



Standard Practice for Gravity Load Testing of Floors and Low Slope Roofs¹

This standard is issued under the fixed designation E 196; 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.

^{e1} NOTE—Editorial changes were made in October 2000.

1. Scope

1.1 This practice covers static load testing of floors and low slope roofs (roofs having a slope of less than 1 in 12) under actual or simulated service conditions, and is applicable to typical elements or sections of structures fabricated for test or to actual existing building components. This practice is intended for use in determining the strength and stiffness of elements or sections of floors and roofs of buildings under gravity loads, as well as in checking the design, materials, connections, and the quality of the fabrication of such building constructions.

2. Referenced Documents

2.1 ASTM Standards:

E 575 Practice for Reporting Data from Structural Tests of Building Constructions, Elements, Connections, and Assemblies²

3. Significance and Use

3.1 This practice is intended to be used by parties involved in the testing of floors and roofs of structures either in the field or the laboratory. Tests are either proof tests or tests to failure, and are applicable to all construction materials. The practice is not intended for use in routine quality control testing of individual building elements or constructions.

4. Types of Tests

4.1 *Proof Tests*—Proof tests are intended to give assurance that the construction will support a specified load or will not exceed a given deflection under this load, or both. If the floor or roof is to be placed in service after the proof test, or is part of an existing structure which must remain in service after the test, great care must be exercised to determine that structural damage has not occurred, or that if failure did occur, damage is minimal and the safety of personnel is not jeopardized.

4.2 *Failure Tests*—Failure tests are carried out to obtain more detailed information on the performance, ultimate load carrying capacity, the mode of failure, the adequacy of the connections, and to develop the complete load-deflection curve for the construction(s).

5. Test Specimens

5.1 The area or size of the test specimen shall be a representative section, taken to duplicate the structural performance of the actual floor or roof, or shall be a typical element or bay of an existing structure. When a loading test is performed on a particular floor or roof composed of many identical segments, the selection of a representative test section shall be approved by the building official or party for whom the test is being performed. Normally only one representative portion of the structure need be tested, except where various areas of a floor or roof are subject to differing types of loading, or where a number of structural elements or sections in a building are suspect and to be proof loaded.

5.2 The condition of the materials in the assembly to be tested shall be reasonably equivalent, at the time of test, to the conditions assumed in the design or representative of the actual in-service conditions.

6. Simulated Structures

6.1 When a loading test is carried out on a simulated structure, the support conditions and the fixity of the edges of the floor or roof developed in the actual structure shall be reproduced as closely as possible in the test specimen.

6.2 The materials, structural shapes, connections, connectors, and construction used in the simulated structure shall duplicate as closely as practical those used or intended for use in the actual structure.

7. General Testing Arrangement

7.1 *Verification of Design Assumptions*—Floors or roofs shall be loaded in a manner satisfying the original design assumptions. Floors or roofs designed for uniform loading shall be tested under uniform loading or by a method that will simulate the forces and moments generated by a uniformly distributed load. When structures with protrusions or structural

¹ This practice is under the jurisdiction of ASTM Committee E06 on Performance of Buildings and is the direct responsibility of Subcommittee E06.11 on Horizontal and Vertical Structures/Structural Performance of Completed Structures. Current edition approved April 15, 1995. Published June 1995. Originally published as E 196 – 62 T. Last previous edition E 196 – 80 (1985).

² *Annual Book of ASTM Standards*, Vol 04.11.