Tate Strut User Installation Reference Guide

THIS INFORMATION MUST BE SHARED WITH ALL SERVICE PROVIDERS WHO INTEND TO SUSPEND SERVICES FROM THE TATE STRUT SYSTEM

Download
Installation Guide

7510 Montevideo Road, Jessup, MD 20794 • T:410-799-4200 • E: info@tateinc.com • W: tateinc.com

THIS INFORMATION MUST BE SHARED WITH ALL SERVICE PROVIDERS WHO INTEND TO SUSPEND SERVICES FROM THE TATE STRUT SYSTEM

Introduction

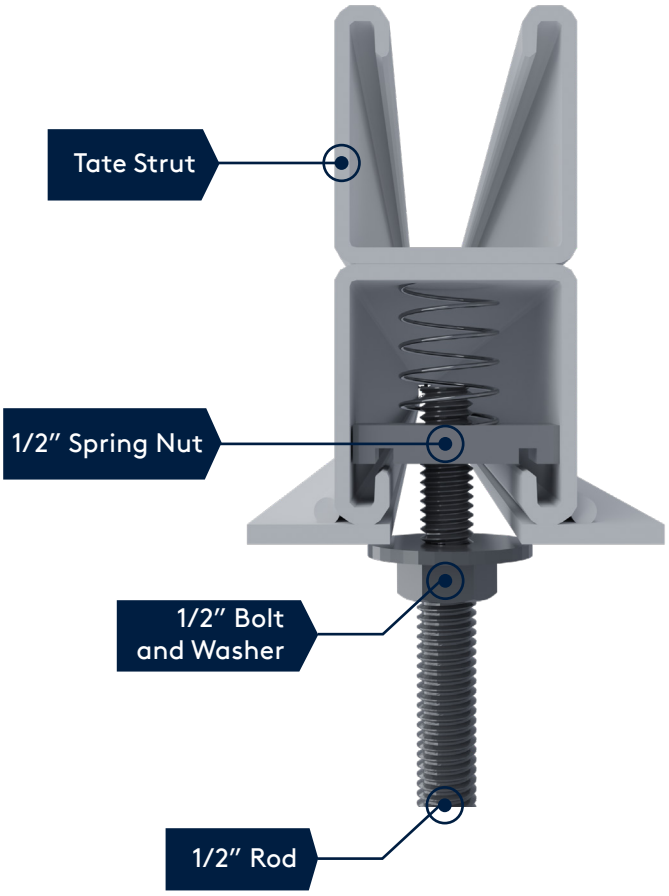
Thank you for choosing Tate Strut. The purpose of this guide is to provide you with a reference for typical installation situations. We would be interested in hearing any comments you have on this installation manual, product, or overall experience. Please call or email Technical Services: Phone: 410-799-4200, Email: TateInfo@tateinc.com

Safety

Tate Strut is a structural ceiling system designed to support static vertical loads. When installing services to Tate Strut, the following instructions must be adhered to:

1. Tate Strut is limited to a maximum point load of 1750 lbs or distributed load of 219 lb/ft2 when suspended on 4'x4' or 4'x5' hangers.
   a. Exceeding these values may cause a failure in the system.
2. Tate Strut is NOT a walk-on ceiling.
3. In certain conditions the loading capacity of the Tate Structural Ceiling System may be greater than the loading capacity of the building structure and/or means of attachment to the building structure. Consult with a licensed structural engineer to obtain site specific recommendations regarding the attachment of the Tate Structural Ceiling System and any associated loading to the building structure.
4. Structural ceiling systems as a whole shall be analyzed and designed to local codes by a qualified engineer.
5. Do not impose a dynamic load on the connection to Tate Strut. During installation of supported services, bracing is required to prevent dynamic load on the Tate Strut ceiling.
   a. Moment forces imposed on the Tate Strut system may cause failure of the connection between the services and the Tate Strut system.
6. All bottom attachments to continuous channel slot should be secured with suitable channel nuts. Be sure all bolts, nuts, and threaded rods are properly tightened down as described in this guide.
7. Do not put a load on the system until the installation is complete.
8. Wear personal protective equipment (PPE) when drilling, cutting, or installing. PPE includes gloves, safety eyeglasses, hard hats, etc.

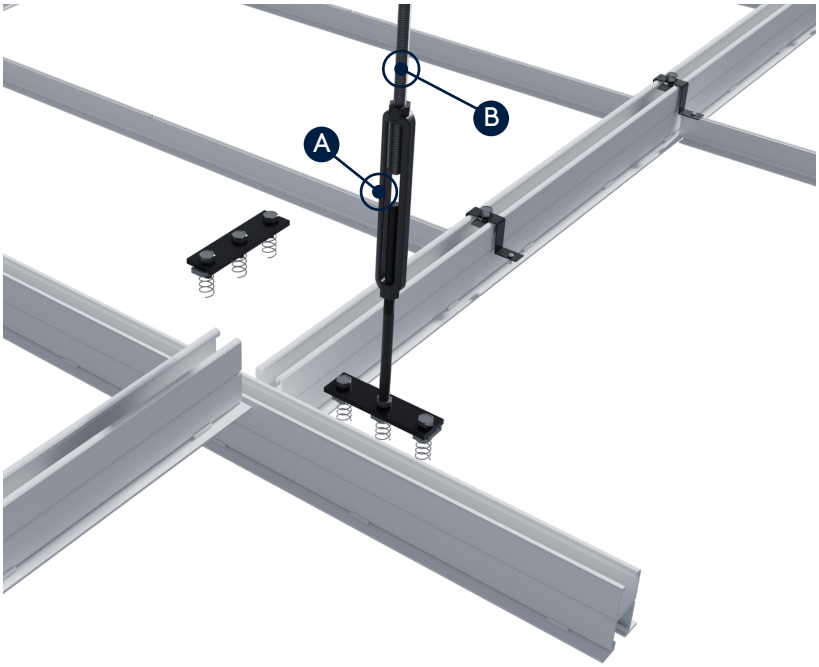
Suitable Connection Methodology



1. Building Connections

Tate Scope of Supply:

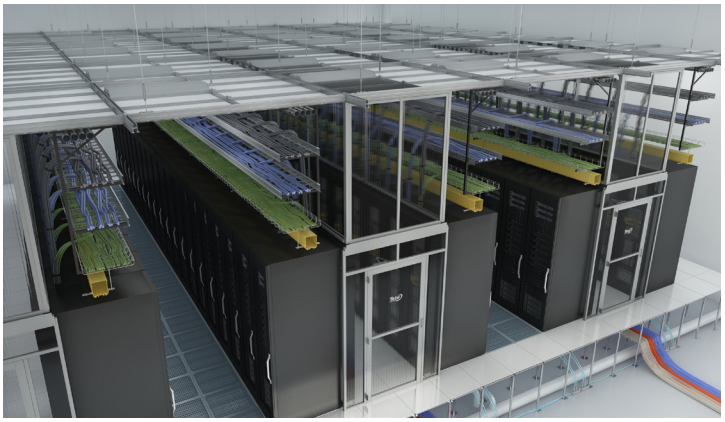
Tate supplies Strut components up to the turnbuckle (A), suitable drop rod and building connections (B) must be sourced by others.



Tate Strut hanging method from steel building

Tate Strut hanging method from concrete building

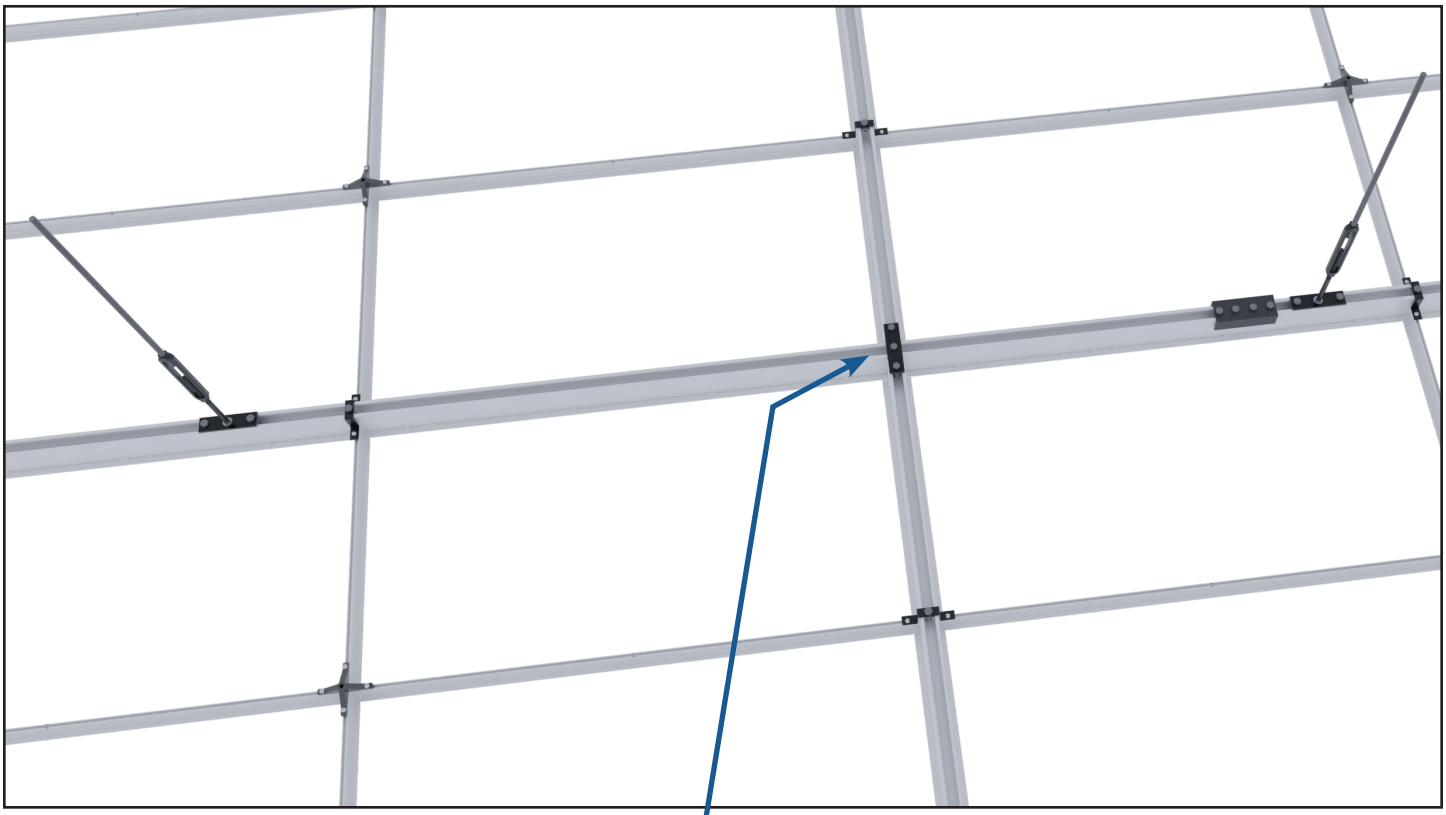
The Tate Strut system may be hung either directly from structural steel or the above concrete slab.

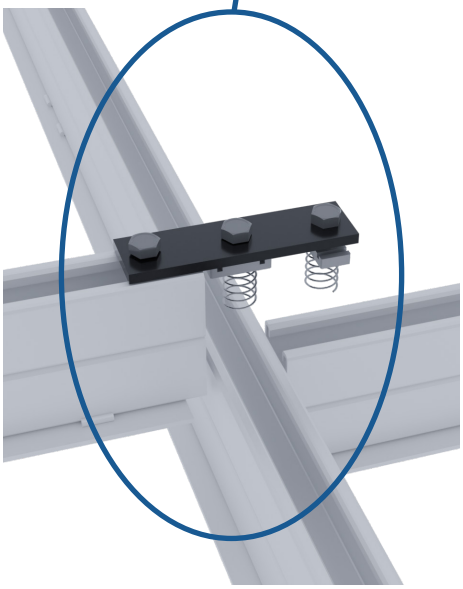


Drop Rod Frequency:

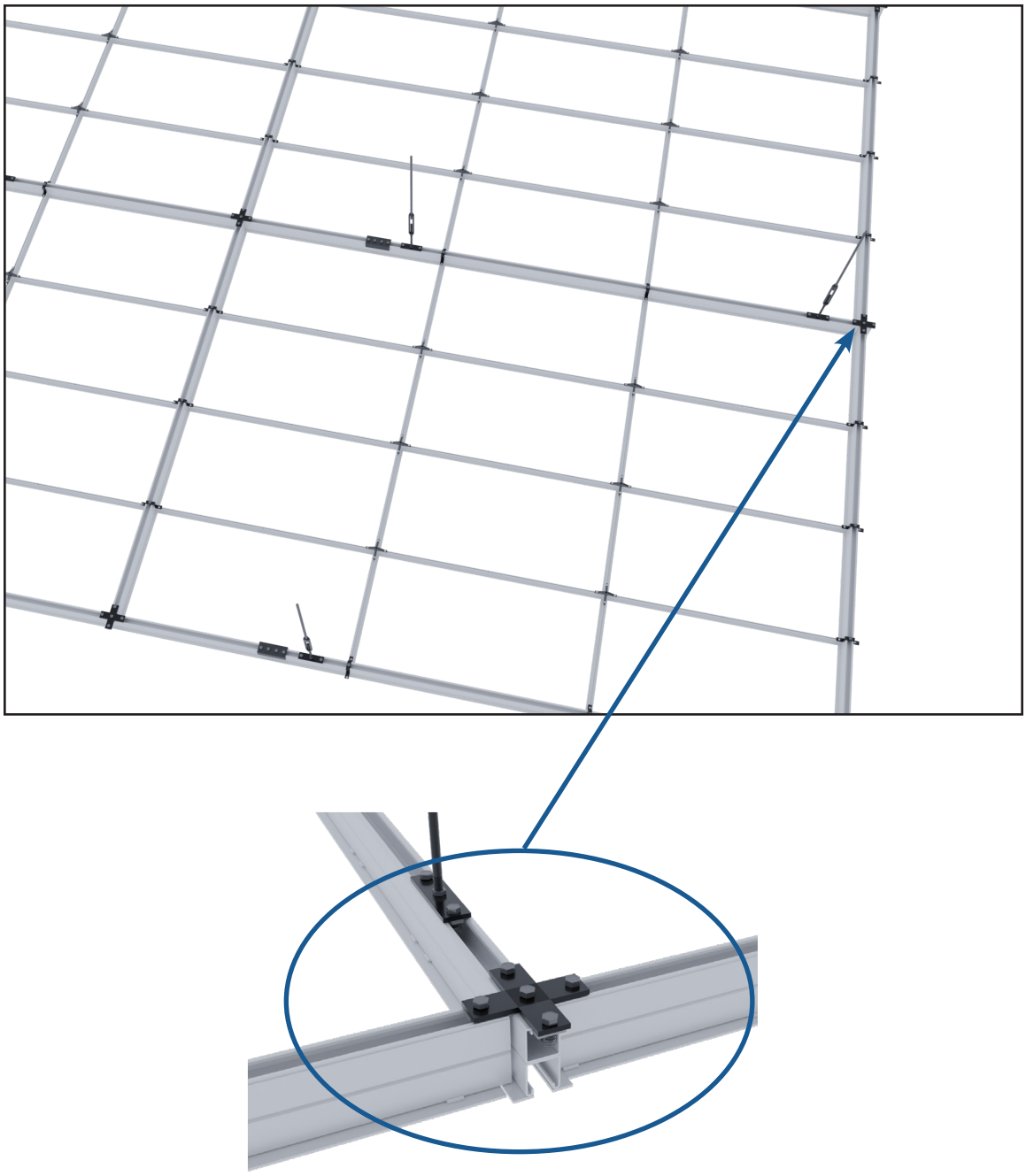
Tate Strut allows for variable connections configuration 4'x4', 6'x6', and 8'x8' nominal on center spacing and along the perimeter main beam.

2. General Layout & Part Numbers





Structural Tee Connections
3 Hole Connector (PN 24242)
1/2" Bolt (PN 41906)
1/2" Spring Nut (PN 24237)

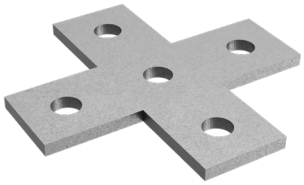


Cross Connector
Cross Connector (PN 24241)
1/2" Bolt (PN 41906)
1/2"Spring Nut (PN 24237)

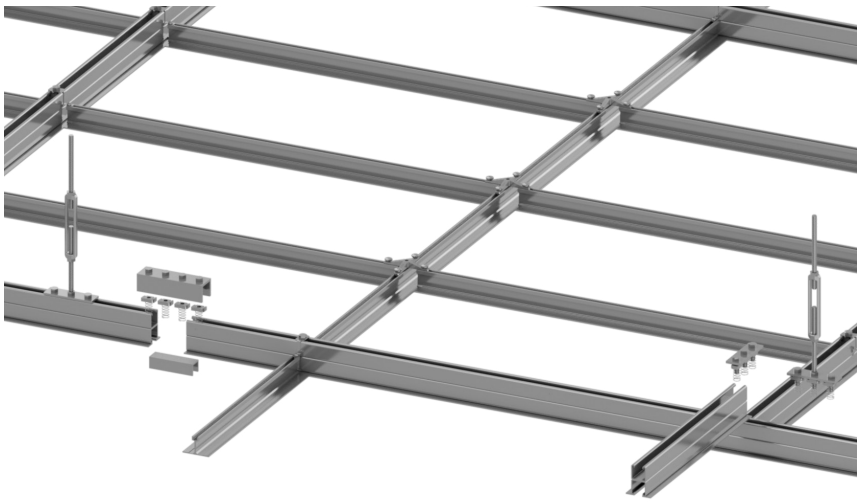
3. Connector Details

Tate Strut Connector Types

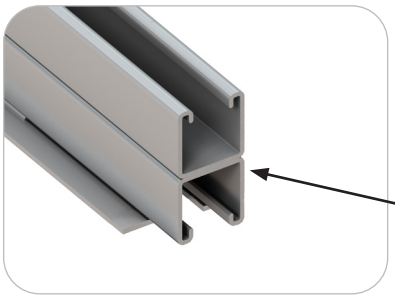
Straight Connector
Used at Main Runner and Cross Tee Intersections



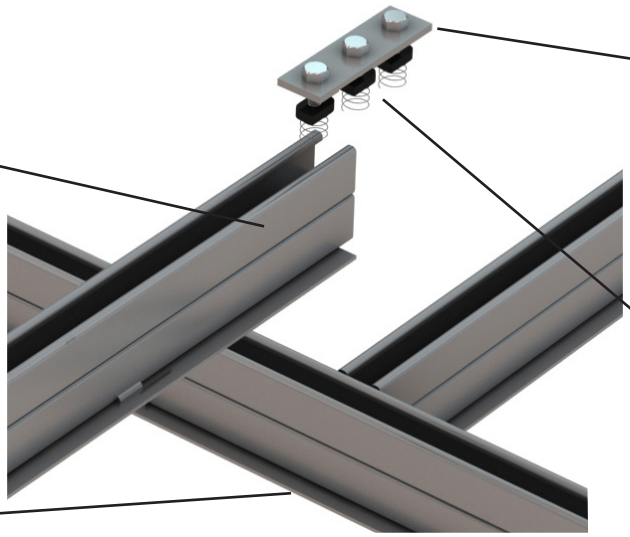
Cross Connector
Used at Main Runner and Cross Tee Intersection when a Rod Drop falls at the Intersection

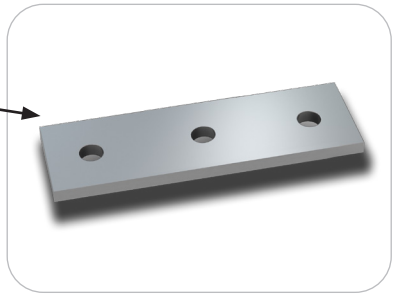


Straight Connector Detail

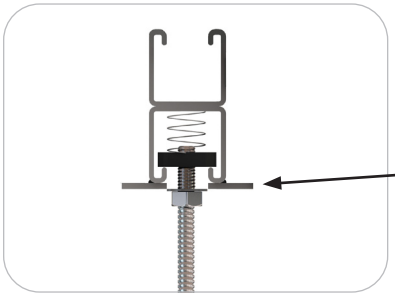


Structural Tee coped for simplified installation and stronger connections

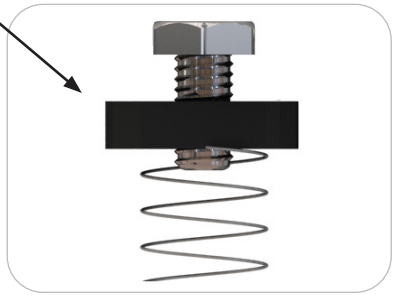




Straight Connector

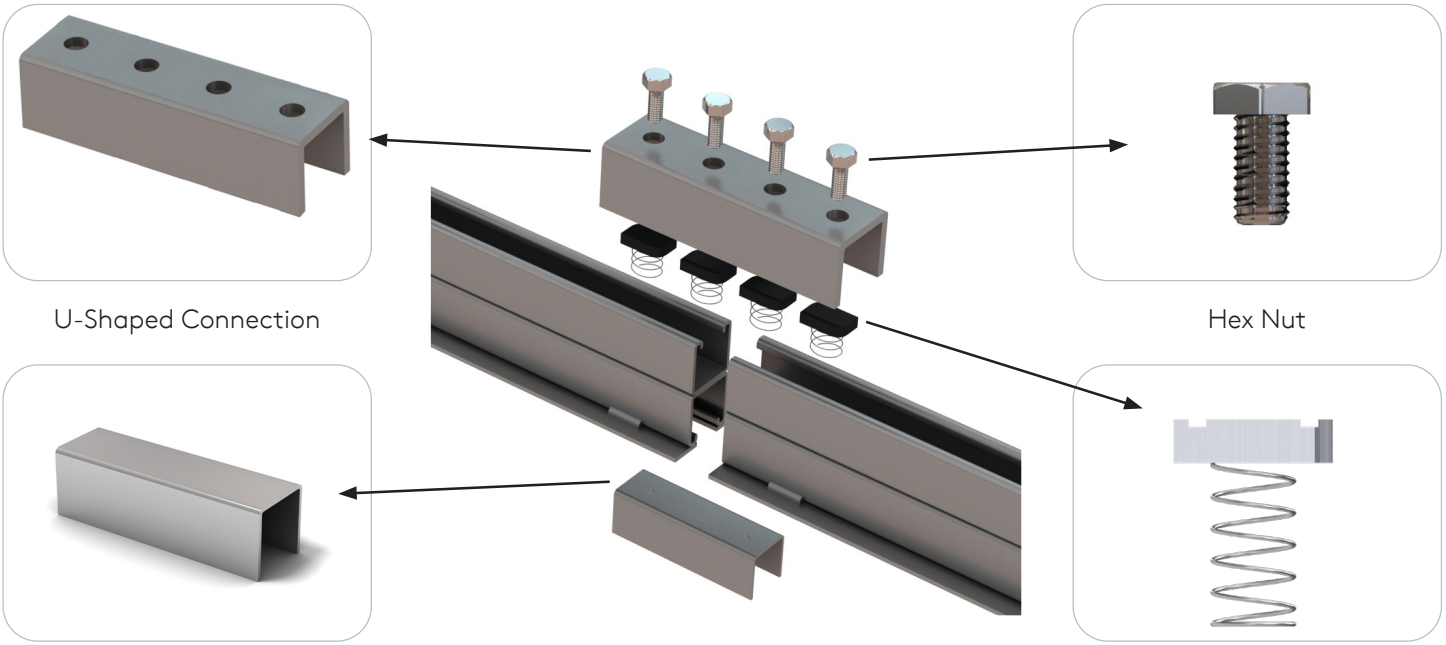


Spring Nuts are used to secure the load to the Strut System



Spring Nuts are used to secure connections to Main Runners and Structural Tees

Main Beam Splice



U-Shaped Connection

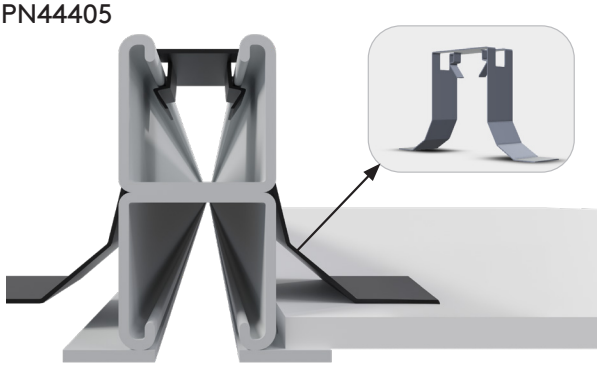
Hex Nut

Internal Splice Support Connector

Spring Nut

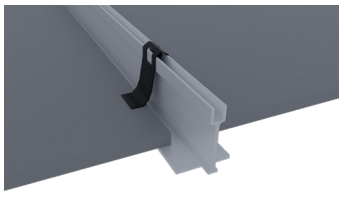
Hold Down Clips

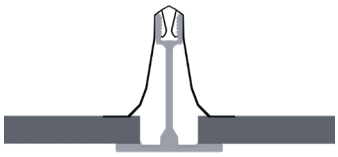
- Hold down clips can be provided with the Tate Strut system as an option.
- Two hold down clips are recommended per tile.
- Hold down clips are installed by pressing them into the top thread by hand or lightly tapping them with a mallet.
- Hold down clips are designed for use with 1/2" - 1" thick ceiling tiles
- PN44405



Light Structural Hold Down Clips

- Hold down clips can be provided with the Tate Strut system as an option.
- Two hold down clips are recommended per tile.
- Hold down clips are installed by pressing them into the top thread by hand or lightly tapping them with a mallet.
- Hold down clips are designed for use with 1/2" - 1" thick ceiling tiles
- PN44403





4. Perimeter Details

Perimeter Options:

The Tate Strut profile should run along all perimeters and should be supported at the same spacing of the on-center hanger spacing. This serves multiple purposes:

- An engineering purpose as it ensures no part of the system is cantilevered.
- It also has aesthetic and air sealing benefits as the tiles sit better in this design.

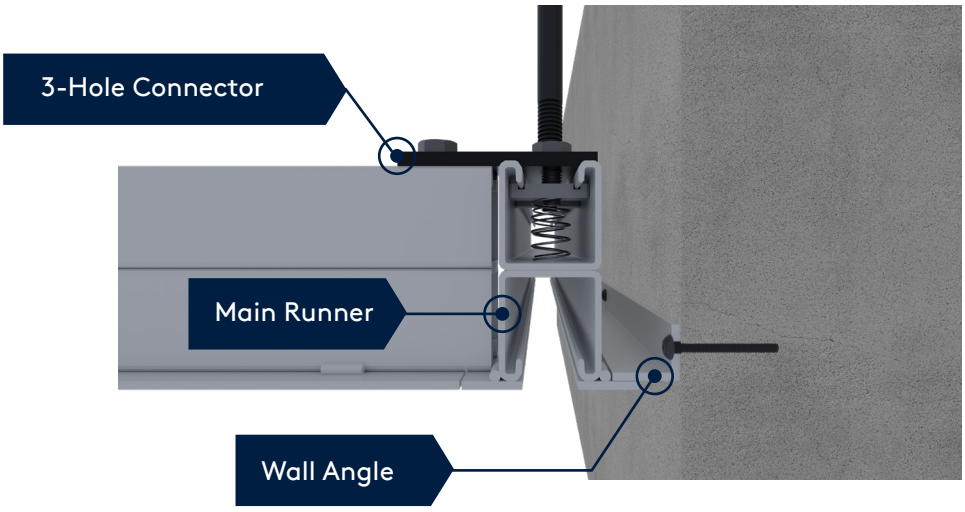
If this design is not followed, the members of Tate Strut terminating at the wall may not be structurally sound and may deflect and fail under load.

Floating perimeters utilize standard Main Runner components which can also be used in other areas of the data hall.

Perimeter Floating Installation

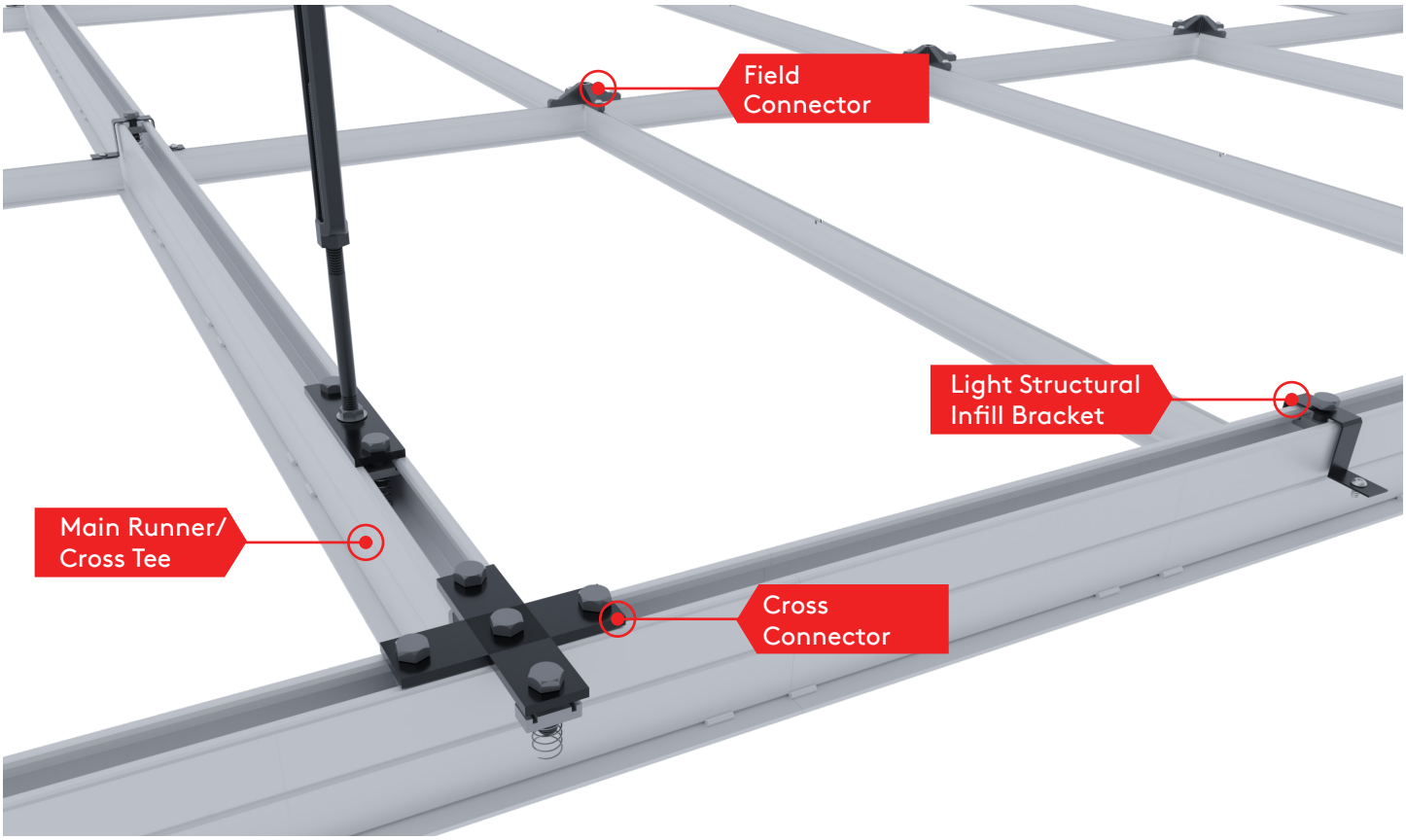
Main Runners are utilized when installing with a floating detail.

Additionally it is recommended to utilize a Wall Angle attached to the perimeter.



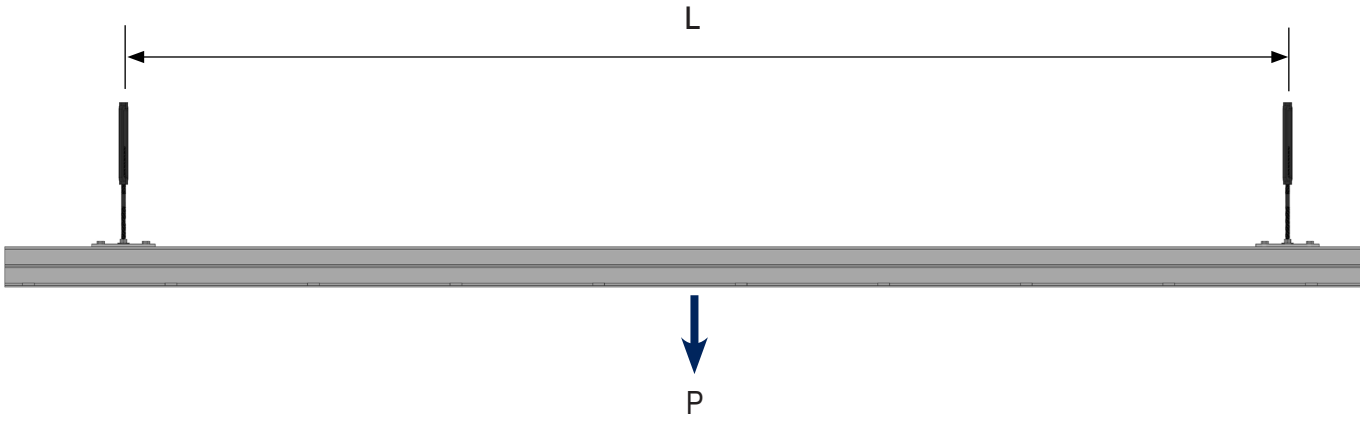
5. Perimeter Details

Standard Floating Perimeter Detail



6. Performance Criteria

To determine load capacities and corresponding deflections based on span lengths, use this chart



On Center Hanger Spacing	Max. Uniform Load (lbs/SF)	Max. Safe Working Load[1] (Point Load) (lbs)	Mid Span Deflection @ Max. Safe Working Load (in)	Safety Factor
4' x 4'	219	1750[2]	0.17	2x
5' x 4'	175	1750[2]	0.33	2x
6' x 4'	145	1667	0.55	2x
7' x 4'	125	1429	0.75	2x
8' x 4'	109	1250	0.97	2x
6' x 6'	97	1667	0.55	2x
8' x 6'	72	1250	0.97	2x
8' x 8'	54	1250	0.97	2x

1. Hanging locations are to be no less than the length of the strut span in any given direction
2. Maximum point loads are limited by the turnbuckle connections to strut. Turnbuckles are required to be within 12" of a Main Runner Splice
3. All loads provide for a minimum safety factor of 2.

L (Span between Supports) = in

E (Modulus of Elasticity) = $30x10^6$ lbs/in^2

I (Moment of Inertia) = 0.789 in^4

D (Deflection) = $PL^3/48EI$

USF (Uniform Load/SF) = $P/(L/12)^2$

7. Maintenance

Cleaning:

To clean Tate Strut components please use a common non-abrasive mild detergent containing less than 0.5% phosphate and water, applied using a sponge. The components should be dried using a soft towel. If solvents are required to remove materials not soluble in water such as petroleum products, the following solvents can be used: Isotropy alcohol, denatured alcohol, mineral spirits or methanol. Paint scratches can be touched up. Contact the factory for matching paint.

Maintenance of above ceiling services:

The Tate Strut system should not be walked on under any circumstances. This may expose the system to excess dynamic loads and cause a failure.

Tate®

Corporate Headquarters:

7510 Montevideo Road,
Jessup, MD 20794
Tate Hotline: 1-800-231-7788
Tel: +1 410 799 4200
Fax: +1 410 799 4207

Production Facilities:

7510 Montevideo Road,
Jessup, MD 20794

52 Springvale Road,
Red Lion, PA 17356
Tel: +1 717 244 4071
Fax: +1 717 246 3437

Canadian Sales & Support Office:

5050 South Service Road Unit 201,
Burlington, ON L7L 5L4 Canada
Tate Hotline: 1-800-231-7788
Tel: +1 905 847 0138
Fax: +1 905 847 0141

Central and South American Sales & Support:

Tel: +1 954 412 2334

Asia Sales & Support Office:

1 Commonwealth
#07-26 One Commonwealth,
Singapore 149544
Tel: +65 6264 5942

Australian Sales & Support Office:

3 Herbert Place, Smithfield NSW 2164,
Sydney, Australia
Tel: +61 2 9612 2300
Fax: +61 2 9612 2301

European Sales & Support:

EDI House, Kylemore Park West,
Ballyfermot,
Dublin 10, D10 KH30 Ireland
Tel: +353 (1) 685 6518

Middle East Sales & Support:

Jebel Ali-Lahbab Road (E 77 Road),
Dubai Investment Park,
United Arab Emirates
Tel: +971 56 199 8368

Kingspan
A Kingspan Group Company

LRQA CERTIFIED ISO 9001

LRQA CERTIFIED

ZERO WASTE TO LANDFILL

CAGBC

USGBC MEMBER

EPA GREEN POWER PARTNER

Tate components are proudly made in the U.S.A.

Tate reserves the right to amend product information without prior notice. Care has been taken to ensure that the contents of this publication are accurate, but Tate, its parent company and its subsidiary companies do not accept responsibility for errors or for information that is found to be misleading or outdated. Suggestions for, or description of, technical specifications and the end use or application of products are provided in good faith and should be verified prior to use. To ensure you are viewing the most recent and accurate product information, please scan the QR code.

T:410-799-4200 • E: info@tateinc.com • W: tateinc.com