# *CAN/CSA- CSA S136-07 North American Specification for the Design of Cold Formed Steel Structures Members*
# Welding Requirements

This document provides an overview of the requirements of *CAN/CSA- S136-07-North American Specification for the Design of Cold Formed Steel Structures Members* with respect to welding. It is designed to provide guidance for individuals and organizations involved in the design of structural members cold-formed to shape from low alloy steel sheet, strip, plate or bar used for load carrying purposes in buildings and other structures in Canada.

This document is only for general guidance purposes; reference to the full text of CSA S136 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 cold formed structures members. To ensure welds of the highest quality and the safety of both the users of buildings and the general public, CSA Standard S136 provides specific requirements around the design of cold formed structural members and welded fabrication of cold formed structures, with awareness that building are occupied by people.

## *Welded Fabrication*

*Appendix B of CSA S136 that applies only for Canada provides the following requirements:*

### *E2a Welded Connections*

*Arc welding shall be performed by a fabricator or erector certified in accordance with CSA W47.1. Resistance welding shall be performed by a fabricator or erector certified in accordance with CSA W55.3.*

*Where each connected part is over 4.76 mm in base steel thickness, welding shall conform to CSA W59. Where at least one of the connected parts is between 0.70 and 4.76 mm in base steel thickness, welding shall conform to the requirements contained herein and shall be performed in accordance with the applicable requirements of CSA W59. Except as provided for in Section E2.2, where at least one of the connected parts is less than 0.70 mm in base steel thickness, welds shall be considered to have no structural value unless a value is substantiated by appropriate tests.*

CSA Standard W47.1 provides requirements for the qualification of welders and welding operators, welding procedures and welding supervisory and engineering personnel. A company certified to CSA W47.1 Division 1 requires having full time engineer(s) and a company certified to Division 2 requires having retained part time engineer(s).

CSA Standard W55.3 provides requirements for the qualification of welding operators, welding procedures and welding supervisory and engineering personnel. A company certified to CSA W55.3 Division 1 requires having full time engineer(s) and a company certified to Division 2 requires having retained part time engineer(s). All companies certified to CSA W55.3 require to have in place a quality system for resistance welding.

CSA Standard W59 provides guidance on weld design, fabrication techniques, inspection and other key considerations around welding for steel. CSA Standard W59 requires that contractors performing work under this standard be certified under the requirements of CSA Standard W47.1 unless the Engineer of record approves the contractor for the work to be undertaken.

An organization meeting the requirements of CSA Standard W47.1 and / or CSA Standard W55.3 will have qualified welders, operators, 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 W47.1 and / or CSA Standard W55.3. 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 contravene the intent of CSA S136 and place public safety at risk.

For a listing of all organizations that currently meet the requirements of CSA Standard W47.1 and CSA Standard W55.3 please see *www.cwbgroup.org*.

***Welding Inspection***

CSA Standard W59 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 W59 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* .