CAN/CSA-S413-07 – Parking Structures
Welding Requirements

This document provides an overview of the requirements of *CAN/CSA- S413-07 – Parking Structures* with respect to welding. It is designed to provide guidance for individuals and organizations involved in the design, fabrication, and erection of parking structures constructed of structural steel, reinforced concrete (including prestressed concrete), or a combination of these materials in Canada. This Standard specifies special requirements for the durability aspects of the design and construction of new parking structures and parts of buildings subject to vehicular traffic.

This document is only for general guidance purposes; reference to the full text of CSA S413 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 parking structures. To ensure welds of the highest quality and the safety of both the users of parking and the general public, CSA Standard S413 provides specific requirements around the design of steel structures and welded fabrication and erection of parking steel structures.

Welded Fabrication and Inspection

CSA S413 provides the following requirements:

7. Design requirements
7.1Code and reference standards
The design shall be in accordance with the NBCC, CSA A23.3, and CAN/CSA-S16.

10. Construction
10.1Reference standards
The construction shall be in accordance with CAN/CSA-A23.1 and CAN/CSA-S16, except as hereafter specified.

National Building Code Canada (NBCC) does not have any direct reference to welding. The requirements for welding are done via the mandatory requirement in the NBCC that CSA Standard S16 shall be used for all structural steel and CSA Standard A23.3 shall be used for reinforced concrete structures. For all other aspects of welding, the requirements of CSA W59 shall be followed.

CAN/CSA Standard-S16 “Design of Steel Structures” requires fabricators and erectors responsible for welding structures fabricated or erected under this Standard to be certified by the Canadian Welding Bureau to the requirements of CSA W47.1 (Division 1 or Division 2), CSA W55.3, or both, as applicable. Part of the work may be sublet to a Division 3 fabricator or erector; however, the Division 1 or Division 2 fabricator or erector shall retain responsibility for the sublet work.

CAN/CSA Standard-A23.3 “Design of Concrete Structures” requires fabricators responsible for welding of reinforced steel fabricated under this Standard to be certified by the Canadian Welding Bureau to the requirements of CSA W186.

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 W186 provides requirements for the qualification of welders and welding operators, welding procedures and welding supervisory and engineering personnel. All companies certified to CSA W186 require having full time engineer(s) or having retained part time engineer(s). This standard also provides guidance on weld design, fabrication techniques, inspection and other key considerations around welding for steel.

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 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 W47.1 and / or 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 contravene the intent of CSA S413 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 W186 please see *www.cwbgroup.org*.

Welding Inspection

According to CSA Standard S16 when third-party welding inspection (visual and/or NDE) is specified by the owner, the welding inspection shall be performed by firms certified to CSA W178.1, except that visual inspection may also be performed by persons certified to Level 2 or 3 of CSA W178.2.

CSA Standard W59 and / or CSA Standard W186 require 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, CSA Standard W59.2 and / or 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 and CSA Standard W59.2.

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* .