Section 4152. Structural Steel

4152.01 GENERAL REQUIREMENTS.

Meet the following requirements unless alloy steel is specified in the contract documents. For alloy steel, meet the requirements specified in the contract documents for each project on which such steel is specified.

4152.02 STRUCTURAL STEEL.

A. Use the type and quality designated in the contract documents. When not specifically designated, use structural carbon steel meeting the requirements of ASTM A 709/A 709M Grade 36 (250). Miscellaneous items not commonly rolled from steel meeting these requirements may be furnished in other grades of steel with the Engineer's approval.

B. Unless noted otherwise, apply Charpy V-notch toughness requirements of Table 4152.02-1 to the following members. Ensure members are sampled and tested according to AASHTO T 243/T 243M (ASTM A 673/A 673M).

1. Flange and web plates of welded plate girders.

2. Rolled section main beams, stringers, and welded cover plates.

3. Flange and web splice plates.

4. Rolled or welded floor beams, abutment diaphragms, and cross frames carrying direct live loads, and all parts, except shear connectors, welded to each of these members.

5. Lateral bracings and connecting gusset plates in horizontally curved bridges.

C. The contract documents may also designate other members to which toughness requirements apply.

Table 4152.02-1: Non-Fracture Critical Impact Test Requirements

Grade	Thickness (in.)(mm) and Joining Method	Minimum Average Energy, ft.lbf. at °F (Joules at °C)
36T[(a)] (250T[(a)])	to 4 (100), mechanically fastened or welded	15 at 40 (20 at 4)
50T[(a, b)] (345T[(a, b)]) 50WT[(a, b)] (345WT[(a, b)])	to 2 (50), mechanically fastened or welded over 2 to 4 (50.1 to 100), mechanically fastened over 2 to 4 (50.1 to 100), welded	15 at 40 (20 at 4) 15 at 40 (20 at 4) 20 at 40 (27 at 4)
100T[(c)] (690T[(c)]), 100WT[(c)] (690WT[(c)])	to 2 1/2 (65), mechanically fastened or welded over 2 1/2 to 4 (65.1 to 100), mechanically fastened over 2 1/2 to 4 (65.1 to 100), welded	25 at 0 (34 at -18) 25 at 0 (34 at -18) 35 at 0 (48 at -18)

(a) CVN-impact testing of "H" heat frequency testing according to ASTM A 673/A 673M.

(b) If the yield point of the material exceeds 65 ksi (450 MPa), reduce the testing temperature for the minimum average energy required by 15°F (8°C) for each increment of 10 ksi (70 MPa) above 65 ksi (450 MPa). The yield point is the value given on the certified "Mill Test Report".

(c) CVN-impact testing of "P" plate frequency testing according to ASTM A 673/A 673M.