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REGION



Tate.[®]

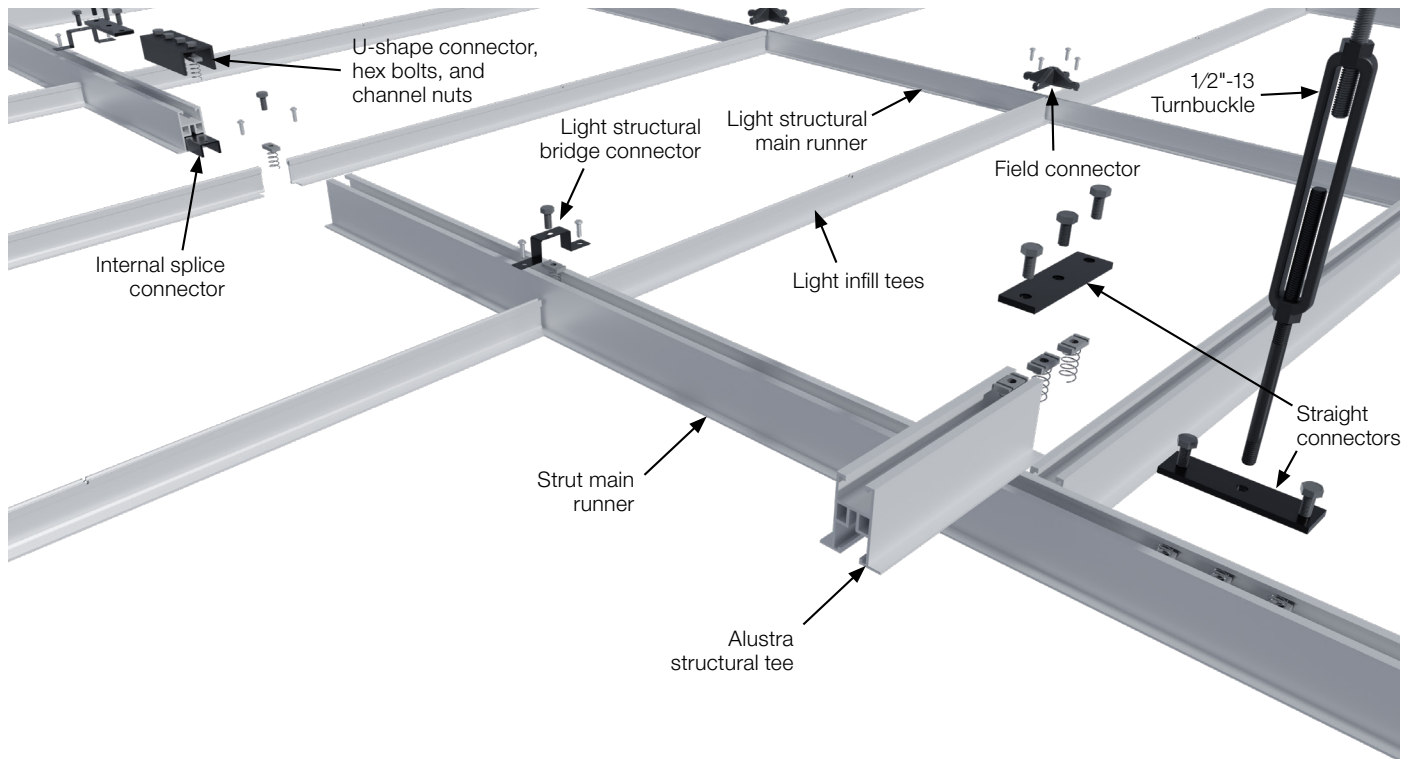
IMPERIAL DATA SHEET INFORMATION

Tate Alustra

Aluminum Structural Ceiling
Grid System for Data Centers

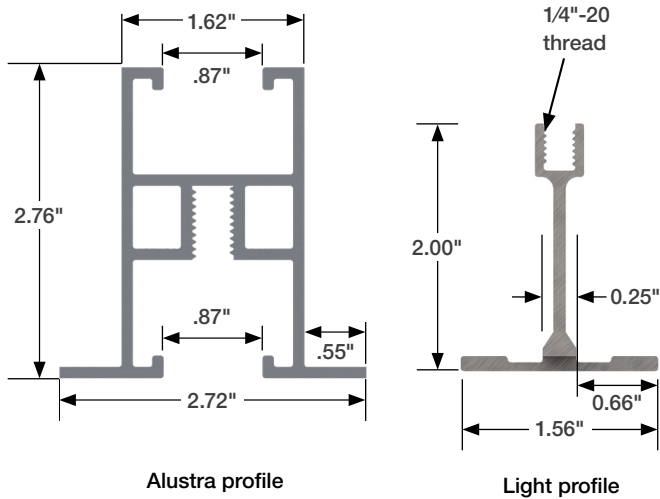
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**BUILDING A
SMARTER WORLD
TOGETHER.**



Grid Specifications

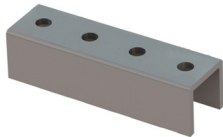
- Structural suspended ceiling grid system consists of structural aluminum extrusion with light infill
- White or black powder coat finish
- Extruded aluminum profile
 - Center-on-center grid spacing can be selected to accommodate project specific specs (See page 4)
 - Max static/uniform load based on span (table 1)
 - Continuous slot on top and bottom of the aluminum profile
 - 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 4)
 - Light structural aluminum extrusion
 - Capable of supporting ceiling tiles, light fixtures, and other lightweight flange supported accessories



Straight connector



Internal splice connector



U-shaped upper splice connector



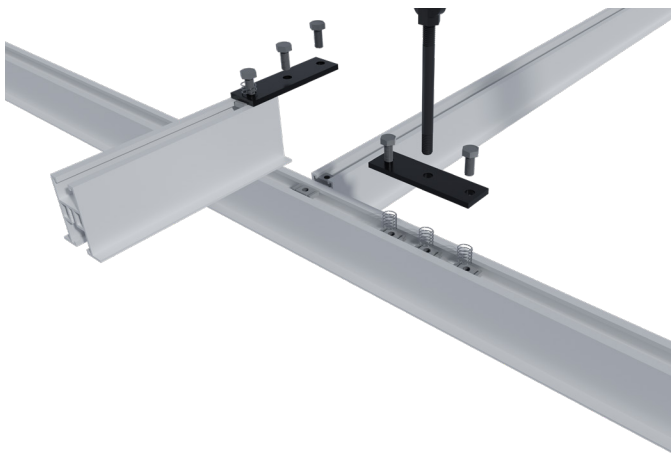
Field connector

Components

- Extruded aluminum grid profile
 - 20' extruded aluminum main runner
 - Extruded aluminum structural tees
 - Alustra straight connectors
 - U-shaped upper splice connector
 - Internal splice connector
 - 1/2"-13 channel nut with spring
 - 1/2"-13 x 1.5" hex head bolt
 - 1/2"-13 x 7.85" lg turnbuckle w/ starter rod
- Light Infill
 - Light structural main runner
 - Light infill tees
 - Light structural bridge connector
 - Field connector
- Factory applied gasket available upon request
- Optional hold down clips
- Aluminum perimeter angle

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 aluminum grid



Simple channel nut assemblies are used for Alustra connections

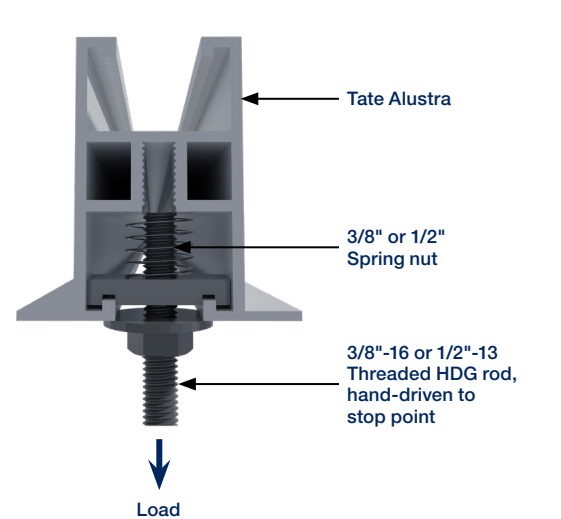


Open slots for connecting cable trays, utilities and other accessories via channel nuts

Table 1: Performance Criteria based on Span Length

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

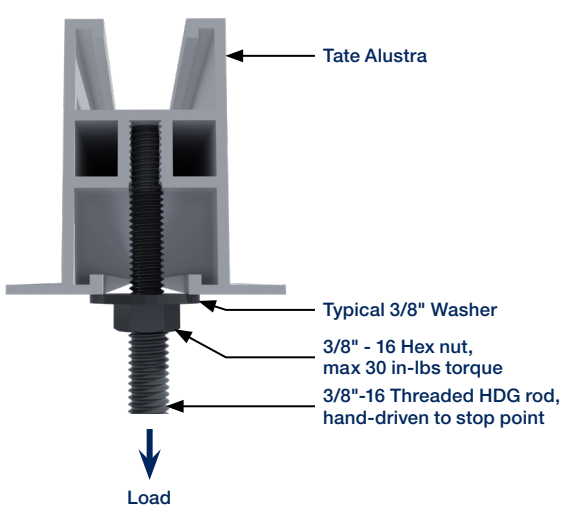
I. UTILIZING CHANNEL NUT IN SLOT SUSPENSION



Bottom Channel Spring Nut Connection Performance Criteria				
On-Center Hanger Spacing	Max Uniform Load (lbs/SF)	Max Safe Working Load (Point Load) (lbs)	Mid Span Deflection at Max Safe Working Load (in)	Safety Factor
4x4	156	1000	0.515"	2x
5x4	125	800	0.760"	2x
6x4	104	700	0.867"	2x
7x4	89	500	0.857"	2x
8x4	78	300	0.90"	2x
6x6	69	700	0.867"	2x
8x6	52	300	0.90"	2x
8x8	39	300	0.90"	2x

1. The combined loading of the center channel and bottom channel cannot exceed the loading in the chart above.
2. Hanging locations are to be no less than the length of the Alustra span in any given direction.
3. Maximum point loads are limited by the turnbuckle connections to Alustra. Turnbuckles are required to be within 12" of a main runner splice.
4. All loads provide for a minimum safety factor of 2.

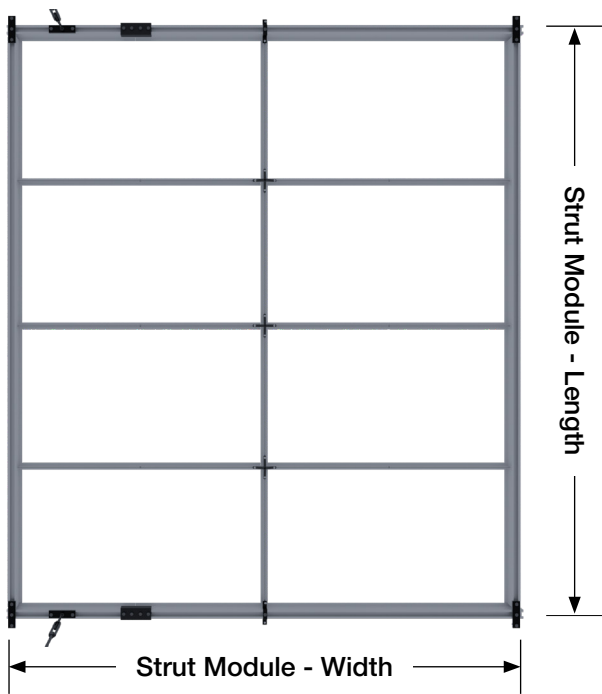
II. UTILIZING INTERIOR THREADED SLOT



Threaded Center Slot Performance Criteria				
On-Center Hanger Spacing	Max Uniform Load (lbs/SF)	Max Safe Working Load (Point Load) (lbs)	Mid Span Deflection at Max Safe Working Load (in)	Safety Factor
4x4	156	380	0.20"	2x
5x4	125	380	0.32"	2x
6x4	104	380	0.50"	2x
7x4	89	380	0.635"	2x
8x4	78	300	0.657"	2x
6x6	69	380	0.50"	2x
8x6	52	300	0.657"	2x
8x8	39	300	0.657"	2x

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

Determining Grid Spacing and Tile Sizing: Example



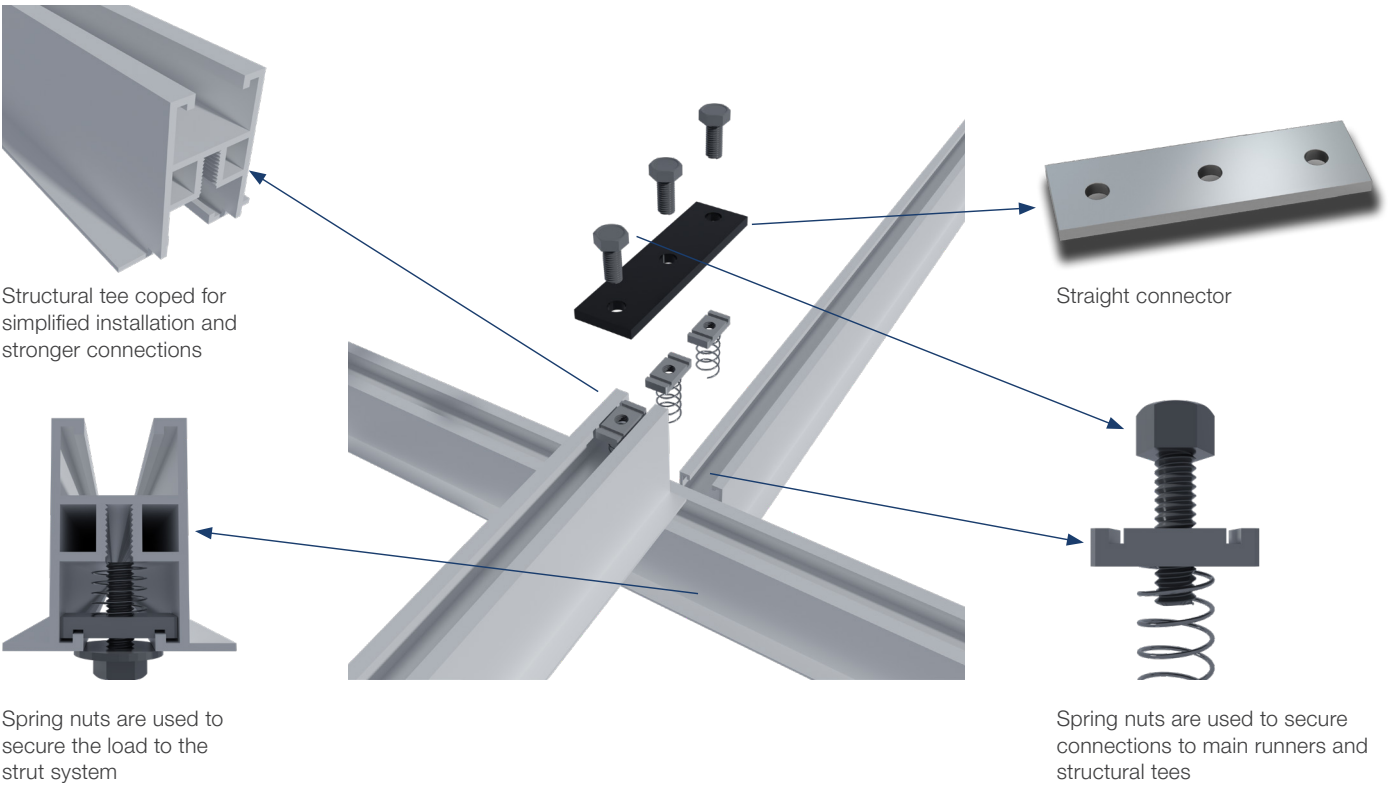
If your requirement is to have the structural grid spacing on hard 24"/48" dimensions, you will need special sized ceiling tiles as follows:

Alustra Module Size	On-Center 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 7/8" x 22 7/8"	22 7/8" x 46 1/8"
4' x 6'	48" x 72"	22 3/4" x 22 3/4"	22 3/4" x 45 3/4"
4' x 8'	48" x 96"	22 3/4" x 22 3/4"	22 3/4" x 46 1/2"
6' x 6'	72" x 72"	22 3/4" x 22 3/4"	NA
6' x 8'	72" x 96"	22 3/4" x 22 3/4"	NA
8' x 8'	96" x 96"	22 3/4" x 22 3/4"	22 3/4" x 46 1/2"

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

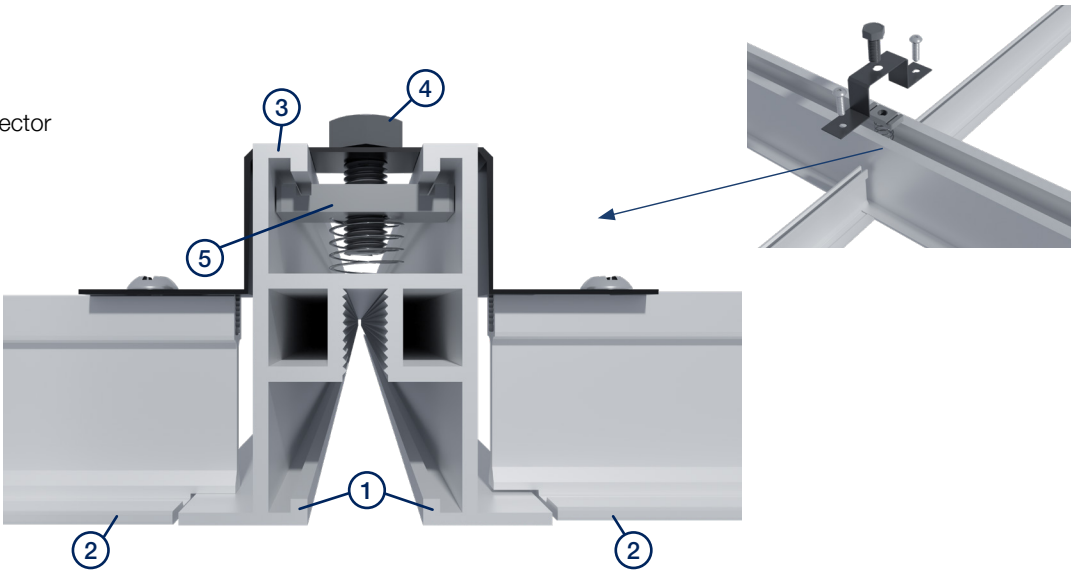
Alustra Module Size	On-Center Grid Spacing (W x L)	2' x 2' Tile Size (W x L)	2' x 4' Tile Size (W x L)
4' x 4'	50"x50"	23 3/4" x 23 3/4"	23 3/4" x 47 3/4"
4' x 6'	50" x 74 3/4"	23 3/4" x 23 3/4"	22 3/4" x 47 3/4"
4' x 8'	50" x 99"	23 3/4" x 23 3/4"	23 3/4" x 47 3/4"
6' x 6'	74 3/4" x 74 3/4"	23 3/4" x 23 3/4"	NA
6' x 8'	74 3/4" x 99"	23 3/4" x 23 3/4"	NA
8' x 8'	99" x 99"	23 3/4" x 23 3/4"	23 3/4" x 47 3/4"

Straight Connector Assembly



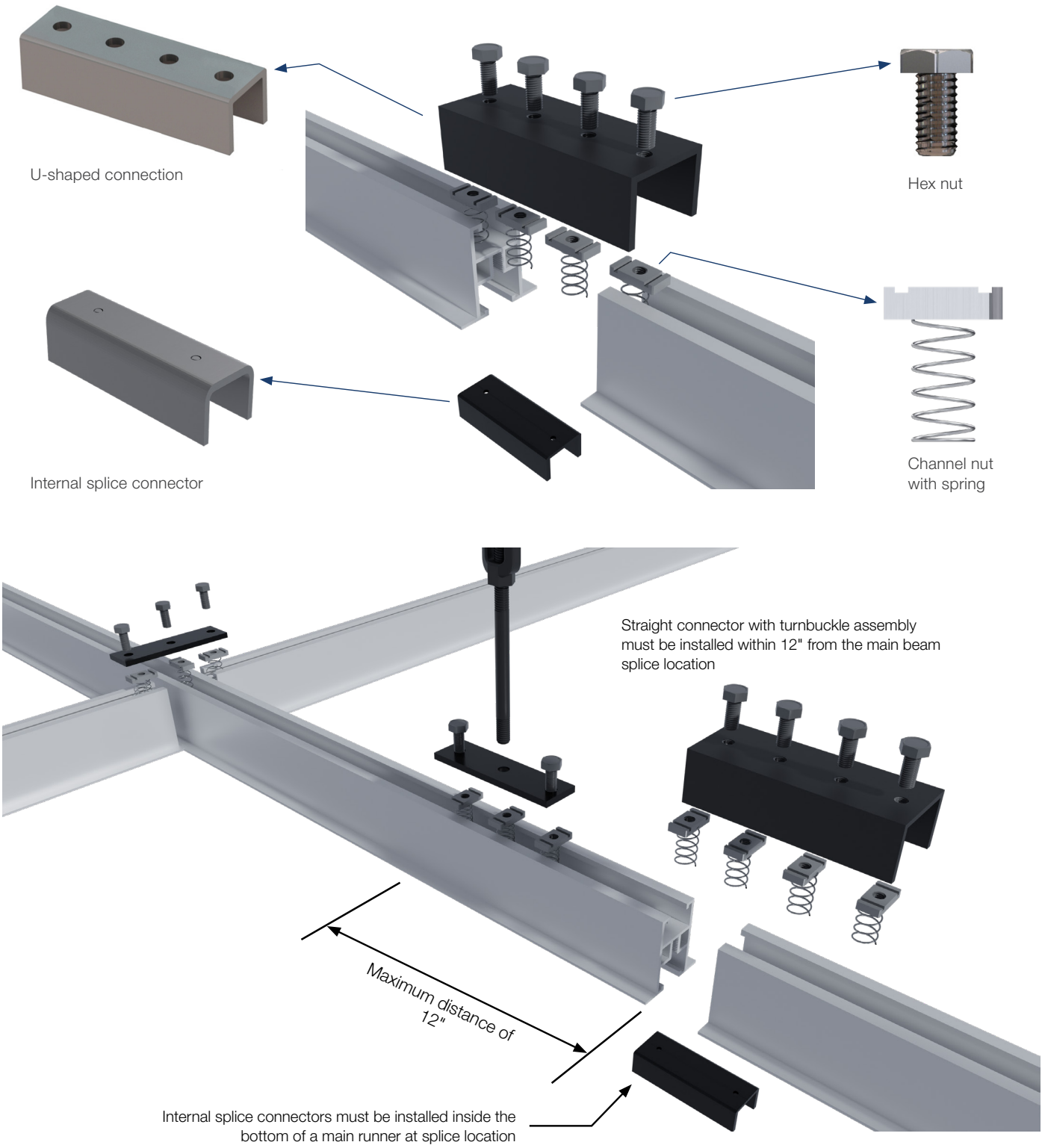
Light Structural Bridge Connector Assembly

- 1. Alustra main or tee
- 2. Light structural tees
- 3. Light structural bridge connector
- 4. Hex bolt
- 5. Channel nut and spring

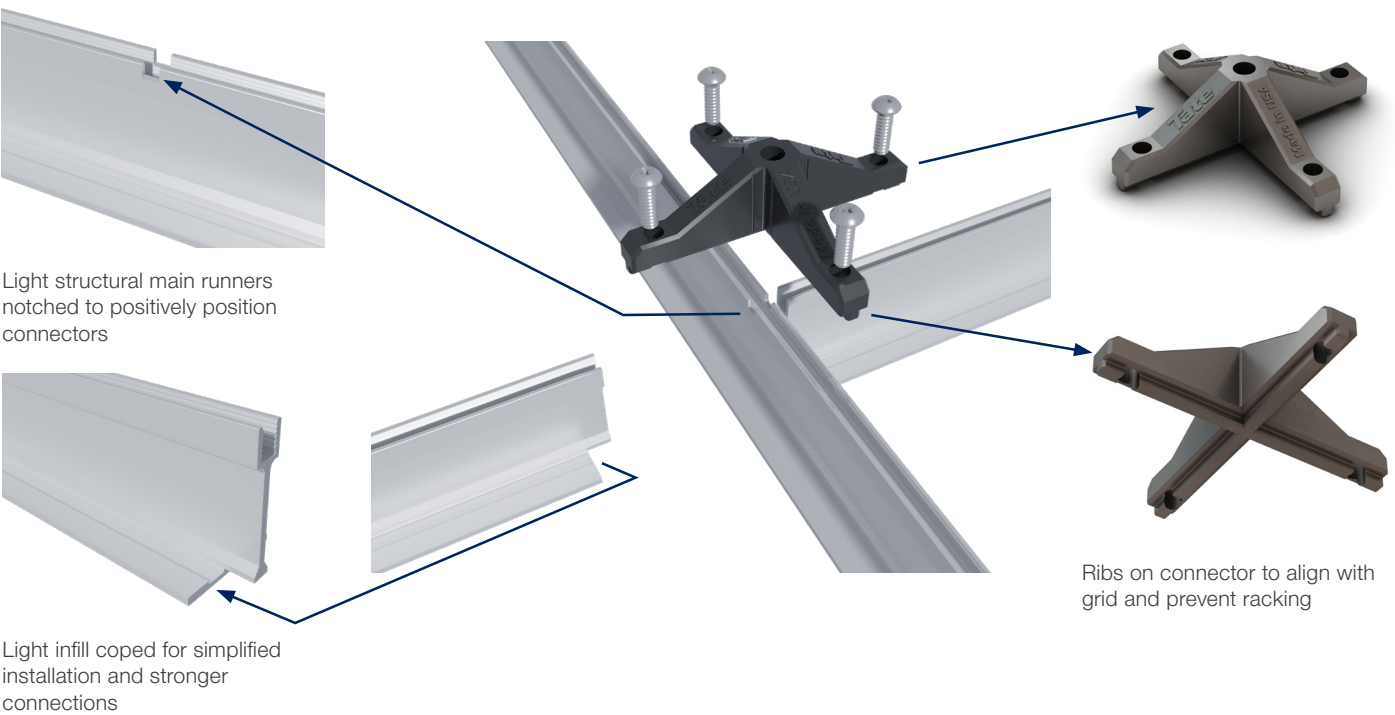


Light structural bridge connector joining two light structural tees on either side of a main runner/structural tee. Note all light structural tees have factory coped ends.

U-Shaped and Internal Splice Support Connector Assembly



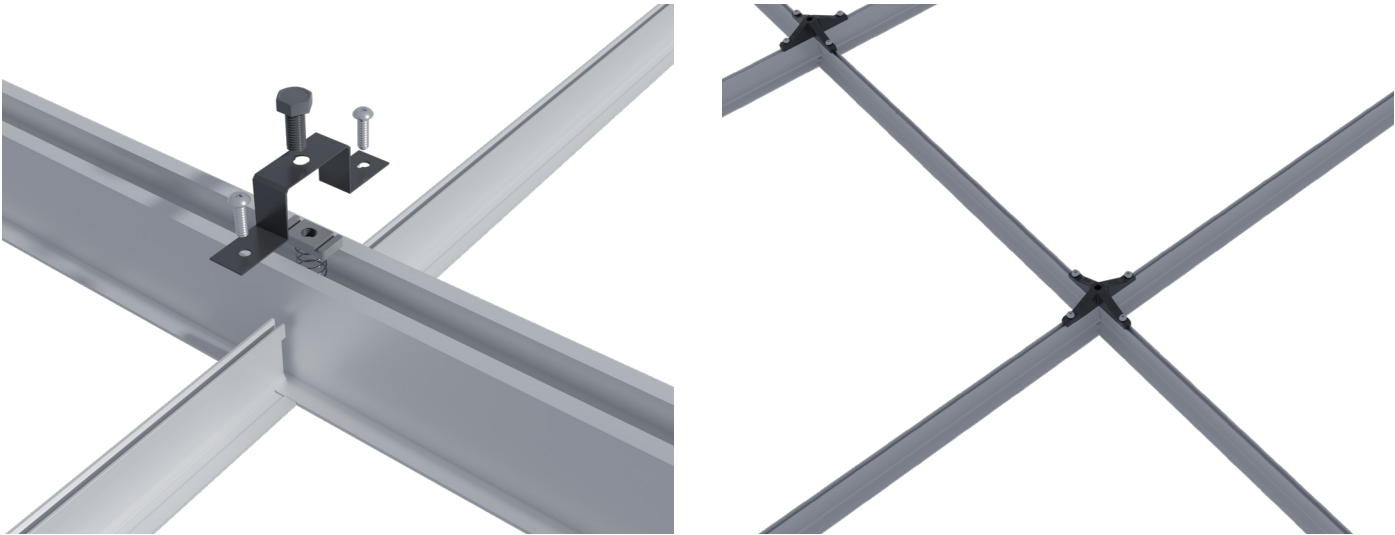
Field Connector Assembly at Light Infill Intersection



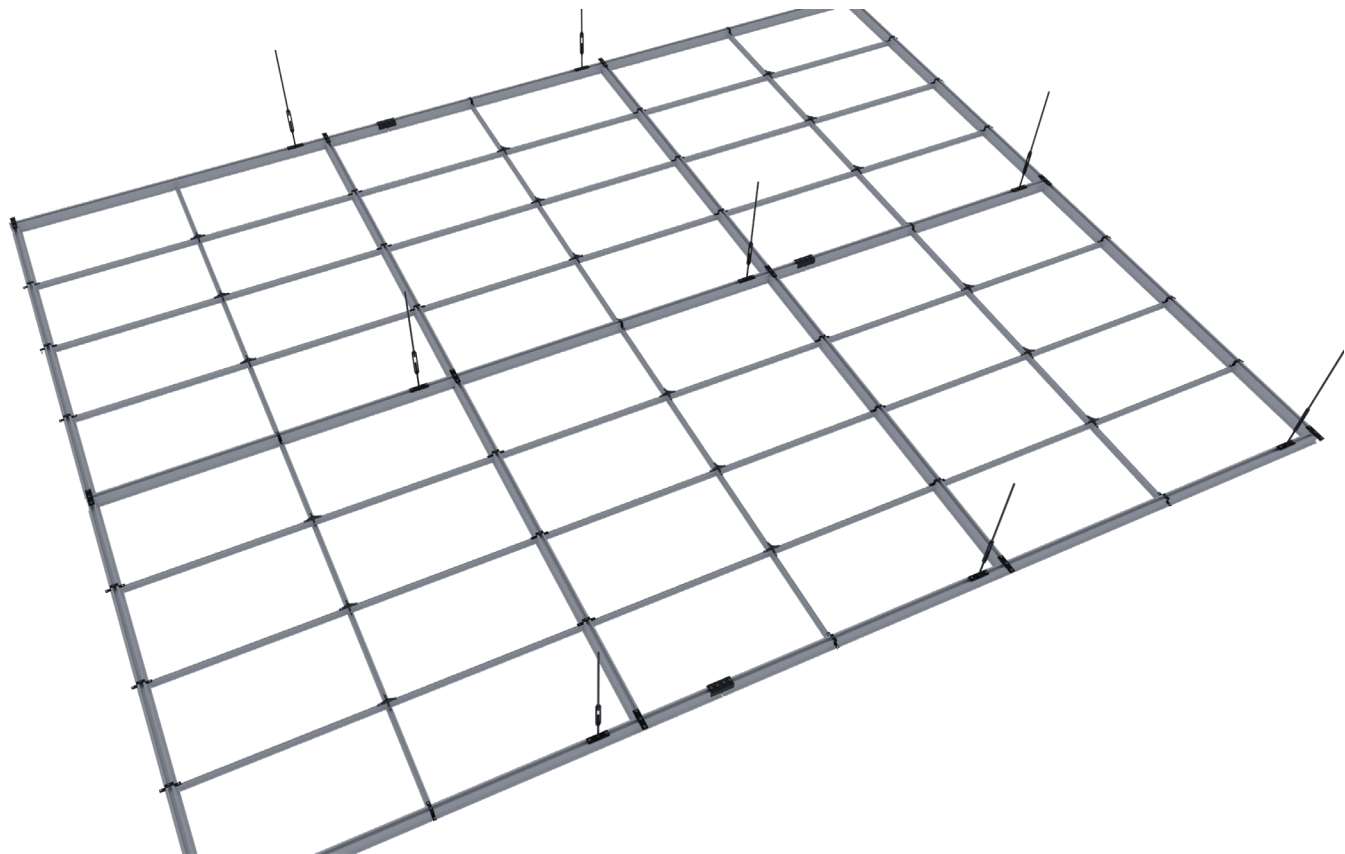
Light Structural Infill

Coped light infill connection to structural grid with light structural bridge connector for simple attachment

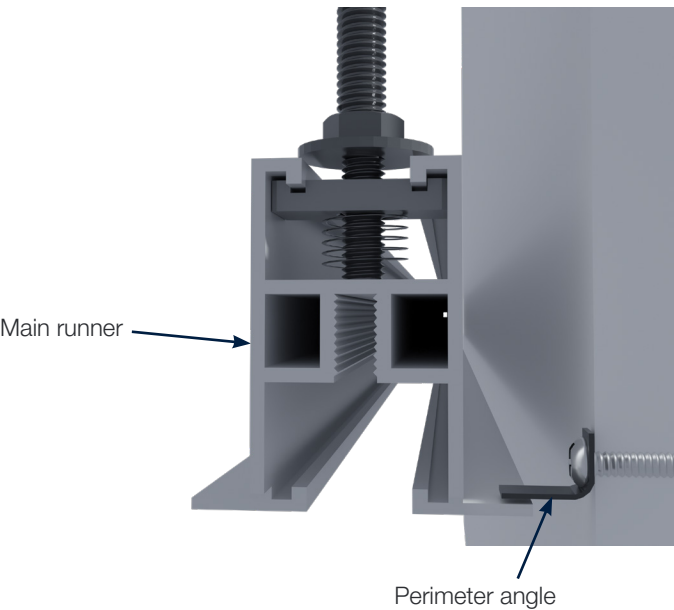
Light infill with field connectors



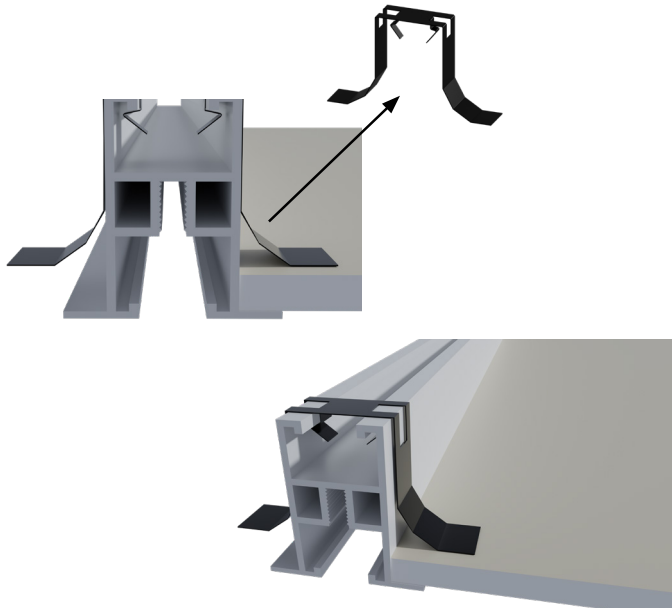
Repeating infill pattern between Alustra as per project specification.



Perimeter Angle



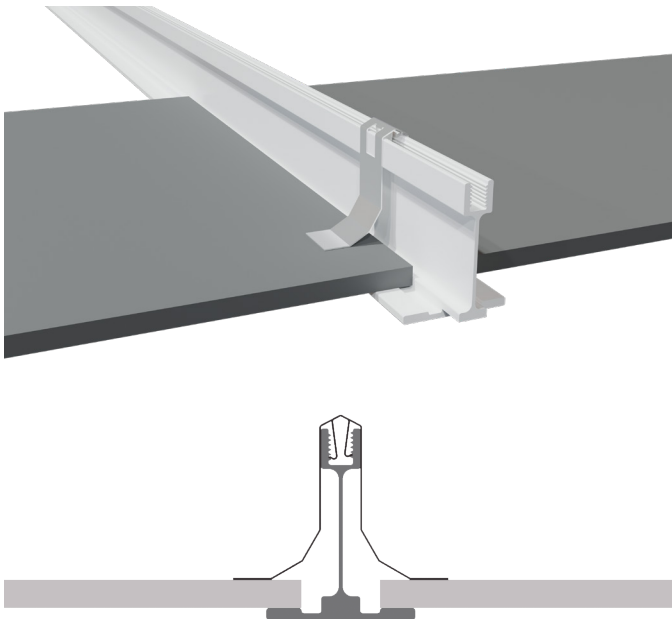
Main runners and structural tees are utilized when installing with a floating detail in conjunction with perimeter angles. Perimeter angles can be cut on site to desired length when assembled along the column. Perimeter angles are bolted directly to the wall with appropriate fasteners for wall type.



Hold Down Clips

PN44406

- Hold down clips can be provided with the Tate Alustra 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

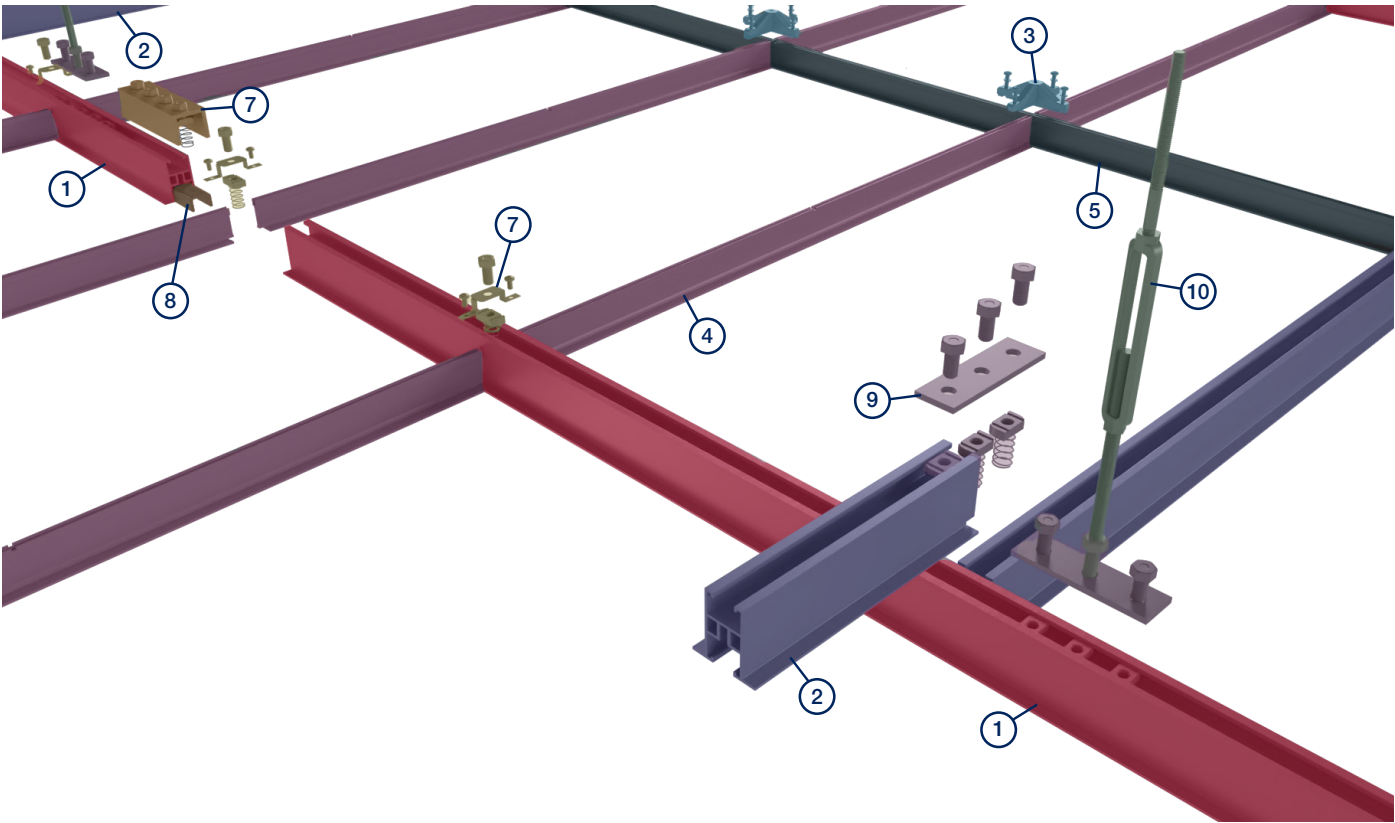


Light Structural Infill Hold Down Clips

PN44403

- Hold down clips can be provided with the Tate Alustra 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

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



1. Alustra
main runner



2. Alustra
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
connector

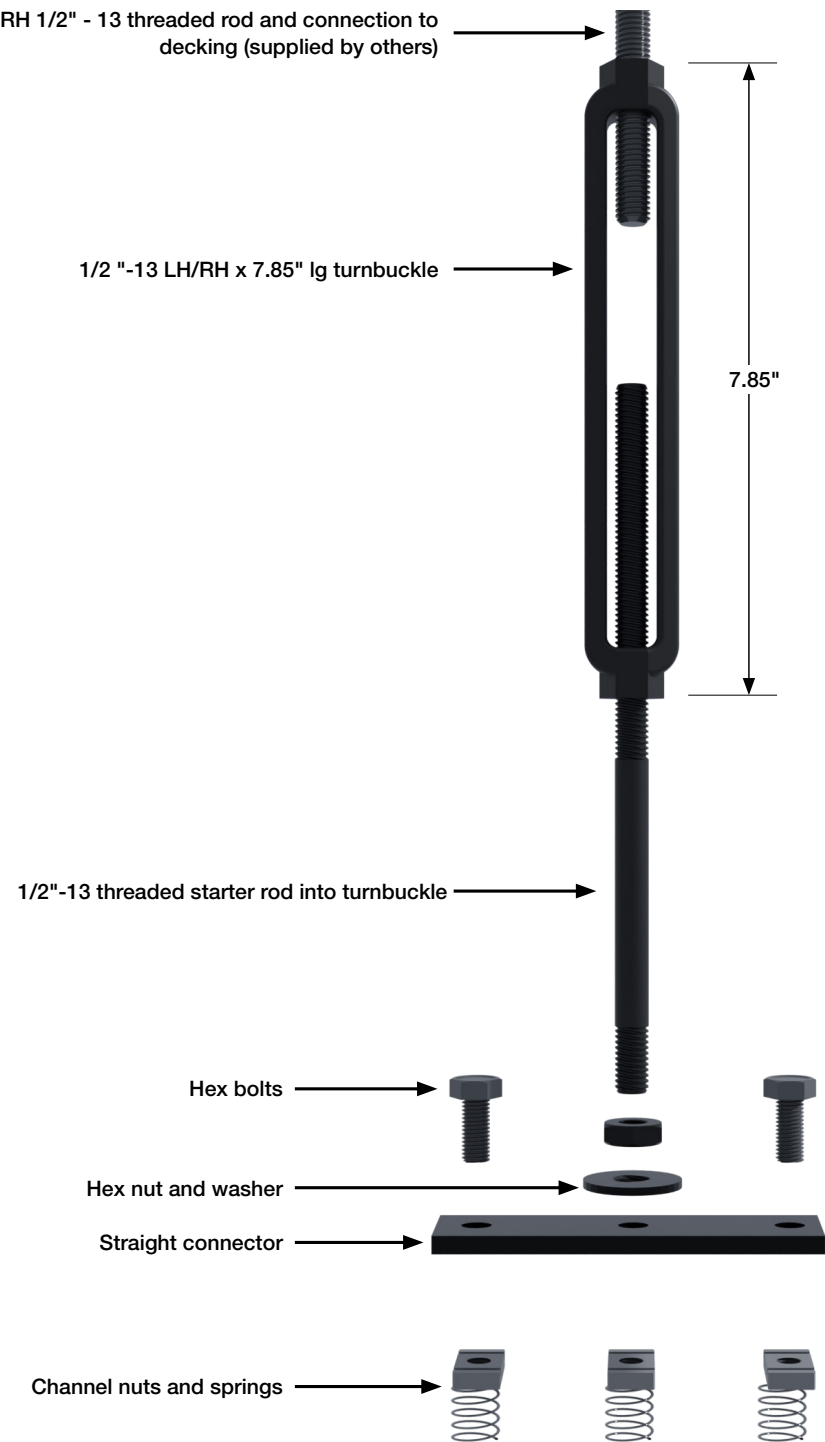


9. Straight
connector



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 ALUSTRA SYSTEM

Tate Alustra is a structural ceiling system designed to support static vertical loads. When installing services to the center 3/8"-16 threaded channel, the following instructions must be adhered to:

1. Do not torque the threaded rod or bolts above 30 in-lb when using the direct connection method. Over-torquing will damage the threads of the slot reducing the load capacity of the Tate Alustra system. Torque limits are not restrictive when hanging using a spring nut connection.
2. There must be at least 5/8" thread engagement between threaded rod or bolt.
3. Be sure all bolts, nuts, and threaded rods are properly tightened down as described in this guide.
4. Do not impose a dynamic load on the connection to Tate Alustra. During installation of supported services, bracing is required to prevent dynamic load on the Tate Alustra ceiling.
5. All bottom thread fixings should be completed with suitable washers.
6. Do not put a load on the system until the installation is complete.
7. Tate Alustra is NOT a walk-on ceiling.
8. Two or more people are required for handling some of the pieces for this system.
9. Wear personal protective equipment (PPE) when drilling, cutting, or installing. PPE includes gloves, safety eyeglasses, hard hats, etc.

