

CAN/CSA-S304.1-04 – Design of Masonry Structures Welding Requirements

This document provides an overview of the requirements of *CAN/CSA-304.1-04 – Design of Masonry Structures* with respect to welding. It is designed to provide guidance for individuals and organizations involved in the design of unreinforced, reinforced and prefabricated masonry structures and components in accordance with the limit state design method of the National Building Code of Canada.

This document is only for general guidance purposes; reference to the full text of CSA S304.1 should be made. For further information, please contact the CWB at 1-800-844-6790 or info@cwbgroup.org.

Introduction

Welding is a key joining method used in the fabrication of masonry. To ensure welds of the highest quality and the safety of both the users of masonries and the general public, CSA Standard B304.1 provides specific requirements around the fabrication and erection of masonries, with awareness that the unreinforced, reinforced and prefabricated masonries are used by people.

Welded Fabrication

CSA S304.1 provides the following requirements:

Scope:

1.1 This Standard provides requirements for the engineered design of unreinforced, reinforced and prefabricated masonry structures in accordance with the limit states design method of the National Building Code of Canada. In addition, this Standard provides requirements for the empirical design of unreinforced masonry.

1.2 Requirements for mortar and grout for unit masonry, masonry connectors and masonry constructions are specified in CSA Standards A371 and A370, respectively. Both of these Standards include requirements that affect the design and are required for use with this Standard.

12.5.3 Welded splices and mechanical connections

12.5.3.2 Except as provided for this Standard, all welding shall conform to CSA W186.

CSA standard W186 provides requirements for the qualification of welders and welding operators, welding procedures and welding supervisory and engineering personnel. A company certified to CSA W186 Division 1 requires having full time engineer(s) and a company certified to Division 2 requires having retained part time engineer(s).

CSA standard W186 provides guidance on weld design, fabrication techniques, inspection and other key considerations around welding for steel and aluminum respectively.

An organization meeting the requirements of CSA Standard W186 will have qualified welders, accepted welding procedures and accepted supervisory/engineering personnel. All elements of the welding operation will be independently verified by the Canadian Welding Bureau on an on-going basis.

Please note that there are no domestic or international equivalents to CSA Standard W186. Other national systems, such as that of the American Welding Society (AWS) do not include key concepts such as independent and on-going verification and welding supervisors/engineers. The CWB strongly cautions the reader around accepting substitutions; doing so may place public safety at risk.

For a listing of all organizations that currently meet the requirements of CSA Standard W186 and please see www.cwbgroup.org.



Welding Inspection

CSA Standard W186 requires that all welds be visually inspected. In addition, when required by contract weld inspection must be completed by certified welding inspectors or a welding inspection organization following the requirements of CSA Standard W178.2 or CSA Standard W178.1 respectively. It also requires that CSA Standard W186 be followed for the acceptance criteria for all welds. It should be noted that CSA Standard W178.2 has individual "product categories" that inspectors may qualify to, including one for CSA Standard W59.

For a listing of all organizations and individuals who currently meet the requirements of CSA Standard W178.1 and CSA Standard W178.2, please see www.cwbgroup.org.

