

EP: WEX: CIVIL: ISBC

SPECIAL TERMS AND CONDITIONS FOR CIVIL WORKS

1. EARTH WORK FOR FOUNDATIONS :

Earth work excavation for foundations or filling in foundations shall be clearly demarked in the field by the contractor. Excavation shall be done to lines and leaves defined. Excavation shall be carried out to such width, length, depth profiles and grades as shown in the drawings or as may be specified by the Engineer – in – charge. Rough excavation may be carried out up to a depth 15cms, less than the final level but the balance excavation shall be filled up as directed by the Engineer –in-charge.

2. PLAN & REINFORCED CEMENT CONCRETE WORKS :

All design and construction shall be performed in accordance with the Indian Standard Code of Practice for plain and re-in forced concrete BIS:456-1978 or latest. Any special requirements noted on the drawings or bill of quantities shall prevail over the provisions of this specification. The coarse aggregate to be used for all concrete works shall be of hard broken granite stone jelly of various sizes as specified under respective items in the bill of quantities conforming to IS:383-1978 or latest edition.

Unless otherwise approved, concrete shall be placed in single operation to the full thickness of slabs. The concrete after being laid shall be compacted by means of vibrators of approved type under proper supervision as directed by the Engineer-in-charge. Care should be taken to avoid segregation and formation of air bubbles. The whole process starting from the mixing of concrete to the placing and compaction shall not take more than 20 minutes and the process shall be completed before the initial setting takes place. Curing shall be accomplished in accordance with IS:456-1978 or latest, by keeping the concrete covered with a layer of sacking, canvas, hessian or similar absorbent materials and kept constantly wet for the period as directed by the Engineer-in-charge.

3. REINFORCEMENT :

All reinforcement shall be clean and free from pitting, loose mill-scales, dust, rust and coats of paints, oil or other coating which may destroy or reduce the bond. General construction details and workmanship relating to reinforcement including bar bends, laps, splices and installation shall be in accordance with IS: 2502-1978 or latest.

The bars required for the work will be supplied separately as per the relevant drawings. The bars shall be bent as per the bar bending schedules indicated in the drawings or as per the directions of Engineer-in-charge. All reinforcing bars shall be so tied as to form a rigid cage to prevent displacement before or during concreting. Rate quoted for reinforcement should include the cost of transporting MS rods / CTD bars from BHEL stores to site work (including loading, unloading and incidental costs complete) as well as cleaning, cutting, bending, placing, binding with contractor's own binding wire including cost thereof and providing necessary cover blocks of concrete but excluding the cost of MS rods / CTD bars.

4. FORM WORK :

Form work shall conform to the shapes, lines and dimensions of concrete and RCC structures as shown in the drawings and variations if any shall be well within the permissible tolerances. Form work for concrete shall be of plywood, MS fabricated seasoned timber or other approved materials which shall be properly designed and build for easy removal and cleaning.

5. STONE MANSORY :

Stones shall be obtained from the approved quarry and shall be free from decay and weathering. All stones shall be thoroughly wetted before use. The mortar used for jointing shall be as specified under the respective item of the Bill of Quantities.

The walls shall be carried up truly to plumb level. Every stone shall be carefully fitted to the adjacent stones so as to form a neat and close joint.

To give sufficient lateral bond, vertical joints shall be avoided. Prescribed number of headers as required shall be provided to give sufficient transverse bond. At junctions of walls the stones or each alternate course shall be so carried into each of the respective walls as to unite the entire work thoroughly. Where breaks are unavoidable in carrying up the work continuously in horizontal course, sufficiently long steps shall be left to join the old and new works. Buildings of two thin faces and filling up the middle with small stuff or dry packing shall be strictly avoided. When plastering or raised pointing is not required to be done, joints shall be strut flush and finished simultaneously. The rate quoted for the stone masonry work shall include the cost of such simultaneously flush pointing and finishing also.

6. RANDOM RUBBLE MANSORY :

Stones shall be obtained from approved quarry and shall be free from decay and weathering. The stones shall be hammer dressed at faces and joints to enable them to come into close proximity with each other. The face stone shall be laid in headers and stretchers alternately so as to break joint by at least 75 mm. Thickness of joints shall not exceed 12mm. No pinning shall be used on the face stone and shall extend well back into the hearting. Stones less than 730mm in height shall not be used on the face.

7. BRICK WORK MANSORY :

Brick work shall conform to IS: 2212-2000 or latest. Unless otherwise specified in the Bill of Quantities, standard metric bricks of size 21 x10 x 7.5 cm only shall be used. Bricks shall be well soaked for at least 6 hours before use on works. The soaked bricks shall be kept on wooden planks or brick platform. Brick required for masonry with clay shall not be soaked but only dipped in water before use.

Brick work shall be laid with specified mortar to be prepared in accordance with IS: 2250-2000 or latest. Half bricks or cut bricks shall not be used except where needed to complete the bond. Each course shall be perfectly straight in both directions horizontal and transverse. The walls shall be taken up truly to plumb and if battered, the batter is to be truly maintained. The level of the brick work shall be checked up at every one meter interval.

The joints shall be restricted to 6mm first class brick work and to 10mm in second class brick works.

The newly completed work shall be protected from rain by suitable covering. Masonry work shall be kept thoroughly watered on all the faces for at least 10 days after completion. In case of lime mortar curing shall commence two days after laying of masonry and shall continue for seven days.

8. SCAFFOLDING:

All the requisite scaffolding for the work shall be provided by the contractor at their expense.

9. DAMP PROOF COURSE:

Damp proof course shall either be with cement concrete or with cement mortar of specified thickness as mentioned in the relevant item of schedule. Damp proof course shall not be carried across doorways. It shall be laid for all walls except veranda retaining walls or for particular walls only as directed by the Engineer-in-charge. It shall be laid flush with the floor levels as instructed the Engineer-in-charge.

10. CEMENT PLASTERING:

Cement plastering shall be in accordance with IS: 1661 and Cement Mortar shall conform to IS: 269. The mortar of specified mix and thickness shall be used. The surface to be plastered shall be thoroughly cleaned so that it is free from dust, dirt, oil, salts etc. The joints of masonry shall be raked out to a depth of at least 12mm.

11. FABRICATION & ERECTION OF STRUCTURAL STEEL WORK:

I) Fabrication & Erection:

- a. Erection of steel works shall generally be in accordance with the provisions of IS: 800 - Code of practice for use of structural steel in general constructions.
- b. Site assembly of members on the ground by welding, bolting or otherwise as specified in the drawings shall be inspected thoroughly by the Engineer -in-charge or his authorised representative and approved before erection.
- c. All equipment, facilities and consumables for site fabrication as well as erection of plant requirements etc., such as derricks, cranes, lifting tackles, wire ropes, chain pulleys, jacks, winches etc., as necessary shall be arranged by the contractor at their own cost. Care shall be taken to see that all equipment, tools and tackles and wire ropes etc., in use are always in good condition and fit for use.
- d. Necessary WORK PERMITS shall be obtained including certification from Safety Officer and other as necessary before commencement of work.
- e. Frames shall be lifted at such points that they will not buckle or deform. Trusses shall be lifted only at nodes. Temporary bracing shall if required be provided at no extra cost to relieve erection stresses.
- f. In case of trusses and similar roof structures all or at least a majority of the purlins and wind bracings shall be erected side by side with the erection of these structures, columns shall be erected true to plumb (no screen bars provided and fixed by the contractor over the prepared pedestals). True to centre line, level and gauge of the travelling cranes. Alignments of the columns, crane girders and rails shall be done very carefully using high precision survey instruments and necessary adjustments made to suit actual requirements.
- g. All damages to the steel work caused during the transit or otherwise shall be made good to the full satisfaction of BHEL at contractor's own cost before erection.
- h. It shall be the sole responsibility of the contractor to ensure level plumb and alignment of steel work before erection of other components.

II) Fabrication and Painting – Timing and flow of work

- a. The following programme shall strictly followed :
 - i. Fabrication of structural steel works to be completed – progressively within from the date of award of contract.
 - ii. Erection, painting of the structures, supply and erection of clacking item etc., to be completed – progressively within from the date of handing over the site for erection.

12. PAINTING:

- b. Preparing the surface for painting: For new Iron & Steel work – the surface shall be thoroughly scrapped, brushed and cleaned free of rust, scale and dirt. For old painted surface – the surface shall be cleaned and cleared of all old paints/ coatings thoroughly and further prepared the surface as specified for new works.
- c. Two coats of red – oxide primer coats shall be provided to the fabricated structures of approved quality.