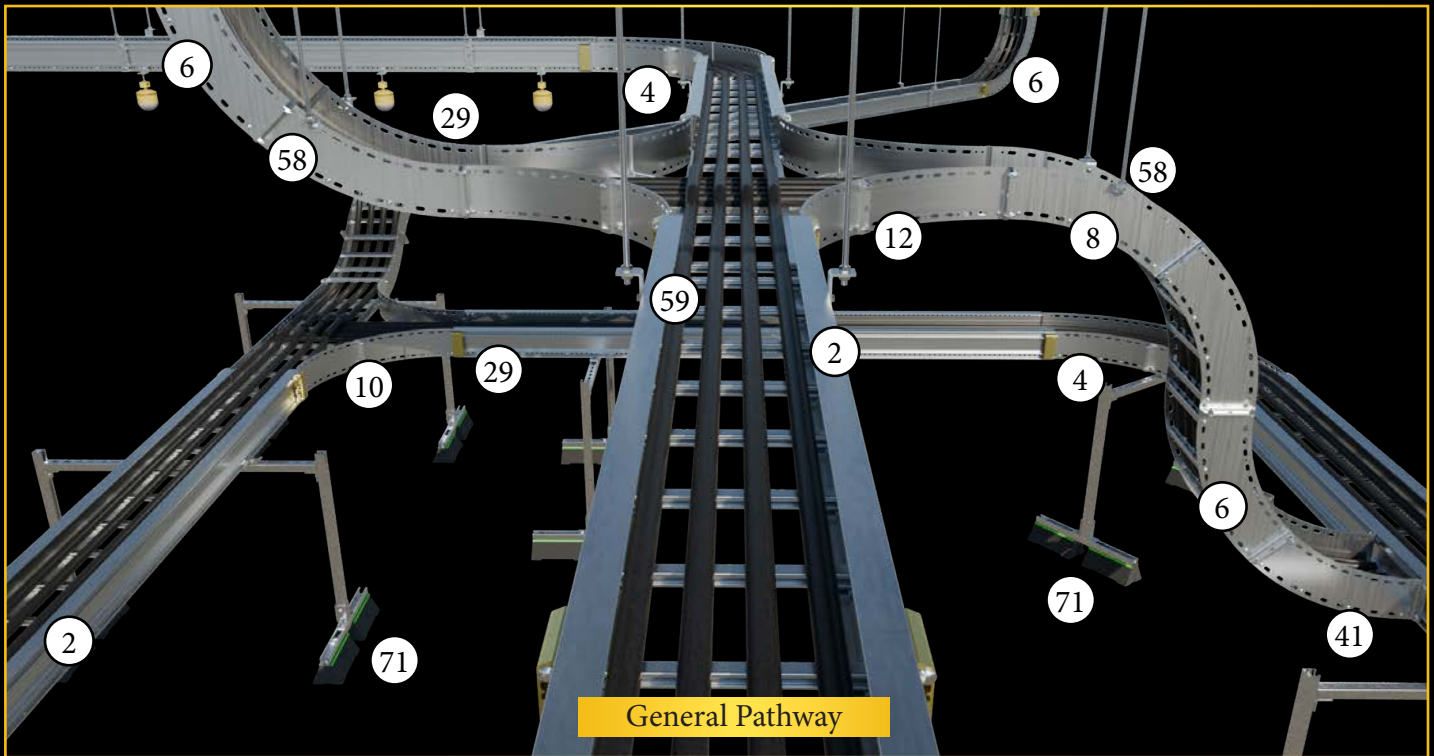


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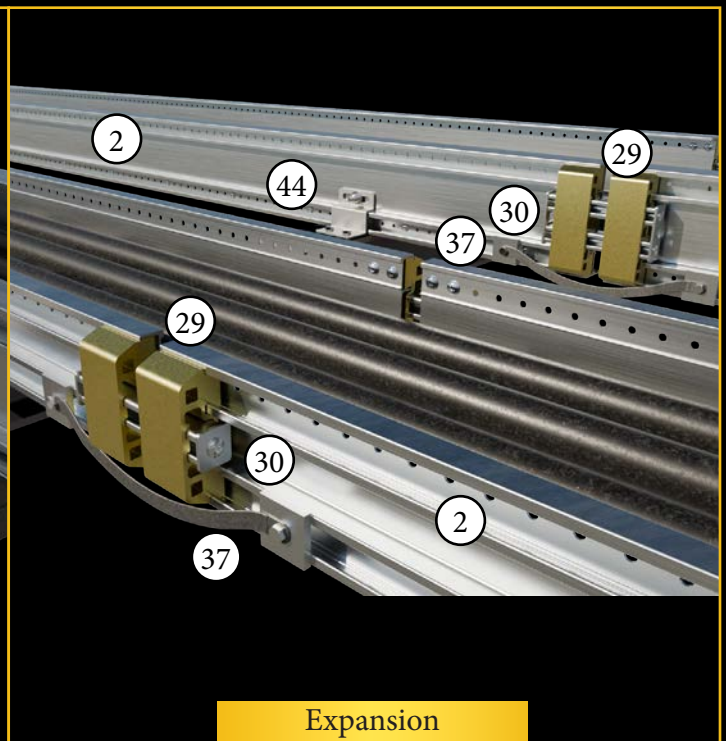
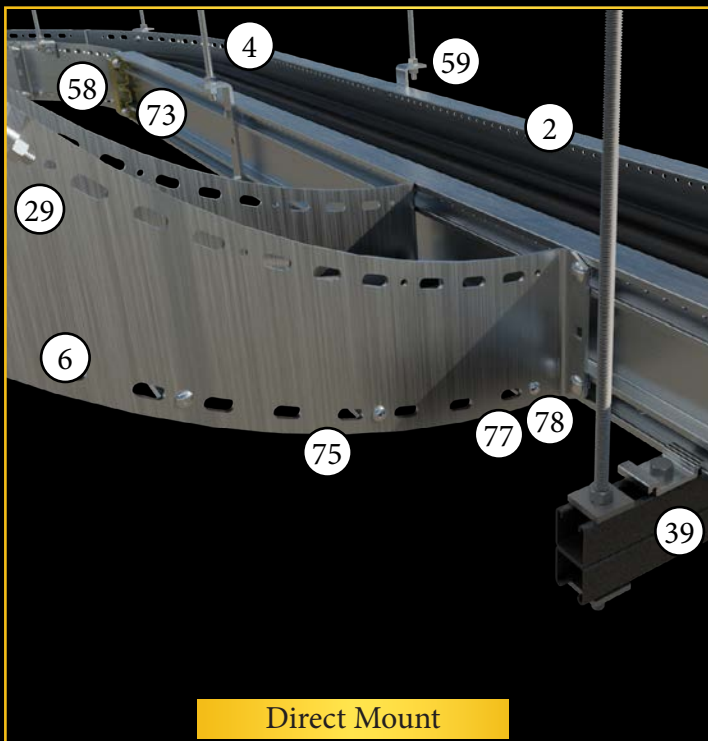
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|  <p>57 Connecting Bracket<br/>PG: 33</p>   |  <p>58 Hanger Bracket<br/>PG: 33</p>       |  <p>59 HD Hanger Bracket<br/>PG: 33</p>   |  <p>60 Strut Brkt<br/>PG: 33</p>          |
|  <p>61 Double Strut Brkt<br/>PG: 33</p>    |  <p>62 Gusseted Strut Brkt<br/>PG: 33</p>  |  <p>63 Cover Brackets<br/>PG: 34</p>      |  <p>64 Rung Kits<br/>PG: 34</p>           |
|  <p>65 Tray Edge Protector<br/>PG: 34</p> |  <p>66 Isolation<br/>PG: 34</p>           |  <p>67 Rooftop Support A<br/>PG: 35</p>  |  <p>68 Rooftop Support B<br/>PG: 35</p>  |
|  <p>69 Rooftop Support C<br/>PG: 35</p>  |  <p>70 Rooftop Support D<br/>PG: 35</p>  |  <p>71 Rooftop Support E<br/>PG: 35</p> |  <p>72 Link to Link<br/>PG: 36</p>      |
|  <p>73 Link to Fitting<br/>PG: 30</p>    |  <p>74 Fitting to Fitting<br/>PG: 30</p> |  <p>75 Rung to Siderail<br/>PG: 30</p>  |  <p>76 Cover to Siderail<br/>PG: 30</p> |
|  <p>77 ATR<br/>PG: 37</p>                |  <p>78 Couplers<br/>PG: 37</p>           |  <p>79 Washers<br/>PG: 37</p>           |  <p>80 Hex Nuts<br/>PG: 37</p>          |
|  <p>81 Cable Kits<br/>PG: 38</p>         |  <p>82 HHCS<br/>PG: 38</p>               |  <p>83 Channel Nuts<br/>PG: 39</p>      |  <p>84 TOUGHStrut<br/>PG: 39</p>        |



# Application Reference

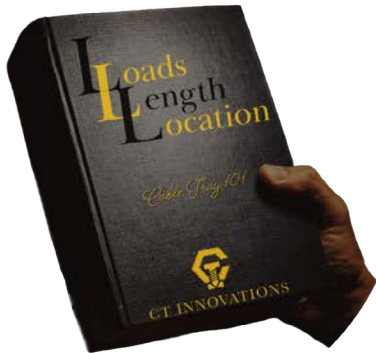


## Innovation That Applies



# Tray Selection

NEMA:10B-C+, 12A-C, & 20B-C+



|   |                                      |   |
|---|--------------------------------------|---|
| <b>LOAD</b><br>of cables (lbs/ft)           | <b>20-100</b><br>A=50 B=75 C=100     | <b>50-100</b><br>A=50 B=75 C=100 C+=145             |
| <b>LENGTH</b><br>of support span (ft)       | <b>5-10</b><br>STANDARD 10FT LENGTHS | <b>10-20</b><br>STANDARD 10FT & 12FT & 20FT LENGTHS |
| <b>LOCATION</b><br>of product (environment) |                                      |   |
| <b>FOR MORE INFORMATION</b>                 |                                      |   |

Determining what tray system is right for your project has never been easier to select or specify. Simply answer the 3 L's of tray selection and follow the above table.

## 1. Load:

First, determine how much cable, accessory, and environmental loads will be applied to the tray system in question.

## 2. Length:

Secondly, define the maximum distance required between supports, better known as the support span.

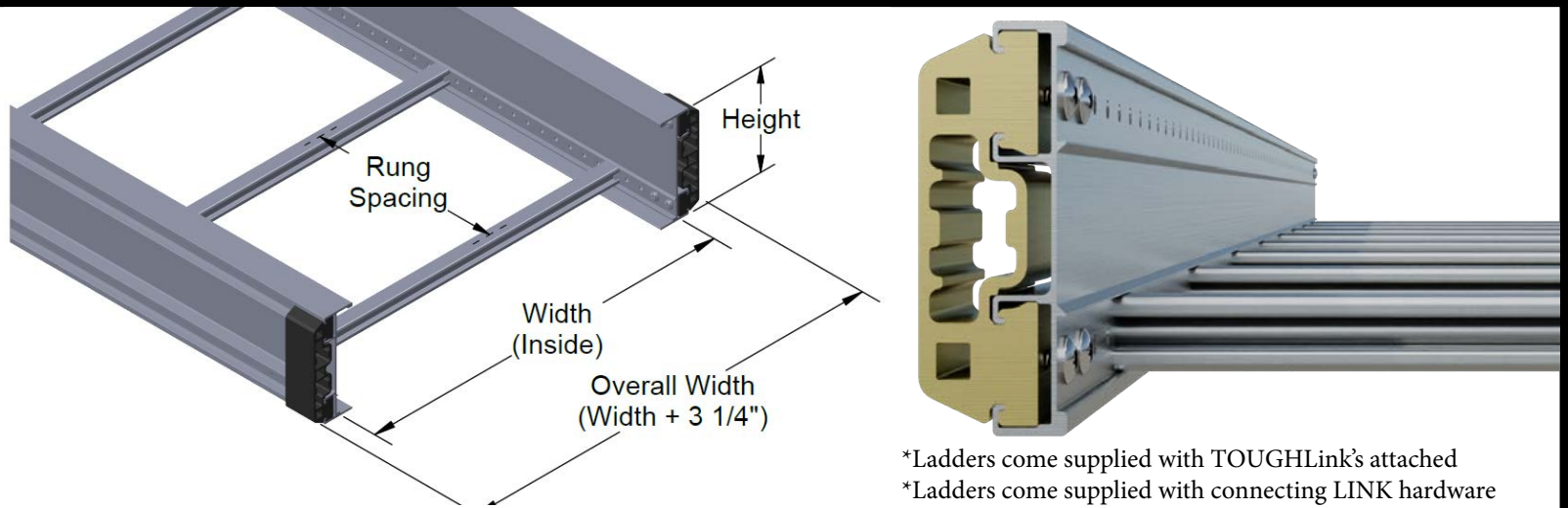
## 3. Location:

Lastly, determine what environment most closely relates to where the cable tray system will be installed.



# 12ft Straight Sections: 4in

## NEMA:12A, 12B, & 12C



\*Ladders come supplied with TOUGHLINK's attached  
 \*Ladders come supplied with connecting LINK hardware

Submittal



### TTS09-4X12X12C-AL

| Product Series & Type    | Rung Spacing                   | Height | Inside Width  | Length   | Load Class                                    | Finish |
|--------------------------|--------------------------------|--------|---|----------|---|--------|
| TTS = TOUGHTray Straight | 06 = 6"<br>09 = 9"<br>12 = 12" | 4 = 4" | 06 = 6" 24 = 24"<br>09 = 9" 30 = 30"<br>12 = 12" 36 = 36"<br>18 = 18" * = ETO | 12 = 12' | A = 50lbs/ft<br>B = 75lbs/ft<br>C = 100lbs/ft | AL     |

\* Contact CTI for ETO Options

**Compliance**  
NEMA & NEC

**Safety Factor**  
1.5

**Rung Capacity**  
+300lbs

**Material Grade**  
AL: 6063-T6

**LINK Hardware**  
316 Stainless

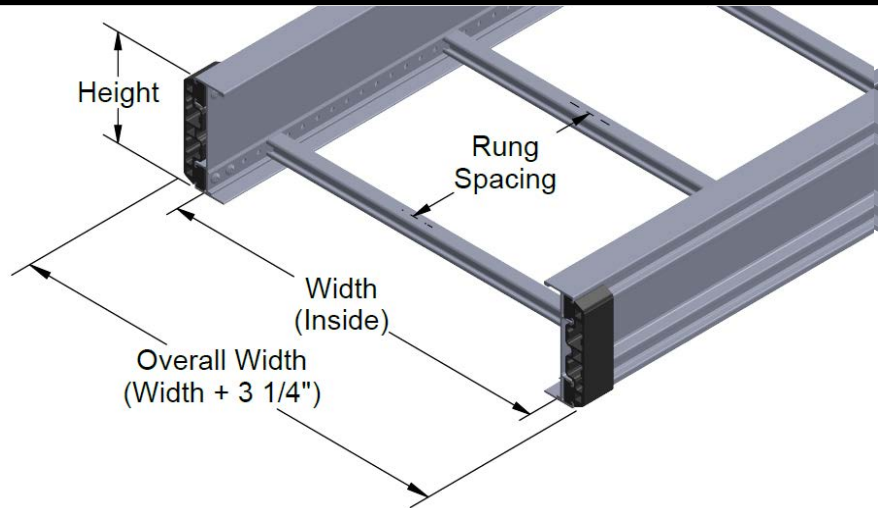
| Siderail Height (in) | Series | Classifications                                       | Span (ft) | Load (lbs/ft) | Design Factors (2 Rails)                             | Span (m) | Load (kg/m) | Design Factors (2 Rails)                           |
|----------------------|--------|---|-----------|---------------|--|----------|-------------|--|
| 4                    | 12A    | NEMA: 12A<br>X-Sectional<br>Area: 1.37in <sup>2</sup> | 10        | 75            | Sx: 1.46 in <sup>3</sup><br>Ix: 3.28 in <sup>4</sup> | 3.0      | 111         | Sx: 23.9cm <sup>3</sup><br>Ix: 68.4cm <sup>4</sup> |
|                      |        |   | 12        | 60            |  | 3.7      | 89          |  |

| Siderail Height (in) | Series | Classifications                                       | Span (ft) | Load (lbs/ft) | Design Factors (2 Rails)                             | Span (m) | Load (kg/m) | Design Factors (2 Rails)                           |
|----------------------|--------|---|-----------|---------------|--|----------|-------------|--|
| 4                    | 12B    | NEMA: 12B<br>X-Sectional<br>Area: 1.37in <sup>2</sup> | 10        | 93            | Sx: 1.46 in <sup>3</sup><br>Ix: 3.28 in <sup>4</sup> | 3.0      | 141         | Sx: 23.9cm <sup>3</sup><br>Ix: 68.4cm <sup>4</sup> |
|                      |        |   | 12        | 85            |  | 3.7      | 119         |  |

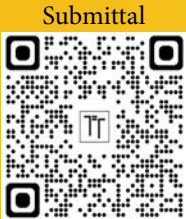
| Siderail Height (in) | Series | Classifications                                       | Span (ft) | Load (lbs/ft) | Design Factors (2 Rails)                             | Span (m) | Load (kg/m) | Design Factors (2 Rails)                           |
|----------------------|--------|---|-----------|---------------|--|----------|-------------|--|
| 4                    | 12C    | NEMA: 12C<br>X-Sectional<br>Area: 1.37in <sup>2</sup> | 10        | 105           | Sx: 1.46 in <sup>3</sup><br>Ix: 3.28 in <sup>4</sup> | 3.0      | 156         | Sx: 23.9cm <sup>3</sup><br>Ix: 68.4cm <sup>4</sup> |
|                      |        |   | 12        | 100           |  | 3.7      | 149         |  |

# 10ft Straight Sections: 6in

## NEMA:10B, 10C, & 10C+



\*Ladders come supplied with TOUGHLink's attached  
 \*Ladders come supplied with connecting LINK hardware



### TTS09-6X12X10C-AL

| Product Series & Type    | Rung Spacing                   | Height | Inside Width  | Length   | Load Class                                      | Finish |
|--------------------------|--------------------------------|--------|---|----------|---|--------|
| TTS = TOUGHTray Straight | 06 = 6"<br>09 = 9"<br>12 = 12" | 6 = 6" | 06 = 6" 24 = 24"<br>09 = 9" 30 = 30"<br>12 = 12" 36 = 36"<br>18 = 18" * = ETO | 10 = 10' | B = 75lbs/ft<br>C = 100lbs/ft<br>C+ = 200lbs/ft | AL     |

\* Contact CTI for ETO Options

**Compliance**  
NEMA & NEC

**Safety Factor**  
1.5

**Rung Capacity**  
+300lbs

**Material Grade**  
AL: 6063-T6

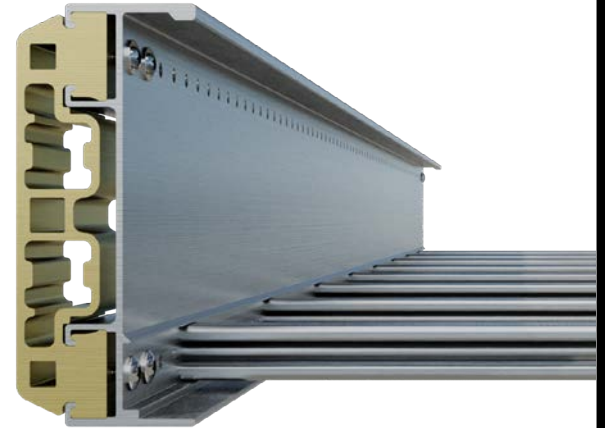
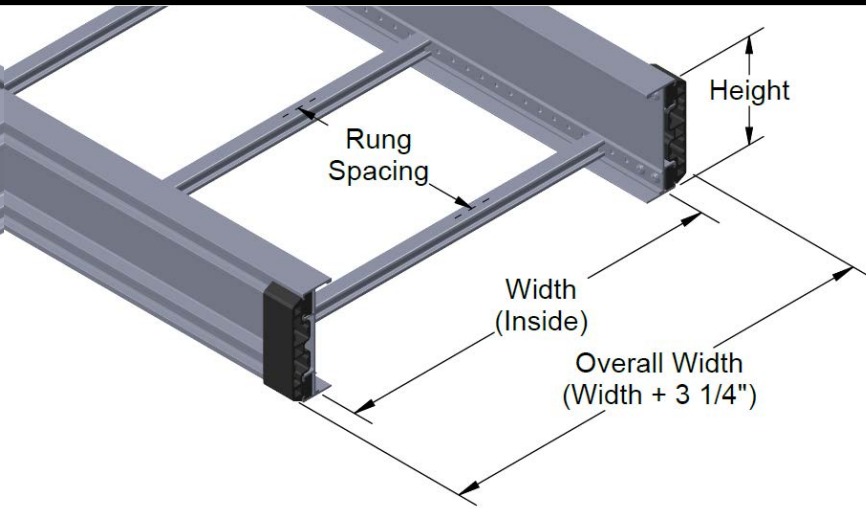
**LINK Hardware**  
316 Stainless

| Siderail Height (in) | Series | Classifications  | Span (ft) | Load (lbs/ft) | Design Factors (2 Rails)                             | Span (m) | Load (kg/m) | Design Factors (2 Rails)                          |
|----------------------|--------|--|-----------|---------------|--|----------|-------------|---|
| 6                    | 10B    | NEMA: 10B<br>X-Sectional<br>Area: 2.44in <sup>2</sup>  | 5         | 124           | Sx: 4.34 in <sup>3</sup><br>Ix: 14.5 in <sup>4</sup> | 3.0      | 184         | Sx: 71.1cm <sup>3</sup><br>Ix: 603cm <sup>4</sup> |
|                      |        |  | 10        | 88            |  | 3.7      | 130         |   |
| 6                    | 10C    | NEMA: 10C<br>X-Sectional<br>Area: 2.44in <sup>2</sup>  | 5         | 163           | Sx: 4.34 in <sup>3</sup><br>Ix: 14.5 in <sup>4</sup> | 3.0      | 242         | Sx: 71.1cm <sup>3</sup><br>Ix: 603cm <sup>4</sup> |
|                      |        |  | 10        | 115           |  | 3.7      | 171         |   |
| 6                    | 10C+   | NEMA: 10C+<br>X-Sectional<br>Area: 2.44in <sup>2</sup> | 5         | 283           | Sx: 4.34 in <sup>3</sup><br>Ix: 14.5 in <sup>4</sup> | 3.0      | 421         | Sx: 71.1cm <sup>3</sup><br>Ix: 603cm <sup>4</sup> |
|                      |        |  | 10        | 200           |  | 3.7      | 297         |   |



# 20ft Straight Sections: 6in

NEMA:20B, 20C, & 20C+



\*Ladders come supplied with TOUGHLINK's attached  
\*Ladders come supplied with connecting LINK hardware

Submittal



## TTS09-6X12X20C-AL

| Product Series & Type    | Rung Spacing                    | Height | Inside Width  | Length   | Load Class                                      | Finish |
|--------------------------|---------------------------------|--------|---|----------|---|--------|
| TTS = TOUGHTray Straight | 06 = 6"<br>09 = 9"<br>*12 = 12" | 6 = 6" | 06 = 6" 24 = 24"<br>09 = 9" 30 = 30"<br>12 = 12" 36 = 36"<br>18 = 18" * = ETO | 20 = 20' | B = 50lbs/ft<br>C = 100lbs/ft<br>C+ = 145lbs/ft | AL     |

\* Contact CTI for ETO Options

**Compliance**  
NEMA & NEC

**Safety Factor**  
1.5

**Rung Capacity**  
+300lbs

**Material Grade**  
AL: 6063-T6

**LINK Hardware**  
316 Stainless

| Siderail Height (in) | Series | Classifications                                       | Span (ft) | Load (lbs/ft) | Design Factors (2 Rails)                             | Span (m) | Load (kg/m) | Design Factors (2 Rails)                          |
|----------------------|--------|---|-----------|---------------|--|----------|-------------|---|
| 6                    | 20B    | NEMA: 20B<br>X-Sectional<br>Area: 2.44in <sup>2</sup> | 10        | 115           | Sx: 4.34 in <sup>3</sup><br>Ix: 14.5 in <sup>4</sup> | 3.0      | 171         | Sx: 71.1cm <sup>3</sup><br>Ix: 603cm <sup>4</sup> |
|                      |        |   | 20        | 82            |  | 6.1      | 122         |   |

| Siderail Height (in) | Series | Classifications                                       | Span (ft) | Load (lbs/ft) | Design Factors (2 Rails)                             | Span (m) | Load (kg/m) | Design Factors (2 Rails)                          |
|----------------------|--------|---|-----------|---------------|--|----------|-------------|---|
| 6                    | 20C    | NEMA: 20C<br>X-Sectional<br>Area: 2.44in <sup>2</sup> | 10        | 148           | Sx: 4.34 in <sup>3</sup><br>Ix: 14.5 in <sup>4</sup> | 3.0      | 220         | Sx: 71.1cm <sup>3</sup><br>Ix: 603cm <sup>4</sup> |
|                      |        |   | 20        | 105           |  | 6.1      | 156         |   |

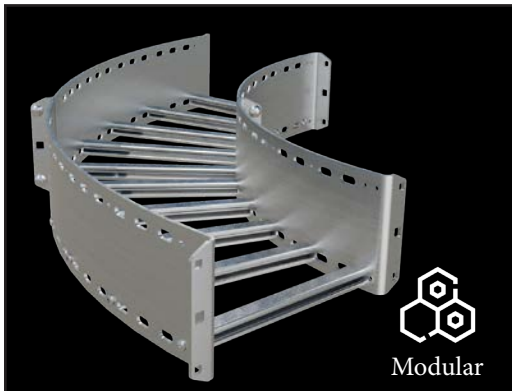
| Siderail Height (in) | Series | Classifications  | Span (ft) | Load (lbs/ft) | Design Factors (2 Rails)                             | Span (m) | Load (kg/m) | Design Factors (2 Rails)                          |
|----------------------|--------|--|-----------|---------------|--|----------|-------------|---|
| 6                    | 20C+   | NEMA: 20C+<br>X-Sectional<br>Area: 2.93in <sup>2</sup> | 10        | 208           | Sx: 5.52 in <sup>3</sup><br>Ix: 18.1 in <sup>4</sup> | 3.0      | 315         | Sx: 90.5cm <sup>3</sup><br>Ix: 376cm <sup>4</sup> |
|                      |        |  | 20        | 147           |  | 6.1      | 215         |   |

# Fittings: HB, VI, & VO

## TTF-4X12-90HB24-AL

| Product Series & Type   | Height           | Inside Width  | Angle  | Type  | Radius                           | Finish |
|-------------------------|------------------|---|--|---|----------------------------------|--------|
| TTF = TOUGHTray Fitting | 4 = 4"<br>6 = 6" | 06 = 6" 24 = 24"<br>09 = 9" 30 = 30"<br>12 = 12" 36 = 36"<br>18 = 18" * = ETO | 30 = 30°<br>45 = 45°<br>60 = 60°<br>90 = 90° | HB = Horizontal Bend<br>VI = Vertical Inside<br>VO = Vertical Outside | 12 = 12"<br>24 = 24"<br>36 = 36" | AL     |

Note: Supplied with connecting hardware



Modular

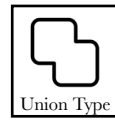
### Horizontal Bend



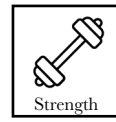
Design Type  
Self Supporting



Connectivity  
Slotted Siderail



Union Type  
Integral LINK



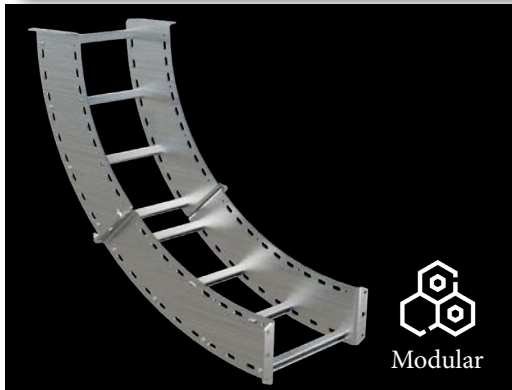
Strength  
Fortified Midpoint



Hardware  
316 Stainless

Ex: TTF-6X12-90HB12-AL

Submittal



Modular

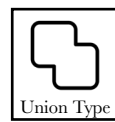
### Vertical Inside Bend



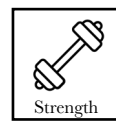
Design Type  
Self Supporting



Connectivity  
Slotted Siderail



Union Type  
Integral LINK



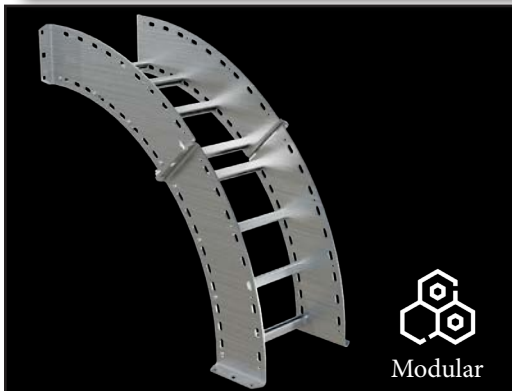
Strength  
Fortified Midpoint



Hardware  
316 Stainless

Ex: TTF-6X12-90VI12-AL

Submittal



Modular

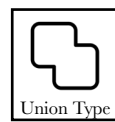
### Vertical Outside Bend



Design Type  
Self Supporting



Connectivity  
Slotted Siderail



Union Type  
Integral LINK



Strength  
Fortified Midpoint



Hardware  
316 Stainless

Ex: TTF-6X12-90VO12-AL

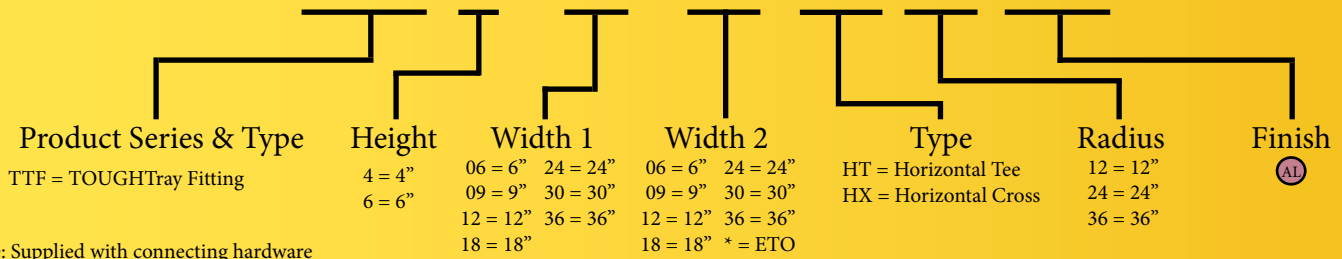
Submittal



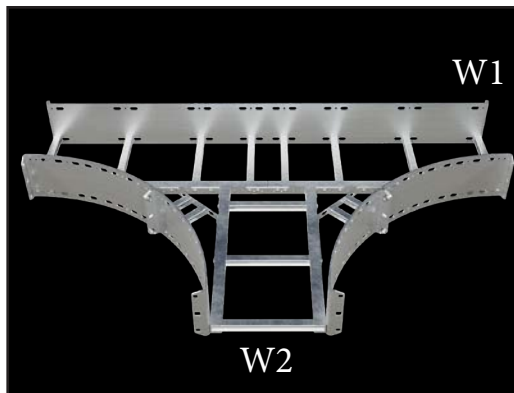


# Fittings: HT & HX

## TTF-4X12X24-HT24-AL



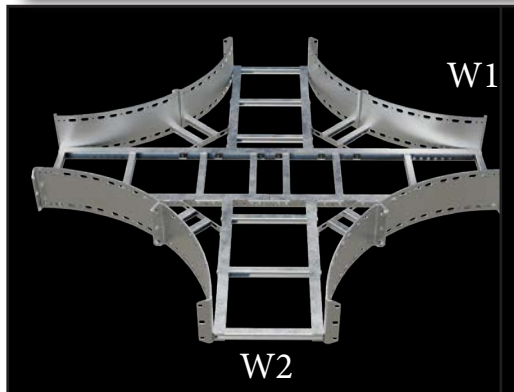
Note: Supplied with connecting hardware



### Horizontal Tee

- Design Type: Self Supporting
- Connectivity: Slotted Siderail
- Union Type: Integral LINK
- Strength: Fortified Midpoint
- Hardware: 316 Stainless

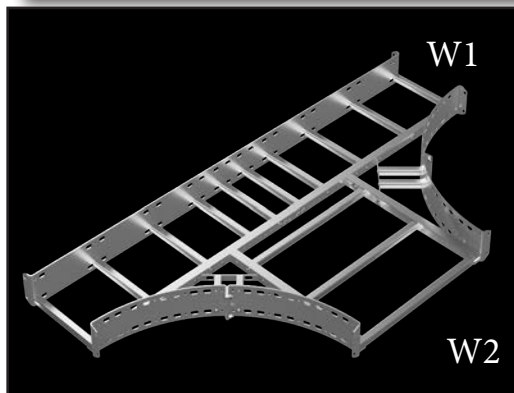
Ex: TTF-6X12X12-HT12-AL



### Horizontal Cross

- Design Type: Self Supporting
- Connectivity: Slotted Siderail
- Union Type: Integral LINK
- Strength: Fortified Midpoint
- Hardware: 316 Stainless

Ex: TTF-6X12X12-HX12-AL



### Expanding / Reducing

- Design Type: Self Supporting
- Connectivity: Slotted Siderail
- Union Type: Integral LINK
- Strength: Fortified Midpoint
- Hardware: 316 Stainless

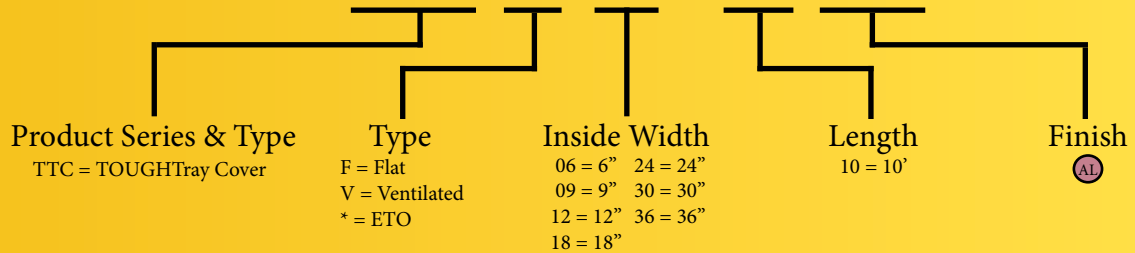
\*Sheet supplied on smallest width

Ex: TTF-6X12X24-HT12-AL

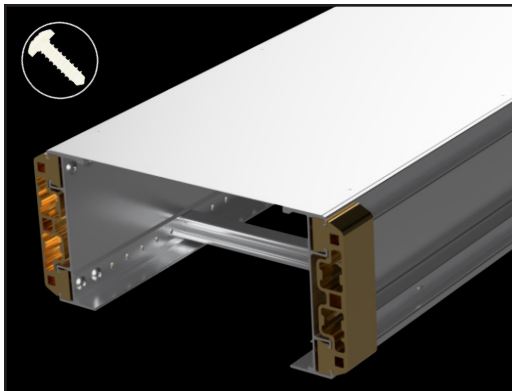


# Covers: ST, HB, VI, & VO

## TTC-F-12X10-AL



\*Call for more options



## Straight Section Cover

- Flat
- Vented

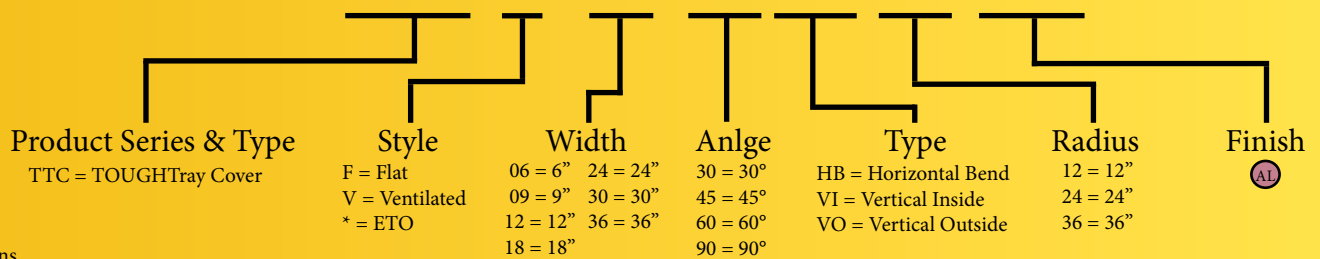
(Sold Separate: TTA-CVRSCREW-S6 Pg. 30)

Ex: TTC-F-12X10-AL

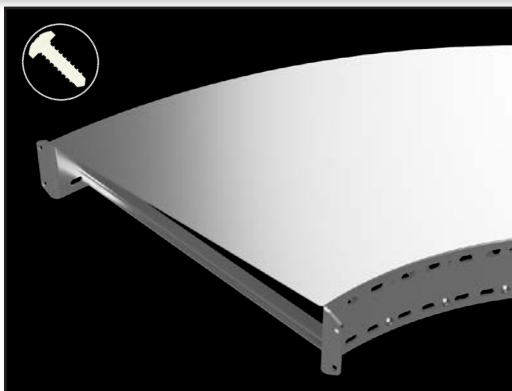
Submittal



## TTC-F-12-90HB24-AL



\*Call for more options



## HB, VI, & VO Covers

- Flat
- Vented

(Sold Separate: TTA-CVRCLMP Pg. 34)

Ex: TTC-F-06-90HB12-AL

Submittal



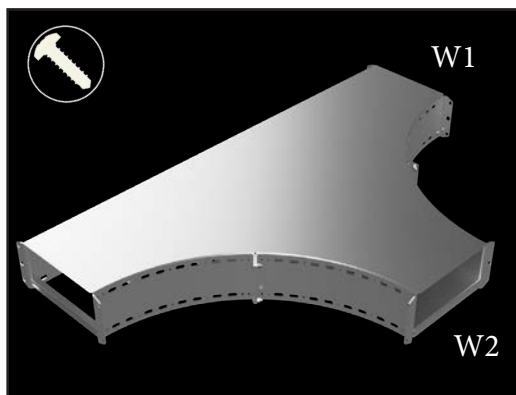


# Covers: HT & HX

## TTC-F-12X12-HT24-AL

|   |   |   |   |   |   |                     |
|---|---|---|---|---|---|---------------------|
| <b>Product Series &amp; Type</b><br>TTC = TOUGHTray Cover | <b>Style</b><br>F = Flat<br>V = Ventilated<br>* = ETO | <b>Width 1</b><br>06 = 6" 24 = 24"<br>09 = 9" 30 = 30"<br>12 = 12" 36 = 36"<br>18 = 18" | <b>Width 2</b><br>06 = 6" 24 = 24"<br>09 = 9" 30 = 30"<br>12 = 12" 36 = 36"<br>18 = 18" | <b>Type</b><br>HT = Horizontal Tee<br>HX = Horizontal Cross | <b>Radius</b><br>12 = 12"<br>24 = 24"<br>36 = 36" | <b>Finish</b><br>AL |
|---|---|---|---|---|---|---------------------|

\*Call for more options

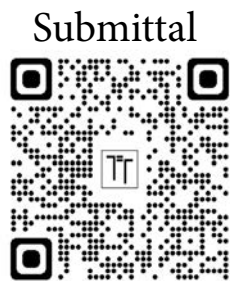


### HT & HX Cover

- Flat
- Vented

(Sold Separate: TTA-CVRCLMP Pg. 34)

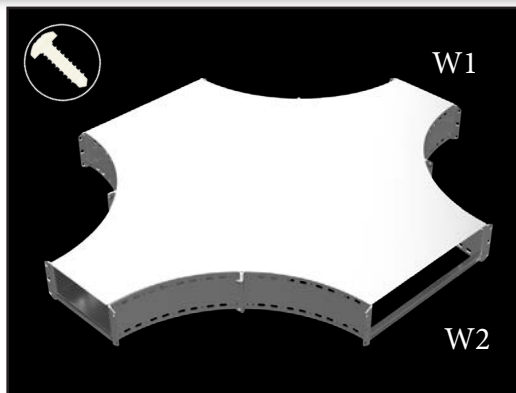
Ex: TTC-F-36X36-HT-AL



## TTC-F-06X12-HX24-AL

|   |   |   |   |   |   |                     |
|---|---|---|---|---|---|---------------------|
| <b>Product Series &amp; Type</b><br>TTC = TOUGHTray Cover | <b>Style</b><br>F = Flat<br>V = Ventilated<br>* = ETO | <b>Width 1</b><br>06 = 6" 24 = 24"<br>09 = 9" 30 = 30"<br>12 = 12" 36 = 36"<br>18 = 18" | <b>Width 2</b><br>06 = 6" 24 = 24"<br>09 = 9" 30 = 30"<br>12 = 12" 36 = 36"<br>18 = 18" | <b>Type</b><br>HT = Horizontal Tee<br>HX = Horizontal Cross | <b>Radius</b><br>12 = 12"<br>24 = 24"<br>36 = 36" | <b>Finish</b><br>AL |
|---|---|---|---|---|---|---------------------|

\*Call for more options

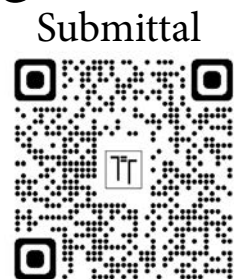


### Expanding/Reducing Cover

- Flat
- Vented

(Sold Separate: TTA-CVRCLMP Pg. 34)

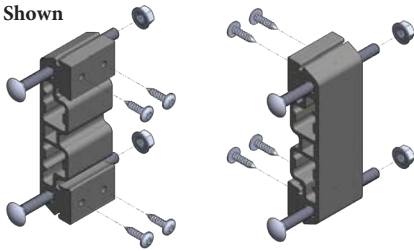
Ex: TTC-F-36X24-HX-AL



# LINK's & Splices

## STANDARD LINK

6in Shown



Used to fix tray sections together & expansion ready

**Type:** Splicing  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" CB & T30  
**Hardware Finish:** 316 SS

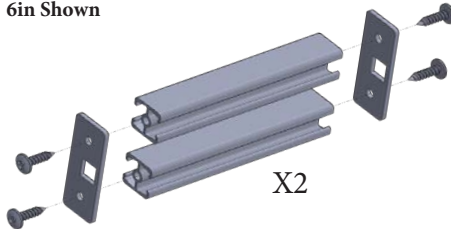
| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-LINK-4     | 4in 101mm   |
| TTA-LINK-6     | 6in 152mm   |

\*T30 TORQUE: 9ft-lbs

\*Note: Every straight section comes supplied with 4 LINKS reinstalled

## EXPANSION KIT

6in Shown



Used to allow thermal expansion of the tray system

**Type:** Splicing  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** T30  
**Hardware Finish:** 316 SS

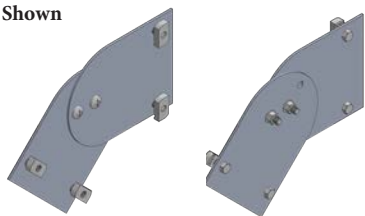
| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-EXPNKIT-4  | 4in 101mm   |
| TTA-EXPNKIT-6  | 6in 152mm   |

\*T30 TORQUE: 9ft-lbs

\*Note: 1" of expansion is typically needed every 60ft for outdoor use

## VERTICAL ADJUSTABLE SPLICE

6in Shown



Used to connect tray sections at unknown vertical angles

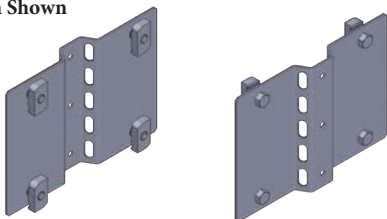
**Type:** Splicing  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" HHCS  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-VADJ-4     | 4in 101mm   |
| TTA-VADJ-6     | 6in 152mm   |

\*Note: Angle ranges from (0-90°) without modifying the tray

## HORIZONTAL ADJUSTABLE SPLICE

6in Shown



Used to connect tray sections at unknown horizontal angles

**Type:** Splicing  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" HHCS  
**Hardware Finish:** 316 SS

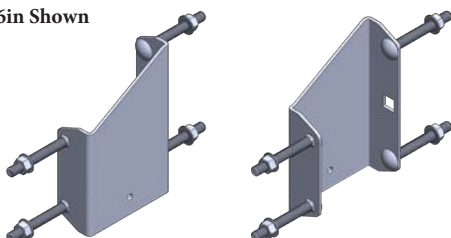
| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-HADJ-4     | 4in 101mm   |
| TTA-HADJ-6     | 6in 152mm   |

\*Note: Angle ranges from (0-15°) without modifying & (15-90°) with modifying

\*Note: Add-A-Rung Ready (Pg. 32)

## STEP DOWN SPLICE

6in Shown



Used to connect tray sections of different heights

**Type:** Splicing  
**Furnished:** Pairs  
**Material:** AL  
**Hardware Size:** 3/8" CB  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-STEPDOWN   | All Heights |

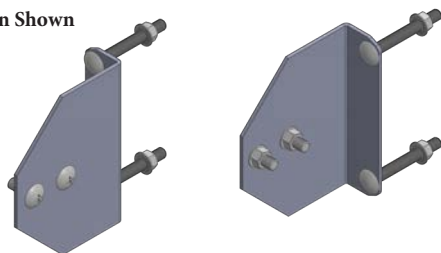
\*Note: LINKS may be aligned to "step down" with a pair of 3/8" CB



# Splices & Grounding

## UNIVERSAL ADAPTER SPLICE

6in Shown



Used to connect competitor tray sections to TOUGHTray

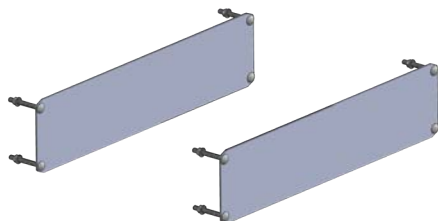
**Type:** Splicing  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8"  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-USPLICE-4  | 4in 101mm   |
| TTA-USPLICE-6  | 6in 152mm   |

\*Note: 9/16" pilot hole required through competitors side rail to secure 3/8" hardware

## STRAIGHT REDUCING SPLICE

6in Shown



Used to center & connect different width tray systems

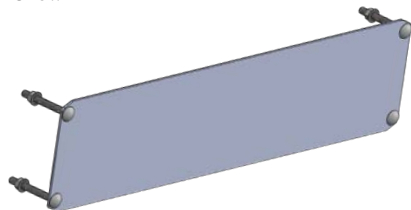
**Type:** Splicing  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" CB  
**Hardware Finish:** 316 SS

| Catalog Number  | Tray Height |
|-----------------|-------------|
| TTA-SREDU-4-(W) | 4in 101mm   |
| TTA-SREDU-6-(W) | 6in 152mm   |

(W) Insert Total Reduction Width:  
**03, 06, 09, 12, 15, 18, 21, 24, 27, 30**  
 Ex: 36 to 09 = 27 = TTA-SREDU-4-27

## OFFSET REDUCING SPLICE

6in Shown



Used to offset & connect different width tray systems

**Type:** Splicing  
**Furnished:** Each w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" CB  
**Hardware Finish:** 316 SS

| Catalog Number  | Tray Height |
|-----------------|-------------|
| TTA-OREDU-4-(W) | 4in 101mm   |
| TTA-OREDU-6-(W) | 6in 152mm   |

(W) Insert Total Reduction Width:  
**03, 06, 09, 12, 15, 18, 21, 24, 27, 30**  
 Ex: 12 to 09 = 3 = TTA-SREDU-4-03

## INSULATED BONDING JUMPER



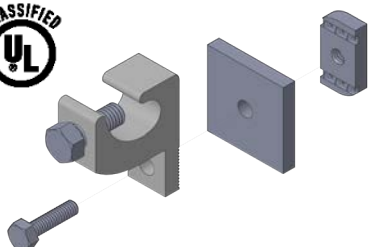
Used to electrically bond mechanically disconnected trays

**Type:** Grounding  
**Furnished:** Each w/ Hardware  
**Material:** AL  
**Hardware Size:** 1/4"  
**Hardware Finish:** 316 SS

| Catalog Number | Ampacity |
|----------------|----------|
| TTA-GRND-1600  | 1600     |

\*1/4 TORQUE: 12ft-lbs  
 \*Design: Insulated & Lugless  
 \*Bonding jumpers **must** be utilized around expansion joints for E.G.C.

## GROUNDING CLAMP



Used to directly bond continuous ground wire to they tray system

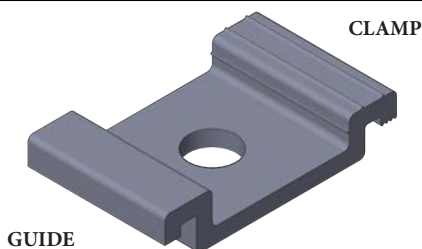
**Type:** Grounding  
**Furnished:** Each w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" HHCS  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-GRNDCLMP   | All Heights |

\* Note: ground clamp accepts 4/0 and smaller ground wire

# Clamps & Guides

## GUIDE & CLAMP COMBO



GUIDE

CLAMP

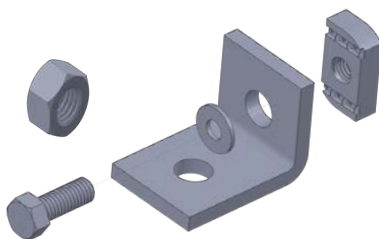
**Friction based guide & clamp combo ideal for strut mounts**

**Type:** Clamp & Guide  
**Furnished:** Pairs  
**Material:** AL  
**Hardware Size:** 3/8" (not incl.)  
**Hardware Finish:** N/A

| Catalog Number   | Type  |
|------------------|-------|
| TTA-CLAMPGUIDE-U | COMBO |

\*Note: Hardware to connect to structure is NOT provided; accepts up to 1/2" hardware (9/16" Hole)

## GUIDE & CLAMP COMBO



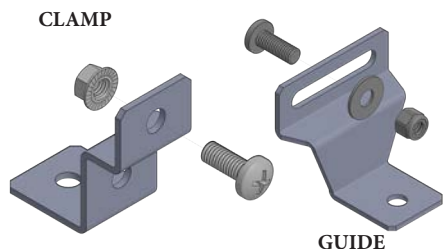
**Friction based guide & clamp combo ideal for strut mounts**

**Type:** Clamp & Guide  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" HHCS  
**Hardware Finish:** 316 SS

| Catalog Number   | Type  |
|------------------|-------|
| TTA-CLAMPGUIDE-L | COMBO |

\*Supplied with HexNuts for fittings  
 \*Note: Orientation of channel nut determines clamp (locked in channel) or guide (parallel with channel)

## HEAVY DUTY GUIDE & CLAMP



CLAMP

GUIDE

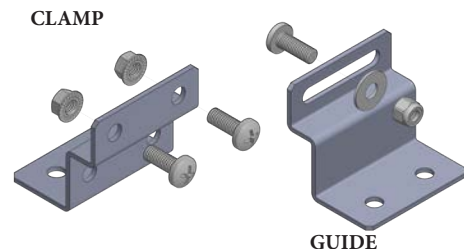
**Bolt through guide & clamp ideal for long vertical drops**

**Type:** Clamp & Guide  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" RHMC  
**Hardware Finish:** 316 SS

| Catalog Number | Type  |
|----------------|-------|
| TTA-CLAMP-1HD  | CLAMP |
| TTA-GUIDE-1HD  | GUIDE |

\*Note: Hardware to connect to structure is NOT provided; accepts up to 1/2" hardware (9/16" Hole)

## EXTRA HEAVY DUTY GUIDE & CLAMP



CLAMP

GUIDE

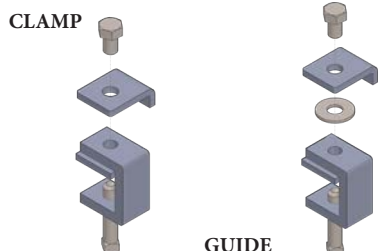
**Bolt through guide & clamp ideal for environmental impacts**

**Type:** Clamp & Guide  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" RHMC  
**Hardware Finish:** 316 SS

| Catalog Number | Type  |
|----------------|-------|
| TTA-CLAMP-2HD  | CLAMP |
| TTA-GUIDE-2HD  | GUIDE |

\*Note: Hardware to connect to structure is NOT provided; accepts up to 1/2" hardware (9/16" Hole)

## NON-PENETRATING GUIDE & CLAMP



CLAMP

GUIDE

**Friction based guide & clamp ideal for beam mounts**

**Type:** Clamp & Guide  
**Furnished:** Pairs w/ Hardware  
**Material:** HD or 316 SS  
**Hardware Size:** 3/8" HHCS  
**Hardware Finish:** 316 SS

| Catalog Number   | Type  |
|------------------|-------|
| TTA-CLAMP-NP-(F) | CLAMP |
| TTA-GUIDE-NP-(F) | GUIDE |

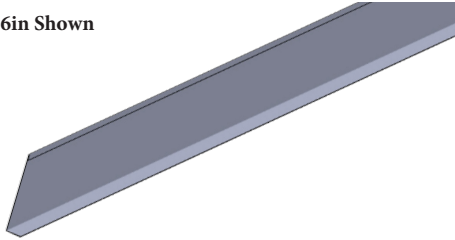
(F) Insert Finish: **HD** or **S6**  
 HD: Hot Dip or S6: 316 Stainless  
 Example: TTA-CLAMP-NP-HD



# Barriers

## STRAIGHT BARRIER

\*6in Shown



Used to separate cables to prevent signal disruptions

**Type:** Barrier  
**Furnished:** Each  
**Material:** AL  
**Hardware:** TMA-CVRSCERW  
**Hardware Finish:** 316 SS (Pg.30)

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-SBAR-4     | 4in 101mm   |
| TTA-SBAR-6     | 6in 152mm   |

\*Note: straight barriers come in 10ft lengths and are secured with self tapping screws

## HORIZONTAL BARRIER

\*6in Shown



Used to separate cables around horizontal bends

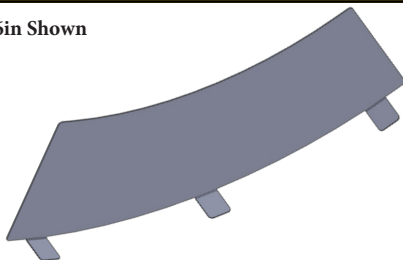
**Type:** Barrier  
**Furnished:** Each  
**Material:** AL  
**Hardware:** TMA-CVRSCERW  
**Hardware Finish:** 316 SS (Pg. 30)

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-HBAR-4     | 4in 101mm   |
| TTA-HBAR-6     | 6in 152mm   |

\*Note: HBARs can be used for any horizontal changes in direction and are secured with self tapping screws

## VERTICAL INSIDE BARRIER

\*6in Shown



Used to separate cables around vertical inside fittings

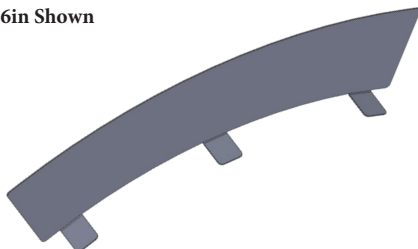
**Type:** Barrier  
**Furnished:** Each  
**Material:** AL  
**Hardware:** TMA-CVRSCERW  
**Hardware Finish:** 316 SS (Pg. 30)

| Catalog Number     | Tray Height |
|--------------------|-------------|
| TTA-(A)VIBAR-4-(R) | 4in 101mm   |
| TTA-(A)VIBAR-6-(R) | 6in 152mm   |

(A) Insert Angle: **30, 45, 60, 90**  
(R) Insert Radius: **12, 24, 36**  
Ex: TTA-45VIBAR-4-12

## VERTICAL OUTSIDE BARRIER

\*6in Shown



Used to separate cables around vertical outside fittings

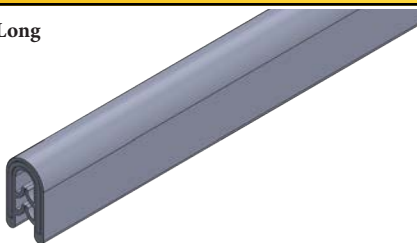
**Type:** Barrier  
**Furnished:** Each  
**Material:** AL  
**Hardware:** TMA-CVRSCERW  
**Hardware Finish:** 316 SS (Pg. 30)

| Catalog Number     | Tray Height |
|--------------------|-------------|
| TTA-(A)VOBAR-4-(R) | 4in 101mm   |
| TTA-(A)VOBAR-6-(R) | 6in 152mm   |

(A) Insert Angle: **30, 45, 60, 90**  
(R) Insert Radius: **12, 24, 36**  
Ex: TTA-90VOBAR-6-24

## BARRIER SPLICE

\*3in Long



Used to connect & align all barrier types

**Type:** Barrier  
**Furnished:** Bags (10)  
**Material:** PE + AL  
**Hardware Size:** N/A  
**Hardware Finish:** N/A

| Catalog Number | Barrier Height |
|----------------|----------------|
| TTA-BARSPLICE  | ALL Heights    |

\*Note: Snaps on the top side of barrier strips to help aid in overall alignment & aesthetics

# Adapters

## FRAME TYPE BOX CONNECTOR

\*6in Shown



Used to connect tray system to a wall or termination cabinet

**Type:** Adapter  
**Furnished:** Each w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" HHCS  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-FTBC-4X(W) | 4in 101mm   |
| TTA-FTBC-6X(W) | 6in 152mm   |

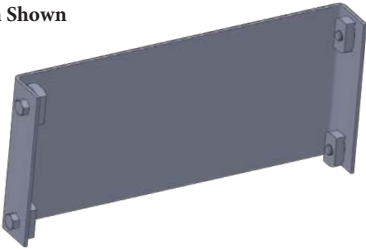
(W) Insert Tray Width:

**06, 09, 12, 18, 24, 30, 36**

Example: TTA-FTBC-4-24

## BLIND END

\*6in Shown



Used to close off the end of a tray system run

**Type:** Adapter  
**Furnished:** Each w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8" HHCS  
**Hardware Finish:** 316 SS

| Catalog Number  | Tray Height |
|-----------------|-------------|
| TTA-BLIND-4X(W) | 4in 101mm   |
| TTA-BLIND-6X(W) | 6in 152mm   |

(W) Insert Tray Width:

**06, 09, 12, 18, 24, 30, 36**

Example: TTA-BLIND-4-18

## EXTRA RUNG

\*6in Shown



Used to increase connectivity or strengthen cable tray systems

**Type:** Adapter  
**Furnished:** Each  
**Material:** AL  
**Hardware Size:** T30 Torx  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-RUNG-(W)   | All Heights |

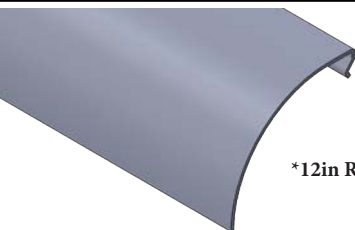
\* T30 TORQUE: 9ft-lbs

(W) Insert Tray Width:

**06, 09, 12, 18, 24, 30, 36**

Example: TTA-RUNG-12

## DROP OUT



\*12in Rad S

Used to gradually drop our cables with a consistent radius

**Type:** Adapter  
**Furnished:** Each w/ Hardware  
**Material:** AL  
**Hardware Size:** Self Tapping  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-DROP-(W)   | All Heights |

(W) Insert Tray Width:

**06, 09, 12, 18, 24, 30, 36**

Example: TTA-DROP-36

## CONDUIT TO TRAY ADAPTER

\*2in Shown



Used to secure conduit terminations to tray sections

**Type:** Adapter  
**Furnished:** Each w/ Hardware  
**Material:** AL & Steel  
**Hardware:** 3/8 SFHN  
**Hardware Finish:** 316 SS

| Catalog Number | Outside Dia. |
|----------------|--------------|
| TTA-CONADPTR-2 | 1-2in        |
| TTA-CONADPTR-4 | 2.1-4in      |
| TTA-CONADPTR-6 | 4.1-6in      |

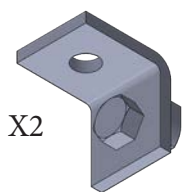
\*Note: this adapter is for structure only, it is not rated as an EGC



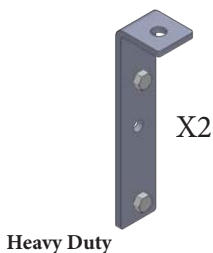
# Supporting Brackets

## HANGER ROD BRACKET

Universal



X2



Heavy Duty

X2

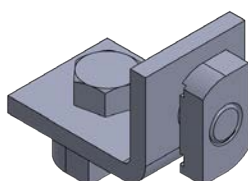
Used to secure or suspend tray systems from up to 1/2" ATR

**Type:** Support  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8 HHCS  
**Hardware Finish:** 316 SS

| Catalog Number | Height | Load/Pr |
|----------------|--------|---------|
| TTA-HRBRKT-U   | All    | 1000lbs |
| TTA-HRBRKT-HD  | All    | 2000lbs |

\*Note: Cable & environmental loads determine qty required

## CONNECTING BRACKET



X2

Used to connect two passing tray systems perpendicularly

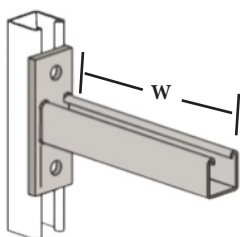
**Type:** Support  
**Furnished:** Pairs w/ Hardware  
**Material:** AL  
**Hardware Size:** 3/8 HHCS  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-CCBRKT     | All Heights |

\*Note: more than one pair of connecting brackets may be required based loading & environment

## STRUT WALL BRACKET

\*12in Shown



Used to support cable tray systems with easy connections

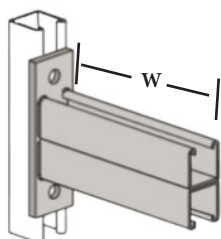
**Type:** Support  
**Furnished:** Each  
**Material:** Steel  
**Hardware Size:** N/A  
**Hardware Finish:** N/A

| Catalog Number | Width | Load    |
|----------------|-------|---------|
| TSSC06WB-(* )  | 6in   | 1600lbs |
| TSSC12WB-(* )  | 12in  | 800lbs  |
| TSSC18WB-(* )  | 18in  | 550lbs  |
| TSSC24WB-(* )  | 24in  | 400lbs  |

(\* ) Insert Finish: ZN, HD, S4, S6, AL

## DOUBLE STRUT WALL BRACKET

\*in Shown



Used to support cable tray systems with easy connections

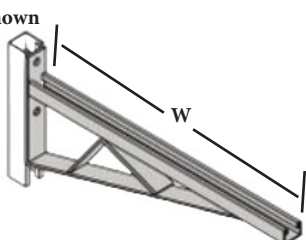
**Type:** Support  
**Furnished:** Each  
**Material:** Steel  
**Hardware Size:** N/A  
**Hardware Finish:** N/A

| Catalog Number | Width | Load    |
|----------------|-------|---------|
| TSDC12WB-(* )  | 12in  | 2000lbs |
| TSDC18WB-(* )  | 18in  | 1300lbs |
| TSDC24WB-(* )  | 24in  | 1000lbs |
| TSDC36WB-(* )  | 36in  | 650lbs  |

(\* ) Insert Finish: ZN, HD, S4, S6, AL

## GUSSETED WALL BRACKET

\*24in Shown



Used to support cable tray systems with easy connections

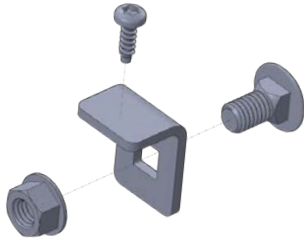
**Type:** Support  
**Furnished:** Each  
**Material:** Steel  
**Hardware Size:** N/A  
**Hardware Finish:** N/A

| Catalog Number | Width | Load    |
|----------------|-------|---------|
| TSGC12WB-(* )  | 12in  | 1580lbs |
| TSGC24WB-(* )  | 24in  | 996lbs  |
| TSGC36WB-(* )  | 36in  | 864lbs  |
| TSGC48WB-(* )  | 48in  | 500lbs  |

(\* ) Insert Finish: ZN, HD, S4, S6, AL

# Kits

## FITTING COVER KIT



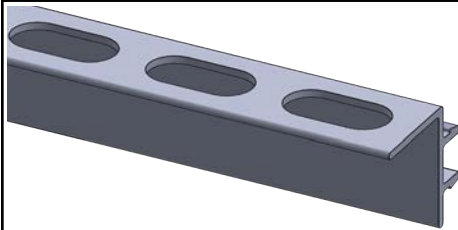
Used to secure covers to cable tray fittings

**Type:** Kits  
**Furnished:** Each (Bag 50)  
**Material:** AL  
**Hardware Size:** 3/8" Self Drilling  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-CVRCLMP    | ALL Heights |

\*Note: See instruction sheets for qty needed based on size of fittings and demand of environment

## SLOTTED RUNG KIT



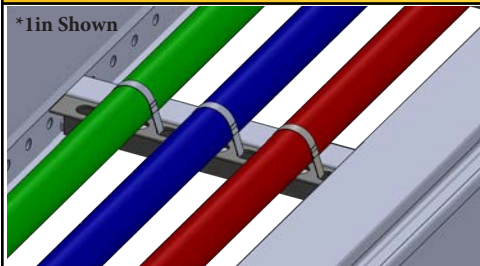
Used to secured cables at strategic points of tray system

**Type:** Kits  
**Furnished:** Each  
**Material:** AL  
**Hardware Size:** N/A  
**Hardware Finish:** N/A

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-SLRUNG-(W) | ALL Heights |

(W) Insert Tray Width:  
**06, 09, 12, 18, 24, 30, 36**  
 \*Note: Snap in slotted rung can be applied above or below the rung

## RUNG STRAP KIT



\*1in Shown

Used to fix conduit, EMT, & armored cables to tray

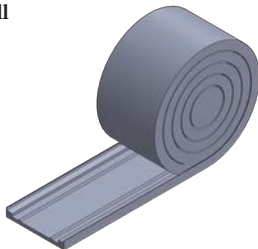
**Type:** Kits  
**Furnished:** Each (Box 100)  
**Material:** Stainless  
**Hardware Size:** N/A  
**Hardware Finish:** 301 SS

| Catalog Number | Size(gra) | Load   |
|----------------|-----------|--------|
| TTA-RSTRAP-075 | .75"      | 700lbs |
| TTA-RSTRAP-100 | 1.00"     | 700lbs |
| TTA-RSTRAP-125 | 1.25"     | 700lbs |
| TTA-RSTRAP-150 | 1.50"     | 700lbs |

\*EMT sizes available upon request

## ISOLATION KIT

\*20ft Roll



Used to separate dissimilar metals & prevent corrosion

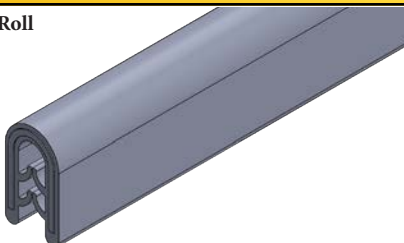
**Type:** Kits  
**Furnished:** Each (50ft Roll)  
**Material:** N/A  
**Hardware Size:** N/A  
**Hardware Finish:** N/A

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-ISOLATOR   | ALL Heights |

\*Note: these rolls are easily cut to fit for guides, clamps, or the tray itself over a support

## EDGE PROTECTION KIT

\*50ft Roll



Used to shield and protect edges for cables or personnel

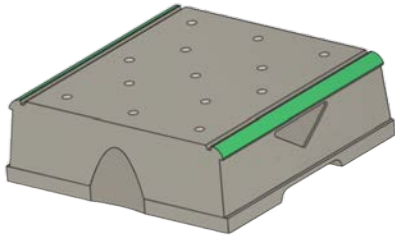
**Type:** Kits  
**Furnished:** Each (50ft Roll)  
**Material:** PE + AL  
**Hardware Size:** N/A  
**Hardware Finish:** N/A

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-EDGE       | ALL Heights |

\*Note: Snap on protection providing quick installs for exposed, heavily trafficked areas

# Rooftop Supports

## NON-PENETRATING A-SERIES ROOFTOP SUPPORT



Used to anchor strut supports and cable tray systems

**Type:** Support  
**Furnished:** Each  
**Material:** Rubber  
**Hardware Size:** N/A  
**Hardware Finish:** N/A

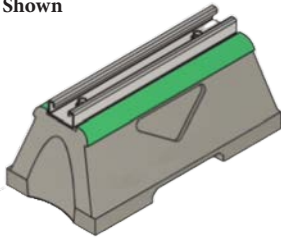
| Catalog Number | Tray Height |
|----------------|-------------|
| TSRB-A-(* )    | ALL Heights |

\*Note: Anchor block has 3/8" threaded inserts for easy attachments points for other fixtures and systems

(\* ) Insert Finish: ZN or HD

## NON-PENETRATING B-SERIES ROOFTOP SUPPORT

\*1 Block Shown



Used to support strut fixtures and cable tray systems

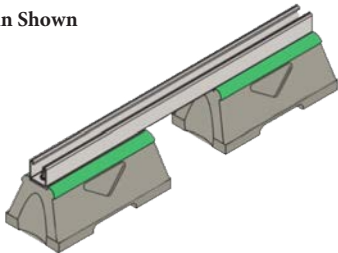
**Type:** Support  
**Furnished:** Each  
**Material:** Rubber & Steel  
**Hardware Size:** 3/8 HHCS  
**Hardware Finish:** ZN

| Catalog Number | Width | Load     |
|----------------|-------|----------|
| TSRB-B-10-(* ) | 12in  | 2500lbs  |
| TSRB-B-24-(* ) | 18in  | 5000lbs  |
| TSRB-B-36-(* ) | 24in  | 7500lbs  |
| TSRB-B-48-(* ) | 36in  | 10000lbs |

(\* ) Insert Finish: ZN or HD

## NON-PENETRATING C-SERIES ROOFTOP SUPPORT

\*24in Shown



Used to support strut fixtures and cable tray systems

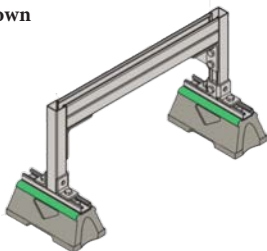
**Type:** Support  
**Furnished:** Each  
**Material:** Rubber & Steel  
**Hardware Size:** 3/8 HHCS  
**Hardware Finish:** ZN

| Catalog Number | Width | Load    |
|----------------|-------|---------|
| TSRB-C-28-(* ) | 28in  | 1491lbs |
| TSRB-C-42-(* ) | 42in  | 994lbs  |
| TSRB-C-50-(* ) | 50in  | 835lbs  |
| TSRB-C-60-(* ) | 60in  | 696lbs  |

(\* ) Insert Finish: ZN or HD

## NON-PENETRATING D-SERIES ROOFTOP SUPPORT

\*24in Shown



Used to support cable tray systems with heavier loads

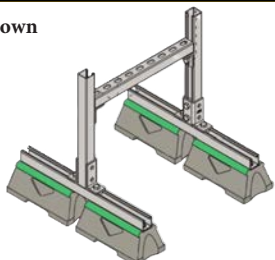
**Type:** Support  
**Furnished:** Each w/ Hardware  
**Material:** Rubber & Steel  
**Hardware Size:** 3/8 HHCS  
**Hardware Finish:** ZN

| Catalog Number | Width | Load    |
|----------------|-------|---------|
| TSRB-D-24-(* ) | 24in  | 3500lbs |
| TSRB-D-36-(* ) | 36in  | 3250lbs |

(\* ) Insert Finish: ZN or HD

## NON-PENETRATING E-SERIES ROOFTOP SUPPORT

\*24in Shown



Used to support cable tray systems with adaptability

**Type:** Support  
**Furnished:** Each w/ Hardware  
**Material:** Rubber & Steel  
**Hardware Size:** 3/8 HHCS  
**Hardware Finish:** ZN

| Catalog Number          | Load        |
|-------------------------|-------------|
| TSRB-E-(H)-(W)-(L)-(* ) | 750-2000lbs |

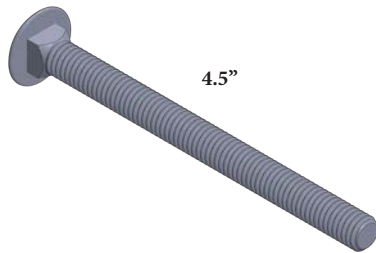
(H): 23, 29, 41, 53  
(W): 18, 24, 36, 48  
(L): 24, 36  
(\*): ZN, HD

Example: TSRB-E-41X18X36-HD



# System Hardware

## LINK TO LINK



Used to connect 2 tray systems together

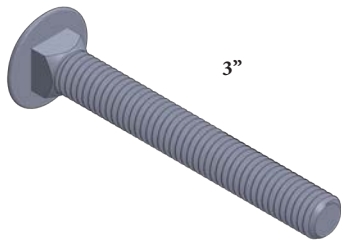
**Type:** Hardware  
**Furnished:** Each (Bag 50)  
**Material:** 316 SS  
**Hardware Size:** 3/8" CB  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TA38SNCB450-S6 | ALL Heights |

\*3/8" TORQUE: 19ft-lbs

\*Note: These are included with the tray purchase as a standard, only for additional needs

## LINK TO FITTING



Used to connect a tray straight section and fitting together

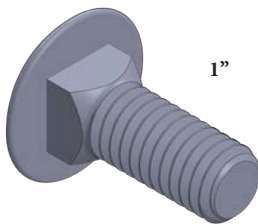
**Type:** Hardware  
**Furnished:** Each (Bag 50)  
**Material:** 316 SS  
**Hardware Size:** 3/8" CB  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TA38SNCB300-S6 | ALL Heights |

\*3/8" TORQUE: 19ft-lbs

\*Note: These are included with the tray purchase as a standard, only for additional needs

## FITTING TO FITTING



Used to connect 2 tray fittings together

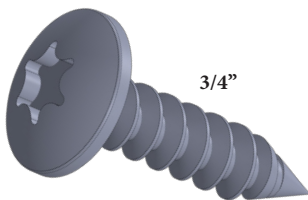
**Type:** Hardware  
**Furnished:** Each (Bag 50)  
**Material:** 316 SS  
**Hardware Size:** 3/8" CB  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TA38SNCB100-S6 | ALL Heights |

\*3/8" TORQUE: 19ft-lbs

\*Note: These are included with the tray purchase as a standard, only for additional needs

## RUNG TO SIDERAIL



Used to secure TOUGHRungs to the TOUGHRail

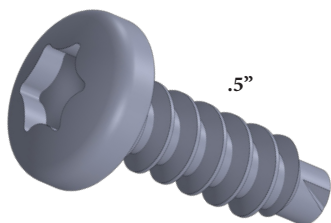
**Type:** Hardware  
**Furnished:** Each (Bag 50)  
**Material:** 316 SS  
**Hardware Size:** T30 Thread Former  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TA-25THS075-S6 | ALL Heights |

\*T30 TORQUE: 9ft-lbs

\*Note: These are included with the tray purchase as a standard, only for additional needs

## COVER TO SIDERAIL



Used to secure covers directly to the top of the siderail

**Type:** Hardware  
**Furnished:** Each (Bag 50)  
**Material:** 316 SS  
**Hardware Size:** T30 Self Drilling  
**Hardware Finish:** 316 SS

| Catalog Number | Tray Height |
|----------------|-------------|
| TTA-CVRSCRW-S6 | ALL Heights |

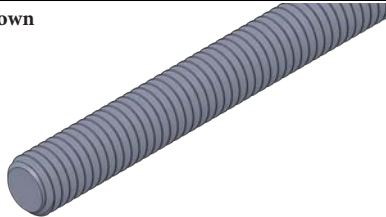
\*NOT included with cover purchase

\*NOTE: Screws will be housed by the I-Strut profile and not exposed

# Trapeze Fixings

## ALL THREAD ROD

\*3/8" Shown



Used to hang or support cable tray systems from structure

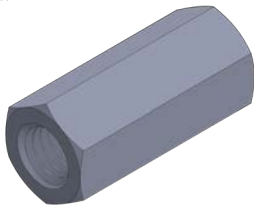
**Type:** Hardware  
**Furnished:** Each  
**Material:** Steel / Stainless  
**Hardware Size:** 1/4", 3/8" & 1/2"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number   | Size  | Load    |
|------------------|-------|---------|
| TA25X144-ATR-(*) | 1/4in | 240lbs  |
| TA38X144-ATR-(*) | 3/8in | 750lbs  |
| TA50X144-ATR-(*) | 1/2in | 1350lbs |

\*Insert Finish: ZN, S4, S6

## ALL THREAD ROD COUPLER

\*3/8in Shown



Used to connect 2 pieces of ATR together

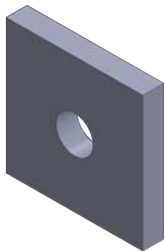
**Type:** Hardware  
**Furnished:** Each (Bag 20)  
**Material:** Steel / Stainless  
**Hardware Size:** 1/4", 3/8" & 1/2"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number | Size  |
|----------------|-------|
| TA25CP-(*)     | 1/4in |
| TA38CP-(*)     | 3/8in |
| TA50CP-(*)     | 1/2in |

\*Insert Finish: ZN, S4, S6

## SQUARE WASHER

\*3/8in Shown



Used to distribute large loads and act as a shim when securing fixtures

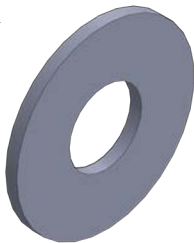
**Type:** Hardware  
**Furnished:** Each (Bag 20)  
**Material:** Steel / Stainless  
**Hardware Size:** 1/4", 3/8" & 1/2"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number | Size  |
|----------------|-------|
| TF25WSQ-(*)    | 1/4in |
| TF38WSQ-(*)    | 3/8in |
| TF50WSQ-(*)    | 1/2in |

(\*) Insert Finish: ZN, S4, S6

## FLAT WASHERS

\*3/8in Shown



Used to distribute loads over uniform areas & space correction

**Type:** Hardware  
**Furnished:** Each (Bag 20)  
**Material:** Steel / Stainless  
**Hardware Size:** 1/4", 3/8" & 1/2"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number | Size  |
|----------------|-------|
| TA25W-(*)      | 1/4in |
| TA38W-(*)      | 3/8in |
| TA50W-(*)      | 1/2in |

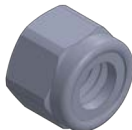
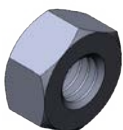
(\*) Insert Finish: ZN, S4, S6

## HEX NUTS

Hex Nut

Nyloc

Serrated Flanged



Used to secure ATR, Hex Head Cap Screws, and other bolts

**Type:** Hardware  
**Furnished:** Each (Bag 20)  
**Material:** Steel / Stainless  
**Hardware Size:** 1/4", 3/8" & 1/2"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number | Type    |
|----------------|---------|
| TA(D)HX-(*)    | Hex Nut |
| TA(D)HN-(*)    | Nyloc   |
| TA(D)FHX-(*)   | Flanged |

(D) Insert Dia: 25, 38, 50

(\*) Insert Finish: ZN, S4, S6

# Suspension Fixings

## CABLE KITS



Used to directly suspend TOUGHTray system from structure

**Type:** Hardware  
**Furnished:** (Bag 10)  
**Material:** 316 SS  
**Hardware Size:** N/A  
**Hardware Finish:** N/A

| Catalog Number     | Load   |
|--------------------|--------|
| TTA-CABLEKIT-4-(L) | 495lbs |
| TTA-CABLEKIT-5-(L) | 715lbs |

(L) Length: **05, 10, 15, 20**

(\*) Safety Factor 5:1

Example: TTA-CABLEKIT-4-05

## SEISMIC CABLE KITS



\*TTA-SCABLEKIT-12-10

Used to seismically brace TOUGHTray system

**Type:** Hardware  
**Furnished:** (Bag 10)  
**Material:** 316 SS  
**Hardware Size:** 3/8"  
**Hardware Finish:** N/A

| Catalog Number       | Load    |
|----------------------|---------|
| TTA-SCABLEKIT-10-(L) | 400lbf  |
| TTA-SCABLEKIT-12-(L) | 945lbf  |
| TTA-SCABLEKIT-19-(L) | 2265lbf |
| TTA-SCABLEKIT-25-(L) | 3570lbf |

(L) Length: **10, 15, 20**

## TRAY TO MESH ADAPTER KIT



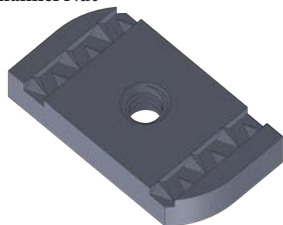
Used to secure TOUGHMesh to the I-Strut Profile or other strut systems

**Type:** Hardware  
**Furnished:** Pair  
**Material:** Steel / Stainless  
**Hardware Size:** 6mm  
**Hardware Finish:** Zinc, Stainless

| Catalog Number | Size |
|----------------|------|
| TMA-WLKIT-EG   | 6mm  |
| TMA-WLKIT-HD   | 6mm  |
| TMA-WLKIT-S4   | 6mm  |
| TMA-WLKIT-S6   | 6mm  |

## RUNG FIXINGS

Mini Channel Nut



Used to secure fixtures and brackets to ladder rungs

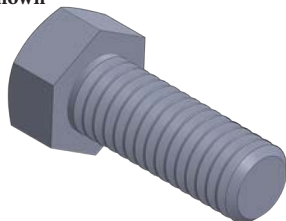
**Type:** Hardware  
**Furnished:** Each (Bag 20)  
**Material:** Steel / Stainless  
**Hardware Size:** 1/4"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number | Type      |
|----------------|-----------|
| TA25NCM-(* )   | 1/4" MINI |

(\*) Finish: ZN, S4, S6

## HEX HEAD CAP SCREWS

\*3/8" Shown



Used to secure accessories to tray & strut systems

**Type:** Hardware  
**Furnished:** Each (Bag 20)  
**Material:** Steel / Stainless  
**Hardware Size:** 1/4", 3/8", & 1/2"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number  | Thread |
|-----------------|--------|
| TA(D)HX(L)-(* ) | Course |

(D) Dia (in): **25, 38, 50**

(L) Length: **075, 100, 125, 150, 200**

(\*) Finish: ZN, S4, S6

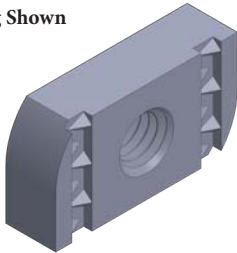
Example: TA38HX100-ZN



# TOUGHStrut Add-Ons

## CHANNEL NUTS

\*No Spring Shown



Used to secure accessories to the I-Strut Profile

**Type:** Hardware  
**Furnished:** Each (Bag 20)  
**Material:** Steel / Stainless  
**Hardware Size:** 1/4", 3/8", & 1/2"  
**Hardware Finish:** Zinc, Stainless

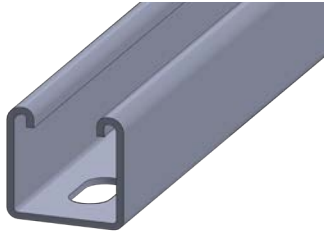
| Catalog Number | Spring Type |
|----------------|-------------|
| TA(D)NC-(* )   | None        |
| TA(D)NCS-(* )  | Standard    |
| TA(D)NCSS-(* ) | Short       |

(D) Dia (in): **25, 38, 50**

(\* ) Finish: **ZN, S4, S6**

## 12G OR 14G 1 5/8 SINGLE CHANNEL

12G Slotted



Metal framing used to erect supports, & create structure

**Type:** Channel  
**Furnished:** Each  
**Material:** Steel, Stainless, Aluminum  
**Hardware Size:** 3/8" & 1/2"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number     | Type  | Length |
|--------------------|-------|--------|
| TC(G)158-(L)-(* )  | Solid | 10ft   |
| TC(G)158S-(L)-(* ) | Slots | 20ft   |

(G) Gauge: **2,4**

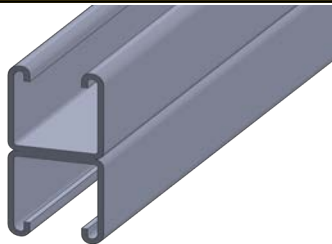
(L) Length: **120, 240**

(\* ) Finish: **ZN, HD, S4, S6, AL**

12G Example: *TC2158-120-ZN*

## 12G OR 14G 1 5/8 DOUBLE CHANNEL

14G Solid



Metal framing used to erect supports, & create structure

**Type:** Channel  
**Furnished:** Each  
**Material:** Steel, Stainless, Aluminum  
**Hardware Size:** 3/8" & 1/2"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number      | Type  | Length |
|---------------------|-------|--------|
| TC(G)158H-(L)-(* )  | Solid | 10ft   |
| TC(G)158SH-(L)-(* ) | Slots | 20ft   |

(G) Gauge: **2,4**

(L) Length: **120, 240**

(\* ) Finish: **ZN, HD, S4, S6, AL**

12G Example: *TC2158H-240-HD*

## 12G OR 14G 7/8 SINGLE CHANNEL

12G Solid



Shallow Metal framing used to erect supports, & create structure

**Type:** Channel  
**Furnished:** Each  
**Material:** Steel, Stainless, Aluminum  
**Hardware Size:** 3/8" & 1/2"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number     | Type  | Length |
|--------------------|-------|--------|
| TC(G)078-(L)-(* )  | Solid | 10ft   |
| TC(G)078S-(L)-(* ) | Slots | 20ft   |

(G) Gauge: **2,4**

(L) Length: **120, 240**

(\* ) Finish: **ZN, HD, S4, S6, AL**

14G Example: *TC4078-120-ZN*

## 12G OR 14G 7/8 DOUBLE CHANNEL

14G Slotted



Shallow Metal framing used to erect supports, & create structure

**Type:** Channel  
**Furnished:** Each  
**Material:** Steel, Stainless, Aluminum  
**Hardware Size:** 3/8" & 1/2"  
**Hardware Finish:** Zinc, Stainless

| Catalog Number      | Type  | Length |
|---------------------|-------|--------|
| TC(G)078H-(L)-(* )  | Solid | 10ft   |
| TC(G)078SH-(L)-(* ) | Slots | 20ft   |

(G) Gauge: **2,4**

(L) Length: **120, 240**

(\* ) Finish: **ZN, HD, S4, S6, AL**

12G Example: *TC2078-240-ZN*



Rev: F

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