i) Steel work for all members of the plate girders is made of mild steel only. The steel should be of Grade-E-350 A 0 quality for Plate Girders and Tubular section of YST310 conforming to IS 2062- 2006. For, A copy of the approved general arrangements drawing and detailed standard RDSO drawings for fabrication showing the proposed FOBs will be issued to the Contractor after accepting the tender. The contractor has to submit the scheme of erection to Railways for approval and erection shall be taken up on receipt of approval from Railways.

ii) All materials required for the work including raw steel, paints, welding materials, consumables, bolts and nuts, etc., shall be arranged by the contractor. The contractor shall be solely responsible for the procurement of the required materials.

1.0. FABRICATION ARRANGEMENTS:

1.1 The tenderer shall clearly note that the fabrication of the steel work will have to be carried out at the site allotted by the Railway in the Railway land and transport the same to site of work at his cost. However, prior approval of Railway shall be taken if fabrication is proposed to be carried out at contractor's workshop. The decision of Railways is final and binding on the contractor.

1.2 In case of fabrication proposed to be done at the contractor's workshop, the freight and other incidental charges in bringing fabricated steel from the fabricator's work shop to the site shall be borne by the contractor and rates provided deemed to be inclusive of all such charges including re handlings if any against respective items and the Railway do not undertake to pay on this account any extra rates over the above rates quoted. All fabricated materials will have to be brought to the site of erection at contractor's cost.

1.3 The land required for fabrication and stacking materials will be allotted by the Railway as for rules.

1.4 GUIDELINES ON FABRICATION OF STEEL STRUCTURE

1.4.1. The fabrication of steel girder is to be done at any work shop, which is approved by the Engineer- in- charge. The work shop/firm should have required facilities including stud welding machine.

1.4.2 The guidelines for steel fabrication specifications as given in IRS B1-2001 (Fabrication specifications) shall be followed as applicable.

1.5 **Welding process and positions**:

i) Welding shall be carried out in accordance with the approved welding procedure, specifications by approved welders, processes and positions. Only submerged arc welding should be used for all shop fabrication. Proforma for welding procedure specification and welding procedure qualification records are enclosed as Annexures.

Signature Not Verified
Digitally signed by ROLLAKUPPASWAMY KISHORE
Date: 2026.11.10 18:48:56 IST
Reason: IREPS-CRIS
Location: New Delhi

ii) All welding be preferably done in flat position (horizontal) welding should be done as per drawing ensuring proper size of weld. Over size may lead to excessive heat affected zone which may lead to failure of material. Welding should be carried out in a warm and dry place so that the rain water or other atmospheric elements may not come in contact while welding is in progress.

iii) Electrodes shall conform to C lass A2 of IRSM-28 and wire for CO2 welding shall conform to Class 1 of IRSM-46.

iv) All consumable shall be stored and handled with care and in accordance with the manufacturer's recommendations.

v) All tests to be carried out as per the notes mentioned in the drawing and got approved by competent authority.

1.6 i) Since the length of plates of standard make are available upto 12.00 mts., where steel girders of length more than 12.00 mts., the length of girder be made by allowing spliced joint instead of field welding. The spliced joints shall be fabricated by using high strength friction grip bolts only.

ii) Field connection shall preferably be done using HSFG bolts confirming to IS-4000-1967. Where this is not feasible, riveting may be done with the approval of Engineer-in-charge in field.

1.7 i) Final cutting and finishing of components:

Final finishing of length, profile and notches etc., is accomplished by accurate marking with the help of templates, measurement and gauge wherever necessitates and then by gas cutting (Chipping, grinding) as the case may be. Excessive metal is normally chipped off or gas cut (more than 3mm) and the exact finishing or profiling is achieved by fine and accurate grinding.

ii) Stud welding, shear studs welded to top flange should be done by using automatic stud welding machines.

1.8 Inspection stages:

a) Before fabrication b) During fabrication c) After fabrication

a) Before fabrication:

Quality assurance plan shall be prepared and got approved. Raw material such as Channels and plates etc., to be inspected as per specification mentioned against each items and rolling mark certificates.

Lamination, piping, pitting, rolling defects and straightness of material to be checked before fabrication. Consumables such as rivets, welding electrodes and paints etc., are as per standard specification. Welding procedure specification needs to be approved. Welder's approval as per welding procedure specification.

b) During fabrication:

Layout, Jigs, Fixtures and profile to be checked. Welding by Qualified welder as per approved WPSS.

Welding parameters are to be set and checked during welding.

Riveting by qualified and skilled personnel with approved work instructions.

c) After fabrication:

Verify rolling mark number of steel section used for fabrication from certificate issued by manufacturer. Check the register maintained by them. Surface defects shall be checked visually. Quality of welds with respect to specified sizes, length and any visual defects. Quality of rivets to be checked visually and with the help of riveting hammer. Dye penetration tests Magnetic particle radio graphic test of welds as agreed to by Engineer-in- charge. Leading dimensions ie., overall length, hole dimensions, end finishing etc., shall be checked for tolerances as per IRC 24. For this purpose detail measurement sheet shall be prepared for.

2.0 ERECTION SCHEME:

2.1 The steel work shall be temporarily assembled in shop fully and checked for tolerance, camber etc., and necessary holes drilled for field assembly and approved by Engineer- in-charge.

2.2 The successful tenderer after awarding tender shall submit detailed scheme for erection of steel girders and casting of deck slab to make composite structure proposed to be adopted for the erection of the various members keeping in view of the movement of rail traffic, electrification, location etc., In finalising his scheme for actual execution the contractor shall take into account any objections/ directions that may be given by the Railway.

2.3 Any approval given by the Railway in this regard shall in no way absolve the contractor from full and sole responsibility for the soundness and safety of erection methods as may be finally adopted by him as well as for delivery of the finished structure in accordance with the approved drawings and as per the specifications.

2.4 The tenderers are advised to quote rates taking into consideration all the conditions stipulated in the tender document without quoting their own conditions as regards to methods of measurement, terms of payment, site facilities, wastage of steel. Tenders of those who quote their own conditions under the above heads are liable to be rejected.

2.5 Payment for steel work, supplied, fabricated and erected will be paid in terms of notes of the respective chapter-4 of IRU standard specifications for formation works, Bridge works and P.Way works and follow USSR 2021.

3.0 WEIGHT:

3.1 For steel work, payment will be made only for actual quantities to be calculated as per approved Railway Drawing. The quoted rate for supply, fabrication and erection item shall be applied to the weight thus calculated. The standard drawings for fob will be supplied by the Railway.

3.2 The weight of plates and sections will be calculated from the approved rdso drawings using over all lengths and square dimensions and theoretical unit weight. No deductions being made for holes, notches and skew cuts. Gussets will be paid on the dimensions of the smallest enclosing rectangle. In addition, for all built up members welded, the calculated weight of the members shall be arrived as per Notes under Chapter-4 of Unified Standard Specifications (formation works, Bridge works and P.Way works), 2021.

3.3 The payment for High Tensile Studs and HSFG bolts and nuts will be made only for actual weight irrespective of size/lengths under item No.1 of schedule – "E". No extra rate is payable to these categories.

3.4 Shear connectors/studs, HSFG bolts, HTS nuts are to be sourced from reputed fasteners only after approval of Engineer-in-charge.