



Designation: D 5484 – 99

## Standard Specification for Steel Grid Bridge Flooring<sup>1</sup>

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### 1. Scope

1.1 This specification covers the requirements for steel grid bridge flooring systems, including design and material specifications, coatings, fabrication, and installation practices. This specification includes open (Type I), concrete filled (Type II), and unfilled composite grid (exodermic) (Type III).

### 2. Referenced Documents

#### 2.1 ASTM Standards:

A 123/A 123M Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products<sup>2</sup>

A 366/A 366M Specification for Commercial Steel (CS) sheet, Carbon (0.15 Maximum Percent) Cold Rolled<sup>3</sup>

A 569/A 569M Specification for Steel, Carbon (0.15 Maximum Percent) Hot-Rolled Sheet, and Strip Commercial<sup>3</sup>

A 615/A 615M Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement<sup>4</sup>

A 709/A 709M Specification for Carbon and High-Strength Low Alloy Structural Steel Shapes, Plates, and Bars and Quenched-and-Tempered Alloy Structural Steel Plates for Bridges<sup>4</sup>

A 780 Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings<sup>2</sup>

C 94/C 94M Specification for Ready-Mixed Concrete<sup>5</sup>

D 448 Classification for Sizes of Aggregate for Road and Bridge Construction<sup>6</sup>

D 3963/D 3963M Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars<sup>6</sup>

D 6275 Practice for Laboratory Testing of Bridge Decks<sup>6</sup>

#### 2.2 Other Standards:

Bridge Grid Flooring Manufacturers Association Design

and Specification Data<sup>7</sup>

Exodermic Bridge Deck Inc Design and Specification Data<sup>8</sup>

ANSI/AASHTO/AWS Bridge Welding Code AWS D1.5<sup>9</sup>

AASHTO Standard Specifications for Highway Bridges<sup>10</sup>

### 3. Classification

3.1 *Type I—Open Steel Grid System*—Consists of an open steel grid for carrying vehicular traffic with or without a roughened (serrated) surface. Other methods of improving skid resistance may be acceptable, but regardless of the method, it is imperative that a maintainable skid resistant surface be furnished for Type I decks. Design options to obtain acceptable fatigue life of this type of grid must be investigated.

#### 3.2 *Type II—Concrete Filled System*

3.2.1 *Grade 1*—Consists of a steel grid that will be filled with concrete to the full depth of the grid. The concrete may be finished flush with the top of the grid and made ready for traffic, or an additional thickness of concrete or other wearing surface may be placed at the option of the designer (see Note 1 and Note 3).

NOTE 1—If an additional surface course is placed, adequate provision must be made to obtain dependable bonding at the top of the filled grid.

3.2.2 *Grade 2*—Consists of a steel grid that will be partially filled with concrete by constructing the grid in the fabrication plant with a pan form at some design depth but never more than midpoint from the bottom, except that the grid must be filled full depth over all supporting floor system flanges (see Note 1, Note 2, and Note 3).

NOTE 2—The use of this system by the designer may be more beneficial than Grade 1 if dead load is a consideration.

NOTE 3—A minimum 1 $\frac{3}{4}$ -in. overlay on all Type II flooring systems is required for dependable bonding (Note 1). In the absence of such overlay,

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 01.06.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 01.03.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 01.04.

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 04.02.

<sup>6</sup> *Annual Book of ASTM Standards*, Vol 04.03.

<sup>7</sup> Available from Bridge Grid Flooring Manufacturers Association, 231 South Church St., Mt. Pleasant, PA 15666.

<sup>8</sup> Available from Exodermic Bridge Deck Inc., 60 Long Pond Road, Lakeville, CT 06039.

<sup>9</sup> Available from American National Standards Institute, 11 West 42nd St., 13th Floor, New York, NY 10036.

<sup>10</sup> Available from the American Association of State Highway and Transportation Officials, 444 N. Capitol St., NW, Washington, DC 20001.