

TOUGHTray



CT INNOVATIONS

Do Better. Be Better.

Our DNA

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

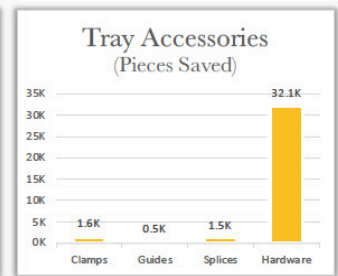
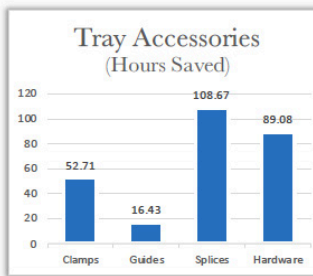
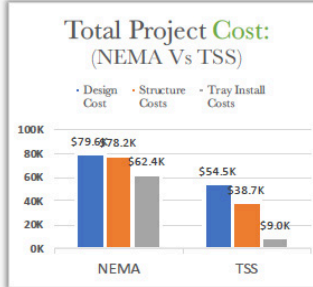
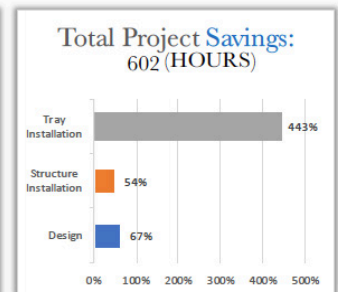
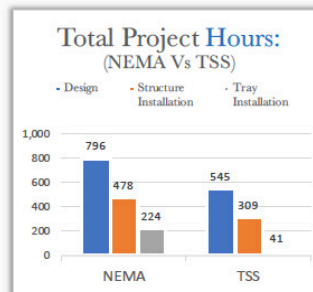


\$124.0K Dollars Saved

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

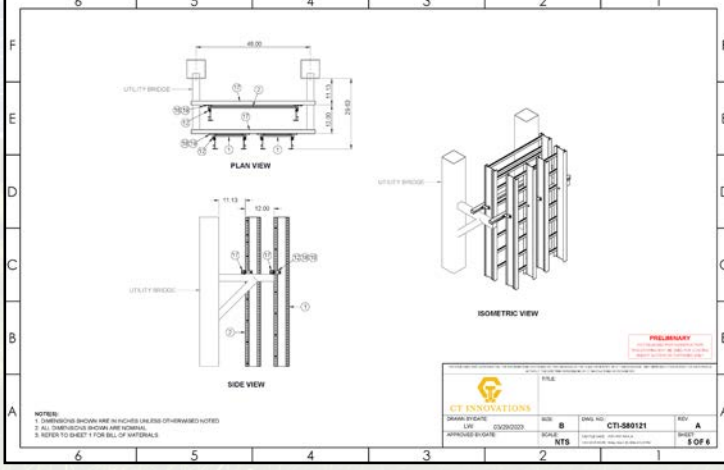
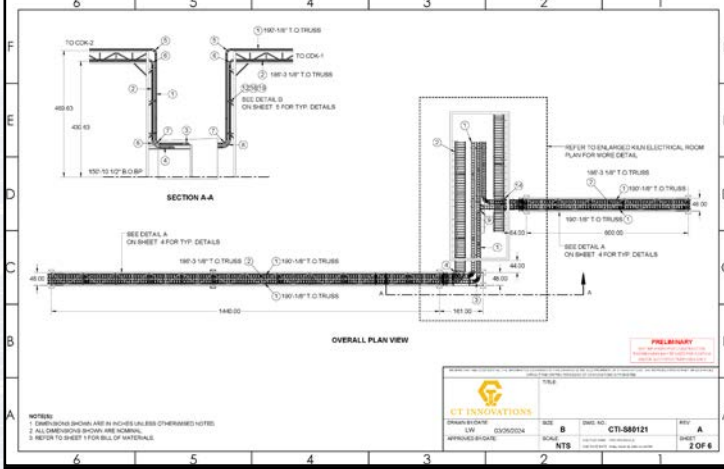
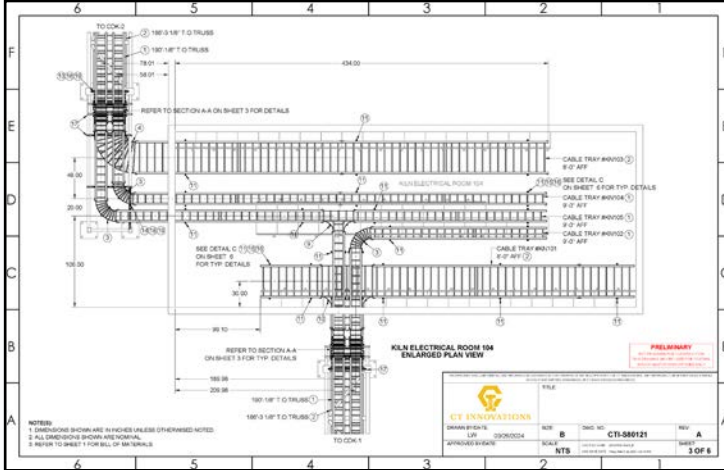
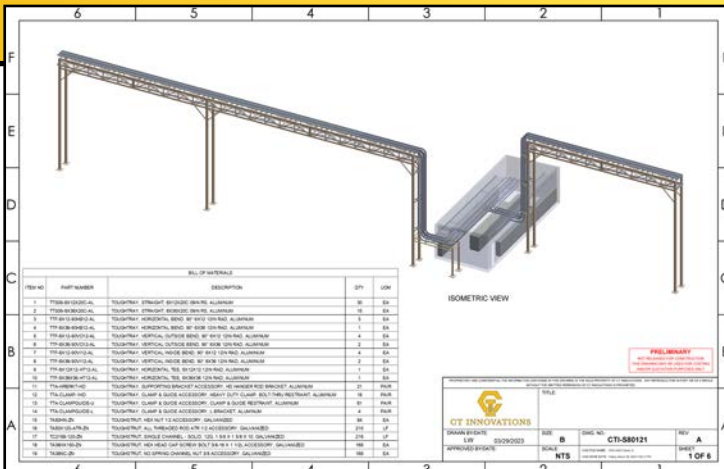


CT INNOVATIONS



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

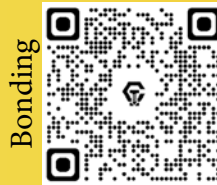
CT Innovations cable tray systems are manufactured, tested, and certified in accordance with and compliance to industry standard NEMA VE-1.

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:

AL

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

AL

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

AL

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

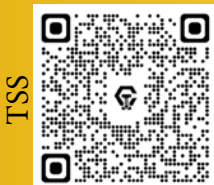
S6

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

S6

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

Design Recommendations:



TSS

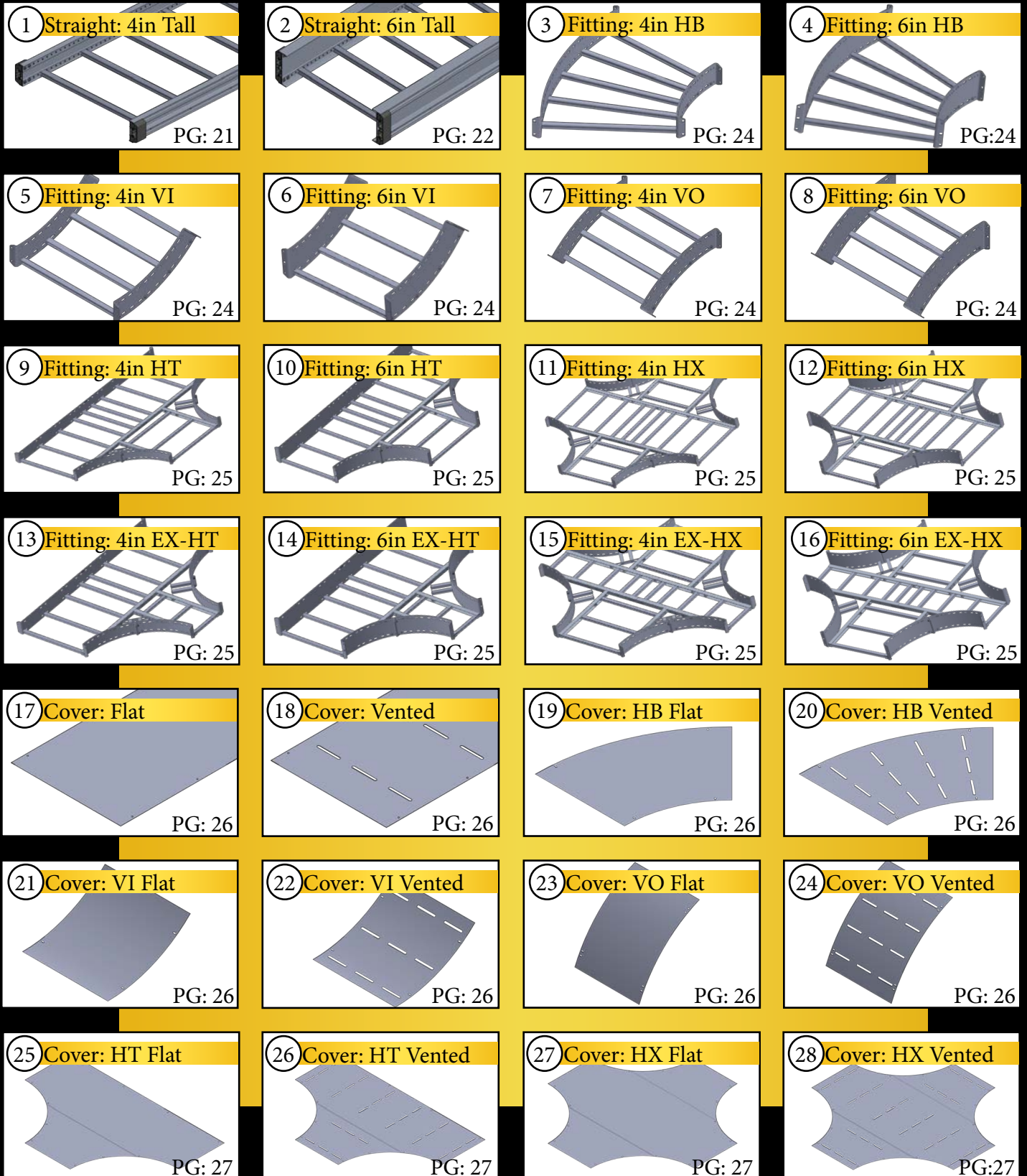
TOUGH Support Savings (TSS) represents the most optimal blueprint for tray installation & design ensuring you get the most out of our product.



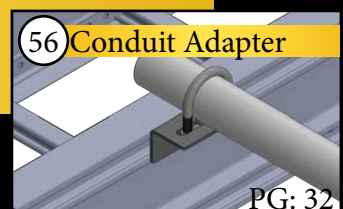
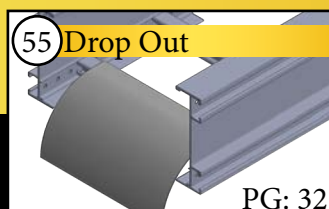
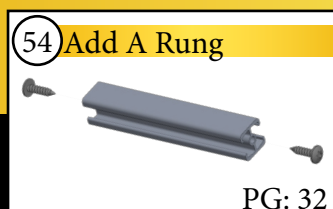
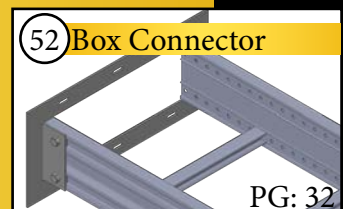
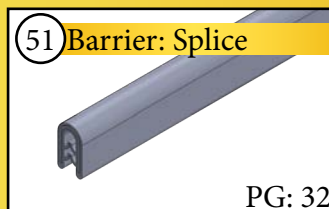
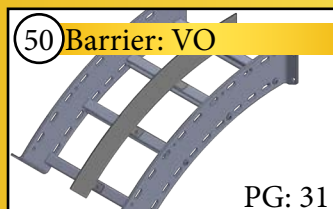
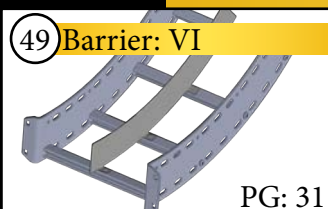
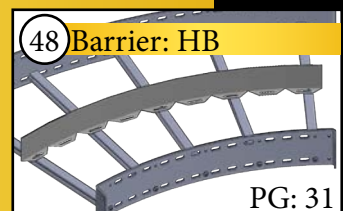
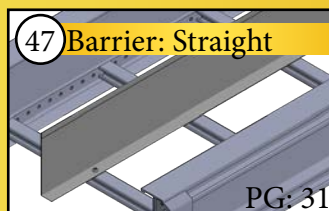
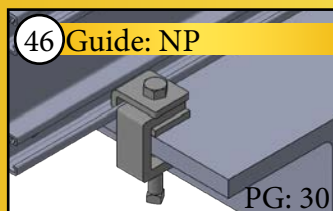
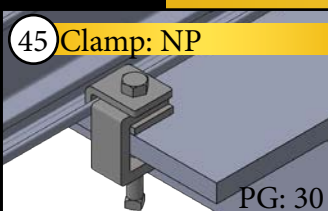
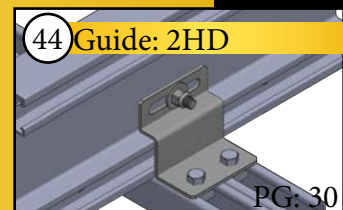
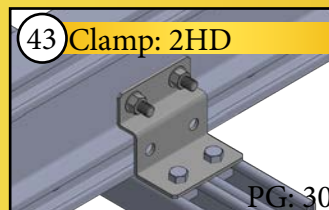
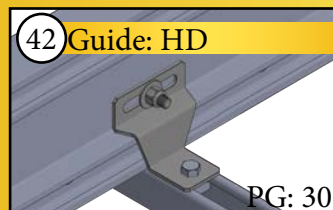
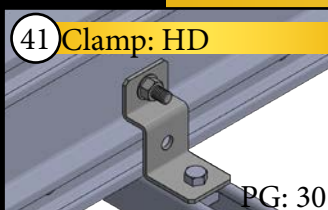
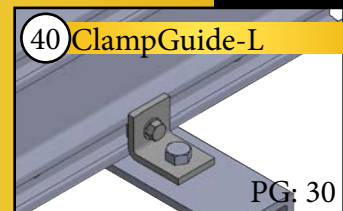
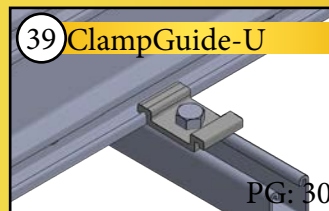
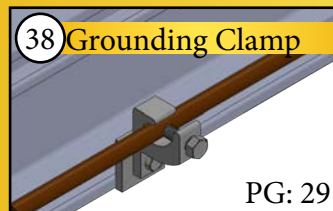
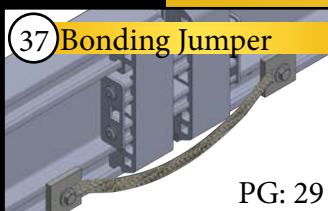
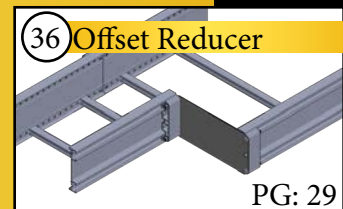
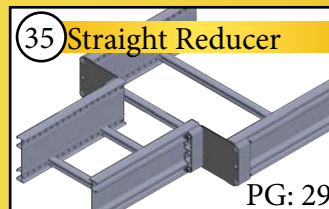
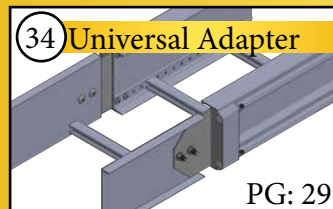
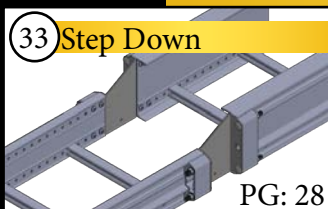
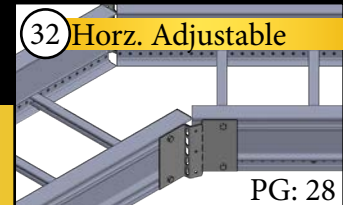
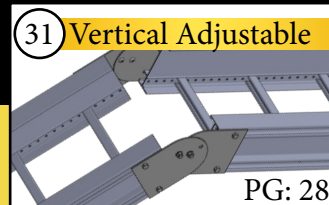
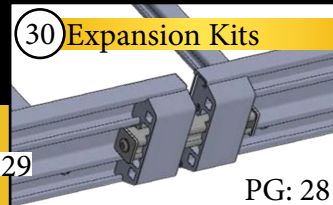
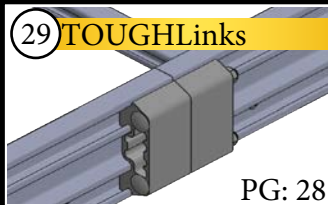
Resources

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

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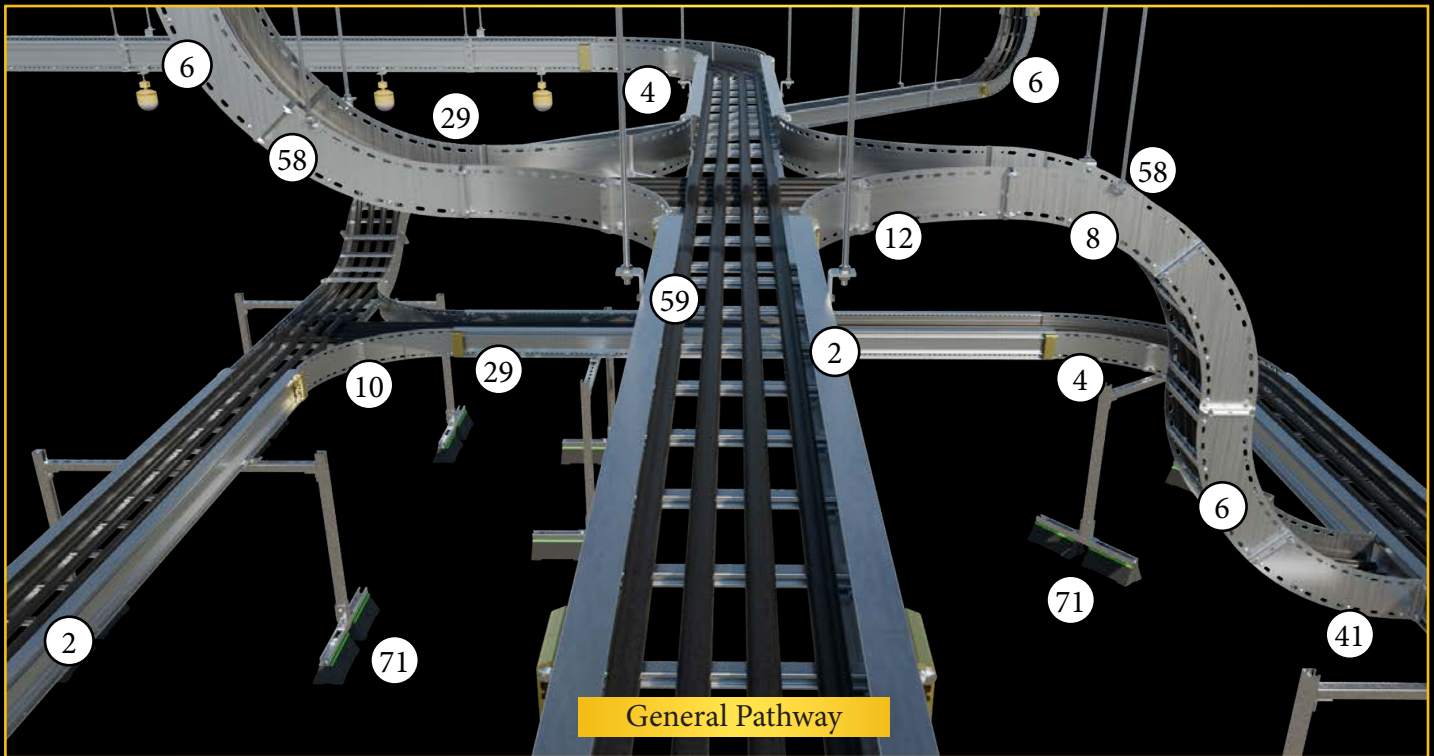
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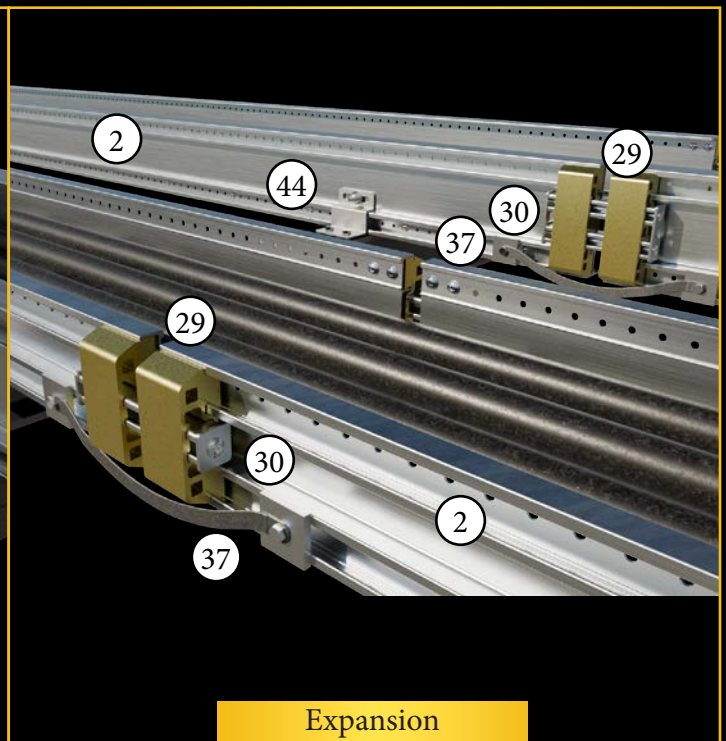
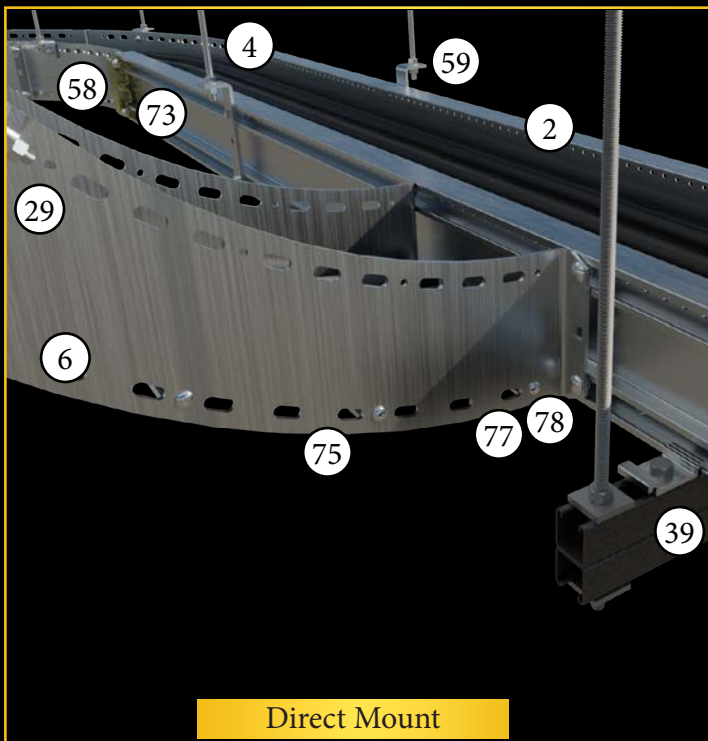
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Application Reference

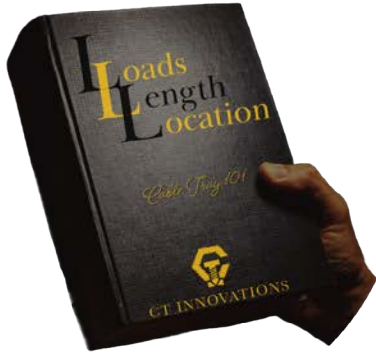


Innovation That Applies



Tray Selection

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



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

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:

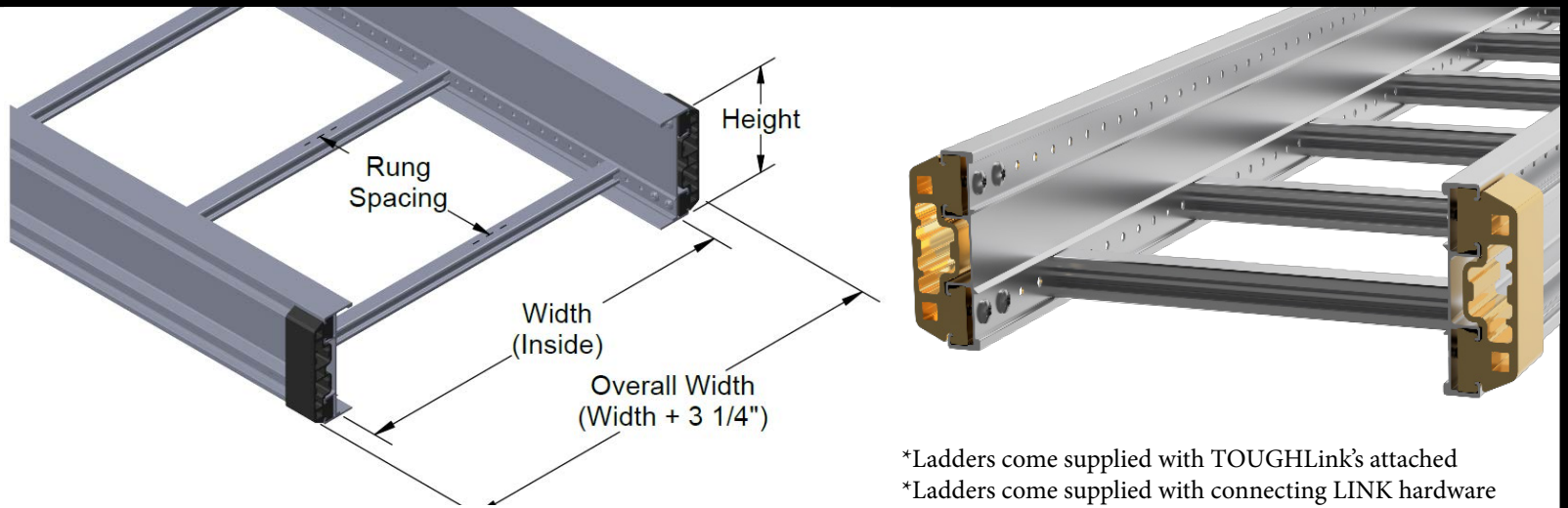
Secondly, define the maximum distance required between supports, better known as the support span.

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" 09 = 9" 12 = 12"	4 = 4"	06 = 6" 24 = 24" 09 = 9" 30 = 30" 12 = 12" 36 = 36" 18 = 18" * = ETO	12 = 12'	A = 50lbs/ft B = 75lbs/ft 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

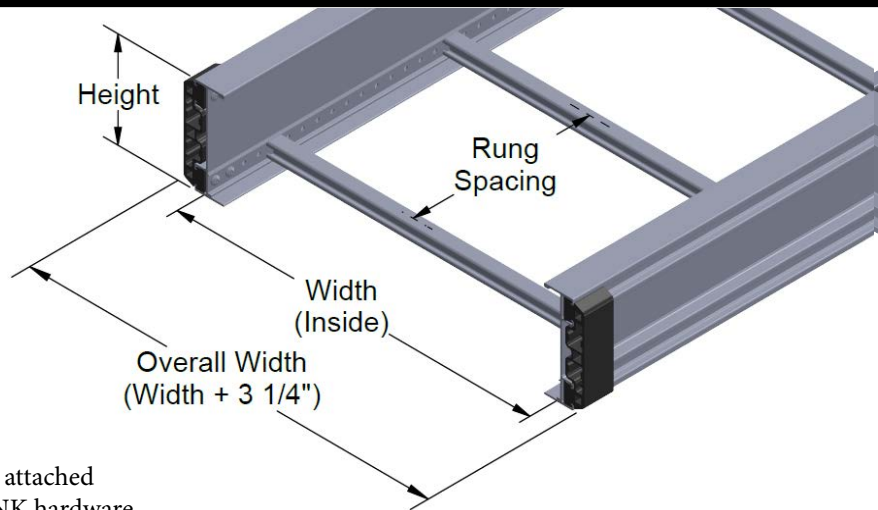
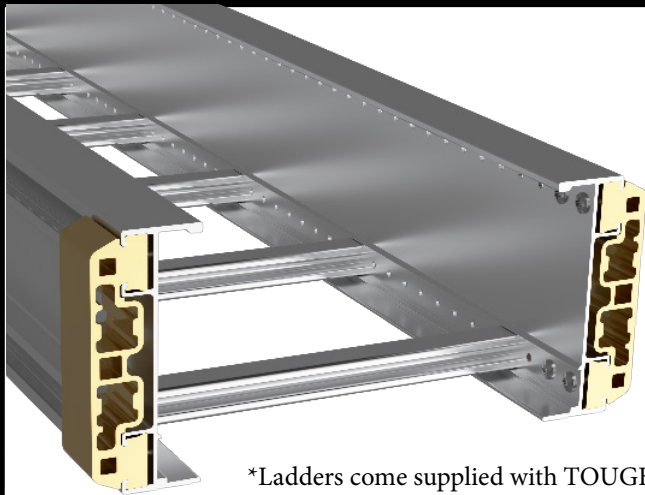
Siderail Height (in)	Series	Classifications	Span (ft)	Load (lbs/ft)	Design Factors (2 Rails)	Span (m)	Load (kg/m)	Design Factors (2 Rails)
4	12A	NEMA: 12A X-Sectional Area: 1.37in ²	10	75	Sx: 1.46 in ³ Ix: 3.28 in ⁴	3.0	111	Sx: 23.9cm ³ Ix: 68.4cm ⁴
			12	60		3.7	89	

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 X-Sectional Area: 1.37in ²	10	93	Sx: 1.46 in ³ Ix: 3.28 in ⁴	3.0	141	Sx: 23.9cm ³ Ix: 68.4cm ⁴
			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 X-Sectional Area: 1.37in ²	10	105	Sx: 1.46 in ³ Ix: 3.28 in ⁴	3.0	156	Sx: 23.9cm ³ Ix: 68.4cm ⁴
			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" 09 = 9" 12 = 12"	6 = 6"	06 = 6" 24 = 24" 09 = 9" 30 = 30" 12 = 12" 36 = 36" 18 = 18" * = ETO	10 = 10'	B = 75lbs/ft C = 100lbs/ft C+ = 200lbs/ft	AL

* Contact CTI for ETO Options

Compliance
NEMA & NEC

Safety Factor
1.5

Rung Capacity
+300lbs

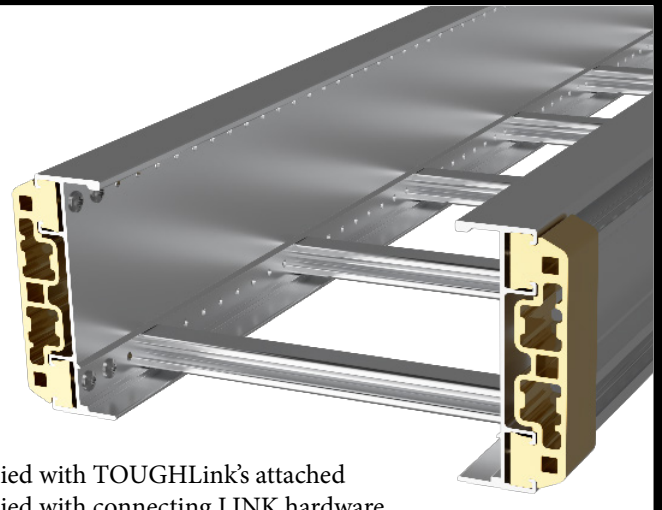
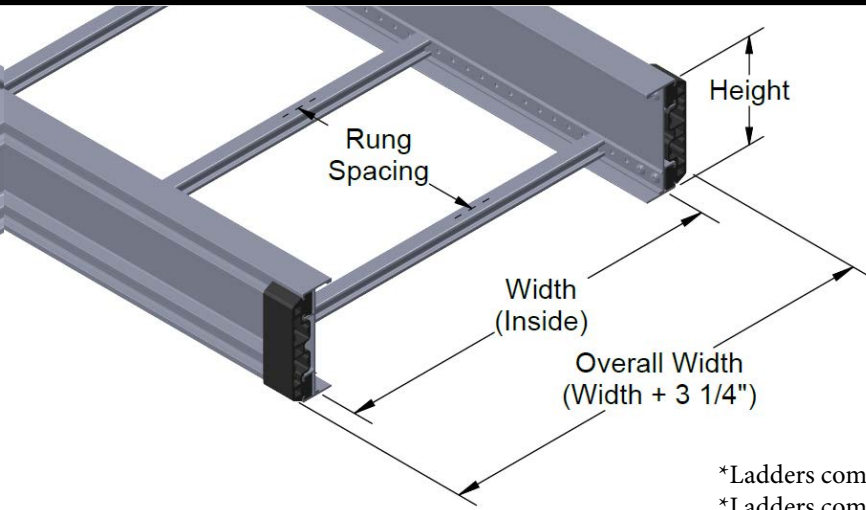
Material Grade
AL: 6063-T6

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 X-Sectional Area: 2.44in ²	5	124	Sx: 4.34 in ³ Ix: 14.5 in ⁴	3.0	184	Sx: 71.1cm ³ Ix: 603cm ⁴
			10	88		3.7	130	
6	10C	NEMA: 10C X-Sectional Area: 2.93in ²	5	163	Sx: 4.34 in ³ Ix: 14.5 in ⁴	3.0	242	Sx: 71.1cm ³ Ix: 603cm ⁴
			10	115		3.7	171	
6	10C+	NEMA: 10C+ X-Sectional Area: 2.93in ²	5	283	Sx: 4.34 in ³ Ix: 14.5 in ⁴	3.0	421	Sx: 71.1cm ³ Ix: 603cm ⁴
			10	200		3.7	297	

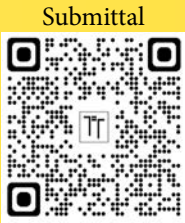
20ft Straight Sections: 6in

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



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

TTS09-6X12X20C-AL



Product Series & Type	Rung Spacing	Height	Inside Width	Length	Load Class	Finish
TTS = TOUGHTray Straight	06 = 6" 09 = 9" *12 = 12"	6 = 6"	06 = 6" 24 = 24" 09 = 9" 30 = 30" 12 = 12" 36 = 36" 18 = 18" * = ETO	20 = 20'	B = 50lbs/ft C = 100lbs/ft 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 X-Sectional Area: 2.93in ²	10	115	Sx: 4.34 in ³ Ix: 14.5 in ⁴	3.0	171	Sx: 71.1cm ³ Ix: 603cm ⁴
			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 X-Sectional Area: 2.93in ²	10	148	Sx: 4.34 in ³ Ix: 14.5 in ⁴	3.0	220	Sx: 71.1cm ³ Ix: 603cm ⁴
			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+ X-Sectional Area: 2.93in ²	10	208	Sx: 5.52 in ³ Ix: 18.1 in ⁴	3.0	315	Sx: 90.5cm ³ Ix: 376cm ⁴
			20	147		6.1	215	

Fittings: HB, VI, & VO

TTF-4X12-90HB24-AL

Product Series & Type

TTF = TOUGHTray Fitting

Height

4 = 4"
6 = 6"

Inside Width

06 = 6" 24 = 24"
09 = 9" 30 = 30"
12 = 12" 36 = 36"
18 = 18" * = ETO

Angle

30 = 30°
45 = 45°
60 = 60°
90 = 90°

Type

HB = Horizontal Bend
VI = Vertical Inside
VO = Vertical Outside

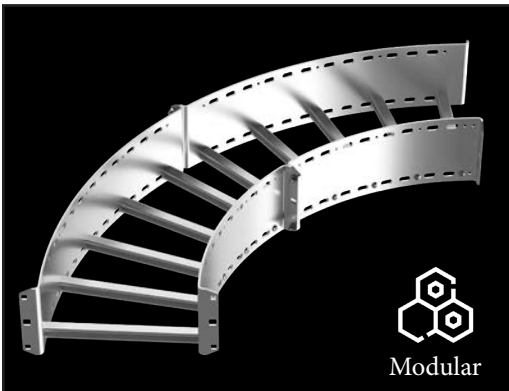
Radius

12 = 12"
24 = 24"
36 = 36"

Finish

AL

Note: Supplied with connecting hardware



Modular

Horizontal Bend



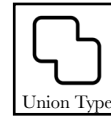
Design Type

Self Supporting



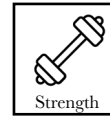
Connectivity

Slotted Siderail



Union Type

Integral LINK



Strength

Fortified Midpoint

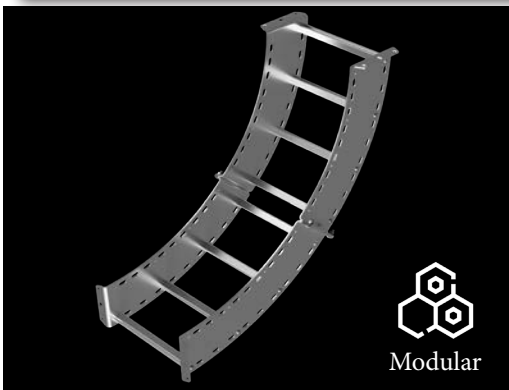


Hardware

316 Stainless

Ex: TTF-6X12-90HB12-AL

Submittal



Modular

Vertical Inside Bend



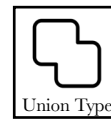
Design Type

Self Supporting



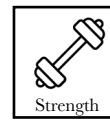
Connectivity

Slotted Siderail



Union Type

Integral LINK



Strength

Fortified Midpoint

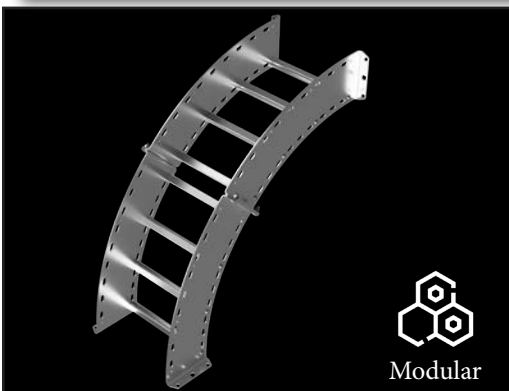


Hardware

316 Stainless

Ex: TTF-6X12-90VI12-AL

Submittal



Modular

Vertical Outside Bend



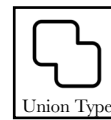
Design Type

Self Supporting



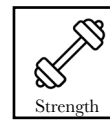
Connectivity

Slotted Siderail



Union Type

Integral LINK



Strength

Fortified Midpoint



Hardware

316 Stainless

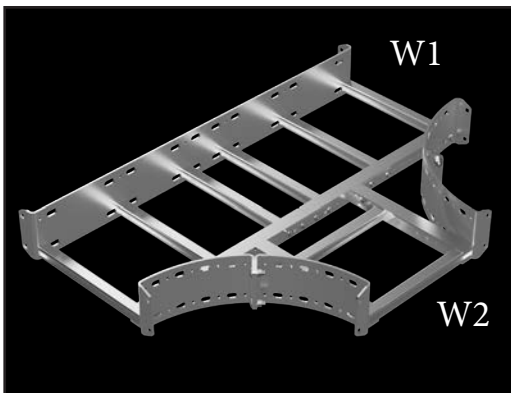
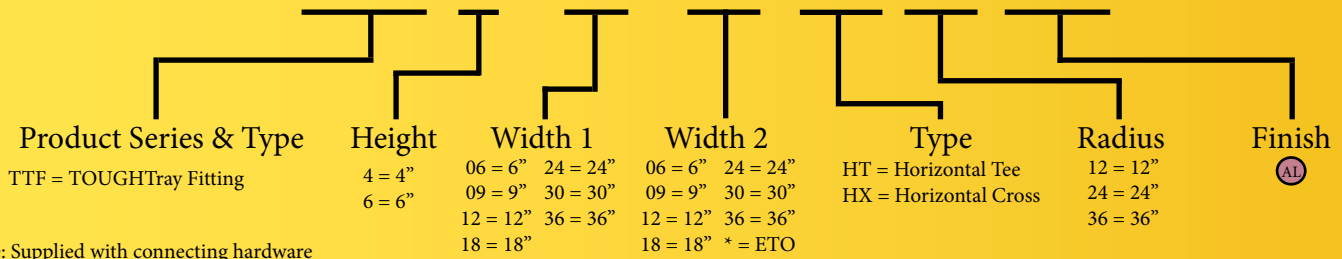
Ex: TTF-6X12-90VO12-AL

Submittal



Fittings: HT & HX

TTF-4X12X24-HT24-AL



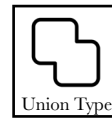
Horizontal Tee



Design Type
Self Supporting



Connectivity
Slotted Siderail



Union Type
Integral LINK



Strength
Fortified Midpoint

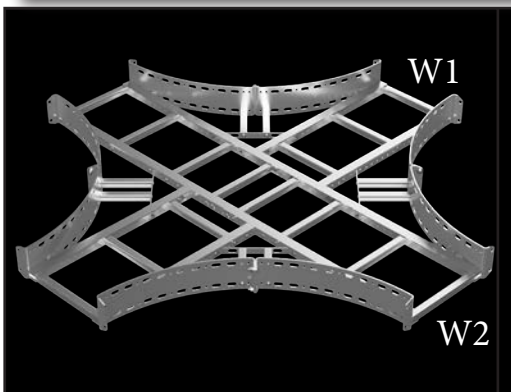


Hardware
316 Stainless

Ex: TTF-6X12X12-HT12-AL



Submittal



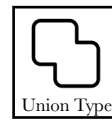
Horizontal Cross



Design Type
Self Supporting



Connectivity
Slotted Siderail



Union Type
Integral LINK



Strength
Fortified Midpoint

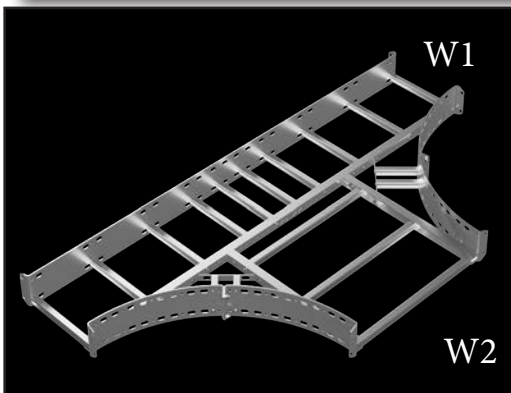


Hardware
316 Stainless

Ex: TTF-6X12X12-HX12-AL



Submittal



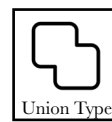
Expanding / Reducing



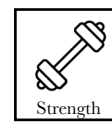
Design Type
Self Supporting



Connectivity
Slotted Siderail



Union Type
Integral LINK



Strength
Fortified Midpoint



Hardware
316 Stainless

*Sheet supplied on smallest width

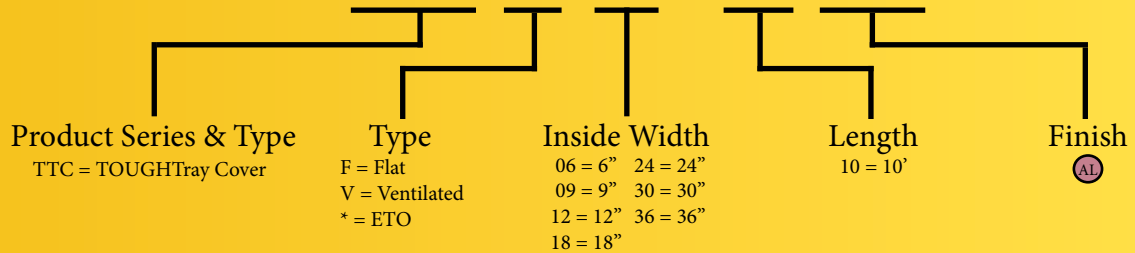
Ex: TTF-6X12X24-HT12-AL



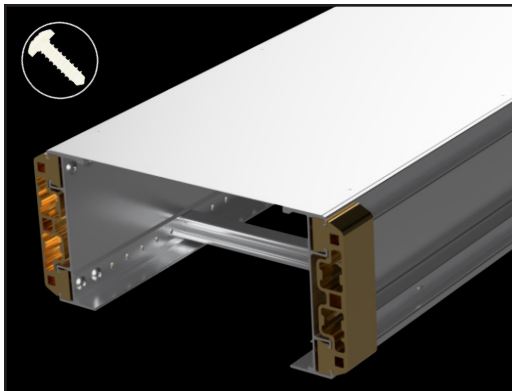
Submittal

Covers: ST, HB, VI, & VO

TTC-F-12X10-AL



*Call for more options



Straight Section Cover

- Flat
- Vented

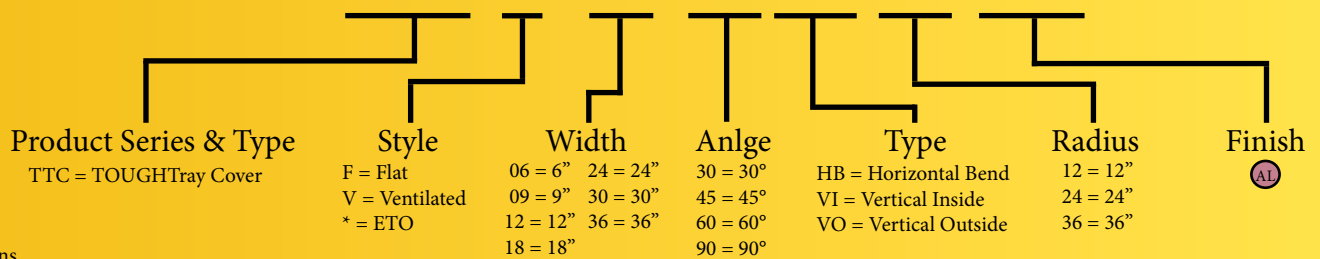
(Sold Separate: TTA-CVRSCREW-S6 Pg. 30)

Ex: TTC-F-12X10-AL

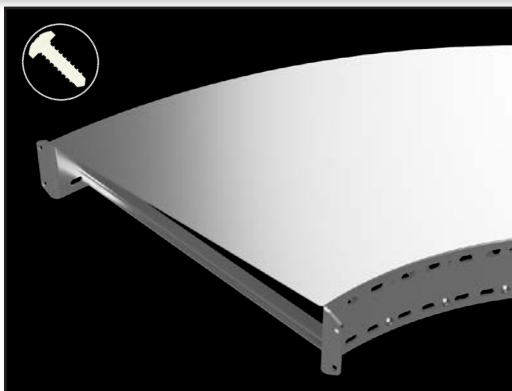
Submittal



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

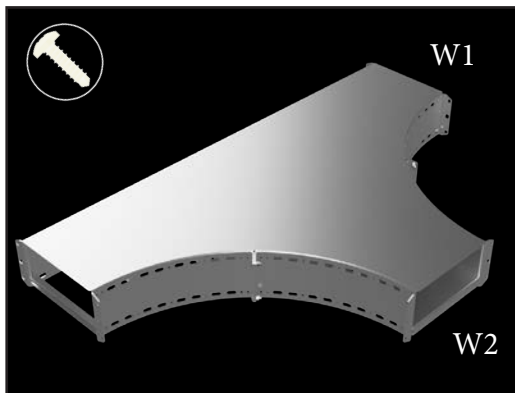


Covers: HT & HX

TTC-F-12X12-HT24-AL

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

*Call for more options



HT & HX Cover

- Flat
- Vented

(Sold Separate: TTA-CVRCLMP Pg. 34)

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

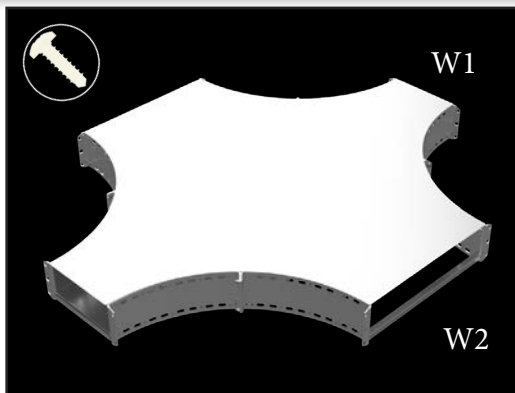
Submittal



TTC-F-06X12-HX24-AL

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

*Call for more options



Expanding/Reducing Cover

- Flat
- Vented

(Sold Separate: TTA-CVRCLMP Pg. 34)

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

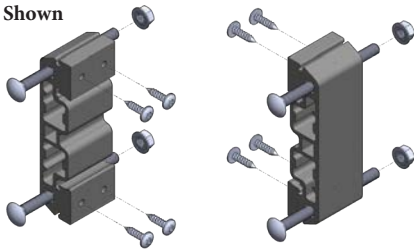
Submittal



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

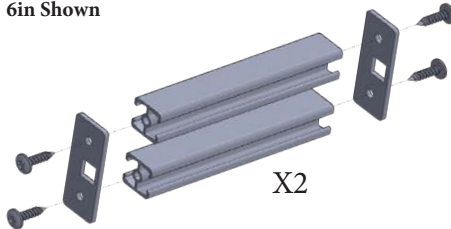
Catalog Number	Tray Height
TTA-LINK-4	4in 101mm
TTA-LINK-6	6in 152mm

*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

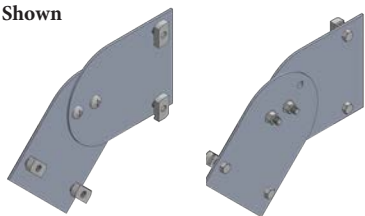
Catalog Number	Tray Height
TTA-EXPNKIT-4	4in 101mm
TTA-EXPNKIT-6	6in 152mm

*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

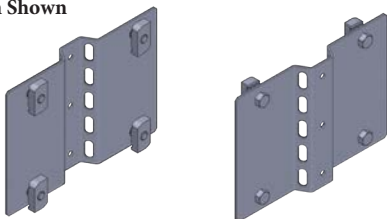
Type: Splicing
Furnished: Pairs w/ Hardware
Material: AL
Hardware Size: 3/8" HHCS
Hardware Finish: 316 SS

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

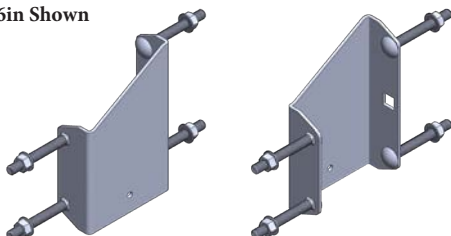
Catalog Number	Tray Height
TTA-HADJ-4	4in 101mm
TTA-HADJ-6	6in 152mm

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

*Note: Add-A-Run 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

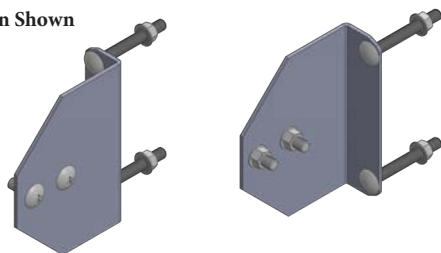
Catalog Number	Tray Height
TTA-STEPDOWN	All Heights

*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

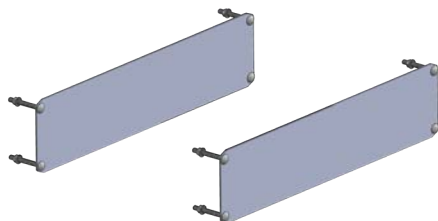
Type: Splicing
Furnished: Pairs w/ Hardware
Material: AL
Hardware Size: 3/8"
Hardware Finish: 316 SS

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

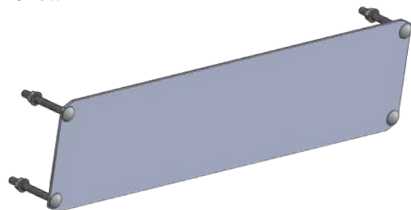
Type: Splicing
Furnished: Pairs w/ Hardware
Material: AL
Hardware Size: 3/8" CB
Hardware Finish: 316 SS

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



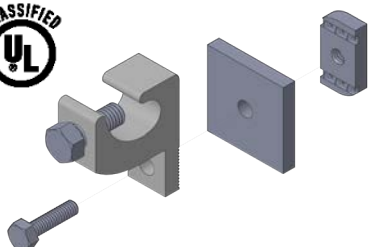
Used to electrically bond mechanically disconnected trays

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

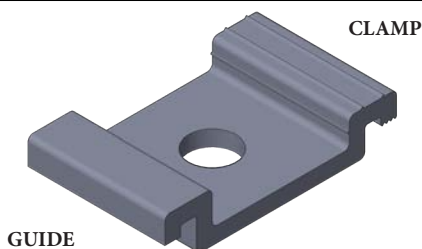
Type: Grounding
Furnished: Each w/ Hardware
Material: AL
Hardware Size: 3/8" HHCS
Hardware Finish: 316 SS

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

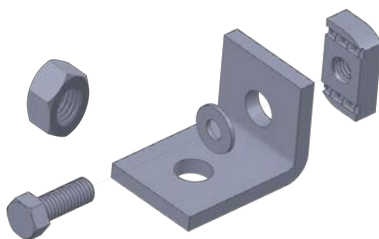
Friction based guide & clamp combo ideal for strut mounts

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



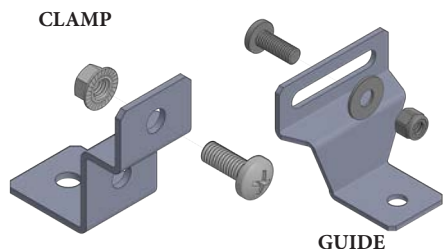
Friction based guide & clamp combo ideal for strut mounts

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

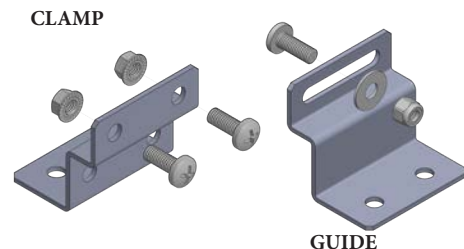
Bolt through guide & clamp ideal for long vertical drops

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

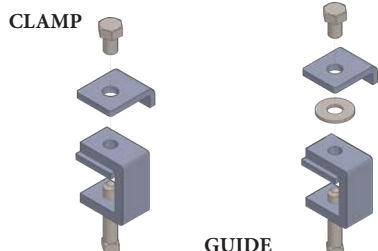
Bolt through guide & clamp ideal for environmental impacts

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

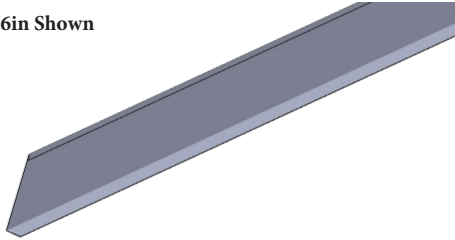
Catalog Number	Type
TTA-CLAMP-NP-(F)	CLAMP
TTA-GUIDE-NP-(F)	GUIDE

(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

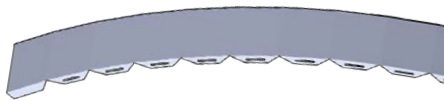
Type: Barrier
Furnished: Each
Material: AL
Hardware: TMA-CVRSCERW
Hardware Finish: 316 SS (Pg.30)

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

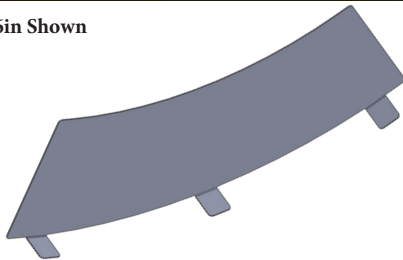
Type: Barrier
Furnished: Each
Material: AL
Hardware: TMA-CVRSCERW
Hardware Finish: 316 SS (Pg. 30)

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

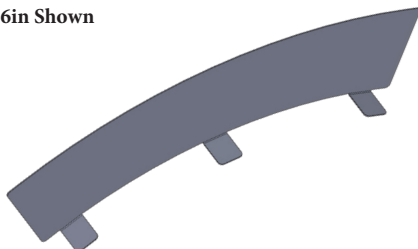
Type: Barrier
Furnished: Each
Material: AL
Hardware: TMA-CVRSCERW
Hardware Finish: 316 SS (Pg. 30)

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

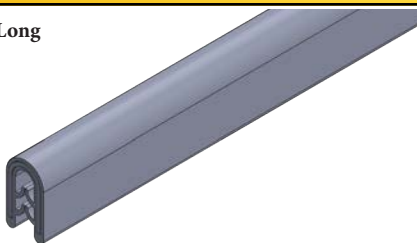
Type: Barrier
Furnished: Each
Material: AL
Hardware: TMA-CVRSCERW
Hardware Finish: 316 SS (Pg. 30)

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

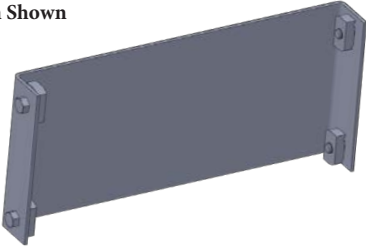
(W) Insert Tray Width:

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

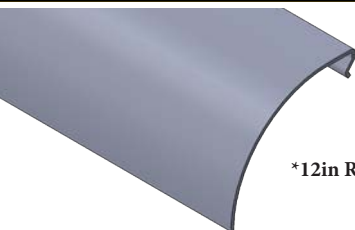
* T30 TORQUE: 9ft-lbs

(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

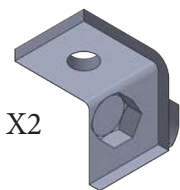
Catalog Number	Outside Dia.
TTA-CONADPTR-2	1-2in
TTA-CONADPTR-4	2.1-4in
TTA-CONADPTR-6	4.1-6in

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

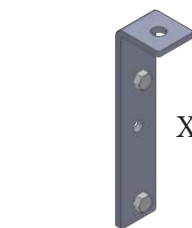
Supporting Brackets

HANGER ROD BRACKET

Universal



X2



Heavy Duty

X2

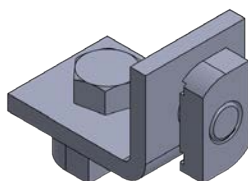
Used to secure or suspend tray systems from up to 1/2" ATR

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

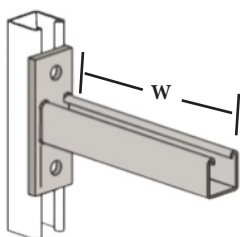
Type: Support
Furnished: Pairs w/ Hardware
Material: AL
Hardware Size: 3/8 HHCS
Hardware Finish: 316 SS

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

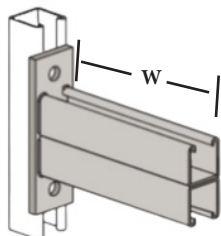
Type: Support
Furnished: Each
Material: Steel
Hardware Size: N/A
Hardware Finish: N/A

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

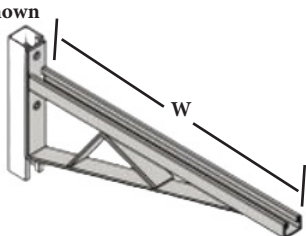
Type: Support
Furnished: Each
Material: Steel
Hardware Size: N/A
Hardware Finish: N/A

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

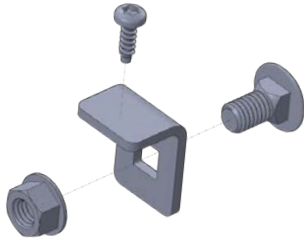
Type: Support
Furnished: Each
Material: Steel
Hardware Size: N/A
Hardware Finish: N/A

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



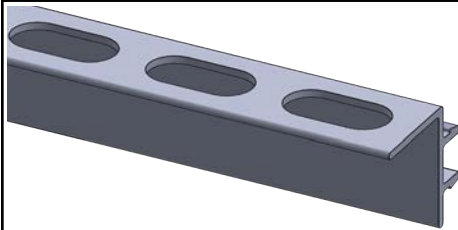
Used to secure covers to cable tray fittings

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



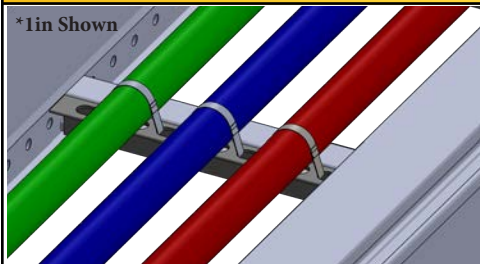
Used to secured cables at strategic points of tray system

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



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

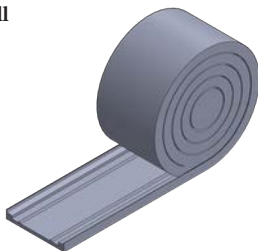
Type: Kits
Furnished: Each (Box 100)
Material: Stainless
Hardware Size: N/A
Hardware Finish: 301 SS

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

*50ft Roll



Used to separate dissimilar metals & prevent corrosion

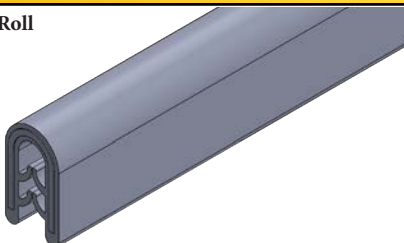
Type: Kits
Furnished: Each (50ft Roll)
Material: AL
Hardware Size: 3/8"
Hardware Finish: 316 SS

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

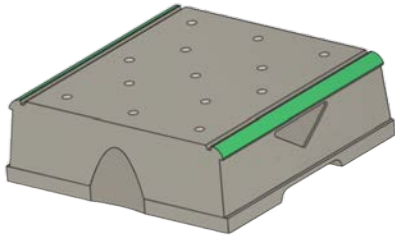
Type: Kits
Furnished: Each (50ft Roll)
Material: PE + AL
Hardware Size: N/A
Hardware Finish: N/A

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

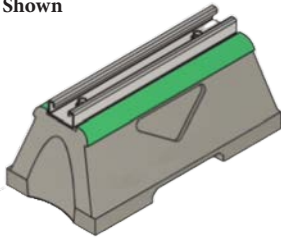
Catalog Number	Tray Height
TSRB-A-(*)	ALL Heights

*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

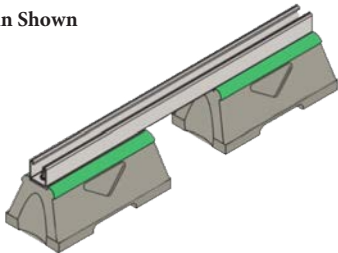
Type: Support
Furnished: Each
Material: Rubber & Steel
Hardware Size: 3/8 HHCS
Hardware Finish: ZN

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

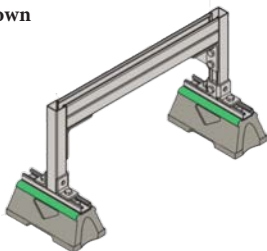
Type: Support
Furnished: Each
Material: Rubber & Steel
Hardware Size: 3/8 HHCS
Hardware Finish: ZN

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

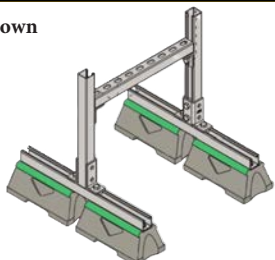
Type: Support
Furnished: Each w/ Hardware
Material: Rubber & Steel
Hardware Size: 3/8 HHCS
Hardware Finish: ZN

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

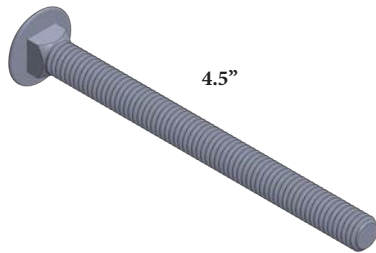
(L): 24, 36

(*): ZN, HD

Example: TSRB-E-41X18X36-HD

System Hardware

LINK TO LINK



Used to connect 2 tray systems together

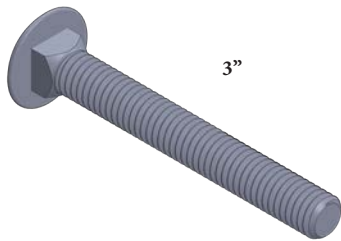
Type: Hardware
Furnished: Each (Bag 50)
Material: 316 SS
Hardware Size: 3/8" CB
Hardware Finish: 316 SS

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

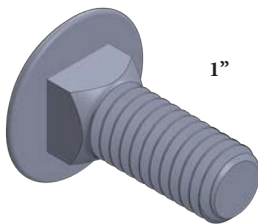
Type: Hardware
Furnished: Each (Bag 50)
Material: 316 SS
Hardware Size: 3/8" CB
Hardware Finish: 316 SS

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

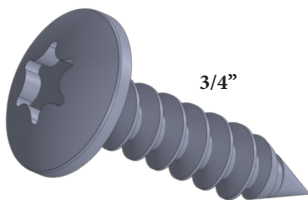
Type: Hardware
Furnished: Each (Bag 50)
Material: 316 SS
Hardware Size: 3/8" CB
Hardware Finish: 316 SS

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

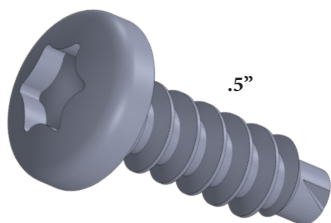
Type: Hardware
Furnished: Each (Bag 50)
Material: 316 SS
Hardware Size: T30 Thread Former
Hardware Finish: 316 SS

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

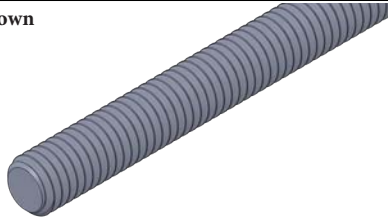
*NOT included with cover purchase

*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
TA25X120-ATR-(*)	1/4in	240lbs
TA38X120-ATR-(*)	3/8in	750lbs
TA50X120-ATR-(*)	1/2in	1350lbs

*Insert Finish: ZN, S4, S6

ALL THREAD ROD COUPLER

*3/8in Shown



Used to connect 2 pieces of ATR together

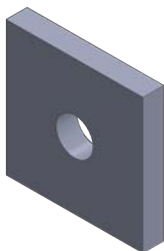
Type: Hardware
Furnished: Each (Bag 20)
Material: Steel / Stainless
Hardware Size: 1/4", 3/8" & 1/2"
Hardware Finish: Zinc, Stainless

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

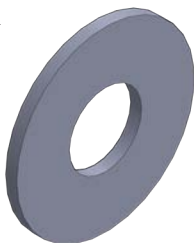
Type: Hardware
Furnished: Each (Bag 20)
Material: Steel / Stainless
Hardware Size: 1/4", 3/8" & 1/2"
Hardware Finish: Zinc, Stainless

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

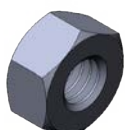
(*) Insert Finish: ZN, S4, S6

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

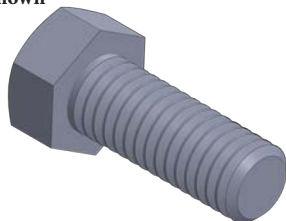
Type: Hardware
Furnished: Each (Bag 20)
Material: Steel / Stainless
Hardware Size: 1/4"
Hardware Finish: Zinc, Stainless

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**

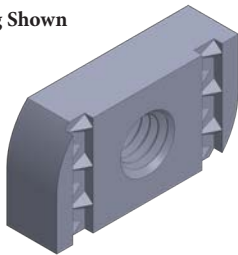
(*) Finish: ZN, S4, S6

Example: TA38HX100-ZN

TOUGHStrut Add-Ons

CHANNEL NUTS

*No Spring Shown



Used to secure accessories to the I-Strut Profile

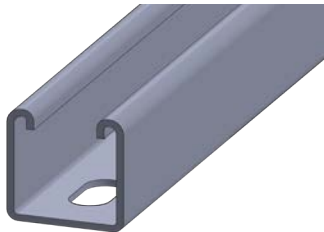
Type: Hardware
Furnished: Each (Bag 20)
Material: Steel / Stainless
Hardware Size: 1/4", 3/8", & 1/2"
Hardware Finish: Zinc, Stainless

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

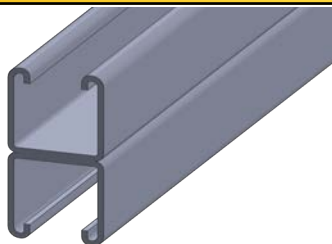
Type: Channel
Furnished: Each
Material: Steel, Stainless, Aluminum
Hardware Size: 3/8" & 1/2"
Hardware Finish: Zinc, Stainless

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: E

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