

## ***Prohibited types of joints and welds***

The CSA Standards for certification of welding fabricators and erectors, administered by the CWB, provide requirements for the certification of organizations involved in welding. These certification standards are based on having three main elements in place:

1. Welding must be done by competent, qualified individuals
2. Welding operations must be overseen by competent, qualified individuals
3. Welding must follow proven, qualified welding procedures

The welding procedure is considered the “recipe” for welding of a particular joint within a frame of essential variables as listed on the procedure and as allowed by welding certification standard, and all procedures are independently reviewed and accepted by the CWB. The welder qualification granted by the CWB is governed by the process, position and the type of joint(s) welded in production by the welding personnel.

Although, these welding procedures and welder qualifications fully meet the requirements of the certification standard, they do not necessarily consider the design standards or service conditions that are applicable to the particular structure or product being fabricated. Certified companies should be aware that some product codes and / or design standards have restrictions for particular type of joints and welds. These restrictions are normally in place to address design or product specific service conditions or risks that may prohibit certain welds.

Although the certified company may have CWB accepted procedures and welder qualifications for specific joints and welds, they are advised to verify with the responsible Engineer and/or design standard about the applicability of their accepted procedures prior to commencing work.

Some examples of these restrictions include:

- CSA Standard S6 “Canadian Highway Bridge Design Code” does not allow tack welding of reinforcing bars unless approved by the Engineer. It also requires that the tack welds shall not be used on fracture-critical or primary tension members unless they are incorporated into the final weld.
- CSA standard W186 “Welding of Reinforcing Bars in Reinforced Concrete Construction” lists a number of configurations not permitted when designing welds to its provisions. This includes a prohibition on tack welds for stirrups to main tensile reinforcement, column ties to main reinforcement, and on or within two bar diameters (50 mm minimum) of any portion of a cold bend measured from the adjacent tangent of the bend.
- CSA Standard S16 “Design of Steel Structures” includes restrictions on the use of backing bars. For the design of members and connections in seismic applications, the weld backing bars and run-off tabs are required to be removed and repaired with reinforcing fillet welds.
- CSA Standard W59 “Welded steel construction” includes restrictions on partial joint penetration groove welds with backing, intermittent groove welds, plug and slot welds and intermittent fillet welds on cyclically loaded structures.

Please note that this is not an exhaustive list, and is provided as examples only. Please reference the full text of the listed CSA standards for the specific requirements for these and other restrictions.

For further information or assistance, please contact the CWB’s Office of Public Safety at 1-800-844-6790 or [info@cwbgroup.org](mailto:info@cwbgroup.org). [www.weldquality.org](http://www.weldquality.org)