(c) - REINFORCEMENT STEEL

1.0 GENERAL

High Strength Deformed Steel Bars and wires for concrete Reinforcement used in the works shall be TMT Fe-500/Fe-500D* conforming to IS 1786 (latest revision) manufactured by Primary steel producers such as SAIL/TISCO/JINDAL/ RINL/IISCO.
* For seismic zone III, IV & V, only TMT Fe-500D steel shall be used.

All reinforcement work shall be executed in conformity with the drawings supplied and instructions given by the Engineer and shall generally be carried out in accordance with the relevant Indian Standards Specifications (IS: 2502)."

2.0 INSPECTION & TESTING

Every bar shall be inspected before assembling on the work and any defective, brittle, excessively rusted or burnt bars shall be removed. Cracked ends of bars shall be cut out.

Physical TestIS:2062, IS:1786	(i)	Upto 10mm Dia one sample per 25 MT or part thereof.
	(ii)	Above 10mm Dia one sample per 40 MT or part thereof.

The various physical test shall be carried out as per IS: 226, IS: 1608, IS:1599, IS:1387.

3.0 LAPPING & WELDING

(i) As far as possible, bars of the maximum length available shall be used. Laps shown on drawings or otherwise specified by the Engineer will be used. In case the contractor wishes to use shorter bars, laps shall be provided at the contractor's cost in the manner and at the locations approved by the Engineer. In any case laps provided will not be measured for payment purpose. The rate is inclusive of all such provision.

(ii) As and when necessary, welded laps shall be provided as specified by the Engineer.

The initial setting time of test block made with the appropriate cement and the water proposed to be used shall not be less than 30 minutes and shall not differ by ±30 minutes from the initial setting time of control test block prepared and tested in accordance with the requirements of IS:4031.

iii) The pH value of water shall generally be not less than 6.

iv) Water found satisfactory for mixing is also suitable for curing concrete. However, water used for curing should not produce any objectionable stain or unsightly deposit on the concrete surface. The presence of tannic acid or iron compounds is objectionable

4.0 REINFORCEMENT STEEL

High Strength Deformed Steel Bars and wires for concrete Reinforcement used in the works shall be TMT Fe-500/Fe-500D* conforming to IS 1786 (latest revision) manufactured by Primary steel producers such as SAIL/TISCO/JINDAL/RINL/ IISCO.
* For seismic zone III, IV & V, only TMT Fe-500D steel shall be used.

All reinforcement work shall be executed in conformity with the drawings supplied and instructions given by the Engineer and shall generally be carried out in accordance with the relevant Indian Standards Specifications (IS: 2502).

5.0 CONCRETE ADMIXTURES

5.1 General

The Engineer may permit the use of admixtures for imparting special characteristics to the concrete or mortar on satisfactory evidence that the use of such admixtures does not adversely affect the properties of concrete or mortar particularly with respect to strength, volume change durability and has no deleterious effect on reinforcement.

The admixtures, when permitted, shall conform to IS: 9103.

Calcium chloride or admixtures containing calcium chloride shall not be used in structural concrete containing reinforcement, prestressing tendon or other embedded metal.

The admixture containing Cl & SO3 ions shall not be used.

Admixtures containing nitrates shall also not be used. Admixtures

Permissible deviation for driven rivets shall be as stipulated in Appendix-IV of IRS-B1-2001.

3.0 BRIEF DESIGN DATA

The through type triangulated steel girders are designed for Heavy Mineral Broad Gauge Loading as per Indian Railway Bridge Rules and Standard Specifications. All panel joints are designed for vertical and transverse forces including secondary moments.

The structure shall be fabricated to camber as per steel bridge code and as provided in the approved drawings. The deflection of the girder is expected not to exceed the values as given in the approved drawings.

All members of the girder and joints are to be either riveted or welded as shown in the approved structural drawings. No welding except where approved by the Engineer is to be carried out at site. All welding and riveting are to be carried out as per relevant IRS Specifications.

4.0 MATERIALS

4.1 Steel

Steel grade conforming to IS:2062, is proposed to be used for all components for all spans.

The steel shall comply in all respects with the requirements of approved drawings and relevant codes and specifications and shall be procured from primary approved manufacturers only such as SAIL/TISCO/JINDAL/RINL/IISCO. However, only certain isolated sections of structural steel, not being rolled by primary approved manufacturers, can be procured from the authorized re=rollers of p[rimary approved manufacturers or authorized licencee of BIS having traceability system and who use billets produced by primary approved manufacturers. Traceabililty shall be ensured by an officer specially authorized by the concerned CPM of the PIU on case to case basis for this purpose. (a/c no. 14) It may be noted that quality of steel used for fabrication shall be the essence of the contract & shall be rigidly followed. Steel sections to be supplied by the manufacturers shall be Ultrasonically tested as per codal provisions at the manufacturer's premises before dispatch. The Contractor on receipt of supply in his factory premises/fabrication workshop shall carryout random USFD testing as per standards laid down in various codes and verify them with the list received from manufacturers. Only tested steel shall be used for fabrication. All rolled sections shall bear cast mark and shall be of such length as to avoid butt welded joints in components of truss. Such rolled