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Structural Welding Code— Sheet Steel



American Welding Society



Key Words — Sheet steel, allowable stresses, details of welded joints, workmanship qualification, visual acceptance criteria, stud welding

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Structural Welding Code— Sheet Steel

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Prepared by
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Approved by
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Abstract

This code covers the requirements associated with welding sheet steel having a minimum specified yield point no greater than 80 000 psi (550 MPa). The code requirements cover any welded joint made from the commonly used structural quality low-carbon hot rolled and cold rolled sheet and strip steel with or without zinc coating (galvanized). Section 1 includes general provisions, section 2 design, section 3 prequalification, section 4 qualification, section 5 fabrication, section 6 inspection, and section 7 stud welding.



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Structural Welding Code—Sheet Steel

1. General Provisions

1.1 Scope

This welding code covers arc welding of structural sheet/strip steels, including cold formed members (hereafter collectively referred to as *sheet steel*) which are equal to or less than 3/16 in. (0.188 in./4.8 mm) in nominal thickness. See Annex D, Tables D1 and D2 for gage numbers and equivalent thicknesses.

Three weld types unique to sheet steel, arc spot, arc seam, and arc plug welds, are included in this code.

1.1.1 Applicable Materials. This code is applicable to the welding of structural sheet steels to other structural sheet steels or to supporting structural steel members.

1.1.2 General Stipulations. The fundamental premise of the code is to provide general stipulations applicable to any situation. Acceptance criteria for production welds different from those specified in the code shall be permitted for a particular application, provided they are suitably documented by the proposer and approved by the Engineer. These alternate acceptance criteria shall be based upon evaluation of suitability for service using past experience, experimental evidence, or engineering analysis considering material type, service load effects, and environmental factors.

1.1.3 Approval. All references to the need for approval shall be interpreted to mean approval by the Engineer, defined as the duly designated person who acts for and in behalf of the owner on all matters within the scope of this code. Deviations from code requirements shall require the Engineer's approval.

1.2 Sheet Steel Base Metal

1.2.1 Specified Base Metals. Sheet steel base metals to be welded under this code shall conform to the requirements of the latest edition of one of the specifications

listed below, or any sheet steel qualified in conformance with 1.2.2. Any combination of these steels may be welded together. These steels may also be welded to any of the steels listed in the latest edition of ANSI/AWS D1.1, *Structural Welding Code—Steel*.

(1) Specification for Sheet Steel, Zinc-Coated (Galvanized) by the Hot-Dip Process. Structural Physical Quality (A653 SQ Grades 33, 37, 40, and 80).

(2) Specification for Hot-Rolled Steel Sheet and Strip. Structural Quality (ASTM A570).

(3) Specification for Steel Sheet and Strip, Hot-Rolled and Cold-Rolled, High Strength, Low Alloy, with Improved Corrosion Resistance (ASTM A606).

(4) Specification for Steel Sheet and Strip, Hot-Rolled or Cold-Rolled, High Strength, Low Alloy Columbium or Vanadium, or both (ASTM A607 Grades 45, 50, 55, 60, 65, and 70).

(5) Specification for Steel, Cold-Rolled Sheet, Carbon Structural (ASTM A611).

1.2.2 Other Base Metals. When a steel other than those covered in 1.2.1 is approved under the provisions of the project or product specification, and such a steel is proposed for welded construction, the weldability of the steel and the WPS for welding it shall be established by qualification in conformance with the requirements of section 4 and such other requirements as prescribed by the Engineer.

1.2.3 Minimum Yield Point. The provisions of this code are intended for use with sheet steel having a minimum specified yield point equal to or less than 80 000 psi (550 MPa).

1.3 Welding Processes

1.3.1 Approved Processes. This code provides for welding with the shielded metal arc welding (SMAW), gas