



PNEUTEK[®]
AIR/SAFE[®] FASTENING SYSTEMS

October 31, 2014

RE: Steel Ledger Attachments

To Whom It May Concern:

Pneutek pneumatically driven fasteners are typically specified for the attachment of wood structural panels to steel substrate to form structural diaphragms (see attached ICC-ES Report ESR-2902). For optimum quality of attachment and consistent performance of the PNEUTEK[®] AIR/SAFE[®] FASTENING SYSTEM, Pneutek, Inc. recommends the material for all steel ledger support members be specified as ASTM A 36 with the chemical content as listed in Table 2 of the attached ANSI / ASTM Standard. All other design details for panel attachment are as contained in Report ESR-2902.

Sincerely,
Pneutek, Inc.

Raymond L. Schwarz
Ass't. V.P./Principal Engineer

Enclosures



AMERICAN NATIONAL
STANDARD

ANSI/ASTM A 36 - 77a⁴

American Association State
Highway and Transportation Officials
Standard AASHTO No.: M 183

Standard Specification for STRUCTURAL STEEL¹

This standard is issued under the fixed designation A 36; 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.

⁴NOTE—Supplementary Requirement S5 was added editorially in August 1979.

This specification has been approved for use by agencies of the Department of Defense for listing in the DoD Index of Specifications and Standards.

1. Scope

1.1 This specification² covers carbon steel shapes, plates, and bars of structural quality for use in riveted, bolted, or welded construction of bridges and buildings, and for general structural purposes. When the steel is used in welded construction, welding procedure shall be suitable for the steel and the intended service.

1.2 Supplemental requirements are provided where improved notch toughness is important. These shall apply only when specified by the purchaser in the order.

NOTE—The values stated in inch-pound units are to be regarded as the standard.

2. Appurtenant Materials

2.1 Unless otherwise provided in the order, the current edition of the specifications of the American Society for Testing and Materials listed in Table 1 shall govern the delivery of otherwise unspecified appurtenant materials when included with material purchased under this specification. Unless otherwise specified, all plain and threaded bars used for anchorage purposes shall be subjected to mechanical tests and shall conform to the tensile requirements of Section 7; headed bolts used for anchorage purposes, and all nuts, shall conform to the requirements of Specification A 307, for Carbon Steel Externally and Internally Threaded Standard Fasteners.³

3. General Requirements for Delivery

3.1 Material furnished under this specification shall conform to the applicable require-

ments of the current edition of Specification A 6, for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling, and Bars for Structural Use.³

4. Bearing Plates

4.1 Unless otherwise specified, plates used as bearing plates for bridges shall be subjected to mechanical tests and shall conform to the tensile requirements of Section 7.

4.2 Unless otherwise specified, mechanical tests shall not be required for plates over 1½ in. (38 mm) in thickness used as bearing plates in structures other than bridges, subject to the requirement that they shall contain 0.20 to 0.33% carbon by heat analysis, that the chemical composition shall conform to the requirements of Table 2 in phosphorus and sulfur content, and that a sufficient discard shall be made from each ingot to secure sound plates.

5. Process

5.1 The steel shall be made by one or more of the following processes: open-hearth, basic-oxygen, or electric-furnace.

5.2 No rimmed or capped steel shall be used

¹ This specification is under the jurisdiction of ASTM Committee A-1 on Steel, Stainless Steel and Related Alloys, and is the direct responsibility of Subcommittee A01.02 on Structural Steel.

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² For ASME Boiler and Pressure Vessel Code Applications see related Specifications SA-36 in Section II of that Code.

³ Annual Book of ASTM Standards, Part 4.



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for plates and bars over 1/2 in. (13 mm) thick or for shapes other than Group 1.

6. Chemical Requirements

6.1 The heat analysis shall conform to the requirements prescribed in Table 2, except as specified in 4.2.

6.2 The steel shall conform on product analysis to the requirements prescribed in Table 2, subject to the product analysis tolerances in Specification A 6, except as specified in 6.3.

6.3 Product analysis is not applicable for bar-size shapes or flat bars 1/2 in. (13 mm) and under in thickness.

6.4 When tension tests are waived in accordance with 7.2, chemistry consistent with the requirements in Table 2, and with the mechanical properties desired must be applied.

7. Tensile Requirements

7.1 The material as represented by the test specimen, except as specified in 4.2 and 7.2, shall conform to the requirements as to the tensile properties prescribed in Table 3.

7.2 Shapes less than 1 in.² (645 mm²) in cross section and bars, other than flats, less than 1/2 in. (13 mm) in thickness or diameter need not be subjected to tension tests by the manufacturer.

7.3 For material under 1/8 in. (8 mm) in thickness or diameter, a deduction from the percentage of elongation in 8 in. (203 mm), specified in Table 3, of 1.25% shall be made for each decrease of 1/32 in. (0.8 mm) of the specified thickness or diameter below 1/8 in.

SUPPLEMENTARY REQUIREMENTS

These requirements shall not apply unless specified in the order.

Standardized supplementary requirements for use at the option of the purchaser are listed in Specification A 6. Those which are considered suitable for use with this specification are listed below by title.

S5. Charpy V-Notch Impact Test.

S14. Bend Test.

ADDED SUPPLEMENTARY REQUIREMENTS

In addition, the following optional supplementary requirements are also suitable for use with this specification.

S1. The material supplied shall be other than rimmed or capped steel.

S2. The material to be supplied shall be silicon-killed fine-grain practice.

TABLE 1 Material Specifications

Material	ASTM Designation ^a
Plate to be bent or formed cold	A 283, Grade C ^b
Steel rivets	A 502, Grade 1 ^b
Bolts and nuts	A 307 ^b , A 325
Cast steel	A 27, Grade 65-35 ^b
Forgings (carbon steel)	A 668, Class D
Hot-rolled sheets	A 570, Grade D
Hot-rolled strip	A 570, Grade D
Cold-formed tubing	A 500, Grade B
Hot-formed tubing	A 501

^a These designations refer to the following specifications of the American Society for Testing and Materials:

A 283, Low and Intermediate Tensile Strength Carbon Steel Plates of Structural Quality,³

A 502, Steel Structural Rivets,²

A 307, Carbon Steel Externally and Internally Threaded Standard Fasteners,³

A 325, High-Strength Bolts for Structural Steel Joints Including Suitable Nuts and Plain Hardened Washers,³

A 27, Mild- to Medium-Strength Carbon-Steel Castings for General Application,⁴

A 668, Steel Forgings, Carbon and Alloy, for General Industrial Use,⁵

A 570, Hot-Rolled Carbon Steel Sheet and Strip, Structural Quality,³

A 500, Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes,³ and

A 501, Hot-Formed Welded and Seamless Carbon Steel Structural Tubing.³

^b These have lower yield point than A 36 steel.

⁴ Annual Book of ASTM Standards, Part 2.

⁵ Annual Book of ASTM Standards, Part 5.

TABLE 2 Chemical Requirements

Product	Shapes ^a	Plates					Bars			
		To ¾ (19), incl.	Over ¾ to 1½ (19 to 38), incl.	Over 1½ to 2½ (38 to 64), incl.	Over 2½ to 4 (64 to 102), incl.	Over 4 (102)	To ¾ (19), incl.	Over ¾ to 1½ (19 to 38), incl.	Over 1½ to 4 (102), incl.	Over 4 (102)
Carbon, max, %	0.26	0.25	0.25	0.26	0.27	0.29	0.26	0.27	0.28	0.29
Manganese, %	...	...	0.80-1.20	0.80-1.20	0.85-1.20	0.85-1.20	...	0.60-0.90	0.60-0.90	0.60-0.90
Phosphorus, max, %	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.04
Sulfur, max, %	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Silicon, %	...	...	...	0.15-0.40	0.15-0.40	0.15-0.40	...	...	...	...
Copper, min, % when copper steel is specified	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20	0.20

^a Manganese content of 0.85-1.35 % and silicon content of 0.15-0.40 % is required for shapes over 426 lb/l.

TABLE 3 Tensile Requirements^a

Plates, Shapes, ^b and Bars:	
Tensile strength, psi (MPa)	58 000-80 000 (400-550)
Yield point, min, psi (MPa)	36 000 (250) ^c
Plates and Bars ^{d,f} :	
Elongation in 8 in. or 200 mm, min, %	20 ^d
Elongation in 2 in. or 50 mm, min, %	23
Shapes:	
Elongation in 8 in. or 200 mm, min, %	20 ^d
Elongation in 2 in. or 50 mm, min, %	21 ^e

^a For plates wider than 24 in. (610 mm), the test specimen is taken in the transverse direction. See 11.2 of Specification A 6.

^b For wide flange shapes over 426 lb/ft tensile strength minimum of 58 000 psi (400 MPa) only and elongation in 2 in. of 19 % minimum applies.

^c Yield point 32 000 psi (220 MPa) for plates over 8 in. in thickness.

^d See 7.3.

^e Elongation not required to be determined for floor plate.

^f For plates wider than 24 in. (610 mm), the elongation requirement is reduced two percentage points.

The American Society for Testing and Materials takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, 1916 Race St., Philadelphia, Pa. 19103, which will schedule a further hearing regarding your comments. Failing satisfaction there, you may appeal to the ASTM Board of Directors.