



Standard Test Methods for Performance of Permanent Metal Railing Systems and Rails for Buildings¹

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ε¹ NOTE—Editorial corrections were made in August 2000.

1. Scope

1.1 These test methods describe procedures to be followed in testing the performance of permanent metal railing systems (guard, stair, and ramp-rail systems) and rails (hand, wall, grab, and transfer rails) installed in and for agricultural, assembly, commercial, educational, industrial, institutional, recreational, and residential buildings.

1.2 These test methods are applicable to such railing systems and rails having major structural components made of metal, with their secondary components made of metal or other materials such as wood, plastic, and glass.

1.3 These test methods can be used to determine whether permanent metal railing systems and rails comply with anticipated performance requirements of the applicable specifications, codes, and standards, such as those described in Specification E 985.

1.4 Specifically, these test methods cover procedures for determining the static strength of metal railing systems and rails as structural elements when installed and fastened to concrete, masonry, wood, and metal as well as related products.

1.5 No consideration is given in these test methods to any possible deterioration of metal railing systems, rails, and connections, resulting from adverse environmental conditions. The performance of special tests covering this aspect may be desirable.

1.6 These test methods are limited to the application of concentrated loads described herein. Whenever given uniformly distributed loads are to be resisted by a railing system or rail in accordance with governing specifications, codes, and standards, the effects of such uniformly distributed loads on the member stresses shall be determined by calculation and the corresponding concentrated loads shall be given consideration during testing and data evaluation.

1.7 Should computations make it possible to provide the needed information, testing can be employed for verification.

1.8 *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.* For a specific hazard statement, see Note 1.

2. Referenced Documents

2.1 ASTM Standards:

E 4 Practices for Force Verification of Testing Machines²

E 575 Practice for Reporting Data from Structural Tests of Building Constructions, Elements, Connections, and Assemblies³

E 631 Terminology of Building Constructions³

E 894 Test Method for Anchorage of Permanent Metal Railing Systems and Rails for Buildings³

E 985 Specification for Permanent Metal Railing Systems and Rails for Buildings³

E 1481 Terminology of Railing Systems and Rails for Buildings³

3. Terminology

3.1 *Definitions:* For definitions of terms used in these test methods, see Terminology E 631 and Terminology E 1481.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *infill*—in the context of this standard, the balusters of a baluster railing system and the structural as well as decorative elements, including panels, mesh, and similar elements, of a panel railing system, located between top and bottom rails and posts; to serve the twofold purpose of (a) protecting bodies from penetrating and falling through the baluster and panel infill areas and (b) providing a specified resistance to horizontal thrusts as are potentially encountered within the infill area.

3.2.1.1 *Discussion*—Infills shall be designed in such a way as to deter climbing of the railing system.

3.2.2 *infill area*—the field of baluster and panel railing systems, bordered by rails, including top, intermediate, and bottom rails, and posts, including end and intermediate posts.

¹ These test methods are under the jurisdiction of ASTM Committee E-6 on Performance of Buildings and are the direct responsibility of Subcommittee E06.56 on Performance of Railing Systems and Rails for Buildings.

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² *Annual Book of ASTM Standards*, Vol 03.01.

³ *Annual Book of ASTM Standards*, Vol 04.11.

