

1.2.2.2 Fillet Welds

When adequate structural performance from fillet welds in "T" and corner joints can be obtained, use fillet weld in preference to groove welds. Fillet welds can be non-destructively inspected with greater certainty of result and at lower cost. The minimum fillet weld size for prequalified joints is shown below:

Material Thickness of Thicker Part Joined (T)	Minimum Size* of Fillet Weld
To 3/4" inclusive	1/4" **
Over 3/4"	5/16" **

* Except that the weld size need not exceed the thickness of the thinner part joined. For this exception, take particular care to provide sufficient preheat to ensure weld soundness.

** Welds of this size must be made in a single pass.

Size fillet welds in accordance with AASHTO LRFD Design Specifications.

Web to flange connection

The minimum fillet weld necessary to join the flange to the web shall be used. This size will vary along the length of the girder depending on the size of the plates being joined.

Use of under matched filler metals

When attaching Grades 50 to HPS using welding it is often preferable to use the appropriate filler metal of the weaker steel. Applications such as attaching web stiffeners to webs or hybrid girders where the web is a lower grade than the flanges are good examples. When attaching Grade 50 specify an 80 ksi tensile strength filler metal.

Shear stress capacity of fillet welds (equal legs):

- LRFD Design - $F_v = 0.6 \times 0.8 F_{exx} \times 0.707 "t"$ (AASHTO 6.13.2.4b)

where: F_{exx} = 58,000 psi for Grade 36 Steel
 F_{exx} = 65,000 psi for Grade 50 Steel
 "t" = length fillet leg

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Fillet Weld Capacity - LRFD Design (lb/in)		
Leg Length "t"	Grade 36 Steel	Grade 50 Steel
3/16"	3690	4135
1/4"	4920	5510
5/16"	6150	6890
3/8"	7380	8270

7/16"	8610	9650
1/2"	9840	11,025
9/16"	11,070	12,405
5/8"	12,300	13,785

Figure 1.2.2.2A