



BHEL, BHOPAL

## PRODUCT STANDARD

Construction of Press shop extension towards south side including Machine Foundation

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## SPECIAL CONDITIONS AND PAYMENT TERMS

REV. 00

BHARAT HEAVY ELECTRICALS LIMITED  
BHOPAL.

### (SPECIAL CONDITIONS – SAFETY)

1. The following are a few safety measures suggested while carrying the work. However all the items of work should be carried out in safe working manner taking all precautions.
2. Proper and necessary precautions shall have to be taken wherever the work involves breaking of reinforced cement concrete slab and dismantling of brick work. These items of work will have to be carried in the presence of the Engineer-in-charge.
3. Proper and necessary scaffolding is to be erected wherever dismantling of brick work is carried out at height more than 1.80 M
4. Reinforced cement concrete slab should be dismantled parallel to the main reinforcement, each piece not exceeding 300mm wide. Under no circumstances the supporting wall shall be cut or removed until the supporting slab is demolished.
5. The contractor shall keep supply all safety equipment like safety boots, goggles, helmets and safety belts, to all the workers.
6. The contractor shall keep a supervisor always at work site.
7. Power shut down shall be taken before commencement of the work wherever power cables are running.
8. Proper and necessary scaffolding and ladders are to be used for carrying out all types of works.
9. The contractor shall provide safety nets to the work force during the execution of work at height of more than 3 meters and as directed by the engineer in charge.
10. The contractor shall take all necessary safety precautions and arrange for appropriate appliance to its authorized officials to prevent loss of human lives, injuries to personnel engaged and damage to property.
11. The Contractor shall provide to the work force and ensure the use of the following personnel Protective Equipment as found necessary and as directed by the authorized BHEL Officials.
  - a) Safety Helmets conforming to IS: 2925, 1981
  - ii) Safety belts conforming to IS: 3521, 1983
  - i) Safety shoes conforming to IS : 1.4544. 1998
  - ii) Eye, and face protection devices conforming to IS: 1179, 1967.
  - iii) Hand and body protection devices conforming to IS: 2573 - 1975, IS: 6994 - 1973 and IS 8520 - 1978, IS: 578-1985 and IS 6694.



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### SAFETY IN CIVIL ENGINEERING WORKS

1. While working at heights, a safe foot holds and hands holds should be provided.
2. No loose material should be allowed to remain in the vicinity of persons working at heights due to which they may inadvertently loose their balance and fall down.
3. Wherever, it is reasonable practical, workers should be made to use safety belts.
4. Ladders, crawling ladders and crawling boards are to be provided if a person has pass across or work on or from any material liable to fracture under his weight and cause him to fall more than 1.98 metres.
5. In considering whether a material is likely to fracture beneath a person's weight, regard must be had to any additional weight he may be carrying or supporting.
6. Ladders crawling boards etc., to be securely supported and if necessary secured to prevent slipping.
7. Guard rails, coverings or other suitable means may be used to prevent person stepping on to fragile material, while working or passing near it if such material is likely to fracture under his weight and cause him to fall more than 1.98 metres.
8. While working on sloping roofs, suitable, crawling, boards or crawling ladders should be used. These crawling ladders should be properly supported and securely enhanced to the sloping surface or the roof ridge.
9. Suitable and sufficient means are to be provided to prevent fall of articles from a sloping roof.

### DEMOLITION:

1. Safe access should be provided to every place at which any person has to work. Scaffolds to be provided for all work that cement safety be done otherwise.
2. Shoring or either steps are to be taken to prevent accidental collapse of the building or part of the building being dismantled.
3. Similar precautions are to be taken against collapse of any adjacent building, if this would involve danger.
4. No steel work or iron work is to be cut or released unless precautions are taken to avoid danger from sudden twist, spring or collapse.
5. No framing is to be removed unless all practicable steps are taken to avoid collapse of the structure.
6. Demolition work is to be placed under the supervision of a competent person experienced in demolition work.



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#### EXCAVATIONS:

1. Barriers are to be provided round excavations, shafts, pits and opening into which persons can fall a vertical distance of 1.98 metres. These barriers are to be as close as practicable to the edge of the excavations and are to be erected as soon as practicable after excavating begins. They are to be maintained in position except when necessarily removed for the access of persons or materials.
2. Adequate and suitable timbering should be used to prevent danger from falls or dislodgement of sides of excavations etc., or materials adjacent to it. Timbering is to be done as early as practicable in the course of work.
3. No person should be allowed to work in any excavation. Shaft or tunnels after explosives have been used in or near it, in a manner likely to affect stability, until a thorough examination has been made by a responsible person.
4. No person should be allowed to work in any excavation, Shaft or tunnels after an unexpected fall of work rock, earth or to her material or after substantial damager to timber or other supports, unless the part concerned is thoroughly examined by a responsible person declared safe.
5. No material should be placed near the edge of the excavation so as to endanger persons below. No load should be placed or removed near the edge of an excavation etc., where it is likely to cause the collapse of the side of the excavation and so endanger to any person.
6. If excavation is likely to affect the security of the another structure (permanent or temporary) steps must be taken to safeguard persons employed from possible collapse of that structure.
7. Means of reaching a place of safety is to be provided, when there may be danger from rising water or irruption of water or materials.
8. Means to prevent over running are to be taken when vehicle is used to tip material into pit or excavation or over the edge of embankment or earth work.

#### LADDERS:

1. Ladders to be used should be of good construction, of a suitable and sound material of adequate strength.
2. Ladders with missing or defective rungs should not be used.
3. Wooden stiles or sides and wooden rungs should have grain running length wise.
4. Rungs should be properly fixed to the sides.
5. Ladders standing on a base are to be equally and properly supported on each stile or side.
6. Ladder standing on a base to be securely fixed near its upper resting place, if such fixing is impractical the ladder must be fixed at or near its lower end. If this is also impracticable a person, must be stationed at the feet of the ladder to prevent it from slipping.
7. Ladder should not be placed on loose bricks or loose packing.



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8. Except when there is an adequate handled, ladder must rise to a height of a least 3 feet 6 inches (1.00 Mtr.) above the landing place or above the heights rung reached by the feet of persons using the ladder.

9. Space at each rung to be sufficient to provide adequate foot held.

10. Openings in landing places through which ladders pass should be as small as practicable.

11. Folding steps ladders should have level and firm footing and should not stand on loose bricks or other loose packing.

#### SCAFFOLDS:

1. Materials used for scaffolds should be of sound and adequate strength.

2. The timber used should be suitable quality, good condition, bark complete stripped off, and without paint or other treatment which would prevent defects from being easily seen.

3. Timber and material with projecting nails should not be used.

4. Metal parts should be of suitable quality, in good condition, free from corrosion or other patent defects likely to affect strength.

5. Defective parts or materials should not be used and no defective ropes or bonds should be used.

6. Standards or upright should be vertical or slightly inclined towards the building or other structure, where practicable and to be sufficiently close to ensure stability.

7. Displacement or sinking of standards or uprights to be prevented either by provision of base plates or either adequate means.

8. Ladders used as uprights to be adequate strength secured to prevent slipping and so placed that the two stiles of sides of each ladder are evenly supported.

9. Ladders are to be horizontal, as nearly as possible and should be secured to standards or uprights by efficient means.

#### WORKING PLATFORMS:

1. All working platforms should be closely boarded, planked or plated.

2. Boards should be of sufficient thickness having regard to the distance between putlogs other supports.

3. All boards should be at least 51 mm thick and 210 mm wide.

4. Boards should rest securely and evenly on their supports. Each board should have at least three supports unless the thickness and the distance between the supports are such as to present on due or unequal staging when, supported on the two pipes.



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5. No board should project beyond for more than four times its thickness, unless secured to prevent tipping.
6. No board should project to an extent which makes it unsafe having regard to its thickness and strength and the weight likely to be on it.
7. The platforms should be of adequate width to give sufficient working space.
8. The platforms should extend at least 600 mm. beyond, the end of wall or working face if work is being done at that end of the wall of face.
9. The platforms should have guard rails to a height of between 920 mm and 1150 mm. above the platform or any raised part of it.
10. The platforms should have toe-boards high enough to prevent falls of persons, tools and materials, with a minimum height of 15.5 mm. space between the toe-boards and the lowest guard rail should not exceed 760 mm. guard rails and toe-boards should be on the inside of uprights unless there is some other means of preventing their outward movement.
11. Guard rails and toe-boards should always remain in position except when removal is necessary for the access of persons or materials, or other necessary purposes of the work.

### SAFETY NETS AND BELTS:

1. If all or any of the above requirements is not practicable, resources may be taken to use suitable safety belts or nets to prevent persons falling from heights of 1.98 metres and above.
2. Safety belts when used should be attached continuously to suitable and fixed anchorages.
3. Safety nets should be maintained in all positions necessary to protect persons at work, except in so far as they have to be temporarily removed for the passage of materials or for any other purposes.

### LIFTING TACKLES/CRANES

Lifting roof trusses should be undertaken after discussing the procedure with BHEL taking all necessary care to prevent accidents.

### MATERIAL HANDLING AND STORAGE

Adequate arrangement be made for material handling & storage taking due care against damages.

### ACCOUNTING

Proper method of accounting of steel , torr steel ,cement & scrap material be followed .The books of such accounting be offered for auditing by BHEL at predecided regular interval.

If the contractor fails to take appropriate safety precautions or to provide necessary safety devices and equipments or to carry out instructions issued by the authorized BHEL officials, BHEL shall have the right to take corrective steps at the risk and cost of the contractors.



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In case of a fatal or disabling injury accident to any person due to lapses by the contractor. BHEL shall have the right to impose appropriate financial penalty on the contractor and recover the same from payments due to the contractor for suitably compensating the victim or his/her dependents. Before imposing the penalty, appropriate enquiry shall be held by BHEL.

In case of any damage to propriety due to the lapses by the contractor, BHEL shall have the right to recover the cost of such damages from the contractor after holding an appropriate enquiry.

Incase of any delay in the completion of a job due to mishaps attributable to lapses by the contractor, BHEL, shall have the right to recover cost of such delay from the payments due to the contractor after notifying the contractor suitably.

If the contractor fails to improve the standards of safety in its operation to the satisfaction of BHEL after being given reasonable opportunity to do so. BHEL shall have the right to terminate the contract and get the job completed at the risk and cost of the sub contractors.

CONTRACTOR

ISSUING/ACCEPTING AUTHORITY

Guidelines and statutory payments for submitting tenders.

Payments of Wages as per Madhay Pradesh Govt. Guidelines.

### i) P F and E S I contributions wages

PF and ESI of basic wages should be contributed by the contractor as per Madhya Pradesh Govt. Guidelines.

## ANNEXURE – I

The following Indian Standards codes shall be followed for missing information in the tender.

### I. Steel work:

1. I.S 814 – 1974 : Part – I Specifications for covered electrodes for metal arc. Welding of structural steel – for welding products other than sheets.  
(Or latest) Part II for welding sheets.
2. I.S 818 – 1968 : Code of practice for safety & health requirements in electric and gas welding and cutting operations.  
(Or latest)
3. I.S 1852 – 1973 : Specifications for rolling and cutting tolerances for hot rolled and steel products.  
(Or latest)
4. I.S 816 – 1969 : Code of practice for use of metal arc welding for



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- (Or latest) general construction in mild steel.
5. I.S 360 – 1973 : Method of testing fusion welded joints and weld metal in steel.  
(Or latest)
6. I.S 102 – 1992 : Ready missed paint, brushing red lead non silting priming.  
(Or latest)
7. I.S 1363 – 1957 : Black hexagonal bolts, nuts, etc.  
(Or latest)
8. I.S 813 – 1961 : Scheme of symbol for welding.  
(Or latest)
9. I.S 1161 – : MS Tubes
- II. Roof covering:
1. I.S code 3007 – 1964 : Code of practice for laying of corrugated sheets.  
(Or latest)
- III. Design codes:
1. I.S 800 – 1975 (Or latest)
2. I.S 875 – 1964 (Or latest)
3. I.S 456 – 1978 (Or latest)
- IV. Any relevant I.S code of practices.
- V. CPWD & NBC standard for building.

CONTRACTOR (S)

ACCEPTING AUTHORITY

## SPECIFICATIONS FOR EXECUTION OF WORK

1. The work under this contract comprises of fabrication of steel work, testing, transporting and erection of steel work over prepared foundations, painting of steel work and erection of cloaking items as detailed in Price Schedule 'A'.
2. Fabrication of steel work shall be done in accordance with shop working drawings on the basis of drawings furnished by Bharat Heavy Electricals Limited.
3. Further particulars relating to design and fabrication or clarifications, if any, may be obtained on reference to the Sr. DGM Civil (MODERNISATION).
4. Fabrication shall generally be in accordance with IS 800-1962 entitled "Code of practice for use of structural steel in general building construction". Welding shall be in accordance with IS 816-1956 entitled "Code of practice for use of metal are welding for general construction in mild steel". Any specification not covered by the relevant Indian Standards Codes of practice shall be in accordance with the relevant B.S.S. **or in its absence in accordance with well established Standards Engineering Practices.**





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5. As the designs inclusive extensive welded fabrication, it is essential that the fabricator should have a well equipped workshop and equipment such as Automatic and Semi-automatic welding sets etc., and also qualified welders possessing operator qualification as required by I.S. 817-1957.
6. All Fabricated steel work shall be given a coat of Red Oxide paint as per relevant I.S. specifications before dispatch if assembled at shop or after assembly at site as the case may be.
7. The contractor shall stack all items of fabricated steel work at approved locating with due regard to the sequence of erection with consultation of the Engineer in Charge.

### SPECIAL CONDITIONS OF CONTRACT FOR FABRICATION AND ERECTION OF STRUCTURES

#### 1. (a) PLACE OF FABRICATION.

The fabrication is to be carried out within the Bharat Heavy Electricals Limited premises earmarked for the purpose .

#### (b) SCOPE OF FABRICATION

**For all structure steel construction the general specification of BHEL shall be followed.**

Structural Steels only are provided by BHEL at Free of cost. All other items are in the scope of Contractor.

#### 2. ACCEPTING OF FABRICATED STEEL FOR DISPATCH:

When all the tests to be performed in the Contractor's or other premises under the terms of this contract have been successfully carried out the material / structure will be accepted, forthwith and the Inspecting Engineer or his duly authorized representative will issue an acceptance certificate, upon receipt of which the material / structure shall be taken out for erection.

#### 3. TESTS AT SITE

In all cases where the contract provides for tests at site, the contractor, except where otherwise specified, shall provide, free of charge, such labour, materials, apparatus and instruments as may be required from time to time, and as may reasonable be demanded to carry out such tests on the materials or workmanship in accordance the contract.

#### 4. TESTS ON COMPLETION:

Where possible, all tests shall be carried out before dispatch from fabricator's works at the contractor cost, should however, it become necessary for the final tests as to the performance and guarantees to be held over, until the structures are erected at site, they shall be carried out in the presence of the contractor's representatives, within one month of the completion of erection or such time as may be considered reasonable by Bharat Heavy Electricals Limited. Should the result of these tests not come within the margin specified, the test shall if required, be repeated, within one month from the date of the structure is again ready for test, and the contractor shall repay the Bharat Heavy Electrical Limited all reasonable expenses which may be put to by such re-tests. Trial assemblies shall be conducted at the site as and when required.





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### 5. ERECTION OF DEFECTIVES STRUCTURE OR PORTION THEREOF

a. If the completed structure, or any portion thereof, before it is taken under clause below, be found defective or fails to fulfill the requirements of the contract, the Engineer in charge shall give the Contractor notice setting forth particulars of such defects or failure, and the Contractor shall forthwith make the defective portions good, or alter the same to make it comply with the requirements of the Contract. Should he fail to do so within a reasonable time, Bharat Heavy Electricals Limited may reject and replace at the risk and cost of the Contractor the whole or any portion of the structure, as the case may be, which is defective or fails to fulfill the requirements of the contract.

b. In the event of such rejection, Bharat Heavy Electricals Limited shall be entitled to the use of the structure in a reasonable and proper manner for a time reasonably sufficient to enable them to obtain other replacement of structure.

Nothing in this clause shall be deemed to deprive of Bharat Heavy Electricals Limited, or effect in any way their rights under the contract which they may otherwise have in respect of such defects or deficiencies or in any way relieve the Contractor of his obligations under the Contract.

### 6. TAKING OVER:

The structure on the site shall be deemed to have been taken over by the Bharat Heavy Electricals Limited when the Executive Engineer will have certified in writing that the structure has satisfied the contract conditions and such certificate shall not unreasonably be withheld, nor shall delay the issue of such certificate solely on account of minor omissions or defects, which do not affect its functional utility without any serious risk to the structure, provided always that the contractor undertakes to make good such omissions and defects at the earliest possible moment. Such certificates, however, shall be deemed to be on account and shall in no way release the Contractor from his liabilities and responsibilities in respect of such structure.

### 7. MAINTENANCE AND THE GUARANTEE:

The contractor shall give the following guarantee in respect of the structure to be supplied and erected by him.

a. All structure shall be free from any defects due to faulty materials, structural detailing and / or workmanship or improper packing.

b. The above guarantees/shall be valid for a period of 12 (Twelve) calendar months after the date of final taking over by the Bharat Heavy Electricals Limited. During this period, the Contractor's liability shall be limited to the replacement immediately, or any of defective parts that may develop in structures or part of a structure of his own manufacturer those of his subcontractors under the conditions provided for by the Contract, and arising solely from structural detailing, workmanship or improper packing provided always that such defective parts as are not repairable at site, and not essential in the meantime in the use of the structure, are returned to the contractor's works unless otherwise arranged.

c. All such replacement of defective parts mentioned above shall be made free of cost at site by the contractor and the return of the defective parts to the contractor's works shall be the contractor's responsibility and shall be made at his expenses. Bharat Heavy Electricals Limited,



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will, however, render such assistance in this matter as will expedite the same. In the case of the defective parts not repairable at site but essential in mean time for the use of structure, the Contractor shall replace at site free of cost to Bharat Heavy Electrical Limited before the said defective parts are removed to his works.

d. If it becomes necessary for the contractor to replace or renew any defective portions of the structure under this clause, the provisions of this clause shall apply to the portions of the structure so replaced or renewed until the expiration of six calendar months from the date of renewed until the expiration of six calendar months from the date of such replacement or renewal or until the end of the above of the above mentioned period of twelve months whichever is later. If any defects be not remedied within a reasonable time, Bharat Heavy Electricals Limited may proceed to do the work at the Contractor's risk and cost, but without prejudice to any other rights which Bharat Heavy Electricals Limited may have against the Contractor in respect of such defects.

e. If the replacements of renewals are of such character as may affect the efficiency of the structure, Bharat Heavy Electricals Limited shall have the right to give to the contractor within one month of such replacement or renewal, notice in writing that "tests on completion" be made once again, in which case such tests shall be carried out as provided in clause 4.

f. All replacements or renewals to be carried out by the Contractor during the maintenance period shall be subject to such clauses of these conditions as may be considered reasonable by the Executive Engineer.

g. Until the final certificate has been issued, the Contractor shall have the right of entry, at the own risk and expense, by himself or his duly authorized representatives (whose names shall previously have been communicated in writing to the Executive Engineer) at all working hours to all necessary parts of the works, for the purpose of inspecting the structure and taking note there from, and if he so desires, making any tests at his own expense subject to the previous approval of the Engineer in charge.

h. At the end of the maintenance period, the Contractor's liability ceases, except as regards workmanship which the Executive Engineer shall have previously given notice of the contractor to rectify.

### 8. CERTIFICATE OF THE ENGINEER:

a. Every application to the Engineer-in charge. for his certificate for payment, must be accompanied by a detailed invoice with joint measurement sheet signed by BHEL engineer and contractor engineer and test certificates as required as per technical specifications (in Quadruplicate), setting forth the claims in the same order as is found in the accepted Schedule of quantities and at the same rates. **No application for payment will be accepted for without joint measurement sheets and test certificates as stated above.** The said certificate will thereafter be issued by the Engineer-in charge at a reasonable time after receipt of the application.

b. The Engineer-in charge may make any correction or modification in any previous certificate, which may have issued by him and payments, will be regulated and adjusted accordingly.

### 9. CERTIFICATE IPSO FACTO NOT TO AFFECT THE RIGHTS OF THE BHARAT HEAVY ELECTRICALS LIMITED :



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No certificate of the Engineer in Charge on account, nor any sum paid on account by the Bharat Heavy Electricals Limited, Nor any extension of time for the execution of the works given to the

Contractor shall in any way affect or prejudice the rights of Bharat Heavy Electricals Limited against the contractor, or relieve the contractor of his obligation for the due performance of the Contract or be interpreted as approval of the work done or of the materials supplied and no certificate ipso facto shall create liability in Bharat Heavy Electricals Limited, to pay for alternations, amendments, variations or discharge in the liability of the contractor for the payment of damages whether due, ascertained, or certified or not, or any sum against the payment of which he is bound to identify the Bharat Heavy Electricals Limited, nor shall any such certificate nor the acceptance by him of any sum paid on account or otherwise, affect or prejudice rights of the contractor against Bharat Heavy Electricals Limited.

### 10. CO-OPERATION WITH OTHER CONTRACTORS

The contractor shall agree to co-operate with the Bharat Heavy Electricals Limited's other contractors for associated work and freely exchange all technical information with them to obtain the most efficient and economical execution and to avoid unnecessary duplication of work. No remuneration shall be payable by Bharat Heavy Electricals Limited for such technical co-operation.

The contractor shall forward to Bharat Heavy Electricals Limited copies of all correspondence and drawings so exchanged.

### 11. TIME AND PROGRESS CHART AND PROGRESS REPORTS

a. The contractor shall submit the Bar chart/PERT Chart before starting the work. Weekly monitoring of the project is to be carried out. Contractor has to submit the weekly progress reports and any delay should be sorted out so that project should be carried out as per Bar Chart/PERT Chart.

### 12. ENGINEER'S SUPERVISION:

All the work shall be carried out in co-operation with, and under the direction and to the reasonable satisfaction of the Engineer in Charge. The contractor shall be responsible for the correctness of the positions, alignment and dimensions of the works according to the drawings, notwithstanding that he may have been assisted by the Engineer in setting out the same.

### 13. WORK AND SERVICES TO BE PROVIDED BY THE CONTRACTOR FOR THE ERECTION

The following major items of work and services shall be included in the work to be provided for by the contractor:

- a. All erection work of the structure including site bolts, nuts, rivets etc., final paintings, testing and putting into commission.
- b. Providing of all erection tools and tackle.
- c. Necessary supervisory personnel, tradesman, and unskilled labour.



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- d. All consumables materials required for erection such as Electrodes, oil, kerosene, petrol, packing etc.
- e. All ladders platforms, temporary supports, safety belts, etc., required for erection, and
- f. All other works and services necessary for the due fulfillment of the contract.

### 14. CONSTRUCTION EQUIPMENT:

The contractor shall provide all equipments and tools needed to do the work efficiently. Bharat Heavy Electricals Limited shall not be under any obligation to arrange for or give on hire, any construction or erection equipment.

### 15. WORK AT SITE:

a. In the execution of the work, no persons other than the contractor, or his duly appointed representatives, subcontractors and workman shall be allowed to do work at the site, except by the special permission, in writing of the Engineer in Charge and his representative and other authorized officials or representatives of BHARAT HEAVY ELECTRICALS LIMITED.

b. The work so far as it is carried out on Bharat Heavy Electricals Limited premises shall be carried out at such time as Bharat Heavy Electricals Limited, approved and so as not to interface unnecessarily with the conduct of Bharat Heavy Electricals Limited's business but Bharat Heavy Electricals Limited shall give the contractor all reasonable facilities for carry out the work.

### 16. POSSESSION PRIOR TO COMPLETION:

Bharat Heavy Electricals Limited shall have the right to take possession of, or use any completed or partially completed part of the work. Such possession or use shall not be deemed to be an acceptance of any work not in accordance with the contract.

### 17. WITH HOLDING PAYMENT:

B.H.E.Ltd., may withhold the whole or part of any payment for work claimed by the contractor, which in the opinion of the B.H.E.Ltd. is necessary to protect itself from loss on account of:

- a. Defective work not remedied or guarantees not met,
- b. Claims filed against the Contractor.
- c. Failure by the Contractor to make due payment for materials or labour employed him.
- d. Damage to another contractor.

Then the grounds withholding payments are removed, payments of the amount due to the contractor shall however be made by B.H.E.Ltd.

### 18. LINES:

Final payment to the contractor shall not be made until the Contractor shall deliver to BHE LTD, a complete release of all lines arising out of the contract or receipts in full in lieu thereof and in either case, an affidavit that so far as he has knowledge or information, the releases and receipts include all the labour and material for which a lien could be filled. If any lien remains unsatisfied after all



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payments are made, the Contractor shall refund to B.H.E.Ltd., all moneys that the latter may be completed to pay in discharging such a lien, including all costs and a reasonable attorney's fee.

### 19. TIME AND DATE:

The time and date stipulated for progress and completion of the work and the rate of fabrication and erection according to the required sequence and be deemed to be the essence of the contract. The Contractor **templating**, jigs and fixtures, cutting, grinding and planning of the sections as necessary and assemble the sections as per the availability from time to time.

### 20. SUPPLY OF RAW STRUCTURAL STEEL:

The raw structural steel sections referred to in Price Schedule 'A' will be supplied at the premises of the Bharat Heavy Electricals Limited, Bhopal. The contractors will take delivery within the time specified by the Engineer in Charge and arrange for safe loading, transporting the steel sections and unloading and stacking them at their fabrication yard, all at their own cost. The point of supply of steel sections to the contractors will be within a lead of 3 kms., from the contractor's fabrication yard.

21. It shall be the sole responsibility of the contractor to ensure accuracy of alignment of steel work before grouting the columns and commencing clocking.

### 22. ERECTION OF CLOAKING ITEMS.

a. Roofing sheets, North light curves etc., shall be measured based on actual area covered in roof sides, Gables and Louvers.

b. Measurement in respect of glazing stated to in Schedule 'A' shall include both wired glass and Aluminium glazing bars with accessories and shall be based.

23. a. The structural steel has been planned in suitable sizes. Any splicing that may be required due to non-supply of steel in required lengths/sizes shall be done so that requirements as per IS 800-1962 are met with. The contractor shall prepare separate drawings for the same and get it approved by the Engineer in Charge. Material should be judiciously utilised by the contractor so that minimum scrap is generated. For that matter the contractor shall obtain prior approval of fabrication planning before commencement of work.

24. The quantity of steel indented, covers extra that will usually be involved in cutting and fabrication. In addition there will be extras to cover minor alternations, if any, and also extras

arising out of accepting standard lengths in some cases and arising out of accepting minimum to (i.e. minimum of one wagon load) in some cases. The contractor shall arrange to receive all these steel supplied, account for it end keep it in safe custody. The surplus steel which is represented by the difference between the quantities received and the sum of quantities in the DODL list shall be returned to Bharat Heavy Electricals Limited on completion of the work.

a. Cut pieces and surplus i.e. RSJ, Channels, angles and plates not shorter than half a metre and M.S. plates not small than 600 sq.cm.

b. Scrap i.e. RSJ Channels, angles shorter than half a metre and M.S. plates small than 600 sq.cm.



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The cut pieces and surplus shall be set a part to be returned as "actuals". The scrap shall be returned in equivalent weight on actual area of glazing.

25. All materials issued by Bharat Heavy Electricals Limited either as free issues or on cost recovery basis should be returned in kind and in good condition as detailed in respective Clauses.

26. While erecting the structural steel, painting etc., the contractor should take precautions against any damage to the existing sheeting structure, machinery, equipment services etc., any damage for the same shall be made good by the contractor at his own cost or compensated by him as per the assessment made by the Engineer-in-charge, which is final and binding on the contractor.

**27. No extra claim or condition in regard to wages or materials escalation will be entertained and any tender containing such stipulation will be rejected.**

28. All rates quoted shall be for finished work in situ inclusive of all leads, lifts and other incidental charges etc., and those in general conditions of contract.

29. The quantities indicated in the Schedule 'A' are approximate and liable for variation.

30. The CPWD standard specifications, I.S. specifications for all schedule Items and technical specification for non schedule items are required to be followed.

### SPECIAL CONDITIONS

1. These special conditions supplement the conditions to tenders and contract and the general conditions of contract and form part of the contract documents. Where these special conditions are at variance with the general conditions of contract these special conditions shall prevail.

2. All rates quoted shall be finished work in the site inclusive of all leads, lifts and other incidental charges and those general conditions.

3. The tenderer is not allowed to alter the specifications of the unit of work noted in the Schedule A for the sake of uniformity in comparison of tenders, tenders should not add any conditions of their own. Tenders not complying with these conditions are liable for rejection.

4. The issues of materials are governed by the conditions specified in **Schedule B & C**. all other materials shall be supplied by the contractor himself and the rates for the relevant items are inclusive of all such supplies.

5. The cement concrete work plain and reinforced shall be executed as per the technical specifications. A tentative sketch / drawing of the work is available in the office, which is intended to give a general idea of the work to be executed and is liable for modifications during the actual execution based on the designs prepared and approved by the Competent authority.

6. The quantities shown above are approximate and liable for variations and no price variations is acceptable on this account.





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7. The rates quoted by the contractor shall be firm in all respects. Any statutory increase in the labour wages and materials during the period of execution shall be borne by the agency. The agency shall quote the rates considering the above.

8. The rate quoted for reinforced cement concrete items shall include smooth finishing of exposed faces. The top surfaces of roof slab shall be laid to specified slope and mortar that comes to surface due to vibrations shall be trowelled so as to obtain smooth and even surface.

9. The paint (Red oxide) to be used shall be of standard make and shall be approved by the Engineer-in-charge before applying.

10. The tenderer should specify the plant and machinery such as a pan mixer, vibrators, steel shuttering etc., that he possesses and is going to use them on the work.

11. Contractor shall execute work as per specifications in the Price Schedule A. if the specifications found wanting relevant Technical specifications along with the tender shall be followed. Further missing details relevant CPWD and IS specifications shall be followed. Wherever, there is difference in between CPWD and IS specifications previous shall prevail.

12. The BHEL reserves the right to deviate either by additions or by deductions from the schedule of items of work given in the tender document after awarding work.

13. In case of any difference between agreement wording and detailed drawings the interpretation of the BHEL shall be final and binding on the contractor.

14. The final acceptances of work in all items are subject proper behavior after testing regardless of whether the items are paid for or not.

15. All debris and surplus materials shall be cleared from the site and when directed by the Engineer-in-charge. Any temporary structure / stores made by the contractor for the work shall be demolished and site cleared before payment of final bill.

16. Curing shall be done with the help of hose pipe in addition to manual curing. Curing shall be done in off days and holidays also. Curing has to be done by ponding water for slabs & spraying for columns and beams for 27 days.

17. Rates tendered by contractors shall be for complete item of the work covering all materials, labour, carriage, royalties, work contract, service tax, sales tax, octroi, wastage, tools, plants & including all other taxes on temporary construction, overhead charges, profits, general royalties, risks etc., and rate shall applied to all heights, levels, depths, leads and lifts etc.,

18. If discrepancy in specifications observed between schedule of quantities and general / technical conditions, the specifications in schedule of quantities will have precedence over the general / technical conditions

19. Electricity will be supplied at one point and will be charges as per BHEL specified rates.

20. Erection and construction equipment, lifting tools and tackles shall not be provided by BHEL and they are in scope of contractor.





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21. Quality records of cement / structural fabrication, test records shall be prepared, maintained and submitted by contractor during the course of execution.

22. All structural fabrication works shall be as per drawings and BHEL specifications for quality and testing. Test for welding should be carried out by contractor.

23. Rate for supplementary items which are not covered in Schedule A will be finalized as per BHEL general conditions of contract.

24. For want of specifications related to structural steel like fabrication, erection, welding, material etc., following IS Codes are to be followed i.e. 1. IS : 816-1969, 2. IS 2139-1976, 3) IS 7215-1974, 4) IS 813-1961, 5) IS – 2062 – 1980.

NOTE: FOR EXECUTION OF ALL SCHEDULED ITEMS CPWD SPECIFICATIONS AND RELEVANT IS CODES ARE TO BE FOLLOWED. FOR EXECUTION OF NON SCHEDULED ITEMS SPECIFICATIONS ENCLOSED WITH THIS TENDER ARE TO BE FOLLOWED.

25. Inside blocks Rails are required fixed in concrete as per the direction of engineer-in-charge.

26. Inserts are required to be fixed in concrete as per the requirement and direction of engineer-in-charge.

27. Specialized works are to be executed by specialised agency with the approval of BHEL.

28. Test Certificates are to be supplied for all bought items.

29. The Estimate has been prepared based on the tentative drawings. Hence the quantity may vary to any extent for completion of project. However it will not exceed the sanctioned amount.

30. Contractor has to execute the job matching with existing structure & a contractor has to take the measurement as per site requirements.

**NOTE: Power will be given at one point. All other thing arranged by Contractor.**

### INSTRUCTIONS FOR RAIL JOINTS BY ARC WELDING

Sub: Jointing of rails by arc welding process.

Statement: Generally rails are joined by Thermit welding, but sometimes, it can also be joined by arc welding process with satisfactory results. For this some precautions should be taken during welding which are stated below:

1. For jointing new rails the procedure should be followed which are stated below except grinding (see sketch).

2. For jointing new rails and used rails the under mentioned procedure should be followed (See sketch).



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3. If longitudinal cracks develop on the surface of the rail, it is advisable to remove at least 2 M from the part and join both ends by arc welding process as shown in the sketch.

Base metal: Rail steel has the following composition:

C = 0.4 to 0.65 %      Mn = 0.9 to 1.2 %  
Tensile strength = 80 kg/mm<sup>2</sup>

Filler metal: The electrode (a) Universe or (b) Ferron-5 (low hydrogen) (a) manufactured by M/s. Advani Oerlikon, (b) manufactured by Indian Oxygen is suitable for buffer layer and (a) eltorail – 1 (b) duroid – 1 (Rutile type) of the above mentioned manufactures is suitable for toping.  
Action:

1. The grooves have to be marked according to the sketch and prepared machine or by gas cutting torch. If by gas cutting, remove all gas cut burns by a hard steel wire brush, and then the surface of the groove should be cleaned by grinding.
2. Electrode (low hydrogen type) should be dried at a temperature of approximately 180<sup>0</sup> C – 300<sup>0</sup> C and the temperature should be maintained during welding.
3. The parts should be pre-heated each sides of the joint by 250<sup>0</sup>mm to a temperature of 250<sup>0</sup>C – 300<sup>0</sup>C and the temperature should be maintained during welding.
4. Welding should be started with the thinnest rod at the base say 10 SWG (3, 2.5 mm) and gradually used thickest electrode upto 6 SWG (5 mm). use cattails or upto 5 mm to 8 mm on the top.
5. (a). The groove 1a & 1b to be welded in rotation till top and jobs joined fully,  
(b). Groove 2a & 2b at the bottom to be welded with penetration  
(c). After wards rail top 3a & 3b to be welded.
6. All slags remaining on any head of welding shall be removed before laying the next host.
7. Current condition DC (+) current range for universe 100-140 for 3, 2.5 mm, 140-190 for 4 mm, 190-250 for 5 mm And 250-330 for 6 mm thickness.

CONTRACTOR(S)

ACCEPTING AUTHORITY