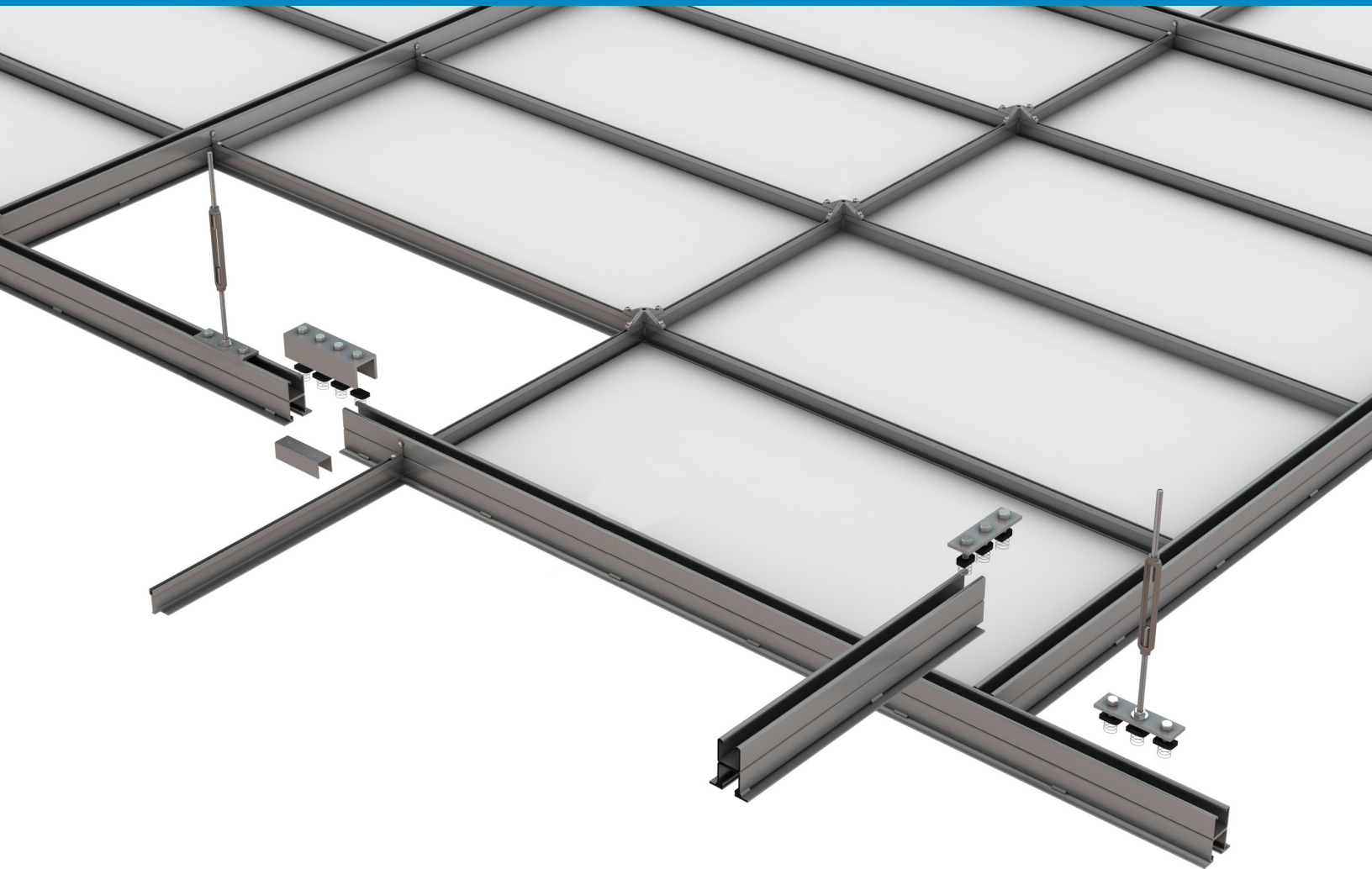
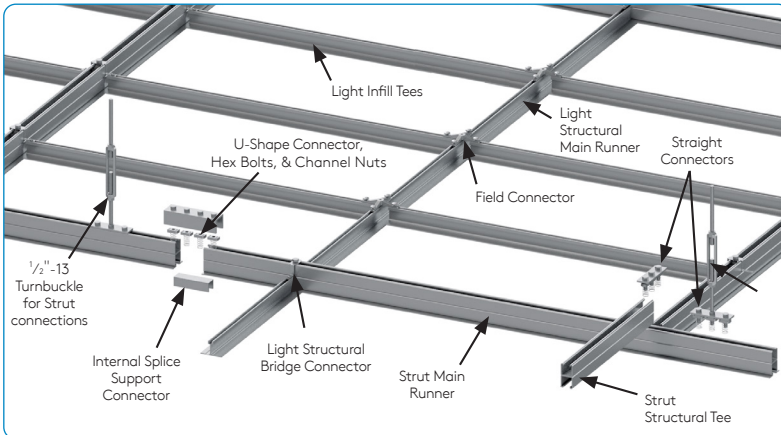


Tate Strut

Steel Structural Ceiling Grid System for Data Centers





Structural Grid Specifications

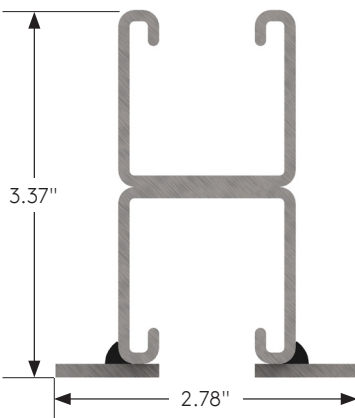
- Structural suspended ceiling grid system consists of steel strut with Light Structural Infill
- White, Black or Custom powder coat finish
- Steel Strut profile
 - Center-on-Center Grid Spacing can be selected to accommodate project specific specs (See page 5)
 - Max static/uniform load based on span (table 1)
 - Continuous slot on top and bottom of Steel Strut
 - Capable of supporting cable trays, caging, and other heavy duty accessories
- Light Infill
 - Center-on-Center Grid Spacing can be selected to accommodate project specific specs (See page 5)
 - Light Structural aluminum extrusion
 - Capable of supporting ceiling tiles, light fixtures, and other lightweight flange supported accessories

Components

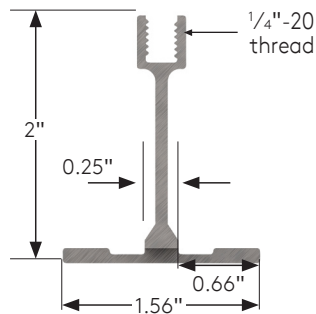
- Steel Strut Grid
 - Steel Strut Main Runner
 - Steel Strut Structural Tees
 - Straight Connectors
 - U-Shaped Connector
 - Internal Splice Support Connector
 - 1/2"-13 Channel Nut with Spring
 - 1/2"-13 x 1.5" Hex Head Bolt
 - 1/2"-13 x 7.85" Ig Turnbuckle w/ Starter Rod
- Light Structural Infill
 - Light Structural Main Runner
 - Light Structural Infill Tees
 - Light Structural Bridge Connector
 - Field Connector
- Factory Applied Gasket available upon request
- Hold Down Clips available upon request

Components by Others

- Ceiling tiles, light fixtures, or other accessories
- All-thread and attachment to building structure
- Channel Nuts and all-thread to attach equipment below steel strut
- Aluminum Perimeter Angle



Strut Profile



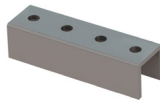
Light Infill



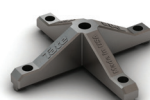
Straight Connector



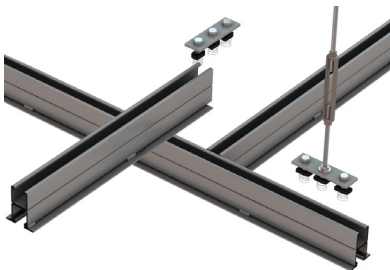
Internal Splice Support Connector



U-Shaped Connector



Field Connector



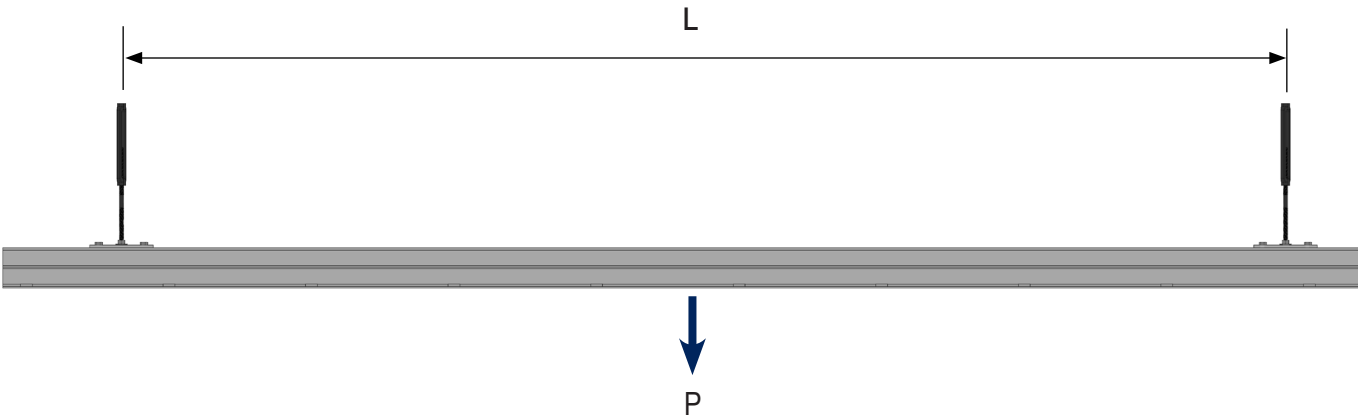
Simple Channel Nut Assemblies are used for Strut connections



Open slots for connecting cable trays, utilities and other accessories via Channel Nuts

Table 1: Performance Criteria based on Span Length

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) = 30x10⁶ lbs/in²

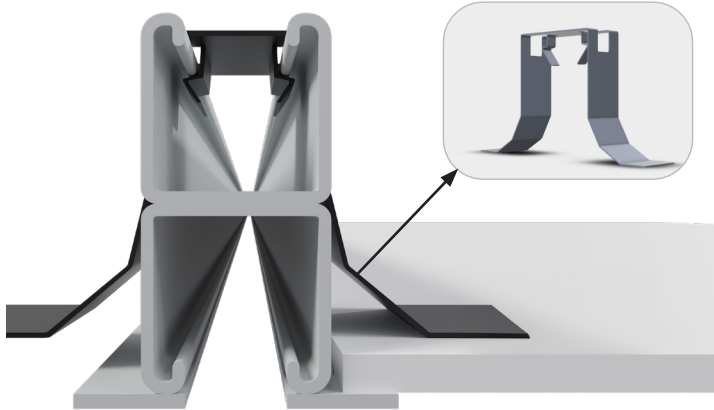
I (Moment of Inertia) = 0.789 in⁴
D (Deflection) = PL³/48EI

USF (Uniform Load/SF) = P/(L/12)²

Hold Down Clips

PN44405

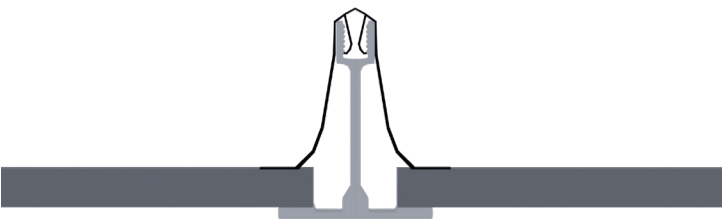
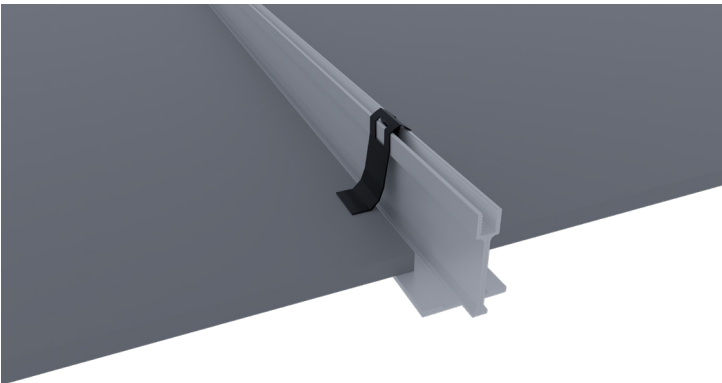
- Hold down clips can be provided with the Tate Strut system as an option.
- Two hold down clips are recommended per tile.
- Hold down clips are installed by pressing them into the top thread by hand or lightly tapping them with a mallet.
- Hold down clips are designed for use with 1/2" - 1" thick ceiling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



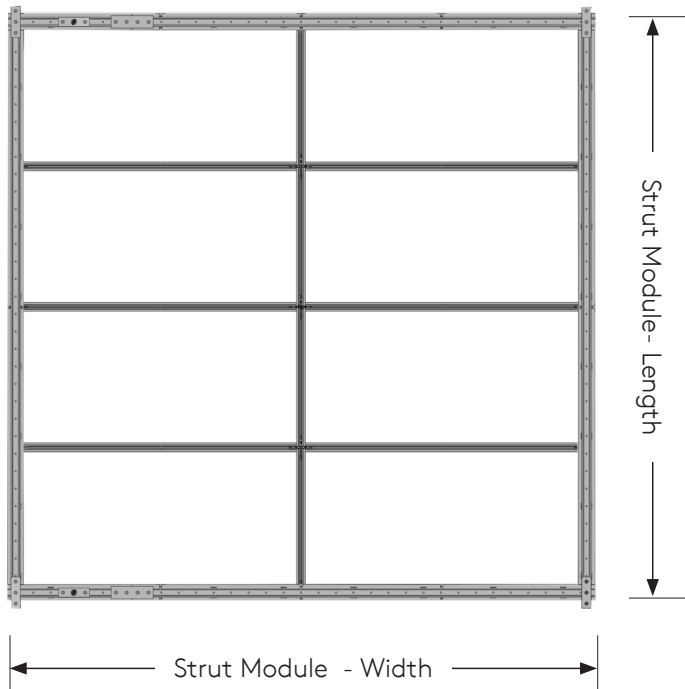
Light Structural Infill Hold Down Clips

PN44403

- 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



Determining Grid Spacing and Tile Sizing: Example



If your requirement is to have the structural grid spacing on hard 24"/48" dimensions, you will need special sized ceiling tiles as follows:

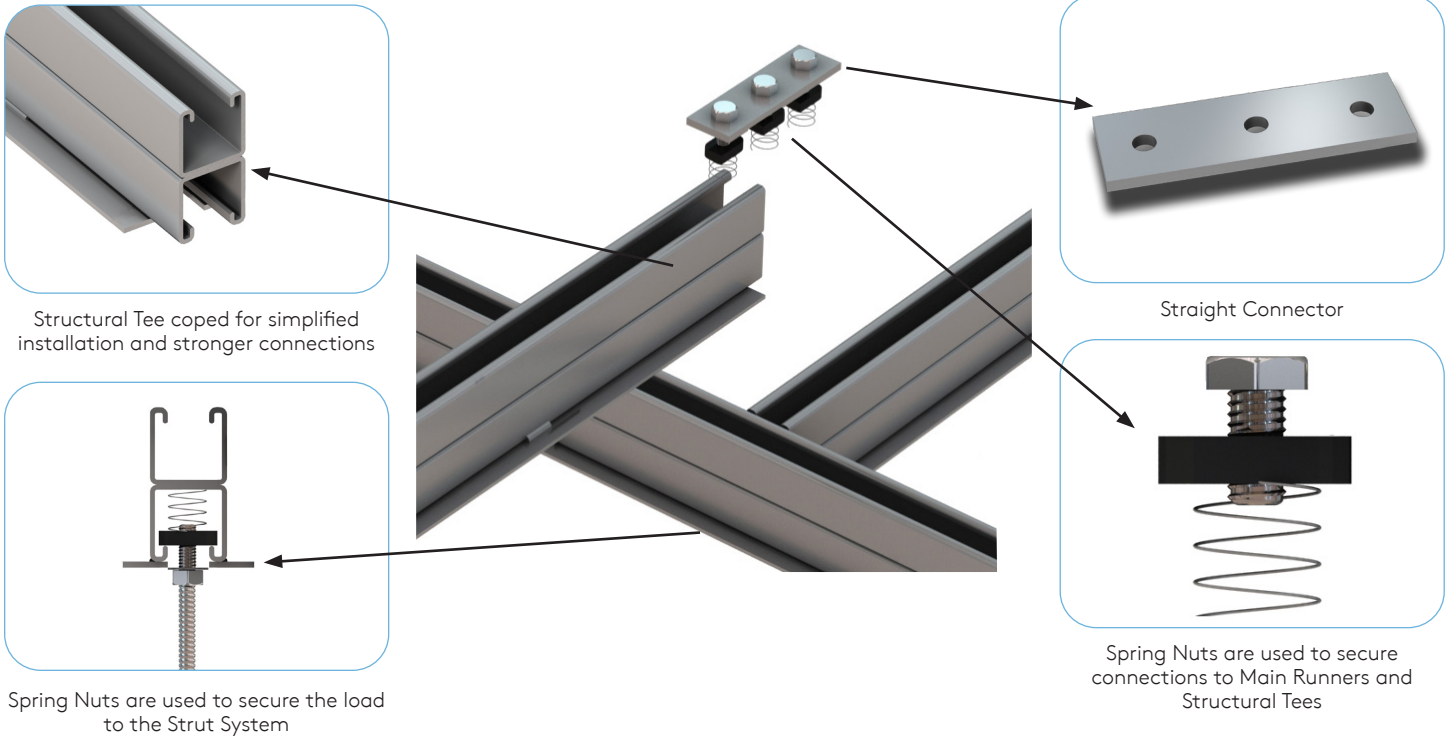
Strut Module Size	Grid Spacing (W x L)	2' x 2' Tile Size (W x L)	2' x 4' Tile Size (W x L)
4' x 4'	48" x 48"	22 - 3/4" x 22 - 3/4" +/-1/8"	22 - 3/4" x 46 - 1/8" +/-1/8"
4' x 6'	48" x 48"		
4' x 8'	48" x 96"		
6' x 6'	72" x 72"		
6' x 8'	72" x 96"		
8' x 8'	96" x 96"		

If your requirement is to have the structural grid spacing to accept standard sized ceiling tiles, your grid spacing would be:

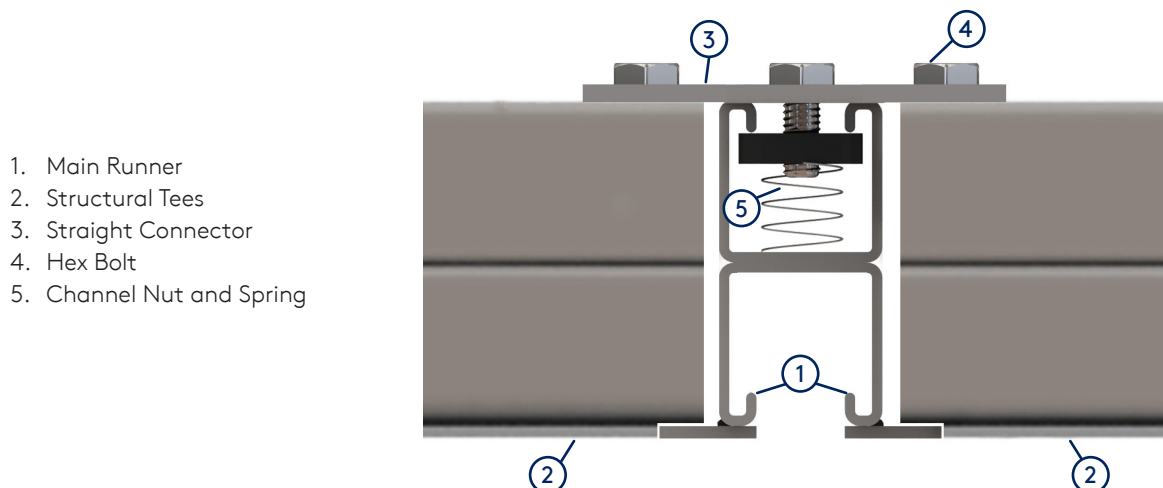
Strut Module Size	Grid Spacing (W x L)	2' x 2' Tile Size (W x L)	2' x 4' Tile Size (W x L)
4' x 4'	50 1/8" x 50 1/4"	23 - 7/8" x 23 - 7/8" +/-1/8"	23 - 7/8" x 47 - 7/8" +/-1/8"
4' x 6'	50 1/8" x 74 3/4"		
4' x 8'	50 1/8" x 99 1/4"		
6' x 6'	74 3/4" x 74 3/4"		
6' x 8'	74 3/4" x 98 3/4"		
8' x 8'	99 1/4" x 98 3/4"		

Note: Other spacing options are available.

Straight Connector Assembly

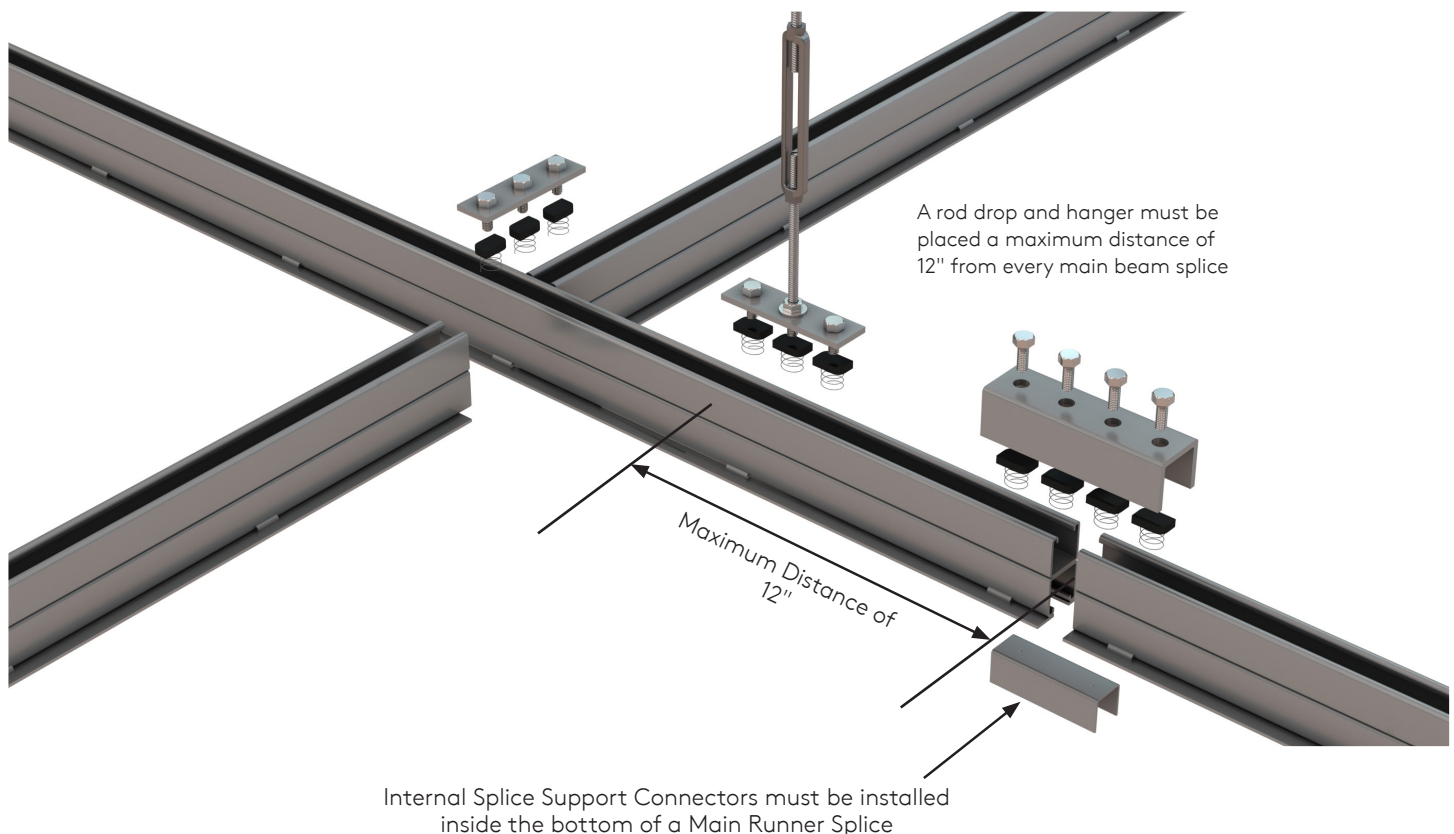
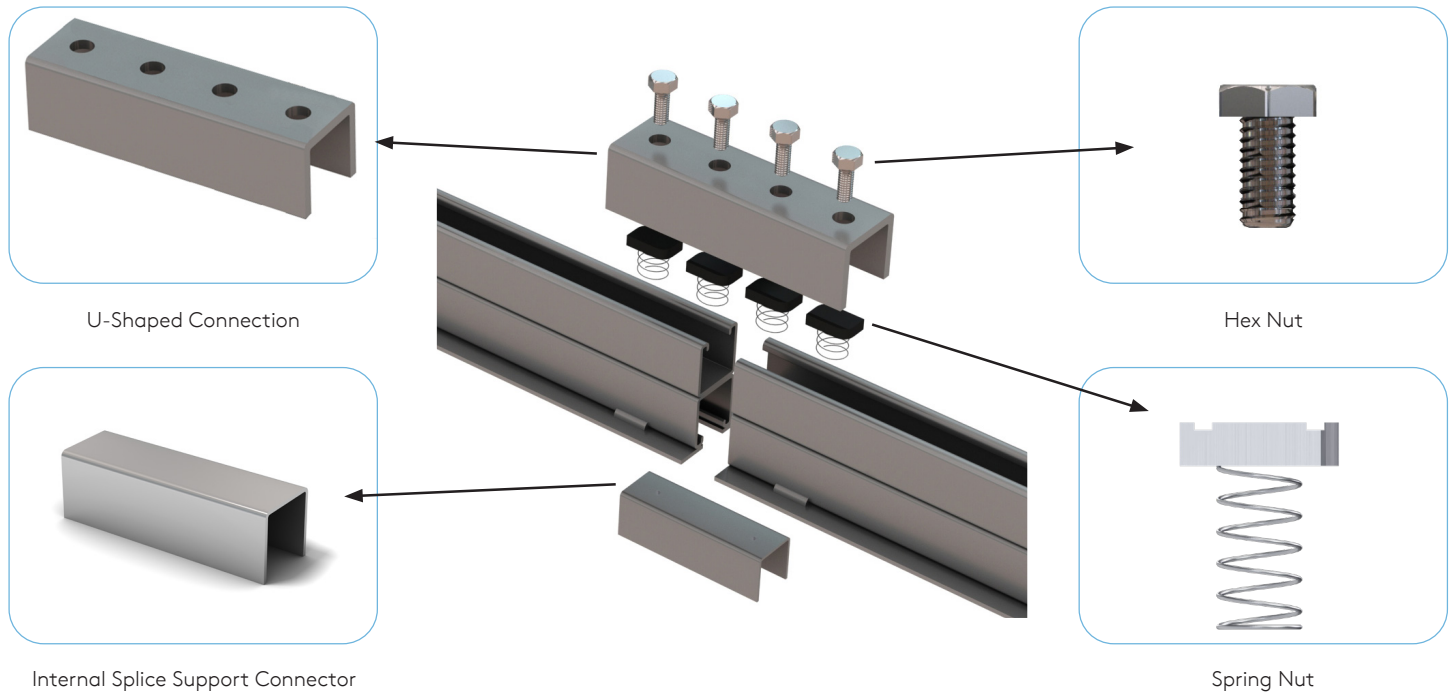


Straight Connector Assembly

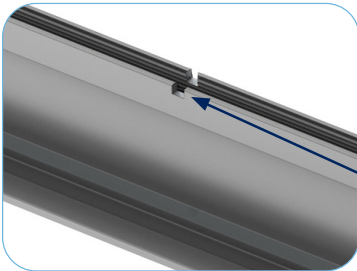


Straight Connector joining two Structural Tees on either side of a Main Runner.
Note all Structural Tees have factory coped ends

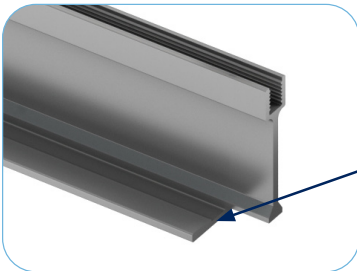
U-Shaped and Internal Splice Support Connector Assembly



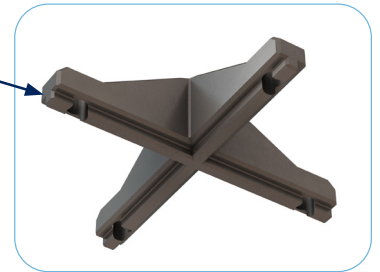
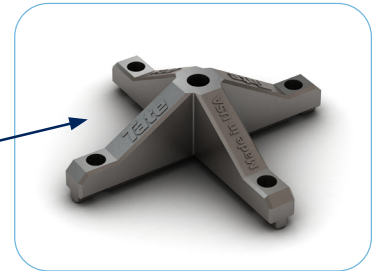
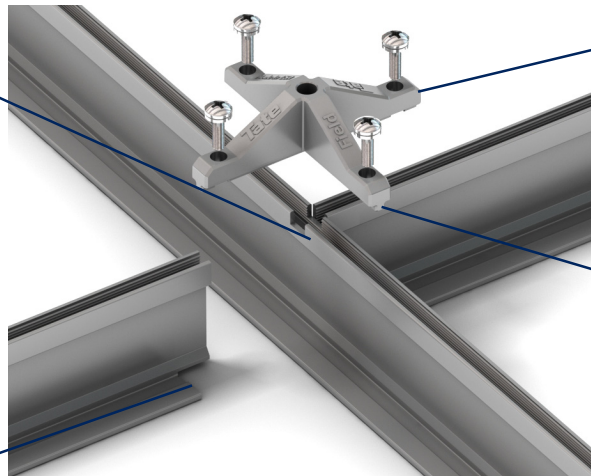
Field Connector Assembly at Light Infill Intersection



Light Structural Main Runners notched to positively position connectors on center every time



Light Infill coped for simplified installation and stronger connections



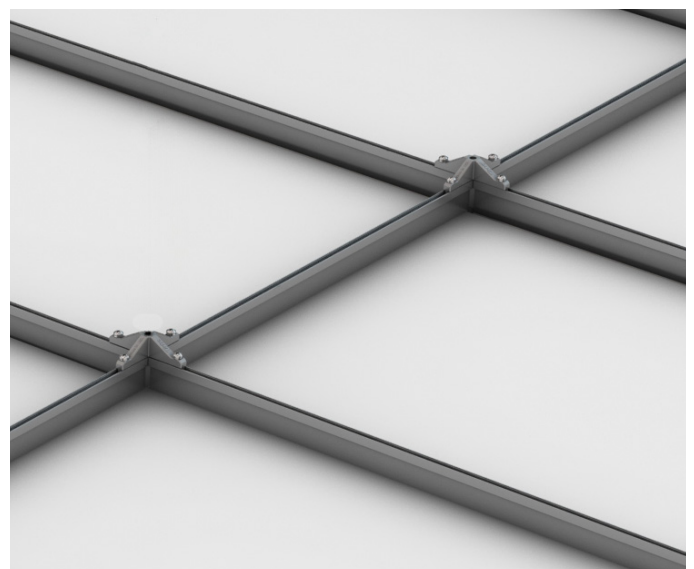
Ribs on connector to align with grid and prevent racking

Light Structural Infill

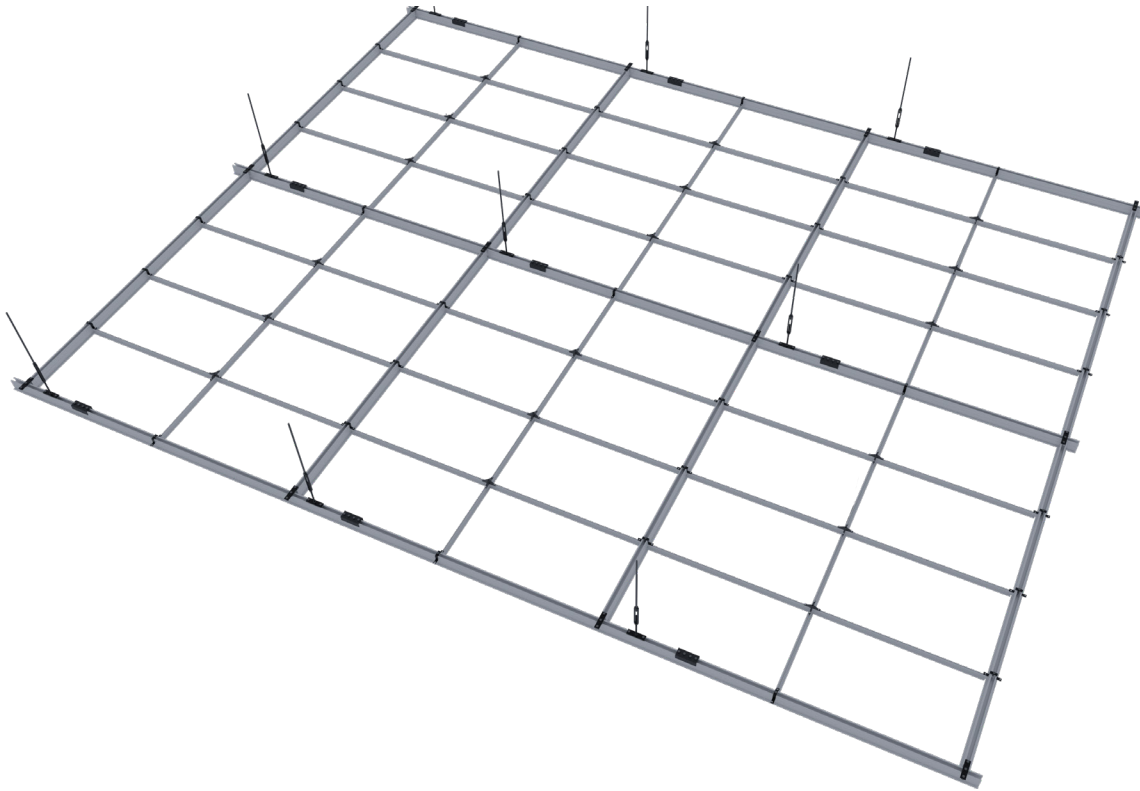
Light Structural Infill Tee with connection to Tate Strut Structural Main Beam via the light structural bridge connector.



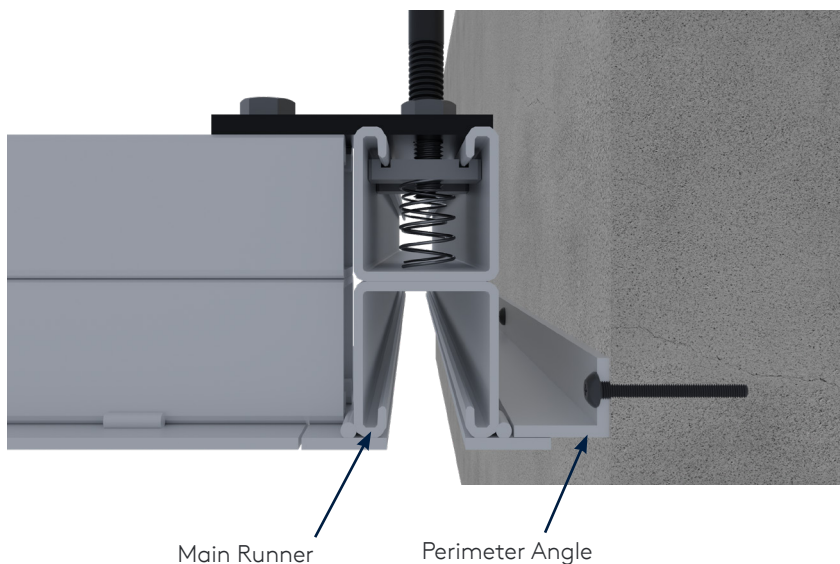
Light Structural Infill mains and tees with Field Connectors.



Repeating infill pattern between struts as per project specification.

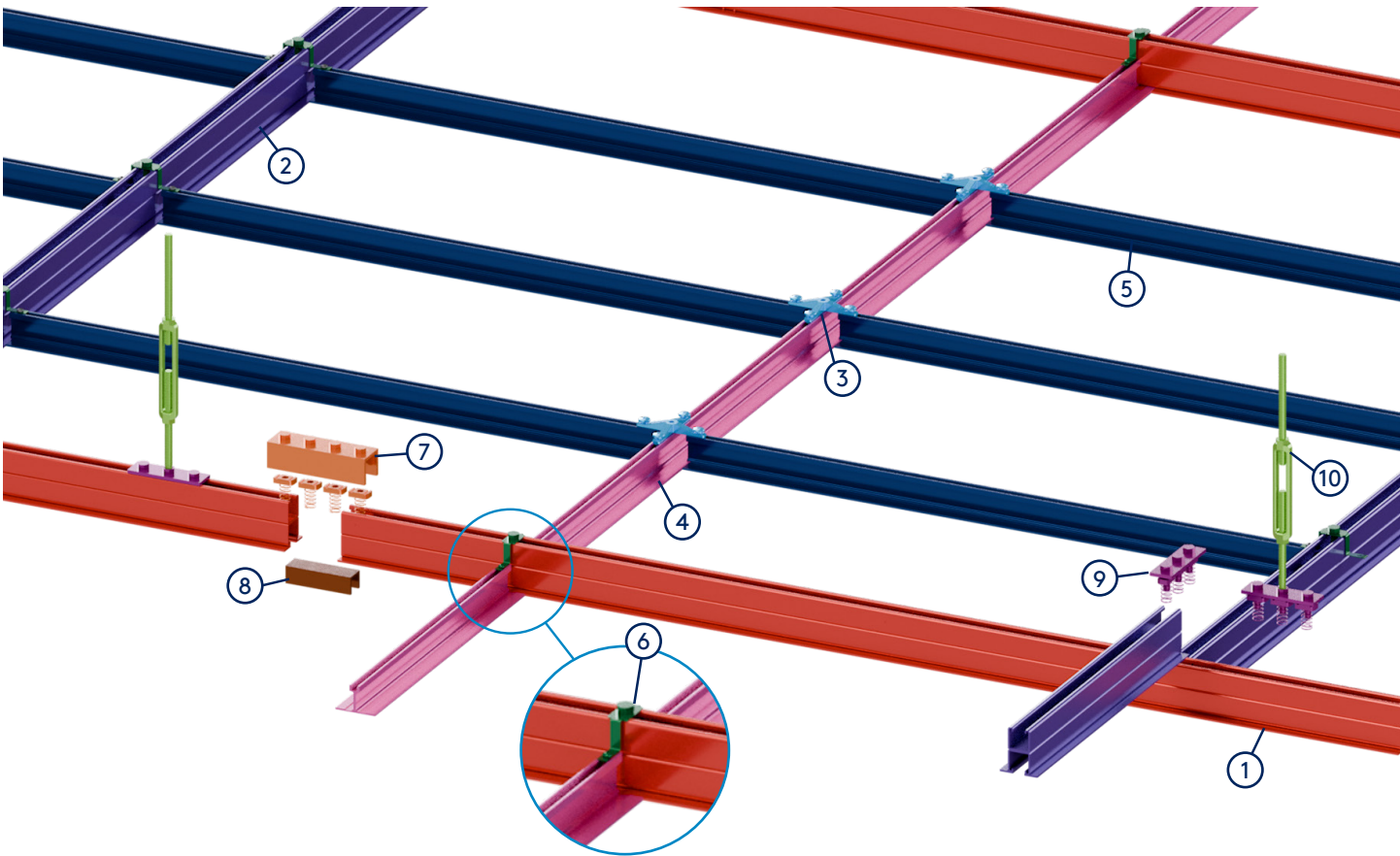


Perimeter Angle



Main Runners and Structural Tees are utilized when installing with a floating detail in conjunction with Perimeter Angles. Perimeter Angles can be cut on site to desired length when assembled along the column. Perimeter Angles are bolted directly to the wall with appropriate fasteners for wall type.

2' x 4' Ceiling Grid with 8' x 8' Tate Strut Layout. Hanging Configuration on 6' Spacing (example)



1. Strut Main Runner



2. Strut Structural Tee



3. Field Connectors



4. Light Infill Main Runner



5. Light Infill Tees



6. Light Structural Bridge Connector



7. U-Shaped Connector



8. Internal Splice Support

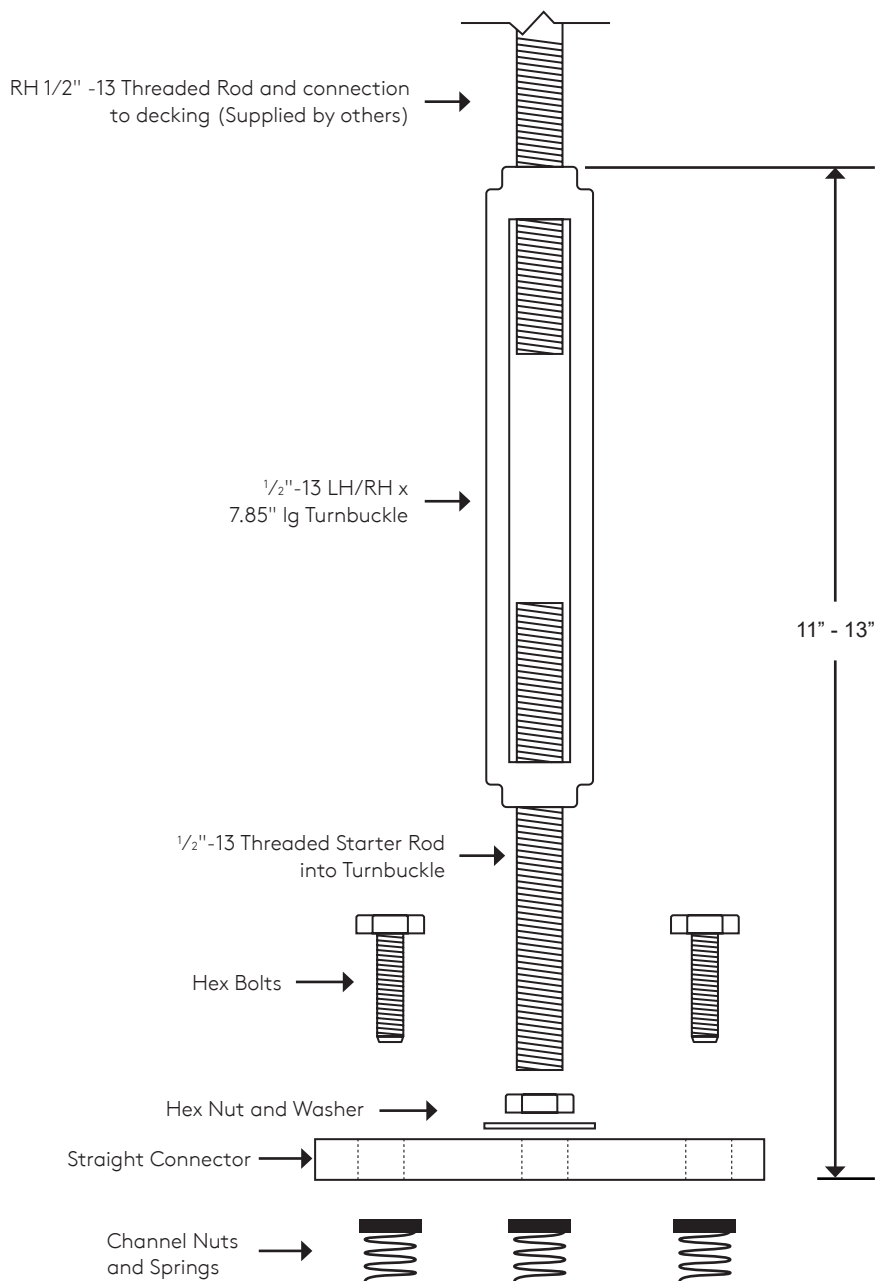


9. Straight Connector



10. 1/2"-13 x 7.85" LG Turnbuckle

Straight Connector Turnbuckle Assembly



Safety Guidelines

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

Tate Strut is a structural ceiling system designed to support static vertical loads. When installing services to the Tate Strut System, 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.
7. Do not put a load on the system until the installation is complete.

