LIVERMORE
CALIFORNIA

Suspension Systems for Acoustical Lay-in Ceilings

Code reference:

2013 CBC 808 and 1613.1
ASCE 7-05 13.3.1 and 13.5.6
ASTM C 635 & 636
CISCA Seismic Zones 3 & 4

Purpose:

Suspended ceiling systems must be connected for vertical and lateral loads to the building structure in accordance with the currently adopted edition of the CBC. The referenced ASCE 7 stipulates specific requirements for Seismic Categories D through F, applicable to all of Livermore. Suspension systems must be analyzed and detailed to transfer ASCE 7 prescribed seismic forces to the building structural elements or the ceiling-structure boundary. Specific prescriptive detailing provisions provided below may be utilized in lieu of calculations and testing of components for conventional T-bar conditions.

Requirements:

a. Heavy Duty T-bar grid system shall be used.
b. The width of the perimeter-supporting angle shall be not less then 2". (See ASCE 7 -05, section 13.5.6.2.2 for more detail).
c. For ceiling areas exceeding 1,000 sq.ft., horizontal restraint of the ceiling to the structural system shall be provided. (See ASCE 7-05, section 13.5.6.2.2 for more detail).
d. Ceilings exceeding 2,500 sq.ft. shall have a seismic separation or a full height partition that breaks the ceiling up into areas not exceeding that unless structural analyses are performed and provided (see ASCE 7-05, section 13.5.6.2.2 for more detail).
e. Provide for lateral displacement of 1" in all horizontal directions at all penetrations.
f. Provide positive ceiling bracing at any changes in ceiling elevation.
g. Cable trays and electrical conduits must be supported independently of the ceiling.

Typical Details:

a. Show wires sizes and spacing.
b. Provide typical detail for the compression post on the plan. Until otherwise revised by the Building Division, the size of the compression post could be picked from the table

attached. Show the connection details of the posts to the roof-framing members. In the case of trusses, the connection should only be made to the top cord.

c. Splayed wires, compression post & vertical wires must be supported at the top chord of the truss or at the upper most portion of the framing above. Provide details on the plan. Support wires shall not be supported by truss bottom chord unless the trusses were designed specifically for supporting the suspended ceiling (provide truss documents).

The following is to be considered when complying with the above section:

1. In a structure where the roof system is composed of beams, purlins, and sub-purlins, the 2x4 sub-purlins are not to be considered as structural members supporting the roof.
2. The strut shall be vertical, and shall not hang more than 1 in 6 out-of-plumb. Some examples of acceptable struts are as follows:

PIPING:

ELECTRICAL METALLIC TUBING

1/2"	TO 2' 8"
3/4"	TO 4' 4"
1"	TO 6' 7"
1-1/4"	TO 10' 5"
1-1/2"	TO 12' 11"
2"	TO 18' 4"

Conduit can be flattened at the ends and connected to the T-Bar mainrunner with one #10 sheet metal screw and to the structural roof/floor member with two #10 wood screws. Other connections are acceptable, but should first be submitted to the Building Division for review.

METAL STUDS:

The following spans are based upon studs having a 1-5/8" leg with a 3/8" return. Double studs are connected together in the shape of a ⊏⊐, with one #6 sheet metal screw at 16" oc.

STEEL STUDS

35/8" X 20ga	TO 9'6"
DBL 21/2" X 20ga	TO 16' 6"
DBL 35/8" X 20ga	TO 24' 0"

Attach the metal stud to the T-Bar main runner and structure roof/floor member with two #8 screws.

MANUFACTURED STRUTS:

Manufactured struts may be acceptable if listed by an approved testing agency or Engineering is submitted to the Building Division for review. This jurisdiction is accepting USG Interiors VSA 24, VSA 47, VSA 713, and VSA 1315 manufactured struts as long as they are installed in accordance with the manufacturer's installation instructions.