

# 11. Materials, Fabrication, Workmanship and Tolerances

## 11.1. Materials

The structural standards specify that the materials of yield strength above 450 MPa are outside of the provisions of the standard. In practice this limitation is of no consequence since fatigue strength rather than fracture usually govern the design of crane runways. The steel plates and sections must be accompanied by certified mill test reports. The material must be free from surface imperfections such as corrosion pitting, physical injury, laminations or other defects likely to impair its strength and fatigue resistance.

Flange plates over 20 mm thick should be checked for the presence of planar inclusions that could develop into lamellar cracking after welding. The best practice is to specify automatic scanning for lamellar defects at the manufacturer's works, and this requirement must be written into the specification. The final workshop ultrasonic testing should be carried out 12 to 16 hours after welding to detect delayed cracking.

Material for use in relatively low service temperature applications shall be selected as appropriate for their thickness and lowest service temperature as a precaution against brittle fracture. AS 4100 gives the method of material selection. For example, Steel plate of 60 mm thickness in accordance with AS 3678, Gr 200, 250 or 300, and AS3679, Gr 250 would not be suitable in temperatures of +10 degrees and under.

## 11.2. Workmanship

Refer to AS 4100, AS 1418.18 and this section for general fabrication tolerances.

The welds used in the manufacture of welded runways should be continuous, and should have all stop/start positions inspected for welding defects and if not complying they shall be repaired to comply with the specification.

In considering substitute sections, details or joining methods the designer should guard from accepting lesser quality of steel, detail or fatigue detail category



# Crane Runway Girders

## Limit States Design

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