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Structural Welding Code— Reinforcing Steel



American Welding Society



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Structural Welding Code— Reinforcing Steel

Including
Metal Inserts and Connections
in Reinforced Concrete
Construction

Sixth Edition

Supersedes ANSI/AWS D1.4-98

Prepared by the
American Welding Society (AWS) D1 Structural Welding Committee

Under the Direction of the
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Abstract

This code covers the requirements for welding reinforcing steel in most reinforced concrete applications. It contains a body of rules for the regulations of welding reinforcing steel and provides suitable acceptance criteria for such welds.



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Structural Welding Code— Reinforcing Steel

1. General Provisions

1.1 Scope

The code shall apply to the welding of:

1. Reinforcing steel to reinforcing steel, and
2. Reinforcing steel to carbon or low-alloy structural steel.

When the code is stipulated in contract documents, conformance with all provisions shall be required, except for those provisions that the Engineer or contract documents specifically modifies or exempts.

1.2 Application

1.2.1 This code shall be used in conjunction with the prescribed general building code requirements and is applicable to all welding of reinforcing steel, using the processes listed in 1.4, and performed as a part of reinforced concrete construction.

1.2.2 The weldments specified in this code shall not be used where impact properties are a requirement of the general specification. Impact testing requirements of welded reinforcing bars are not included in this code.

1.2.3 All references to the need for approval shall be interpreted to mean approval by the Engineer.

1.3 Reinforcing Steel Base Metal

1.3.1 Reinforcing steel base metal in this code shall conform to the requirements of the latest edition of one of the ASTM specifications listed within this paragraph. Combinations of any of these reinforcing steel base metals, when welded, shall use a WPS (welding procedure specification) qualified in conformance with Section 6.

1. ASTM A 82/A 82M
2. ASTM A 496/A 496M
3. ASTM A 615/A 615M
4. ASTM A 706/A 706M
5. ASTM A 767/A 767M
6. ASTM A 775/A 775M
7. ASTM A 934/A 934M

Manufacturing and testing requirements for mats and fabric are covered by the respective ASTM specification. For joining the ASTM A 82/A 82M and A 496/A 496M to other reinforcing wires, reinforcing bars, or structural steels, the Engineer shall specify filler metal and the provisions of this code shall apply.

1.3.2 When a reinforcing steel not listed in 1.3.1 is approved under the provisions of the general building code or by the Engineer, its chemical composition and carbon equivalent shall be provided and its weldability established by qualification in accordance with the requirements of 6.2 and all other requirements prescribed by the Engineer.

1.3.3 Base metal, other than those previously listed, shall be one of the structural steels listed in the latest edition of AWS D1.1, *Structural Welding Code—Steel*, or any steel stipulated in the contract documents or approved by the Engineer.

1.3.4 The carbon equivalent of reinforcing steel bars shall be calculated as shown in 1.3.4.1 or 1.3.4.2, as applicable.

1.3.4.1 For all steel bars, except those designated as ASTM A 706, the carbon equivalent shall be calculated using the chemical composition, as shown in the mill test report, by the following formula:

$$C.E. = \%C + \%Mn/6 \quad (\text{Eq. 1})$$