



Designation: A 786/A 786M – 00a

Standard Specification for Hot-Rolled Carbon, Low-Alloy, High-Strength Low-Alloy, and Alloy Steel Floor Plates¹

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 (ϵ) indicates an editorial change since the last revision or reapproval.

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:

A 6/A 6M Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling²

A 36/A 36M Specification for Carbon Structural Steel²

A 131/A 131M Specification for Structural Steel for Ships²

A 242/A 242M Specification for High-Strength Low-Alloy Structural Steel²

A 514/A 514M Specification for High-Yield-Strength, Quenched and Tempered Alloy Steel Plate, Suitable for Welding²

A 568/A 568M Specification for Steel, Sheet, Carbon, and High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, General Requirements for³

A 570/A 570M Specification for Steel, Sheet and Strip, Carbon, Hot-Rolled, Structural Quality³

A 572/A 572M Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel²

A 573/A 573M Specification for Structural Carbon Steel Plates of Improved Toughness²

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] Thick²

A 606/A 606M Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Hot-Rolled and Cold-Rolled, with Improved Atmospheric Corrosion Resistance³

A 607 Specification for Steel, Sheet and Strip, High-Strength, Low-Alloy, Columbium or Vanadium, or Both, Hot-Rolled and Cold-Rolled³

A 635/A 635M Specification for Steel, Sheet and Strip, Heavy-Thickness Coils, Carbon, Hot-Rolled³

A 659/A 659M Specification for Commercial Steel (CS), Sheet and Strip, Carbon (0.16 Maximum to 0.25 Maximum Percent), Hot-Rolled³

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 Bridges²

A 829/A 829M Specification for Alloy Structural Steel Plates²

A 830/A 830M Specification for Plates, Carbon Steel, Structural Quality, Furnished to Chemical Composition Requirements²

A 907/A 907M Specification for Steel, Sheet and Strip, Heavy Thickness Coils, Carbon, Hot-Rolled, Structural Quality³

A 935/A 935M Specification for Steel, Sheet and Strip, Heavy Thickness Coils, High Strength, Low-Alloy, Columbium or Vanadium, or Both, Hot-Rolled³

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

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² *Annual Book of ASTM Standards*, Vol 01.04.

³ *Annual Book of ASTM Standards*, Vol 01.03.

A 941 Terminology Relating to Steel, Stainless Steel, Related Alloys, and Ferroalloys⁴

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 each manufacturer and are not identical in dimension or appearance to patterns manufactured by other manufacturers, although there may be a close resemblance. Some patterns are shown in Fig. 3. 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 (Fig. 3),

5.1.7 Product analysis (See 9.3),

5.1.8 Copper-bearing steel (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.

⁴ Annual Book of ASTM Standards, Vol 01.01.

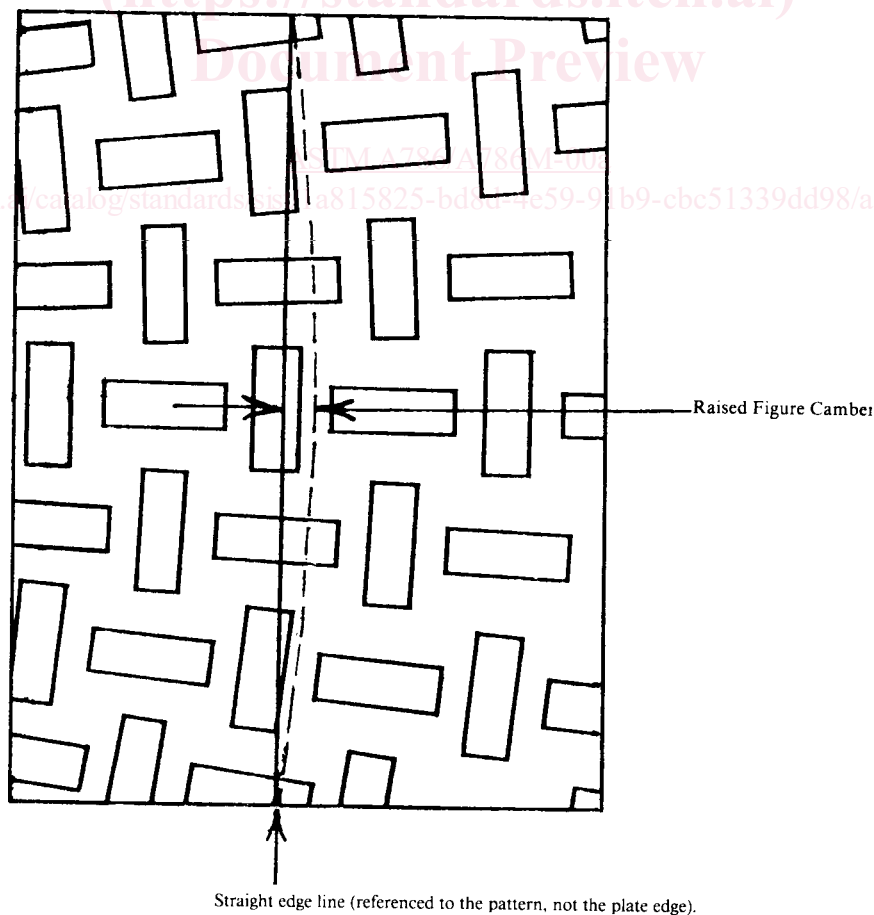


FIG. 1 Camber for Raised Figures for Floor Plates (see Table 3 or Table A1.3)

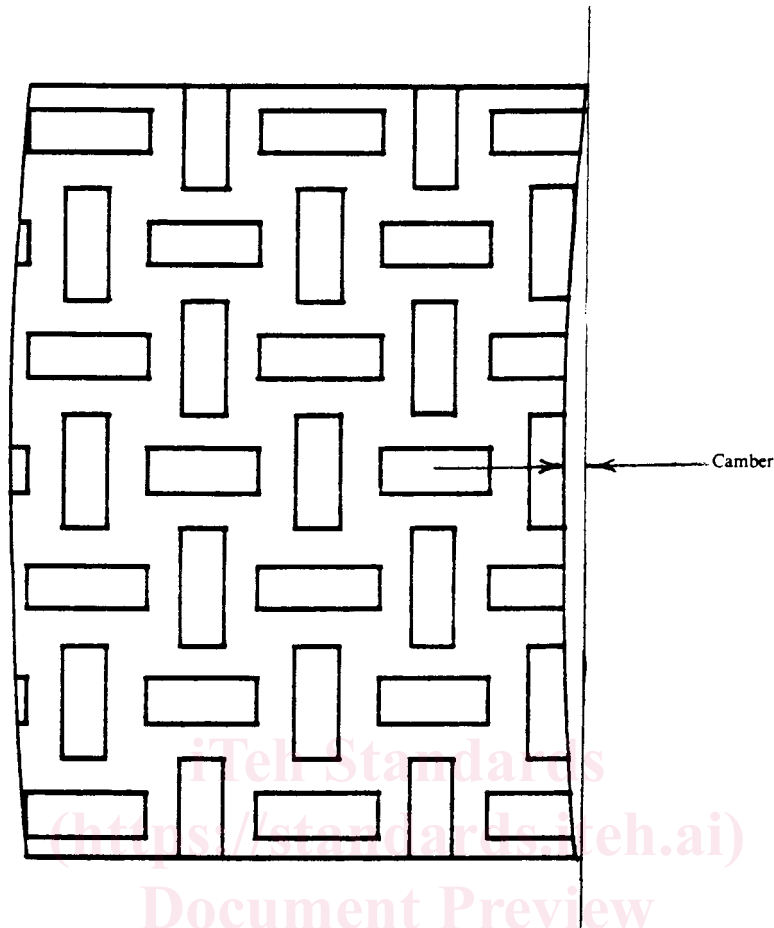


FIG. 2 Camber for Rectangular Sheared Floor Plates and Gas-Cut Floor Plates (see Table 4 or Table A1.4)

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.

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.

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

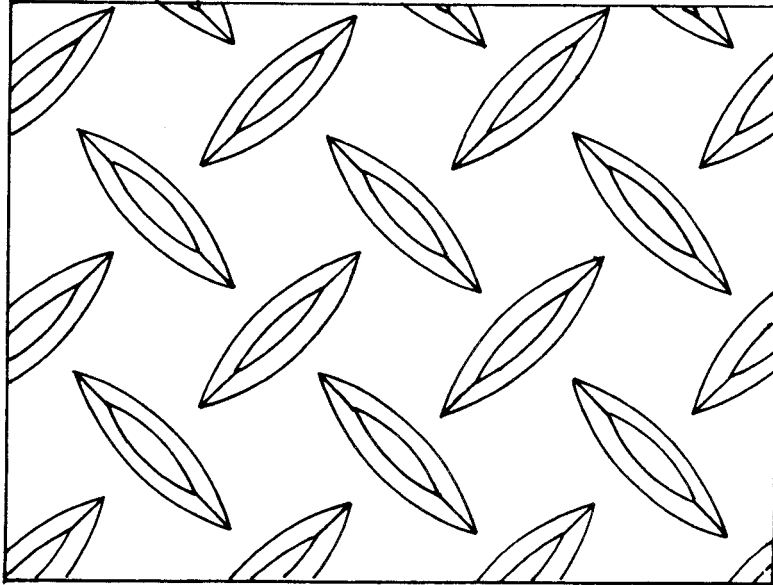
10.2 Percent elongation, and reduction of area where applicable, are not required for rolled floor plate.

11. Permitted Variations

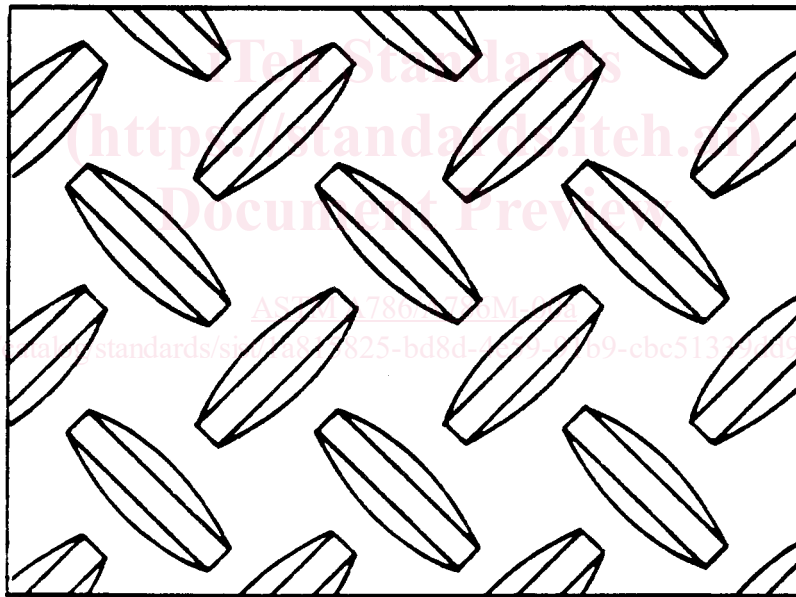
11.1 For plates and sheets, the permitted variations in dimensions shall be as given in Tables 1-6 [Tables A1.1 to A1.6], inclusive.

12. Certification

12.1 *Test Reports*—Test reports shall be furnished as required by Specification A 6/A 6M, and shall include the ASTM designation and year of issue of this specification and the applicable ASTM material designation.



Pattern No. 2



Pattern No. 4

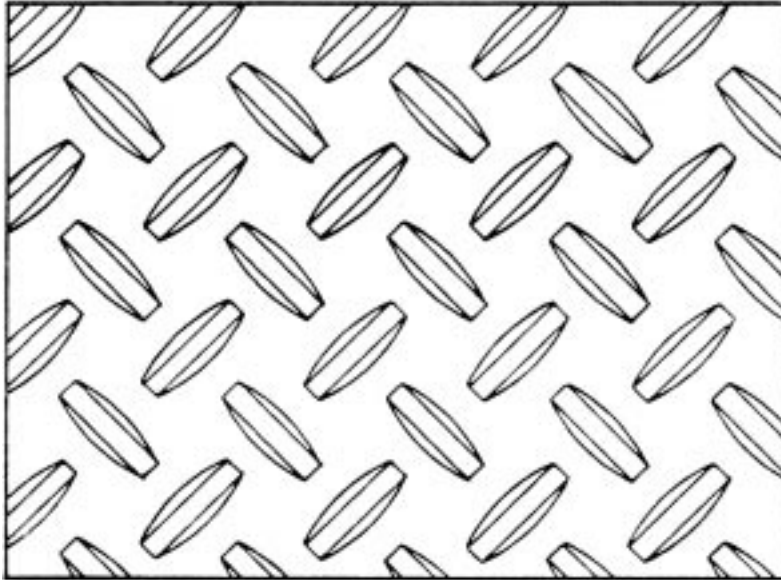
FIG. 3 Floor Plate Patterns (Full Scale)

12.2 *Identification*—Identification markings shall indicate the designation (year of issue not required) of this specification and the applicable ASTM material designation.

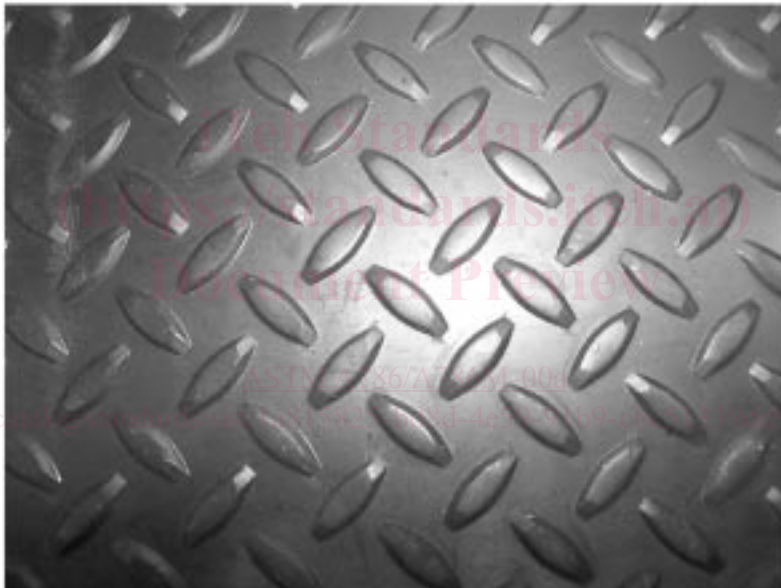
alloy; pattern; raised figures; stairways; steel; structural steel; transportation equipment

13. Keywords

13.1 alloy; carbon; floor plate; flooring; high-strength low-



Pattern No. 5



Pattern No. 6

FIG. 3 (continued)

TABLE 1 Permitted Variations in Thickness for Floor Plates

NOTE 1—Thickness to be measured at $\frac{3}{8}$ to $\frac{3}{4}$ in. from the longitudinal edge.

NOTE 2—For thickness measured at any location other than that specified in Note 1, the permitted variations over specified thickness shall be $1\frac{3}{4}$ times the amounts in this table, rounded to the nearest 0.010 in. for sheets, and to the nearest 0.01 in. for plates.

NOTE 3—Where “. . .” appears in this table, there is no requirement.

Specified Thickness, in.	Permitted Variation Over and Under Specified Thickness for Sheets, in. ^A	Permitted Variation Over Specified Thickness for Plates, in. ^B
To 0.080, incl	0.012	. . .
Over 0.080 to 0.125, incl	0.014	. . .
Over 0.125 to 0.190, incl	0.015	0.03
Over 0.190 to 0.250, incl	0.017	0.04
Over 0.250 to 0.395, incl	0.018	0.05
Over 0.395 to 1.000, incl	0.020	0.05

^AThe specified thickness range captions also apply when rolled floor plate is specified to a minimum thickness, in which case the permitted variations are all over and equal to twice the tabular values.

^BPermitted variation under specified thickness, 0.01 in.

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