



Designation: ~~A786/A786M-00b~~ Designation: A 786/A 786M - 05

# Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates<sup>1</sup>

This standard is issued under the fixed designation A 786/A 786M; 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 ( $\epsilon$ ) 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 specification covers carbon, low-alloy, high-strength low-alloy, and alloy steel hot-rolled floor plates for flooring, stairways, transportation equipment, and general structural purposes. While it is generally provided in the as-rolled condition, floor plate also may be provided in the heat-treated condition, depending on the material specification. Rolled floor plates have raised figures at regular intervals on one surface of the plate.

1.2 Floor plate is available in dimensions that meet the classification size limits for sheet, heavy thickness sheet coil, or plate. Maximum thickness for product delivered under this specification is 1 in. [25 mm].

1.3 When the steel is to be welded, it is presupposed that a welding procedure suitable for the grade of steel and intended use or service will be utilized. See Appendix X3 of Specification A 6/A 6M for information on weldability.

1.4 The values stated in either inch-pound units or SI units are to be regarded separately as standard. The values stated in each system are not exact equivalents; therefore, each system is to be used independently of the other, without combining values.

## 2. Referenced Documents

### 2.1 ASTM Standards:<sup>2</sup>

A 6/A 6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling

A 36/A 36M Specification for Carbon Structural Steel

A 131/A 131M Specification for Structural Steel for Ships

A 242/A 242M Specification for High-Strength Low-Alloy Structural Steel

A 514/A 514M Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding

A 568/A 568M Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for

A 570/A 570M Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality<sup>3</sup>

A 572/A 572M Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel ~~stm-a786-a786m-05~~

A 573/A 573M Specification for Structural Carbon Steel Plates of Improved Toughness

A 588/A 588M Specification for High-Strength Low-Alloy Structural Steel with 50 ksi [345 MPa] Minimum Yield Point to 4 in. [100 mm] Thick

~~A 606/A 606M Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance<sup>3</sup>~~

~~A 607 Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Columbium or Vanadium, or Both, Hot-Rolled and Cold-Rolled<sup>3</sup>~~ Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance

~~A 635/A 635M Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Carbon, Hot-Rolled<sup>3</sup>~~ Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability, General Requirements for

A 659/A 659M Specification for Commercial Steel (CS), Sheet and Strip, Carbon (0.16 Maximum to 0.25 Maximum Percent), Hot-Rolled

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee A01 on Steel, Stainless Steel and Related Products/Alloys and is the direct responsibility of Subcommittee A01.02 on Structural Steel for Bridges, Buildings, Rolling Stock, and Ships.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards*, Vol 01.04, volume information, refer to the standard's Document Summary page on the ASTM website.

\*A Summary of Changes section appears at the end of this standard.

- 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](#)
- A 829/A 829M [Specification for Alloy Structural Steel Plates](#)
- A 830/A 830M [Specification for Plates, Carbon Steel, Structural Quality, Furnished to Chemical Composition Requirements<sup>2</sup>](#)
- ~~A 907/A 907M [Specification for Steel, Sheet and Strip, Heavy Thickness Coils, Carbon, Hot-Rolled, Structural Quality<sup>3</sup>](#)~~
- ~~A 935/A 935M [Specification for Steel, Sheet and Strip, Heavy Thickness Coils, High-Strength, Low-Alloy, Columbium or Vanadium, or Both, Hot-Rolled<sup>3</sup>](#)~~
- ~~[Specification for Plates, Carbon Steel, Structural Quality, Furnished to Chemical Composition Requirements](#)~~
- A 941 [Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys](#) ~~Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys~~
- A 1011/A 1011M [Specification for Steel, Sheet, and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability](#)
- A 1018/A 1018M [Specification for Steel, Sheet and Strip, Heavy-Thickness Coil, Hot-Rolled, Carbon, Commercial, Drawing, Structural, High-Strength Low-Alloy, and High-Strength Low-Alloy with Improved Formability](#)

### 3. Terminology

3.1 *Definitions*—For definitions of terms used in this specification, refer to Terminology A 941.

### 4. Surface Pattern

4.1 Individual floor plate patterns are ~~produced exclusively by unique to~~ each manufacturer and are not identical in dimension or appearance to patterns manufactured by other manufacturers, although there may be a close resemblance. ~~Some~~ Typical patterns are shown in Fig. 1. Manufacturers generally produce only one of the patterns shown.

4.2 Pattern size, shape, and minimum pattern height are not addressed in this specification due to the differences in individual manufacturer's patterns and production methods. Where a need for these attributes exists, purchasers should consult the manufacturer.

### 5. Ordering Information

5.1 Information items to be considered, if appropriate, for inclusion in purchase orders are as follows:

- 5.1.1 Quantity (weight [mass] or number of pieces),
- 5.1.2 ASTM designation and year of issue,
- 5.1.3 Chemical composition limits or ASTM material designation and grade (if applicable) and year of issue (if neither is specified, the product will be supplied 0.33 % maximum carbon, by heat analysis, and without specified mechanical properties).
- 5.1.4 Dimensions (decimal thickness, width, and either cut length of plate or coil size and weight [mass] requirements as applicable),
- 5.1.5 Condition, if other than as-rolled,
- 5.1.6 Product form (plate, sheet, or coil) and pattern designation (from Fig. 1), As indicated in 4.2, if specific pattern attributes, or some alternative pattern, are desired, the purchaser will need to consult with the manufacturer,
- 5.1.7 Product analysis (See 9.3),
- ~~5.1.8 Copper-bearing steel (See~~
- 5.1.8 Copper-bearing steel, if required (See 9.4)

### 6. General Requirements

6.1 Except as otherwise specified, product furnished under this specification as plate shall conform to the applicable requirements of Specification A 6/A 6M.

6.2 Except as otherwise specified, product furnished under this specification as sheet shall conform to the applicable requirements of Specification A 568/A 568M.

6.3 Except as otherwise specified, product furnished under this specification as coil shall conform to the applicable requirements of Specification A 635/A 635M.

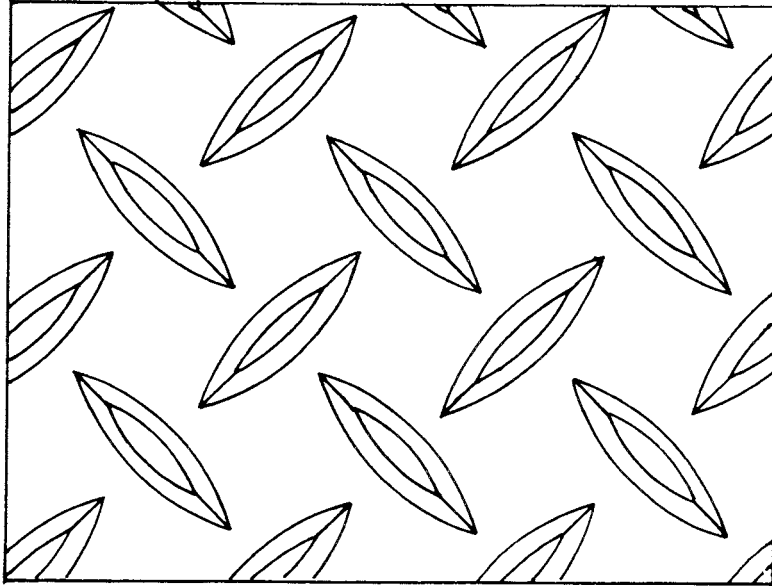
6.4 In case of any conflict in requirements with this specification and a referenced material specification, the requirements of this specification shall prevail.

### 7. Material

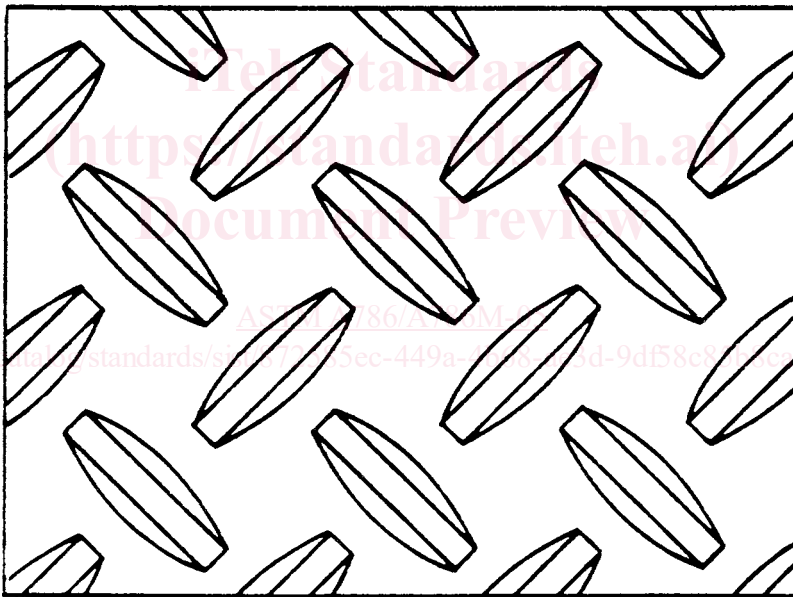
7.1 ASTM specifications that are currently available for floor plate production include, but are not limited to, the following specifications: A 36/A 36M, A 131/A 131M, A 242/A 242M, A 514/A 514M, A 570/A 570M, A 572/A 572M, A 573/A 573M, A 588/A 588M, A 606, ~~A 607~~, A 659/A 659M, A 709/A 709M, A 829/A 829M, A 830/A 830M, ~~A 907/A 907M~~, and ~~A 935/A 935M~~, A 1011/A 1011M, and A 1018/A 1018M.

### 8. Manufacture

8.1 The steel shall be made by any process that conforms to the requirements of the material specification specified in the purchase order (see 5.1.3), if any.



Pattern No. 2



Pattern No. 4

FIG. 1 Floor Plate Patterns (Full Scale)

## 9. Chemical Composition Limits

9.1 *Specified to Chemical Composition Limits Only*—The heat analysis shall conform to the chemical limits specified in the purchase order.

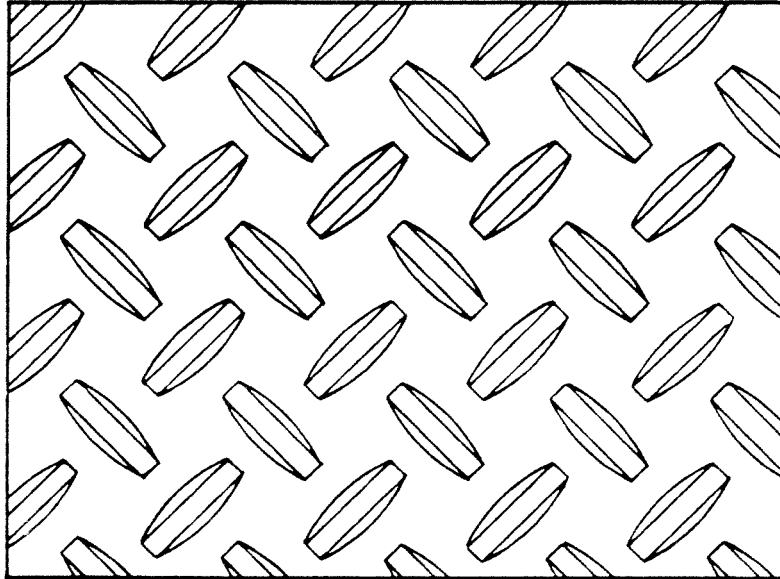
9.2 *Specified to an ASTM Specification* —The heat analysis shall conform to the chemical requirements listed in the applicable specification.

9.3 Where specified in the purchase order, product analyses shall be performed at the frequency specified in the purchase order, and such analyses shall conform to the applicable specified limits for heat analysis, subject to the permitted variations in product analysis in Specification A 6/A 6M.

9.4 If copper-bearing is specified in the purchase order, the material shall contain at least 0.20 % copper, by heat analysis.

## 10. Tensile Properties

10.1 The material as represented by the test specimen shall conform to the requirements for yield point or yield strength, and tensile strength in the ordered specification. The tension test shall be conducted on specimens with the raised figures present.



Pattern No. 5

FIG. 1 (continued)

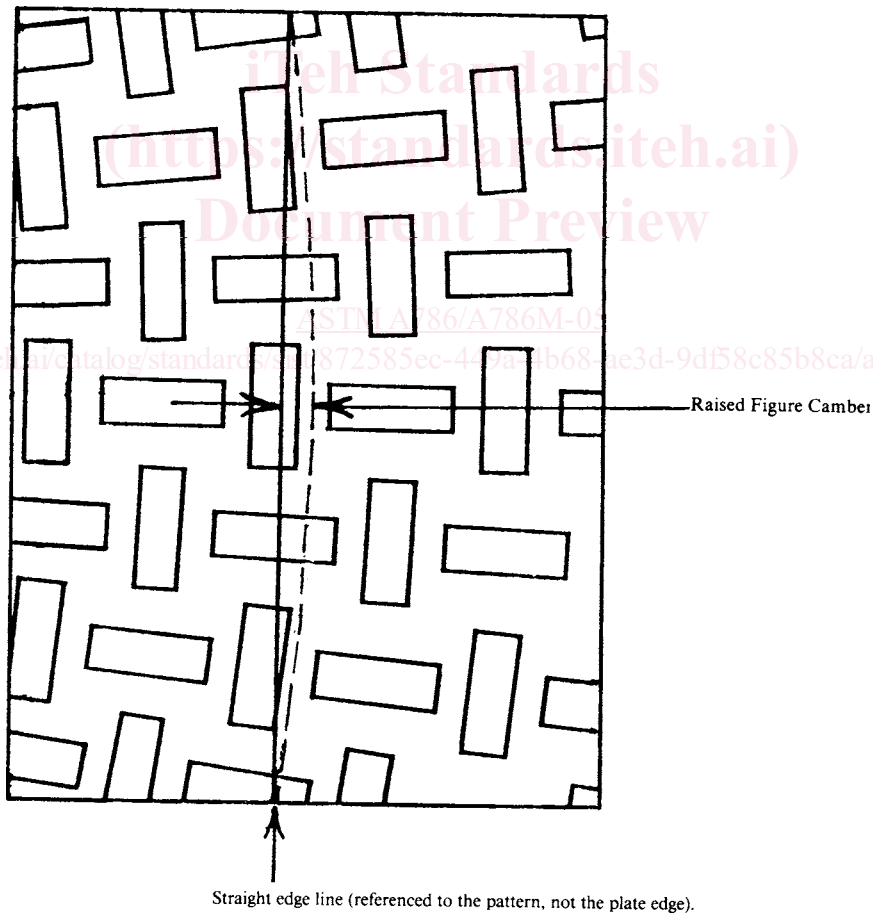


FIG. 2 Camber for Raised Figures for Floor Plates (see Table 4 or Table A1.3)

Thickness is measured at a position between the raised figures in an area unaffected by the pattern.

10.2 Percent elongation, and reduction of area where applicable, are not required for rolled floor plate.

### 11. Permitted Variations

11.1 For plates and sheets, the permitted variations in dimensions shall be as given in Tables 1-3, Fig. 2, Table 4, Fig. 3, Table