Tate, Inc.
Tate Alustra Data Center Structural Ceiling

SECTION 09 54 00
SPECIALTY CEILINGS

PART 1. GENERAL

1.1 WORK INCLUDED

A. Section Includes: Extruded aluminum suspended ceiling grid system including:
1. Aluminum ceiling grid.
2. Grid connectors and fasteners.
3. Wall angle and edge trim.

1.2 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.

1.3 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: **Tate Alustra Structural Ceiling** manufactured by Tate, Inc.

2.2 FINISH & MATERIAL

A. Extruded Aluminum Main Runners and Structural Tees shall be manufactured of aluminum alloy 6063, temper T6 with a powder coated finish. Grid profile shall have a 2.78 inch wide face and 3.37 inch tall profile with a continuous integral 3/8” threaded slot located at the center of the profile for optional attachment of 3/8” threaded rods at any point along the Main Runners and Structural Tees. The top and bottom segment of the Alustra profile shall have a 1.5” wide by 1” tall slot for a channel nut connection to support structural loading.

B. Light Structural infill, to be used for final grid module, shall be constructed of 6063-T6 extruded aluminum and have a powder coated finish.

C. Connector brackets shall be constructed of Q235 or ASTM 283 galvanized steel. All light structural connectors shall be constructed of high strength metal with corrosion resistant finish.

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

A. Hanger spacing on mains shall be variable up to 8’ on center with load capacity per spec section 2.3 below.

B. Provide light structural infill grid resulting in an overall grid module specified on drawings.

C. Provide connectors to connect the Light Structural infill to the Alustra Main Runners and Structural Tees.

D. Light Structural grid shall be notched for positive positioning of Light Structural grid to other Light Structural grid connections.

E. Light Structural infill connectors to include ribs to align with grid notches and to prevent racking.

F. Structural ceiling grid shall be available to fit standard or custom ceiling tile sizes.

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

H. Light Structural infill shall be coped back for vertical support through the flange part of the grid when in contact with Light Structural Main Runners, Tate Alustra Main Runners and Tate Alustra Structural Tees.

I. Include 1/2”-13 threaded turnbuckles for connection of Tate Alustra, to suspension components to the structure above, furnished by others.

J. Provide upper and internal splice connectors for connection of main runners to main runners, such that the splice connection can support the specified load requirement.

K. Straight Connectors shall be used at turnbuckle connections along Alustra Main Runners and Structural Tees.

L. 5-hole cross Connectors shall be used at turnbuckle connections which also falls at an intersection of Alustra Main Runner and an Alustra Structural Tees if required.

M. Light structural connectors shall be constructed of metal components.

N. Alustra structural connectors shall be constructed of Q235 or ASTM 283 galvanized steel.

O. Provide 1/2”-13 hex cap bolts and channel nuts to secure Alustra Main Runners and Structural Tees together.

P. Provide optional factory applied gasket 1/8” thick x 3/8” (3.17mm x 9.52mm) closed cell polyethylene gasket tape if required by contract documents.

Q. Provide optional ceiling tile hold down clips if required by contract documents.

2.4 PERFORMANCE

A. Ceiling system shall be capable of supporting uniform loading based on the following on center hanger spacing: (select one or more of the options below that apply).

1. 4’x4’ on center hanger spacing shall support a max uniform load of 156lbs/SF
2. 5’x4’ on center hanger spacing shall support a max uniform load of 125lbs/SF
3. 6’x4’ on center hanger spacing shall support a max uniform load of 104lbs/SF
4. 7’x4’ on center hanger spacing shall support a max uniform load of 89lbs/SF
5. 8’x4’ on center hanger spacing shall support a max uniform load of 78lbs/SF
6. 6’x6’ on center hanger spacing shall support a max uniform load of 69lbs/SF
7. 8’x6’ on center hanger spacing shall support a max uniform load of 52lbs/SF
8. 8’x8’ on center hanger spacing shall support a max uniform load of 32lbs/SF

B. Ceiling system shall be capable of supporting a maximum static point loading from the bottom slot of the Alustra Profile, based on the following on-center hanger spacing: (select one or more of the options below that apply)

1. 4'x4' on center hanger spacing shall support a max static point load of 1200 lbs
2. 5'x4' on center hanger spacing shall support a max static point load of 1000 lbs
3. 6'x4' on center hanger spacing shall support a max static point load of 700 lbs
4. 7'x4' on center hanger spacing shall support a max static point load of 500 lbs
5. 8'x4' on center hanger spacing shall support a max static point load of 300 lbs
6. 6'x6' on center hanger spacing shall support a max static point load of 700 lbs
7. 8'x6' on center hanger spacing shall support a max static point load of 300 lbs
8. 8'x8' on center hanger spacing shall support a max static point load of 300 lbs

C. The internal 3/8" threaded slot shall have a max static point load of 300 lbs for all on-center hanger spacing of up to 8'.

D. Provide a safety factor of 2X for the specified loads in paragraphs A,B and C above.

E. The sum of all point loads between hangers shall not exceed the loads specified in paragraphs A & B above.

F. Turnbuckle shall be capable of a maximum point load connection to building structure of 2500lb with a safety factor 2 provided.

PART 3. EXECUTION

3.1 STRUCTURAL CEILING INSTALLATION

A. Structural Ceiling grid shall be installed with a hanger spacing required to meet the loading specified and the structural grid layout as detailed on the contract documents. Any sub-division of the structural grid layout shall be provide by a light non-structural grid as detailed in the construction documents

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 support shall be provided as required along the perimeter and at any critical areas or as per seismic or code requirements or considerations.

C. Alustra Main Runners shall be installed on a standardized on-center spacing and all main runners shall be parallel to one another. Alustra Structural Tees shall be installed perpendicular to Alustra Main Runners. Light Structural infill shall be installed in the open area between Alustra Main Runners and Alustra Structural Tees.

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

3.2 PERIMETER INSTALLATION

A. The Structural Ceiling grid shall be installed with **a** floating perimeter condition.

B. Floating perimeter installation: Perimeter Mains shall be supported from structure at level height to interior ceiling grid within 0.10˝overall and 0.06˝over any 10´ distance. Perimeter Mains shall be fastened to Main Runners and Structural Tees with perimeter connectors

and suspended from structure above. Perimeter trim angles shall be field cut with non-ferrous carbide tipped blade. Joints shall fit with no more than .125″ gaps.

3.3 CLEANING

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

END OF SECTION