



Standard Practice for Application of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Requiring Seismic Restraint¹

This standard is issued under the fixed designation E 580; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This practice covers acoustical ceiling suspension systems and their additional requirements for application in areas subject to light to moderate seismic disturbance such as Uniform Building Code Seismic Zone 2, the BOCA Basic National Building Code where A_v is less than 0.20 but greater than 0.10, and the Standard Building Code (SBC) where A_v is less than 0.20 but greater than 0.05. This practice also covers areas subject to moderate to severe seismic disturbance such as Uniform Building Code Seismic Zones 3 and 4, the BOCA Basic National Building Code where A_v is greater than 0.20, and the SBC where A_v is greater than 0.20. The application of this practice is to be determined by local authorities. Current seismic maps published by recognized authorities such as those previously mentioned, should be consulted. Related material such as Open File 82-1033² and MS-812 Seismicity Map³ may also be consulted.

1.2 Specification C 635 and Practice C 636 cover suspension systems and their application without special regard to seismic restraint needs. They remain applicable and should be followed when this practice is specified.

1.3 This practice is not intended to stifle research and development of new products or methods which may simplify this specified application method. A variation, however, must be substantiated by verifiable engineering data.

1.4 A ceiling area of 144 ft² (13.4 m²) or less, surrounded by walls that connect directly to the structure above shall be exempt from this practice.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

C 635 Specification for the Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings⁴

C 636 Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels⁴

2.2 Other Standards:

National Electric Code, 1993⁵

Uniform Building Code, 1994⁶

BOCA Basic Building Code, 1993⁷

3. Areas Subject to Light to Moderate Seismic Disturbance

3.1 Suspension System Components:

3.1.1 The actual average weight of the ceiling system, including grid, panel or tile, light fixtures, and air terminals must be 2.5 lb/ft² (12.2 kg/m²) or less. All other services must be supported independently from the ceiling system. For ceilings that have an average weight greater than 2.5 lb/ft², the ceiling may be installed as specified in Section 4. Other deviations or variations must be substantiated by verifiable engineering data.

3.1.2 The main runners and cross runners of the ceiling system and their splices, intersection connectors, and expansion devices shall be designed and constructed to carry a mean ultimate test load of not less than 60 lb (27.2 kg) in tension with a 5° misalignment of the members in any direction and in compression. Instead of a 5° misalignment, the load may be applied with a 1-in. (25.4-mm) eccentricity on a sample not more than 24 in. (609 mm) long on each side of the splice.

3.1.3 Evaluation of test results shall be made on the basis of the mean values resulting from tests of not fewer than three identical specimens, provided the deviation of any individual test result from the mean value does not exceed $\pm 10\%$.

¹ This practice is under the jurisdiction of ASTM Committee E33 on Environmental Acoustics and is the direct responsibility of Subcommittee E33.04 on Application.

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² Open File 82-1033 Probabilistic Estimate of Maximum Acceleration in Rock published by United States Geological Survey.

³ MS-8125 Seismicity Map of the Conterminous United States and Adjacent Areas, 1965–1974 published by United States Geological Survey.

⁴ Annual Book of ASTM Standards, Vol 04.06.

⁵ Available from National Fire Protection Association, Batterymarch Park, Quincy, MA 02269.

⁶ Available from International Conference of Building Officials, 5360 S. Workman Mill Rd., Whittier, CA 90601.

⁷ Available from Building Officials and Code Administrators International, 4051 W. Flossmoor Rd., Country Club Hills, IL 60477.

