



Designation: D 6275 – 98 (Reapproved 2003)

Standard Practice for Laboratory Testing of Bridge Decks¹

This standard is issued under the fixed designation D 6275; 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.

1. Scope

1.1 This practice establishes a standard for loading bridge deck test modules in the laboratory for static and fatigue investigation of anticipated performance of bridge decks in the field.

1.2 Testing of bridge decks is required for any substantive innovation in the structural system, the materials used, or both.

1.3 Testing of bridge decks is also required when the deck is composite with innovative floorsystem framing or with an innovative primary structural system proposed for use for the first time.

1.4 The specific objectives of the testing may be to study stress distribution in the deck, fatigue-prone details, wearing surface delamination potential, freeze-thaw damage resistance, or to provide experimental data for a life-cycle evaluation.

1.5 Testing of bridge decks should replicate the loading imposed by legal truck tires. Failure to do so in the past has produced possibly misleading information. Inconsistent test methodologies specially designed to justify a specific design cannot advance the knowledge of bridge deck behavior in an orderly and consistent manner.

1.6 *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:*²

IEEE/ASTM SI 10 Standard for Use of the International System of Units (SI): The Modern Metric System

2.2 *American Association of State Highway and Transportation Officials (AASHTO) Standards:*³

AASHTO/LRFD Bridge Design Specifications, 1st Edition, 1994, and 1996 Interim Revisions

AASHTO Standard Specification for Highway Bridges, 16th Edition, 1996

3. Significance and Use

3.1 The next 25 or 30 years will require a massive increase in the number of bridge deck replacement projects. This need, as well as new bridge construction, will lead to the introduction of many new deck construction methods. Dependable information, based on uniform test procedures, will be important to users.

4. General Requirements

4.1 The test module shall replicate the construction of the bridge deck. No scaled reduction in size of materials or components shall be permitted. Wearing surfaces, if structurally significant in the performance of the actual deck, shall be installed on the test module. If the performance of the overlay is to be evaluated, it shall be installed on the test module. Any sacrificial portion of the wearing surface (perhaps the top 1.25 cm) should not be included in the test module.

4.1.1 If the deck is intended for use on a floorsystem comprised of longitudinal stringers or transverse floorbeams, or both, such members used for the test set-up shall be spaced at dimensions that are representative of maximum stringer/floorbeam spacing, unless the test is for a specific bridge.

4.1.2 Alternatively, if supporting members are not located at the maximum spacing for the deck configuration under test, loading shall be increased or decreased to achieve the same force effects as if the supporting members had been placed at the maximum spacing. Connection between the deck and the supports shall replicate the intended field connection. Tests shall be made with the deck test module supported in at least a two-span continuous configuration, since, in fact, decks usually are continuous over multiple supports, making it mandatory to test any deck (other than simple-span units) in negative bending moment, as well as a positive moment.

4.2 The load shall be applied by means of hydraulic actuators, or other devices, which have been calibrated as to load actually applied for a range of hydraulic system pressure, and for the loading frequency to be used in the test. The use of load cells in the set-up, rather than direct calibration of

¹ This practice is under the jurisdiction of ASTM Committee D04 on Road and Paving Materials and is the direct responsibility of Subcommittee D04.32 on Bridges and Structures.

Current edition approved Dec. 1, 2003. Published January 2004. Originally approved in 1998. Last previous edition approved in 1998 as D 6275 – 98.

² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

³ Available from American Association of State Highway and Transportation Officials (AASHTO), 444 N. Capitol St., NW, Suite 249, Washington, DC 20001.