irregularities due to casting at too low a temperature), distortion and other harmful defects. They shall be well dressed and fettled; accurately moulded in accordance with the pattern / drawing and shall be of uniform thickness except where the design necessitates variation. Abrupt changes in the section: of adjoining members shall be voided as far as possible. Unless otherwise indicated edges of castings shall be rounded and integral angles finished with an angle fillet. No welding or repairs shall be carried out, unless otherwise indicated.

10.3 Structural Steel Work

Structural steel shall conform to

(a) Structural steel (fusion welding quality) ‘fe 410-W’ conforming to IS 2062-2006, Specification for structural steel (fusion welding quality). Fe 310-0 steel may be used for general purpose such as door and window frames, window bars, grills, steel gates, handrails, tie bars etc.

10.3.1 Freedom from Defects:

All finished steel shall be well and cleanly rolled to the dimensions, sections and weights specified. The finished material shall be reasonably free from cracks, surface flaws, laminations, rough, jagged and imperfect edges, and all other harmful defects. Minor surface defects may be removed by the manufacturer by grinding provided that the thickness is not locally by more than 4 percent with a maximum of 3 mm.

10.3.2 Structural steel of different sections, sizes and lengths shall be stacked separately. For each classification of steel separate areas shall be earmarked. Steel shall be marked with distinct painting marks for easy identification. All steel shall be so stored that it is always at least 15 cm above the ground level In case of long storage suitable protective measures shall be taken to prevent scaling and rusting.

10.3.3 Tolerances

Rolling and Cutting tolerances shall be as per IS 1852.

10.4 Chequered Plates

Chequered plates shall be as per requirements given in IS 3502-1994 Specification for steel chequered plates, Pattern of chequered plates shall be as directed. Plates shall be cleanly rolled and shall be reasonably free from harmful surface defects such as cracks, surface flaws, imperfect edges, etc. thickness of chequered plates specified shall be exclusive of the raised portion.

10.5 BLANK

10.6 Bolts Nuts and Washers

10.6.1 Bolts and nuts shall be conforming to the relevant requirements given in the following IS specifications and as indicated:

(a) IS1363-2002 (Parts 1 to 3) Specification for hexagon head bolts, screws and nuts
   Of product grade ‘C’ (Size M5 to M64)
(b) IS 1367 (Parts 1 to 20) Technical supply conditions for threaded fasteners.
(c) IS 6639-2005 Specification for hexagon head bolts, for steel structures

10.6.2 The heads shall be forged. in one piece with the bolts and the nuts shall, be neatly made with the hole truly in the centre. The threads shall be full, true and deep. The heads and nuts shall be hexagonal unless square heads and nuts are specially indicated. Bolts and nuts Shall be cleanly finished and shall be sound and free from defects, which may affect their serviceability. Bolts and nuts shall be suitably protected against corrosion.

10.6.3 Washers:

Plain washers shall be of steel conforming to IS 2016-1974. Specification for plain washers: Spring washers shall conform to IS 3063-1994, specification for single coil, rectangular section spring washers for bolts; nuts and screws. The washer shall be free from cracks, burns, pits to other defects. The hole shall be reasonably concentric, with the outer periphery. All sharp edges shall be removed.

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10.7 Electrodes

Electrodes for metal arc welding of mild steel shall be as per IS 814-2004, Specification for covered electrodes for metal arc welding of structural steel Joints in materials above 20 mm thick and all-important connections shall be made with low hydrogen electrodes. The mechanical properties of the weld deposit shall be such as to satisfy all the requirements such as tensile strength,elongation and impact strength of the parent metal.

10.8 Workmanship Generally

Structural steel work riveted, bolted or welded shall be carried out described in IS 800-1984, code of practice for use of structural steel in general building construction.

Note: The Contractor shall prepare the shop Drawings indicating all details regarding cutlength, weld, bolts, joints, splicing, position etc., for the approval of the consultant before providing for any fabrication. All connections, bolts, welds etc., shall be neatly described in the drawing. Approval of shop Drawings by the consultant shall not relieve the Contractor from the responsibility for correctness of the dimensions and adequacy.

10.8.1 Straightening and bending:

All material shall be straight and if necessary, before being worked shall be straightened and flattened by pressure, unless required to be of curvilinear form and shall be free from twists. Straightening of steel by hammer blows is not permitted. All bending and cutting shall be carried out in cold condition, unless otherwise directed, in such manner as not to impair the strength of the metal.

10.9 Cutting and Machining

Member shall be cut mechanically by saw or shear or by oxyacetylene flame. All sharp rough or broken edges and all edges of joints which are subjected to tensile or oscillating stresses shall be grounded. No electric metal arc cutting shall be allowed. All edges cut by oxyacetylene pores shall be cleaned of impurities and slag prior to assembly cutting tolerance shall be as follows:

(a) For member connected at ends +/- 1 mm.

(b) Elsewhere +/- 3 mm.

10.9.1 When compression members depend upon contact surfaces for stress transmission, then ends of columns, caps and bases together with gussets, angles and channels (after riveting/welding together) shall be accurately machined so that the parts connected butt over the entire surfaces of contact. Columns at bases or at caps or at butt joints need not be machined.

10.10 Holes

All holes shall be accurately marked and drilled. Holes through more than one thickness shall preferably be drilled together after the members are assembled and tightly clamped or bolted together. In such cases, if required, these parts shall be separated after drilling and burrs removed. For thickness of materials less than 16 mm the holes may be punched 3 mm less in diameter then the required size and be reamed to the full diameter after assembly. Finished holes for rivets and black bolts shall be not more than 1.5 mm (2.0 mm for rivets and bolts or diameter more than 25 mm) in diameter larger than the diameter of rivets and bolts passing through them. All matching holes for rivets shall be so prepared that a gauge 0.8 mm diameter less than the hole can pass steeley through the members assembled for riveting. Holes other than those required for close tolerance may be punched full size through material not over 12 mm thick.

10.10.1 All holes shall have their axis perpendicular to the surface bored through. Holes through two or more members shall be truly concentric. No rivet or bolt hole shall be nearer the edge of the member than distance equal to its own diameter. Holes shall not be formed by gas cutting process.

10.11 Assembly

Before assembly the contact surfaces shall be painted with a heavy coat of pure zinc chromate red oxide primer including surface preparation.

10.11.1 Laying Out:
Steel structure shall be laid out on a level platform to full scale and to full size or in parts as shown on working drawings or as directed by EIC. Wooden templates 12 mm to 19 mm thick or metal sheet templates shall be made to correspond to each member and part, rivet holes shall be marked accurately on them and drilled. The templates shall be laid on the steel members and holes for riveting and bolting marked on them. The ends of the steel members shall also be marked for cutting. The base of steel columns and the positions of anchor bolts shall be carefully set out.

10.11.2 The component parts shall be assembled in such a manner that they are neither twisted nor otherwise damaged and shall be so prepared that the specified cambers, if any, are provided. All box sections shall be carefully set out.

10.11.3 Assembly shall be done by using assembly fixtures, jigs and stands, which facilitate high quality assembly with proper safety. Mis-alignment and distortion of parts after assembly shall not be allowed; only thoroughly straightened parts free from burrs, grease, rust, etc, shall be allowed for assembly.

10.11.4 Temporary connection of parts during assembly shall be done in the following way:

(a) For welded structures joining shall be done by means of tack weld, fastening devices and fixtures.

(b) For riveted and bolted structures joining shall be done by adequate number of bolts. If tack welding is permitted, in such cases the same shall be removed after the work is over.

(c) For riveted structures in which holes are to be drilled after assembly, joining shall be done by appropriate fixtures.

10.11.5 Tack welding shall be done on the sides and along the line of the weld. Tack weld dimension shall be minimum. Tack welding shall be carried out with similar electrodes as the final welding and the tacks shall completely fuse with the final weld metal.

10.11.6 In case splicing is necessary, the individual members shall be spliced first before assembly and before final welding with other members.

10.11.7 For riveted structures, members shall be well tightened by assembly bolts in every third hole maximum distance between bolts shall not exceed 500 mm. To prevent stiffening, drift pins shall be used 30 percent of the assembly bolts. After tightening, the gap between members to be jointed shall be checked by 0.2 mm thick feeler gauge which should not go inside by more than 2 mm, looseness of bolts shall be checked by tapping with a test hammer.

10.13 **Bolting**

Bolt head and nuts shall be of such length as to project one clear thread beyond the nuts when fixed in position, and these shall fit in the holes without any shake. The nuts shall fit in the threaded ends of bolts properly.

10.13.1 Round washers shall be placed under the heads and nuts’ of permanent bolts. Maximum two washers for one nut and one for each bolt head shall be used. Bolt threads shall be outside the limits of joining members and unthreaded portion of bolt shall not be outside the washer.

10.13.2 Where there is risk of the nuts being removed or becoming loose due to vibration or reversal of stresses, these shall be secured from slackening by the use of lock nuts or spring washers, as directed by the EIC.

10.13.3 Bolts, nuts and washers shall be thoroughly cleaned and dipped in double linseed oil before use.

10.13.4 Quality of tightening of bolts shall be inspected by taping them with a hammer. The bolt shall not be shaken or shifted.

10.13.5 The bolts shall be tightened starting from center of the joint towards the edge.

10.14 **Welding**
10.14.1 Welding shall be done by metal arc process unless otherwise permitted by the EIC, in writing, in accordance with IS 816-1969 Code of practice for use of metal arc welding of general construction. in mild steel, and IS 9595-1996 Recommendation of Metal arc welding, regarding workmanship welding method, welding procedure with suitable electrodes and wire flux, combinations, quality of welds, correction of weld faults etc.

10.14.2 Preparation of members for welding:

10.14.2.1 Assembly of structural members shall be made with proper jigs and fixtures to ensure correct positioning of members (angles, axis, nodes etc)

10.14.2.2 Sharp edges, rust of cut edges, notches, irregularities and fissures to ensure due to faulty cutting shall be chipped or ground or filed over the length of the affected area deep enough to remove faults completely.

10.14.2.3 Edge preparation for welding shall be carefully and accurately made so as to facilitate a good joint.

10.14.2.4 Generally, no special edge preparation shall be required for members under 8 mm thick.

10.14.2.5 Edge preparation (beveling) denotes cutting of the same so as to result in V, X, K or U seam shapes as per IS 9595.

10.14.2.6 The members to be assembled shall be clean and dry on the welding edges. Under no circumstances shall wet, greasy, rust of dirt-covered parts be assembled. Joints shall be kept free from any foreign matter, likely to get into the gaps between members to be welded.

10.14.2.7 Before assembly, the edges to be welded as well as adjacent areas extending for at least 20 mm shall be cleaned (until metallic polish is achieved)

10.14.2.8 When assembling members proper care shall be taken of welding shrinkage and distortions, as the drawing dimensions cover finished dimensions of the structures.

10.14.2.9 The elements shall be got checked and approved by the EIC before assembly.

10.14.2.10.1 The permissible tolerances for assembly of members preparatory to welding shall be as per IS 9595.

After the assembly has been checked, temporary tack welding in position shall be done by electric welding, keeping in view finished dimensions of the structure.

Preheating of members to be joined to be carried put as per standards wherever necessary.

**Butt Welds:**

The form of joint, angle between fusion faces, gap between parts and the welding procedure shall be such that welded joint shall comply with the design requirements. The ends of butt joints in plate shall be welded so as to provide full throat thickness. In the gas-welded condition, the weld face shall be proud of the surface of the parent metal. Where a flush surface is required, the excess metal shall be dressed off. Where no dressing is to be carried out, the permissible weld profile shall be as specified in the relevant IS.

For butt weld, where these are to be welded for both sided, certain welding procedures allow this to be done without back going, but where complete penetration cannot be achieved, the back of the first run shall be gouged out to clean sound metal before welding is started on the gouged outside.

**Fillet Welds:**

A fillet weld as deposited shall be not less than the specified dimensions indicated as throat thickness and/or leg thickness taking into account penetration process or partial penetration. For concave fillet welds the actual throat thickness shall be not less than 0.7 times the specified leg length. For convex fillet welds,
the actual throat thickness shall be not less than 0.9 times the specified leg length.

**Preparation of joint Faces:**

If preparation or cutting of material is necessary, this shall be done by shearing, chipping, grinding, machining, thermal cutting. When shearing is used the effect of work hardening shall be taken care of to ensure that there is no cracking of the edges. Removal of 1 mm to 2 mm from a cut face normally eliminates the layer of hardness.

**Fusion Faces:**

Fusion faces and adjustment surfaces shall be free from cracks, notches or other irregularities which might be the cause of defects or would interfere with the deposition of the weld. They shall also be free from heavy scale, moisture, oil, paint and any other substances which might affect the quality of weld or impede the progress of welding.

**Assembly for Welding:**

Jigs and manipulators should be used, where practicable, so that the welding can be carried out in the most suitable position. Jigs shall maintain the alignment with the minimum restraint so as to reduce the possibility of lock in stresses.

**Alignment of Butt Joint:**

The root edges or root faces of butt joints shall not be out of alignment by more than 25 percent of the thickness of the thinner material for material up to 12 mm thick or by more than 3 mm for thicker material. For certain applications closer tolerances may be necessary for proper alignment.

**Fit up of parts jointed by fillet welds:**

The edges and surfaces to be jointed by fillet welds shall be in close contact as possible since any gap increases the risk of cracking but in no case should be gap exceed 3 mm.

**10.14.10 Tack Welds:**

Tack welds shall be not less than the throat thickness or leg lengths of the root run to be used in the joint. The length of the tack weld shall not be less than four times the thickness of the thicker part or 50 mm whichever is smaller. If smaller tack welds are desired, these shall be so indicated.

Where a tack weld is incorporated in a welded joint, the shape of the tack shall be suitable for incorporation in the finished weld and it shall be free from cracks and other deposition faults.

**10.14.11 Protection from Weather:**

Surface to be welded shall be dry. When rain or snow is falling or during periods of high wind, necessary precautions shall be taken for outdoor welding. Warming shall be carried out at all ambient temperatures below 10°C.

**10.14.12 Inter-Run Cleaning:**

Each run of weld bead and each layer of weld shall be thoroughly cleaned of slag, spatters, etc., before depositing subsequent bead or weld with particular reference to thorough cleaning of toes of the welds. Visible defects such as cracks, cavities and other deposition faults, if any, shall be removed to sound metal before depositing subsequent run or layer of weld.

**10.14.13 Welding Procedure:**

10.14.13.1 Welding shall be carried out only by fully trained and experienced welders as tested and approved by the EIC.

10.14.13.2 Qualification tests for welders as well as tests for approval of electrodes will be carried out as per IS 823. The nature of test for performance qualification for welders shall conform to the
quality of welding required on this work as judged by the EIC.

10.14.13.3 The steel structures shall be automatically, semi-automatically or manually welded.

10.14.13.4 Welding shall be done only after the checks shown under clause 10.15 have been carried out.

10.14.13.5 Welding procedures and tests for welders shall be conducted as per IS 9595 and approved by the EIC

10.14.13.6.1 The welder shall mark with his identification mark on each element welded by him.

10.14.13.7 When welding is carried out in open air steps shall be taken to protect the places of welding against wind or rain. The electrodes wire and parts being weld on shall be dry.

10.14.13.8 Before beginning the welding operation each joint shall be checked to assure that the parts to be welded are clean and root gaps provided as per IS 9595

10.14.13.9 For continuing the welding of seams discontinued due to some reasons the end of the discontinued seam shall be melted in order to obtain a good continuity. Before resuming the welding operation the groove as well as the adjacent parts shall be well cleaned for a length of approximately 50 mm.

10.14.13.10 For single butt welds (in V,1/2V or U) and double butt welds ( in K, double U, etc) the rewelding of the root butt is mandatory but only after the metal deposition on the root has been cleaned by back gouging or chipping.

10.14.13.11 The welding seams shall be left to cool slowly. The contractor shall not be allowed to cool the welds quickly by any method.

10.14.13.12 For multi layer welding before welding the following layer, the formerly -welded layer shall be cleaned metal bright by light chipping and wire brushing. Backing strips shall not be allowed.

10.14.13.13 The order and method of welding shall be so that :

(a) No unacceptable deformation appeared in the welded parts

(b) Two. margin is provided to compensate for contraction due to welding in order to avoid any a high permanent stresses.

10.14.13.14 The defects in welds shall be rectified to IS: 9595 and as per instruction of EIC.

All weld shall be inspected by Dye Penetration before painting, any weld found to be defective shall be cut by using either chipping hammer or any other means in such a manner that the adjacent material is not damaged.

10.14.14 Approval and Testing of welders:

The contractors shall satisfy the EIC that the welder is suitable for the work up on which they will be employed.

10.14.15 Weld instruction:

The weld seams shall satisfy the following:

a. shall correspond to design, shapes and dimensions

b. Shall not have any defects such as cracks, incomplete penetration and fusion under cuts, rough surfaces, burns, blow holes, and porosity etc beyond permissible

10.14.15.1 During the welding operation and approval-of finished elements inspection ant test shall be made as shown in table 1 below

<table>
<thead>
<tr>
<th>SL No</th>
<th>Inspection of test</th>
<th>Coverage</th>
<th>Procedure</th>
<th>Evaluation and remedy of defects</th>
</tr>
</thead>
</table>

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10.14.15.2 The mechanical characteristics of the welded joints shall be as in IS: 9595

10.14.16 Quality of welds and corrections:

Welded joints shall be free from defects that would impair the service performance of the construction. All welds shall be free from incomplete penetration, incomplete fusion; slag inclusion, burns, unwelded craters, undercuts and cracks in the weld metal or in the heat affected zone, porosity, etc. Unacceptable undercutting shall be good by grinding. In case of shrinkage cracks, cracks in parent plate and crater, defective portions shall be removed down to sound metal and re-welded. Whenever corrections necessitate the deposition of additional weld metal, electrode of a size not exceeding 4mm may be used. Rectification of welds by caulking shall not be permitted.

10.15.17 Cleaning
All welds shall be cleaned of slag and other deposits after completion; till the work is inspected and approved, painting shall not be done.

10.15.18 Plaining of Ends:

10.15.18.1 Plaining of ends of member like column ends shall be done by grinding where so specified.

10.15.18.2 Plaining of butt welded member shall be done after these have been assembled and the edges be removed with grinding machine or file.

Shop Painting: Entire steel work with exception of bolts, nuts and machined surfaces after being thoroughly cleaned and shall be given shop coat of zinc chromate primer. Welds and adjacent parent material shall not be painted prior to the deslagging, inspection and approval.

10.15.18.3 The following tolerances shall be permitted on members that have been plained:

(a) The length of member having both end plained max + 2mm with respect to design.
(b) Level difference between plained surface = 0.3mm.
(c) Deviation between plained surface and member axis=max 1/5000.

10.15.19 Safety and Health

The Contractor shall ensure that the safety requirements and health provisions laid down in IS: 818-1968, Code of Practice for safety and health requirements in electric and gas welding and cutting operations, are complied with during welding operations. The Contractor shall also provide equipment for eye and face protection during welding as laid down in IS: 1179-1967. Fire precautions shall be taken in accordance with IS 3016-1982, Code of practice for fire precautions in welding and cutting operations.

10.15 Erection:

10.15.1 Erection work shall be performed in accordance with the general construction schedule. A scheme shall be worked before the commencement of the erection which shall also contain rules for safety precautions as detailed in IS: 7205-1974. Safety code for erection of structural steel works.
10.15.2 Anchor bolts for fastening of steel structures shall be set in designed positions and grouted along with foundations. Alternatively anchor bolts should be provided in the concrete foundation with bolt boxes and anchor channels for the purpose of flexibility and grouted after final alignment and levelling Column.

10.15.3 The gaps between the bearing surface of foundation and bottom of the structure to be erected shall be filled properly by cement grouting. Grouting shall be done after the verification and proper positioning of the structures but before encasing the structures with concrete if specified.

10.15.4 Damaged structural members shall be examined and rectified or replaced as directed.

10.15.5 The erected parts of the structures shall be stable during all the stages of erection; and structural elements to be erected shall be stable and strong to bear erection loads.

10.15.6 Working on the already erected structures is permitted only after they are finally fixed. Erection of structures of each tier for high structures shall be executed only after fastening of lower tier by the permanent or temporary fastening devices as per schedule of execution of work and certified for safety.

10.15.7 The joint and mating surface including the mating planes, strips and filler or spacers shall be cleaned of dust, rut and water.

10.15.8 Erected structural members shall be firmly fastened by bolts and drifts, permanent or provisional tacking, crossing bars and so on before the erection crane hook is removed.

10.15.9 The trusses shall be lifted only at nodes. The trusses above 12 m span shall not be singed at the apex, as it will develop compression stresses in the bottom tie member. It shall be lifted by slinging at two mid points of rafters, which shall be temporarily braced by a wooden member of suitable section. After the trusses are placed in position purlins and wind bracings shall be fixed as soon as possible. The end of truss which faces the prevailing winds shall be fixed with holding down bolts and the other end kept free to move. In case of small truss of span say up to 12 mm the free end of the truss shall be laid on steel plate as per design and the holes for holding down bolts shall be made in the form of oblong slot as to permit the free movement of the truss end. For large spans, the free end of the truss shall be provided with suitable rocker and roller bearing where indicated.

10.15.10 Erection Joints:

While erecting, holes to be riveted shall be fitted with temporary bolts and drifts of diameter equal to those of the holes. It is necessary to install drifts for accurate matching of holes. Number of bolts and drifts shall not be less than 40 Percent of total number of holes. Forces applied to drifts shall be same as approved for rivets. Number of drifts shall be 10 percent of number of holes.

10.15.11 The number, size and length of tack welds in erection forces shall be as indicated. For the erection joints which do not bear the erection forces the length of tack welds shall be minimum 10 percent of tube designed weld length of the joint.

10.15.12.1 Welding, riveting and final fastening of permanent bolts shall be done only after the inspection of the structural elements for their positions. Head bolts and nuts shall perfectly be in touch with the surfaces of structures and washers.

10.15.13 Tolerance Allowed in Erection;

10.15.13.1 Building without crane:

The maximum tolerance for-line and level of steel structure shall be ±3 mm on any part of the structure. The structure shall not be out of plumb more than 5 mm on each 10 meter section in height and not more than 8 mm per 30 metre section. These tolerance shall apply to all parts of structure unless otherwise specified.

10.15.13.2.1 Tolerance allowed in erection of steel structure containing cranes shall be as per following table:
### STEEL REINFORCEMENT

**10.16 Steel Reinforcement for concrete**

Steel Reinforcement shall be of mild steel plain bars, high strength deformed bars manufactured by thermo mechanical treatment process (TMT), steel wire fabrics and of grade / types as indicated.

10.16.1 Mild steel plain bars shall be grade I or grade II as indicated and conforming to IS 432 (part I) - 1982, Specification for mild steel and medium tensile steel bars. Alternatively mild steel bars shall be of grade E 250 conforming to IS 2062.

10.16.2 High strength Deformed Bars shall be produced by thermo mechanical treatment process (TMT) and shall be of grade Fe 415, Fe 500 or Fe 550 as indicated meeting all requirements confirming to IS 1786 - 1985 Specification for high strength deformed bars and wires for concrete reinforcement.


10.16.4 Tolerance on size of Reinforcement Bars:

The tolerance on diameter of the mild steel bars will be +/- 0.5mm for bars upto and including 25mm dia with a total margin of 1 mm, and +/- 0.75mm for bars above 25mm dia with total margin of 1.5mm. The tolerance on the diameter in the case of coiled round bars shall be +/- 0.5mm upto and including 12mm diameter with a total margin of 1 mm Measurement shall be taken at point sufficiently away from the ends ensuring exclusion of heavy ends.

10.16.5 Tolerance on Weight:

The tolerance on weight of plain and deformed round shall be ±4 percent with a total margin of 8 percent

<table>
<thead>
<tr>
<th>Component</th>
<th>Table</th>
<th>Tolerance Allowed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Columns and Roof Posts</td>
<td>(a) Shifting of column's axis at foundation level with respect to building line: (i) In longitudinal direction (ii) In lateral direction</td>
<td>+/-5 mm +/-5 mm</td>
</tr>
<tr>
<td></td>
<td>(b) Deviation of both major column axis From vertical between Foundation and other member connection levels: (i) For a column upto and including 10m height, (ii) For a column greater than 10m but less than 40m height</td>
<td>+/-5.00 mm from true vertical +/-5 mm from true vertical for any 10M length measured between connection levels but not more than +/-8.00mm for 30 M length</td>
</tr>
<tr>
<td></td>
<td>(c) For adjacent pairs of columns across the width of the building prior to placing of truss.</td>
<td>+/-5.00 mm on true span</td>
</tr>
<tr>
<td></td>
<td>(d) For any individual column deviation of any bearing or resting level from levels shown on drawings.</td>
<td>+/-5.00 mm</td>
</tr>
<tr>
<td></td>
<td>(e) For adjacent pairs of columns either across the width of buildings or longitudinally level difference allowed between bearing or seating level supposed to be at the same level.</td>
<td>+/-5.00 mm</td>
</tr>
<tr>
<td>Truss</td>
<td>(a) Deviation at centre of span of upper chord member from vertical plane running though centre of bottom chord. (b) Lateral displacement of top chord at centre of span from vertical plane running through centre of supports.</td>
<td>1/500 of the span or 10mm whichever is less 1/250 of depth of truss or 20mm whichever is less</td>
</tr>
</tbody>
</table>