Tate, Inc.
Tate Strut Data Center Structural Ceiling

SECTION 09 54 00
SPECIALTY CEILINGS

PART 1. GENERAL

1.1 DESIGN REQUIREMENTS

A. Ceiling system shall be capable of directly supporting cable trays, utilities, light fixtures, HVAC registers and other accessories as indicated per area of work.

1.2 WARRANTY

A. Structural ceiling shall be warranted against defects in materials and workmanship for a period of (10) years from shipment.

PART 2. PRODUCTS

2.1 MANUFACTURERS

A. Basis of Design: Product specified is the Tate Strut Structural Ceiling manufactured by Tate, Inc.

2.2 FINISH & MATERIAL

A. Strut Main Runners and Structural Tees shall be constructed of Q235 or ASTM A283 galvanized steel and have a white powder coated finish. Custom colors may also be available.

B. Light Structural infill shall be constructed of 6005-T5 extruded aluminum and have a white powder coated finish. Custom colors may also be available.

C. Connectors: All strut connector brackets shall be constructed of Q235 or ASTM 283 galvanized steel. All light structural connectors shall be constructed of high strength cast aluminum with corrosion resistant finish which is silver in color.

2.2 DESIGN FEATURES: Structural Ceiling grid shall include the following features:

A. Custom strut spacing (4’x4’, 6’x6’, 4’x6’, etc.) centered strut system with 2’x2’ or 2’x4’ Light Structural infill.

B. Strut Main Runners and Structural Tees shall be pre-drilled to required spacing for easy system installation and positioning of Light Structural infill pieces.

C. Light Structural to Tate Strut (LS to TS) Connectors shall be used to connect the Light Structural infill to Strut at pre-drilled holes along the Strut Main Runners and Structural Tees.

D. Light Structural infill shall be notched where necessary for positive positioning of Light Structural infill pieces.

E. Light Structural infill connectors to include ribs to align system with grid on correct center and prevent racking.

F. System is capable of fitting standard or custom ceiling tiles, light fixtures and HVAC registers.

G. Strut Structural Tee flanges shall be coped back for vertical support through flange grid contact to Main Runners.

H. Light Structural infill pieces shall be coped back for vertical support through flange grid contact to adjacent pieces.

I. Connectors include 3/8”-16 or M10-1.5 threaded turnbuckle connections for Light Structural connectors if necessary.

J. Connectors include 1/2”-13 threaded turnbuckle connections for Strut connectors where necessary.

K. 4-hole wrap around brackets and splice brackets shall be utilized for Main Runner splice locations.

L. 3-hole brackets shall be used at turnbuckle connections along Strut members that do not occur at Strut cross-intersections if permitted by the design.

M. Cross tee brackets shall be used at turnbuckle connections along Strut members that occur at Strut cross intersections if permitted by the design.

N. 3-hole brackets shall be utilized at Strut cross intersections if permitted by the design.

O. Light Structural connectors shall be constructed of high strength cast aluminum parts.

P. Strut connectors shall be constructed of Q235 or ASTM 283 galvanized steel.

Q. 1/4”-20 button head Philips head screws with lock washer shall be utilized to secure Light Structural connectors to Light Structural infill pieces.

R. 1/2”-13 hex cap screws and channel nuts shall be utilized to secure Strut connectors to Strut Main Runners and Structural Tees.

S. [Optional gasket] 1/8” thick x 3/8” (3.17mm x 9.52mm) closed cell polyethylene gasket tape shall be provided to improve leakage through system at various air pressures.

2.3 PERFORMANCE

a. Ceiling system shall be capable of supporting a safe uniform load up to [insert from data sheet load capacity chart based upon on-center hanger spacing]

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

b. Ceiling system shall be capable of a maximum static working point load of 1750lb in the bottom slot of the strut. This shall be a true working load, achievable anywhere along the grid system.

c. Turnbuckle connection shall be capable of a maximum point load connection to building structure of 3500lb.

PART 3. EXECUTION

3.1 EXAMINATION

A. Verify ceiling support rod anchors are properly installed in structure above.

3.2 STRUCTURAL CEILING INSTALLATION

A. Structural Ceiling grid shall be installed on a Custom strut spacing (4'x4', 6'x6', 4'x6', etc.) centered connection to decking.

B. Support Spacing shall be defined by positioning of 1/2" turnbuckle connections offset from one another starting from one corner of the interior structural grid assembly and spaced evenly throughout. Additional supports shall be provided as required along the perimeter and at any critical areas or as per seismic or code requirements or considerations.

C. Strut Main Runners shall be installed on CUSTOM centers and all main runners shall be parallel to one another. Strut Structural Tees shall be installed perpendicular to Main Runners. Light Structural infill shall be installed in the open area between Strut members.

D. All work shall be coordinated with all other trades including but not limited to electrical, mechanical, fire protection and furniture.

3.3 PERIMETER INSTALLATION

A. Structural Ceiling grid shall be installed with **a Fixed** OR **a Floating** perimeter condition option.

B. Fixed perimeter installation: Perimeter Angles shall be mounted at level height to interior ceiling grid within 0.10˝overall and 0.06˝over any 10´ distance. Perimeter Angles shall be fastened to perimeter wall with appropriate wall type fasteners. Perimeter Angles can be field cut with non-ferrous carbide tipped blade. Joints shall fit with no more than .08˝gaps.

C. Floating perimeter installation: Perimeter Angles shall be supported from structure at level height to interior ceiling grid within 0.10˝overall and 0.06˝over any 10´ distance. Perimeter Angles shall

be fastened to Main Runners and Structural Tees with perimeter connectors and suspended from structure above. Perimeter Angles shall be field cut with non-ferrous carbide tipped blade. Joints shall fit with no more than .125˝ gaps.

3.4. CLEANING

A. Inspect above and below installed ceiling system. Remove paint splatters and other spots, dirt, and debris. Touch-up scratches and mars of finish to match original finish.

END OF SECTION