



भारत हेवी इलेक्ट्रिकल्स लिमिटेड

(भारत सरकार का उपक्रम)

BHARAT HEAVY ELECTRICALS LIMITED

(A Govt. of India Undertaking)

TENDER CHANGE NOTICE 02(TCN – 02) DT:17-09-2007

WITH REFERENCE TO THE NIT, PUBLISHED IN THE WEB SITES FOR CONSTRUCTION OF 1 NO. COVERED EQUIPMENT SHED, 1 NO. CEMENT STORE AND 1 NOS SEMI-COVERED EQUIPMENT SHED & OTHER ENABLING CIVIL WORKS FOR 1x250 MW SANTALDIH THERMAL POWER PROJECT, UNIT-6, PURULIA, WB, FOLLOWING CHANGES MAY PLEASE BE NOTED AND COMPLIED WHILE SUBMITTING THE OFFER FOR THE SUBJECT JOB.

REF: TENDER DOCUMENT NO-PSER:SCT:SND-C785:07

1. IT HAS BEEN DECIDED TO CONSTRUCT REMOVABLE/REERECTABLE TYPE OF STORAGE SHEDS FOR STPS#6 INSTEAD OF CONVENTIONAL TYPE. HENCE, FOLLOWING MAJOR CHANGES HAS BEEN INTRODUCED IN THE ABOVE MENTIONED TENDER IN THE FORM OF FOLLOWING TENDER CHANGE NOTICES:

2. THE SCOPE OF WORK WILL NOW INCLUDE DEVELOPMENT OF MATERIAL STORAGE YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, DESIGN AND CONSTRUCTION OF TWO NOS OF SECURITY WATCHTOWER, AND CIVIL WORK (FOUNDATIONS ETC) FOR TWO NOS OF REMOVABLE/REERECTABLE TYPE OF STORAGE SHEDS.

3. SCC AND TECHNICAL SPECIFICATIONS HAVE BEEN MODIFIED ACCORDINGLY AND ATTACHED HEREWITH AS TCN-02. ALL THE INTERESTED BIDDERS ARE REQUESTED TO QUOTE BASED ON THIS REVISED TECHNICAL SPECIFICATION AND SPECIAL CONDITION OF CONTRACT VOL-II (TCN-02)

4. ALL THE THREE BOQ PUBLISHED EARLIER IS DELETED AND A SINGLE BOQ HAS NOW BEEN PUBLISHED, WHICH IS ATTACHED HEREWITH AS TCN-02 ALL THE BIDDERS ARE REQUESTED TO QUOTE BASED ON THIS REVISED BOQ CUM RATE SCHEDULE ONLY. EARLIER RATE SCHEDULE, VOLUME-IIA (R-0) AND VOLUME-IIIB (R-0) STANDS DELETED. THE NEW BOQ CUM RATE SCHEDULES ARE VOLUME-IIIA(R-1) AND VOLUME-IIIB(R-2).

5. LAYOUT DRAWING FOR MATERIAL STORAGE YARD PUBLISHED EARLIER STANDS DELETED. THE MDIFIED DRAWING IS ATTACHED HEREWITH.

6. FOLLOWING FILES ARE ATTACHED WITH THIS TCN-02 LETTER:-

- a) File-9-SCT-SND-C785-REVISED TECH SPEC & SCC.
- b) File-10-SCT-SND-C785-DRAWING FOR AREA DEVELOPMENT.
- c) File-11-SCT-SND-C785-FINAL BOQ CUM RATE SCHEDULE, VOLUME-IIIA(R-1) FOR ABSOLUTE VALUES
- d) File-12-SCT-SND-C785-FINAL BOQ CUM RATE SCHEDULE, VOLUME-IIIB(R-1) FOR PERCENT VALUES WITH RESPECT TO TOTAL.

All THE BIDDERS ARE REQUESTED TO NOTE THE ABOVE AND QUOTE ACCORDINGLY.

ALL OTHER TERMS & CONDITIONS OF THE TENDER SHALL REMAIN UNCHANGED.

BIDDERS ARE REQUESTED TO SUBMIT OFFER BY ABOVE DUE DATE.

DGM (SCT)

पावर सेक्टर पूर्वी क्षेत्र (मुख्यालय)

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**TECHNICAL SPECIFICATION AND SPECIAL CONDITION
OF THE CONTRACT**

VOLUME -- II

FOR

**DEVELOPMENT OF MATERIAL STORAGE YARD, DESIGN AND CONSTRUCTION OF
TWO NOS OF WATCHTOWERS AND CIVIL WORKS (CONSTRUCTION OF
FOUNDATIONS ETC) FOR TWO NOS OF RE-ERECTABLE TYPE STORAGE SHED**

FOR

1 X 250 MW UNIT - 6

AT

**SANTALDIH UNIT-6 THERMAL POWER PROJECT
DIST : PURULIA, WEST BENGAL**

BHARAT HEAVY ELECTRICALS LIMITED

**(A GOVT. OF INDIA UNDERTAKING)
POWER SECTOR – EASTERN REGION
PLOT NO. – 9 / 1, DJ – BLOCK,
SECTOR – II, KARUNAMOYEE,
SALT LAKE CITY,
KOLKATA – 700091.**

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VOLUME –II

SECTION –I

1.0 SCOPE OF WORK :

- 1.1 The intent of this specification is to provide all materials including supply of cement, reinforcement steel, structural steel, AC sheeting, Windows, doors, MS / Aluminum fittings, plastering, painting, flooring, roofing, Rolling shutters, fencing, area grading, clearing of bushes, dense vegetation, jungles etc. complete as per drawings and specification.
- 1.2 Testing of all materials, cement, steel etc. shall be the responsibility of the contractor including submission of test reports.
- 1.3 Providing of all types of labour, supervisors, Engineers, watch and ward as required, T & P including fuel, operators etc. as the case may be, consumables as required for completing the works.
- 1.4 The work includes construction of foundations and other civil works for two nos of removable/re-erectable type of storage shed, design and construction of two nos of watchtowers, development of material storage yard as per scheme shown in attached drawing and other enabling works including clearing of the areas allocated for the construction of sheds from bushes, grass, roots and unwanted materials and land development if required.
- 1.5 The detail construction drawings / sketches for foundations of sheds shall be issued to the contractor after the award of work. Contractor shall be required to perform the work in accordance with the CPWD schedule / Relevant IS Codes as per the instruction of Engineer.
- 1.6 Structural fabrication work for roof truss gates etc. for watch towers shall also be the responsibility of the contractor.

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PROJECT INFORMATION

1.0.0 INTRODUCTION

The proposed 1 x 250 MW - TPS, is being set up by M/s WBPDCCL at SANDALDIH TPS , DIST-PURULIA, WEST BENGAL under WBPDCCL as Unit 6 an extension of the existing Power Plant. The site is approachable by road and rail. Nearest railway station is SANTALDIH

It is essential that the bidder visit site and acquaint with the conditions prevailing at site before submission of the bid. The information given hereunder is for general guidance and shall not be contractually binding on the BHEL

1.1.0 APPROACH TO SITE.

- Nearest Railway Station : SANTALDIH
- Nearest Town : PURULIA

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VOLUME – II

SECTION – III

GENERAL TECHNICAL REQUIREMENT FOR CIVIL WORKS

1 GENERAL

All works shall be carried out in proper workmen like manner. Items of works covered by the following specification shall be carried as per the best practice according to the direction of the Engineer In-charge / BHEL, Site Engineer and to his satisfaction. Unless otherwise specified in this section or in the description of item, the cost of stage of works mentioned hereunder shall be deemed to have been included in the rates of items provided in the schedule.

2 EXCAVATION OF FOUNDATION AND FILLING UP OF TRENCHES

- 2.1 Foundation when excavated to the level shown in the drawing will be shown to Engineer In-charge and if on account of technical ground or for any reason whatsoever, he decides to go deeper with the foundation, the contractor shall excavate further to the depths required by the Engineer Incharge. In no case shall foundation soling or concrete be laid prior to receiving orders to that affect from the Engineer Incharge or his authorized representative. Any extra depth excavated when instructed shall have to be filled up, rammed, graded with crushed stone or lean concrete as directed by Engineer.
- 2.2 Excavation shall include keeping the excavated earth up to 150 mm clear of the edge of plain cement concrete or as directed by Engineer whichever is less.
- 2.3 The excavated areas around the foundation of structures are to be filled up properly to the required levels with earth obtained from excavation or other materials as directed well rammed with water and consolidated on layers not exceeding 15 cm at a time. The quantity for this item of work will be measured on the basis of quantity of excavation, less the volume occupied by the structure in foundation. Any water accumulating in trenches from underground water, rain and floods etc. shall be pumped / bailed out by the contractor, without any extra charge.

3 CLEANING OF WORK SITE

- 3.1 All trees, bushes and other dense vegetable matters shall be removed. Cleaning shall also include removing of stumps and roads etc. to 1 foot below furnished grades or as directed by Engineer. All debris from the above operation shall be removed from the site at location to be decided by Engineer. The tenderer in their own interest should visit the site and make themselves conversant with the actual conditions of the site so as to include all costs on their tender rates. No additional payment due to non-availability of site information shall be entertained in the future.

4 EARTHWORK IN GRADING, EXCAVATION AND BACK FILLING

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- 4.1 The contractor shall carry out the survey of the site before excavation and set properly all lines and establish levels for various works, such as earthwork in excavation for grading basement, foundation, plinth filling, roads, drains etc.
- 4.2 The excavation shall be done to correct lines and levels. This shall also include, where required, proper shoring to maintain excavations and also the furnishing, erecting and maintaining of substantial barricades around excavated areas.
- 4.3 Excavation for permanent work shall be taken out to such widths, lengths, depths and profiles as are shown in the drawings / specifications or such other lines and grades as may in the drawings or such other lines and grades as may be specified by the Engineer. Rough excavation shall be excavated with special care, soft pockets shall be removed even below the final level and extra excavation if instructed by the Engineer, should be carried out by the contractor just prior to laying the mud mat, at its own cost.
- 4.4 Should any excavation be taken below the specified elevations the contractor shall fill it up with concrete of the same class as in the foundation resisting thereon, upto the required elevation. No extra shall be claimed by the contractor on this account.
- 4.5 All fill materials will be subject to Engineer's approval. If any material is rejected by Engineer, the contractor shall remove the same forthwith from the site at no extra cost to BHEL. Surplus fill material shall be deposited / disposed of as directed by Engineer after the fill work is completed.
- 4.6 Wherever block excavation is involved, the contractor shall notify the Engineer about his intention to start the work at 3 days earlier to the actual date of starting of work to enable him to take cross sectional levels for purpose of measurement before ground is disturbed.

5 CEMENT CONCRETE WORKS (PLAIN OR REINFORCED)

- 5.1 Shuttering and staging
 - 5.1.1 Wherever necessary, shuttering and staging must be provided. Unless otherwise stated, no payment shall be made for such shuttering or staging and the cost thereof deemed to have been covered by the rate for relevant finished item of work. Where payment for shuttering have been specified, the rate shall be deemed too cover the cost of the necessary staging as well. Payment, if any, for shuttering will be on the basis of surface area of shuttering in actual contact with concrete.
 - 5.1.2 Shuttering may be approved dressed true to line not less than 2.0 cm thick. Surface in contact with concrete are to be planned smooth except where otherwise stated. As an alternative, sufficiently rigid steel shuttering may be used for which same rate of timber shuttering will be allowed. In every case the joints shall be such that there is no loss of the liquid from the concrete. In timber shuttering the joints shall therefore, be either tongued or grooved or the joints must be perfectly closed and lined with craft paper of other types of approved materials. In case of steel shuttering also, the joints are to be similarly lined. All shuttering and framing must adequately be stayed and braced to the satisfaction of the Engineer for properly supporting the concrete during the period of hardening. It shall be so constructed that it may be removed without shock or vibration to the concrete.

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- 5.1.3 Before the concrete is placed, the shuttering shall, if considered necessary, to be coated with an approved preparation for preventing the adhesion of the concrete to the moulds and it is to be of such a nature and so applied that the surface of the finished concrete is not stained. Care shall also be taken that such approved preparation. Before the formwork is stripped, the concrete surface shall be exposed where necessary in order to ascertain that the concrete has hardened sufficiently. In normal weather and with ordinary cement vertical or side shuttering may be removed after three days and the bottom shuttering of the horizontal members after 14 days in case of slabs and 21 days in case of beams and cantilevers etc. from the date of placing of last portion of concrete on the structure. The above period is minimum and may be extended, if found necessary. Before stripping the shuttering of structural members contractor shall take previous permission of Engineer In-charge or his representative.
- 5.1.4 No plugs, bolts, ties, hold post or any other appliances, whatsoever, for the purpose of supporting the shuttering are to be fixed in the structure or placed in such a way that the damage might result to the work in removing the same when the shuttering is struck off.
- 5.2 Mixing, placing and compacting
- 5.2.1 The proportion specified is by volume in dry condition of different constituents.
- 5.2.2 Boxes of suitable size shall be used for measuring sand and aggregate. The unit of measurement for cement shall be a bag of cement weighing 50 kg and shall be taken as 0.335 M³. While measuring the aggregate, shaking, removing and hammering shall not be done. The proportioning of sand shall be on the basis of dry volume and in case of damp sand allowance for bulking shall be made. The aggregate in each batch of concrete are to be proportioned as to contain full bag of cement.
- 5.2.3 Normally, all structural concrete shall be mixed in mixture machine of appropriate capacity and shall be vibrated with suitable vibrator. Mixing shall be continued till there is uniform distribution of materials and mass is uniform in colour and consistency but in no case, shall mixing be done for less than two minutes. The rates appearing in the schedule of rates against such items are inclusive of hire and operational charges of each appliance. For particular job, Engineer in charge may allow hand mixing extra cement up to 10% over the standard requirement of cement for machine mix of particular mix have to be provided by the contractor at his own cost.
- 5.2.4 As the bulking of material may vary from day to day and at different parts of the day on account of varying moisture content, frequent tests for bulking shall be carried out with sand to be used and the amount of bulking allowed for in the field mix so as to keep the actual proportion constant throughout.
- 5.2.5 Only the quantity of mix required is to be mixed and workability shall be measured by the amount of slump. The quantity of water, to be used for each mix of 50 kg of cement, to give required consistency shall be as directed at site. The slumps to be adopted should be as directed by the Engineer in charge at site.

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5.3 Strength requirement of concrete (in kg / sq cm)

Grade of concrete	Compressive strength of 15 cm cube	
	Work test at 7 days minimum	Work test at 28 days minimum
M 10 (1:3:6)	70	100
M 15 (1:2:4)	100	150
M 20 (1:1:5:3)	125	200

5.4 Protection and curing

5.4.1 The contractor shall adequately protect freshly laid concrete about 1 to 2 hours after its laying, from too rapid drying due to sunshine, drying winds, etc. and also from running or surface water and shocks. After 24 hours of laying of concrete, the surface shall be cured by flooding with water of minimum 25 mm depth or by covering with wet absorbent materials. The curing shall be done for a minimum period of 10 days. Over the foundation concrete, the masonry works may be started after 48 hours of it's laying, but the curing of concrete shall be continued along with the masonry work for a minimum period of 10 days.

5.4.2 In case of cement concrete used as sub-grade, the flooring should be commenced within 48 hours of laying of sub-grade. In case this is not possible due to exigencies of work, the suitable arrangement as per order of Engineer in charge for roughening with steel wire brushes and subsequently neat cement slurry laying as directed may be done.

5.5 Construction joints

All joints in slabs & other horizontal members to be formed by inserting vertical boards against which concrete deposited can be properly rammed. The position where such joints may be made will be indicated by Engineer in charge or his representative.

5.6 Test results

Test cubes moulds of the concrete should be taken and laboratory cube test results should be obtained for every day of concrete possibly. In the case of concrete showing on quantity on cubic meter certified by Engineer in charge, so as deficient may be allowed to remain, subject in such a case to a deduction for such sum as are or may become due under the contract, not exceeding Rs. 24.00 per cum of the quantity so certified in case where the deficiency does not exceeds 5% and Rs. 48.00 per cum where deficiency 5%. The Engineer in charge will have full power in his absolute discretion to fix the actual rate of the deduction subject only to that the rate so fixed shall not exceed the minimum provided above. If the deficiency exceeds 10% the Engineer in charge at his discretion direct the portion of the concrete certified by him as so deficient in strength to be removed from the structure and replaced by concrete of specified strength and the contractor shall in that case have to carry out that direction at his own cost irrespective of the amount of loss, remain liable under the provision of his clause notwithstanding signing by the Engineer in charge of any certificate or the passing of the bills or accounts.

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6 STORAGE OF MATERIALS

6.1 Cement

The cement shall be stored above the ground level in perfectly dry watertight sheds. The bags shall be stacked in a manner so as to facilitate easy removal. Any material considered defective by the Engineer shall not be used by the contractor and shall be removed from the work site immediately.

6.2 Aggregate

Aggregate shall be stored on brick soling or an equivalent platform so that they do not come in contact with dirt, clay, grass or any other injurious substance at any stage.

6.3 Reinforcement

Reinforcement bar shall be stored off the ground. If necessary a coat of cement wash shall be given to the bars to guard against rusting.

7 BRICK / MASONARY/FLY ASH BRICKS

7.1.1 Cement mortar shall be prepared by mixing sand and cement in specified proportion. Sand shall be measured on the basis of its dry volume. In case of damp sand, its quantity shall be increased suitable to allow for bulkage.

7.1.2 Brickwork shall be done as instructed at site. A layer of mortar shall be spread on full width for suitable length on top on the lower course. Each brick should be pressed into mortar and shoved into final position so as to embed in the brick and to fill its inside face fully with mortar. Cut bricks shall not be used except where necessary. A set of tools comprising of wooden straight edge, masonry spirit level, square half-meter rule, line and pins, string and plumb shall be kept for every three masons for frequent checking during progress of work. Faces of the walls found not in plumb shall be dismantled.

7.1.3 Both the faces of the walls of thickness greater than 25 cm shall be kept in proper plan. All the connected brickwork shall be out in more than one scaffolding height of about 1.2 meter to 1.5 meter above adjoining walls. The surface of the wall shall be plastering whilst the mortar is fresh.

7.1.4 Brick shall be so laid that all joints are quite full of mortar. The thickness of joints shall not exceed 10 mm. Bricks shall be laid with frogs upward except in the top course where frogs shall be placed downwards. The face joints shall be raked to a minimum depth of 15 mm (3/5 inch) by racking tools daily during the progress of work when the mortar is still green so as to provide proper key for plaster or pointing is not required to be done, the joints shall be struck flush and finished at the line of laying.

7.1.5 The face of brickwork shall be cleaned the very day that brick work is laid daily and all mortar droppings shall be removed.

7.1.6 Green work shall be protected from rain by suitable covering. The brickwork shall be kept for a period of at least 7 days.

7.1.7 Scaffolding should be sound and strong and holes left in masonry work for supporting and scaffolding shall be filled and made good before plastering.

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7.1.8 Sand to be used for mortar shall be hard, durable, clean and free from dirt, clay, organic matter or other impurities.

8 BRICK FLAT SOLING

After the ground is prepared and rammed, brick shall be laid flat in one layer with closed fine joints. After laying the bricks sand shall be spread over the soil and the joints of bricks filled up by sand. Rate tendered shall include all charges for ramming etc.

9 DAMP PROOF COURSE

This shall be laid to specified thickness of 40 mm or as per drawing over walls for the full thickness of the super-structure walls. The surface shall be leveled and prepared before laying the cement should be doubly chequered, damp proof course shall be covered for at least seven days after which shall be allowed to dry. Water proofing materials of approved qualities shall be added to the concrete mixture in accordance with the manufacturer's specification.

10 CEMENT POINTING

10.1 The joints of masonry shall be raked at least 12 mm deep 3 or 4 days after the course is laid, if not done earlier. The dust shall then be brushed out of the joints and the wall washed with water.

10.2 Mortar shall be filled into joints and well pressed with special steel trowels. The joints shall be touched again after it has once begun to set. The joints of the pointing work shall be neat. The lines shall be regular and uniform in breadth and the joints shall be raised flat, sunk 'V' as may be directed. No false point shall be allowed.

10.3 The work shall be kept wet for a week after the pointing with complete. Whenever coloured pointing has to be done, the colouring pigment of the colour required shall be added to cement in such proportions as recommended by the manufacturer and approved by the Engineer.

11 CEMENT PLASTER

11.1 All joints in masonry shall be cleaned by using a hooked tool made for the purpose when the mortar is still green and in any case within 48 hours of laying. The surface to be rendered shall be washed with fresh clean water free from all dirt, loose material, grease etc. and thoroughly wetted for 6 hours before plastering work is commenced. Concrete surfaces to be rendered will be, however, kept dry. The wall shall not be too wet but only damp at the time of plastering. The damping shall be uniform to get uniform bond between the plaster and wall.

11.2 The proportion of the mortar shall be as specified under the respective items of work. Cement shall be mixed thoroughly in dry condition and just enough water added to obtain a workable consistency. The quality of water, sand and cement shall be as per IS standards. The mortar thus made shall be used immediately and in no case shall the mortar be allowed to stand for more than 25 minutes after mixing with water.

11.3 Curing of plaster shall be started as soon as the applied plaster has hardened enough so as not to be damaged. The decision as to when the plaster has hardened will be given by the Engineer. Curing shall be done by continuous applying water in a fine spray and shall be carried out for at least 7 days.

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- 11.4 Whenever the specification or the item of work calls for water proofing the contractor shall provide the percentage of water proofing compound as specified in the item of work.
- 11.5 Ceiling plaster shall be done before wall plaster and wall plaster shall commence at top and work downwards.
- 11.6 The mortar shall be dashed on the prepared surface with a trowel and finished smooth by toweling on the surface with neeru (lime—cem). Neeru shall be properly slaked fat lime. The standard of finish expected is high and shall conform to IS 2394.

12 Integral cement finish on concrete floor

In all cases where integral cement finish on a concrete floor has been specified. The layer of concrete shall be screeded off to proper level and tamped with tamper having conical projections so that the aggregate shall be forced below the surface. The surface shall be finished with a wooden float and a trowel with pressure. The finish shall be continued till the concrete reaches its initial set. No cement or cement mortar finish shall be provided on the surface. Where specified, a floor hardener as approved by the engineer shall be supplied as recommended by the manufacturer.

13 WHITE WASHING / COLOUR WASHING

13.1 PREPARATION OF SURFACE

- 13.1.1 All surfaces for white washing, colour washing, painting shall be thoroughly brushed free from mortar dropping and foreign matters and prepared to the satisfaction of Engineer in charge before application of treatment.
- 13.1.2 Before white washing, all the nails etc. shall have to be removed from the wall as directed. Nail holes or other holes, small depressions or damages in plaster or wall surface shall be filled or repaired to original condition with paste.
- 13.1.3 Old surfaces spoiled by smoke and grease soot's shall be sprinkled with surki and water and rubbed brick bats still or wire brushes or steel scrappers. The surface shall then be broomed to remove all dust and shall be washed with clean water.

13.2 White wash and colour wash

13.2.1 PREPARATION OF WHITE WASH

- 13.2.2 The white washing to be done with five parts of stone lime and part of shell lime with necessary gum (2 kg per cum of lime) using as necessary and to be mixed as per standard practice.

13.2.3 PREPARATION OF COLOUR WASH

- 13.2.4 Colour washing shall have a primer of white wash and shall be of shade approved by Engineer in-charge.
- 13.2.5 Sufficient quantity of colour wash enough for completing the job shall be prepared in one operation to avoid any difference in shade. Procedure and preparation shall be the same as in white washing. Application of white and colour wash – the operation for each coat shall consist of four consecutive strokes of the brush one horizontally from right to left and the next from left to right and the third

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stroke bottom upward and the fourth from top downward before the previous strokes dries. Each coat shall be allowed to dry before next coat as applied. No portion of the surface shall be left out initially to be patched up later on. The brush shall be dipped in white wash or colour wash pressed lightly against the wall of container and then applied by lightly pressing against the surface with full swing of hand.

13.2.6 The white wash on ceiling should be done prior to that on walls.

13.2.7 CEMENT PRIMER COAT

Cement primer coat is used as base on wall finish of cement, lime or lime cement plaster or on asbestos cement surface before oil bound distemper or oil based paints are applied on them. The cement primer is composed of a medium and pigment which are resistant to the alkalies present on the cement, lime, lime cement in wall finish and provides a barrier for the protection of subsequent coat of oil bound distemper or paints. Priming coat shall preferably be applied by brushing and not be spraying. Hurried priming should be avoided particularly on absorbent surface. New plaster patches in old work, before applying oil bound distemper paints etc. should also be created with cement primer. The surface shall be thoroughly cleaned of dust, all white or colour wash by washing & scrubbing. The surface shall be allowed to dry for at least 48 hours, it shall be sand prepared to give a smooth and even surface. Any unevenness shall be made good by applying putty, made of plaster of Paris mixed with water on the entire surface including filling up the undulation and then preparing the same after it is dry.

13.2.8 The cement primer shall be applied with a brush on the clean dry and smooth surface. Horizontal strokes shall be given first, vertical strokes shall be applied immediately afterwards. The entire operation will constitute one coat. The surface shall be finished as uniformly as possible having no brush marks. It shall be allowed to dry at least 48 hours bound distemper is applied.

14 PAINTING

14.1 All surfaces for painting shall be properly sand prepared and cleaned and where necessary good quality putty shall be used to hide all holes, cracks, open joints etc. The rate for painting includes such work.

14.2 Paint shall be applied with approved brushes and surfaces shall be sand papered after every coat. All work when completed shall present a smooth, clean, solid and uniform surface to the satisfaction of the Engineer incharge.

14.3 SYNTHETIC ENAMEL PAINT

Synthetic enamel paint of approved brand and manufacture and of the required shade shall be used for the top coat and an under-coat of shade to match the top coat as recommended by manufacturer shall be used. Undercoat of the specified paints of shades suited to the shade of top coat shall be rubbed next day. It shall be rubbed next day with fine grade of wet abrasive paper to ensure a smooth and even surface free from brush mark and all loose particles dusted off. Top coats of specified paint of the desired shade shall be applied after the undercoat is thoroughly dry. Additional finishing coats shall be applied if found necessary to ensure properly uniform glossy surface.

14.4 ALUMINUM PAINT

Aluminum paint of approved brand and manufacture shall be used. The paint comes in compact dual containers with paste & medium separately. The two shall be mixed together to proper consistency

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before use. Each coat shall be allowed to dry for 24 hours and lightly rubbed down with fine grade sand paper and dusted before the next coat is applied. The finished surface shall present an even and uniform appearance. As aluminum paint is likely to settle in the container, care shall be taken to frequently stir the paint during use. Also the paint shall be applied and laid off quickly, as surface is otherwise not easily finished.

14.5 PLASTIC EMULSION PAINT

Plastic emulsion paints are not suitable for application on external wood and iron surface and are to be used generally on masonry or plastered surfaces. No priming coat is required for the later. Plastic emulsion paint of approved brand and manufacture and of the required shade shall be used. The paint will be applied in the usual manner with brush or roller. The paint dries by evaporation of water content and as soon as the water has evaporated the film gets hard and the next coat can be applied. The time to dry varies from one hour on absorbent surfaces to 2 to 3 hours on non-absorbent surface. The thinning of emulsion is to be done with water will be particularly required for the under coat which is applied on the absorbent surface. The quantity of thinner to be added shall be as per manufacturer's instructions. The surface on finishing shall present flat smooth finish. If necessary, more coats will be applied till the surface presents a uniform appearance.

14.6 PRECAUTION

14.6.1 Old brushes if they are to be used with emulsion paints should be completely dried of turpentine or oil paints by washing in worm-soap water. Brushes should be quickly washed in water, immediately after use and kept immersed in water during break period to prevent the paint from hardening on the brush.

14.6.2 In the preparation of walls for plastic emulsion painting, an oil base putty shall be used in filling cracks, holes etc.

14.6.3 Splashes on floor etc. shall be cleaned without delay, as they will be difficult to remove after hardening.

14.6.4 Washing of surfaces treated with emulsion paints shall not be done within 3 to 4 weeks of application.

14.7 PROTECTIVE MEASURE

Surfaces of rolling shutters, steel ventilators and articles of furniture, flooring etc. and parts of building not to be white or colour washed shall be protected from being splashed down. Such surfaces shall be cleaned of white or colour wash splashes, if any.

15 GROUTING

Grouting of pockets shall be done as per the direction of the Engineer at site and as given in schedule of items.

16 STRUCTURAL STEEL WORK

16.1 All materials for structural steel works have to supplied by the contractor and necessary test certificate of the materials procured for this work has to be submitted for scrutiny.

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- 16.2 All fabrications, and erection of structures must be executed according to the specification and drawings and all steel works should be as per IS code No. 800,806,875,1161 of latest Editions. Erection of trusses are true to line and level and aligned properly, as per drawing and instruction of Engineer Incharge. Necessary connections of member are to be riveted / bolted/ welded as per design and drawing. All fasteners required for the connections are to be supplied by the Contractor.
- 16.3 All fabricated members are to be painted with one coat of shop painting of red oxide / zinc chromites of J&N or equivalent make and final two coats of synthetic enamel paint of approved quality and shade.
- 16.4 The contractor has to prepare necessary shop & erection drawings in sufficient numbers at his own cost and submitted for obtaining approval from BHEL, including design of connections etc.
- 16.5 All the materials procured for this work should be of approved brand and quality. AC sheet should have protection in both sides width wise 800 mm beyond the brick wall.
- 16.6 The contractor has to give his competitive offer taking into consideration of all the above points and based on schedule of items enclosed in this tender document.

17 WINDOWS AND VENTILATORS (STEEL)

17.1 General

Supply and fixing in position of window / ventilators sashes with glazing bars. These sashes should be provided with 12 mm MS round bars welded in window frame horizontally and approximately not more than 100 mm centre to centre and glazing bars shall be fixed / welded to shutter frame as per standard design and as per instruction of BHEL.

- 17.2 Glazing and painting etc. as worded in the respective item.

18 STEEL WINDOWS / VENTILATOR SASHES

- 18.1 The steel window / ventilator sashes shall be conform to IS 1038-1968 regarding sizes, material design etc. and only such windows manufactured by reputed manufacturers by continuous electric welding with flash butt welding process shall be accepted.
- 18.2 The windows and ventilator frames shall be manufactured from rolled steel sections conforming to IS 7452-1974 free from rolling defects and suitable for punching and cutting.

19 FRAMES

Both the fixed and opening frames shall be constructed of sections, approved and to be cut to true length. The corners of fixed and opening frames shall be electrically butt welded to form a solid and true right angle and all frames shall be square & flat. Subdividing bars of the unit shall be tanned and riveted into the frame. No face welding at the joint of the subdividing bars and frame is required. Casements shall be fixed to their frames so as to provide continuous contact for weathering on the inside and outside and shall be secured in closed position by the fittings which shall have been properly checked and adjusted.

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20 SCREWS

Slotted steel adjustable lugs with a standard slot steel windows ventilators shall conform to the requirements of IS 1362-1962.

21 FIXING MATERIALS

Slotted steel adjustable lugs with a standard slot of 8 mm wide for MS screw of 6 mm and 12 mm long with square nuts shall be used as fixed lugs. The other dimension of the lugs shall be as per IS 1081-1960. Lugs shall only be placed in the specified positions and grouted into their holes with cement mortar.

The outer frame shall be provided with fixing holes centrally in the section. Additional holes shall be provided at suitable intervals for inserting special spring glazing clips, glazing beads.

22 SIDE HUNG SHUTTER

Windows shall be provided with steel hinges inserted inside slot out in the fixed frame and welded to the frame. The hinges shall be normally of the projecting type and not less than 65 mm. Friction hinges need not be provided and for easy operation non-friction type projected hinges with hinge pins may be provided. It shall be fitted with peg stays which shall be of aluminium & should be 300 mm long with steel peg and locking bracket. The peg stay should have three holes to open the side hung casements in three different positions.

The side hung shutter shall be provided with aluminium handle and shall be mounted on steel handle plate which shall be welded or screwed or riveted to the opening frame in such a way that it could be fixed before the shutter is glazed and may not be removed after glazing. The handle shall have a two point nose, which shall engage with a cast steel rust protected striking plate on the fixed frame in a slightly open or fast position.

23 TOP HUNG VENTILATORS

The steel butt hinges for top hung ventilators shall be riveted to the fixed frame or welded to it after cutting a slot in it. Hinges to the opening frames should be riveted and welded and cleaned off. Hung casements shall be provided with a aluminium peg stay with three holes which when closed shall be held tightly by the locking bracket. The locking bracket shall either be fitted to the fixed frame or window.

All windows / ventilators shall be designed to open outside.

24 GLAZING

Glazing shall be provided on the outside of the frames. The glass panels shall be free from flow, specks, bubbles etc. and shall have properly squared corners and straight edges. The glass panels shall be of 4 mm thickness, approved figured glass plain sheet glass and of best quality and fixed with special glazing clip / glazing bids the putty containing a hardening agent like lither-age or a patent mastic. The fixing and glazing work shall conform to the relevant specification, contained in the IS-1001-1960.

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No glazing shall be considered as complete until all stains have been removed from the surface of glass and metal forms. The contractor shall make good any glass broken while fixing or cleaning. All windows / glazing repaired and the whole work left perfect on completion.

- 24.1 Payment shall be for the finished work of providing installation of windows / ventilator frame, as provided. Overall dimensions of the ventilator / window shall be measured for payment. The length and breadth shall be measured to nearest to 1 cm and area worked out to two places of decimals of a square meter. No deduction shall be made for the thickness of frame.

25 MS GRILLS / MS ROUND

Where MS grills / doors are to be provided in openings, the same shall be fabricated by welding MS Round bars welded as joints to the approved design and pattern or as directed by Engineer incharge from approved quality of material conforming to IS 226-1958 and IS 800-1956. The outside strip frame of the shall be housed to its full thickness into the surfaces as directed by the Engineer incharge. The grills shall be painted with one coat of red oxide paint and two coats of oil paints of approved make and shade.

26 FLOORING ANE ALLIFD WORKS

26.1 TERRAZZO FINISH IN SITE

It shall consists of an under-bed and a topping laid over an already laid and matured concrete base.

26.2 Thickness

Unless otherwise specified the total thickness of the finish shall be minimum 40mm for horizontal and 25 mm for vertical surface of which the topping shall be not less than 10 mm. While the topping shall be of uniform thickness the under-bed may vary inn thickness to provide necessary slopes. The vertical surface shall project out 6 mm from the adjacent plaster or other finish. Necessary cutting into the surface receiving the finish shall be done to accommodate the specified thickness. All junctions of vertical and horizontal shall be rounded neatly to uniform radius of 25 mm.

26.3 Mix

26.3.1 UNDER- BED

The under-bed for floors and similar horizontal surfaces shall consists of a mix of 1 part cement, 2 parts sand and 4 parts stone chips by volume. For vertical surfaces the mix shall consist of 1 part cement to 3 parts sand by volume. The sand shall be coarse, the stone chips shall be 10 mm down well graded. Only sufficient water to be added to give a workable consistency.

26.3.2 TOPPING

The mix for the topping shall be composed of cement, colour pigment, marble dust and marble chips . The proportions of the ingredients shall be such as to produce the terrazzo of colour, texture and pattern approved by the Engineer. The cement should be white or grey or a mixture of the two to which pigment shall be added to achieve the desired colour. The 3 parts of this mixture 1 part marble powder by volume shall be added and thoroughly mixed dry. To 1 part of this mix 1 to 1.5 parts of marble chips by volume shall be added and thoroughly mixed dry again.

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The pigment must be stable and non-fading. It must be very finely ground. The marble powder shall be from white marble and shall be finer than IS sieve no. 30. Size of marble chips by volume shall be between 1 mm to 20 mm.

26.3.3 LAYING

The under-bed shall be laid in panels. The panels shall not be more than 5 sq. metre in area of which no side shall be more than 2.5 metre long. For exposed locations maximum area of panel shall be 2.0 sq. metre. The panel shall be laid in alternative bays or chess board pattern. No panel shall be cast in contact with another already laid unit the later has contracted to the full extent.

Dividing strips made of aluminium or glass shall be used for forming the panels. The strips shall exactly match the total depth of under-bed plus topping.

After laying the under-bed shall be levelled compacted and brought to proper grade with a screed or float. The topping shall be laid after about 24 hours while the under-bed is still somewhat green but firm enough to receive the topping. A slurry of the mixture of cement and pigment already made shall be spread evenly and brushed in just before laying the topping. The topping shall be rolled for horizontal areas and thrown and spread for vertical areas to extract at superfluous cement and water and to achieve a compact dense mass, fully bonded with the under-bed. The surface of the topping shall be trowel led over, pressed and brought to a smooth dense surface showing a minimum 75% area covered by marble chips in a even pattern of distribution.

26.3.4 CURING

The surface shall be left for curing for about 12 to 18 hours and they cured by allowing water to stand on surface or by covering with wet sack for four days.

26.3.5 GRINDING AND POLISHING

When the surface has sufficiently hardened it shall be watered and ground evenly with rapid cutting coarse grade (No 60) grit blocks till the marble chips are exposed and the surface is smooth. Then the surface shall thoroughly be washed and cleaned. A grout with already been prepared mixture of cement and pigment shall be applied to fill up all pinholes. The surface shall be cured for seven days by keeping it moist and then ground with fine grit blocks (No 120). It shall again be cleaned with water. The slurry applied again to fill up any pinholes that might have appeared and allowed to be cured again for 5 days. Finally the surface is ground again for third time with very fine grit blocks (No 320) to set smooth surface without any pinholes. The grinding shall be done with a suitable machine. Where grinding Machine cannot be used hand grinding may be allowed when the first rubbing shall be with carborundun stone of coarse grade (No 60), second rubbing with medium grade (No 80) and final rubbing and polishing with fine rubbing and polishing with fine grade (No 120). The surface shall be cleaned with water, dried and covered with soil free lean sawdust, if directed by Engineer. The final polishing shall be postponed till before handing over, if desired by Engineer. Just before handing over the surface shall be dusted with oxalic acid at the rate of 0.33 gm per sq m water sprinkled on to it and finished by buffing with felt or Hessian bobs. The floor shall be cleaned with soft, moist rag and dried. However, all excess wax polish to be wiped off and surface to be left glossy but not slippery.

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27 PLUMBING

27.1 SOIL WASTE, VENT PIPES AND FITTINGS

These will conform to IS 1729 – 1964 or IS 3909 – 1967. All pipes and fittings shall be made of cast iron of approved manufacture and shall conform to relevant Indian standard specifications. The pipes shall have spigot and socket ends. The pipes shall be free from cracks and flaws and the inside and outside shall be painted with and anticorrosive paint. The access door of fittings shall be of approved design.

27.2 STONEWARE PIPES AND FITTINGS

These will conform to IS 651 – 1965. All stoneware pipes, bends, fully traps shall be of approved manufacture of the best salt glazed variety inside and outside, hard burst dark grey colour, perfectly sound free from fire crack and imperfection of glaze, truly circular in cross section, perfectly straight and of standard nominal length and depth of socket and barrel.

27.3 GI pipes

These shall conform to IS 1239 – 1964. All GI pipes shall be of 'B' class quality and shall be of reputed manufacturer and shall have threaded ends with a socket at one end only. All fittings for GI pipes are galvanized rough iron.

All exposed pipes shall be painted with two coats of an approved paint over one coat of approved primer, under ground pipes shall be treated with two coats of an approved bituminous paint.

27.4 Miscellaneous

All sanitary and plumbing works shall be carried out by skilled plumbers so that best workmanship can be attained. It shall comply with local laws where applicable.

No work shall be covered over or surrounded with concrete until it has been inspected and approved by Engineer.

27.5 The rates for all piping work shall include for supplying, laying and fixing in position including necessary fixture, jointing, painting, necessary earthwork in excavation in all kinds of soil, refilling in 15 cm layers including watering, consolidation, top dressing, removal of spoils, making holes and is for the completed work.

28 GENERAL :

If Technical Specification of any item is not available, the same will be governed by relevant CPWD/IS code or manufacturer's specification. -

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VOLUME – II

SECTION –IV

SPECIFIC TECHNICAL REQUIREMENT

1 APPROACH TO WORK SITE

The contractor shall make his own arrangements at his own cost for the necessary approach roads for transportation of materials to site of work. No extra charge in this regard will be entertained.

2 SUPPLY OF MATERIALS

2.1 The cement for various plain and reinforcement cement concrete works shall generally conform to relevant IS codes as received from various cement manufacturing companies. Major quantity shall be Ordinary Portland Cement / Portland Pozzolona Cement / Slag cement.

2.2 The reinforcement steel conforming to IS- to be supplied by the vendor

2.3 The structural steel confirming to IS- to be supplied by the vendor

2.4 The contractor may carry out the test as regards conformity / suitability of cement with reference to IS code.

3 DAMAGE TO OTHER STRUCTURE AND PLANT

The contractor shall be totally held responsible for any loss or damages, caused by any act of the contractor labour or his sub-contractor's labour including but not limited to covered / open blasting any structures and plants that may be under construction / erection by any other agency at this site during this entire period covered by this contract alongwith extension, if any.

4 BHEL'S INPUT

BHEL will furnish, within the plant site area, the following services and materials under the conditions described below.

One permanent benchmark in the vicinity of the work site.

All further layout work shall be carried out very accurately by the contractor with his own instruments. The contractor shall have on site a good number of survey instruments such as levels, theodolite, stumps, measuring devices, survey umbrella etc.

5 SPECIFICATION AND CODES

All works shall be carried out strictly in accordance with technical specification unless otherwise approved by Engineer in writing. Where not specified in the technical specifications, the relevant latest Indian standard codes shall be followed.

6 TECHNICAL INSTRUCTIONS

6.1 The successful tenderer on receipt of letter of intent from BHEL shall prepare a detailed work programme including items of work within the overall time period allowed and shall submit the same to the Engineer for approval.

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- 6.2 The work has to be carried out according to priority as may be fixed up by site Engineer of BHEL at site.
- 6.3 The materials and workmanship must be of good quality and accepted standards and specifications.
- 6.4 All material for construction are required to be procured by the contractor and should conform to relevant IS specifications.
- 6.5 The site Engineer reserves the right to reject any material not up to the specification. All taxes, levies and duties on construction materials will be on contractor's account.
- 6.6 After completion of work, the building and areas around them should be cleared of all rubbish, debris etc. and handed over in fit condition for occupation.
- 6.7 Unless otherwise specified, rates quoted under the contract shall apply for works irrespective of lifts and leads. Rates shall also include providing scaffolding and its subsequent removal.
- 6.8 All quantities under schedule of rates and quantities are approximate and are subject to change.

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VOLUME – II

SECTION –IVA

GENERAL AND SPECIFIC TECHNICAL REQUIREMENTS FOR WATCHTOWERS

BHEL desires to construct 2 NOS of Security Watch Towers at Santaldih Unit#6 for surveillance of its material storage yard, Equipment sheds and site office. The Watch Towers shall be designed for effective security watch over the material storage yard and equipment shed of BHEL for santaldih unit#6. Approximate location of watchtower is shown in the attached drawing. The plinth level shall be raised by 200 mm above ground level and the floor of the towers shall generally be 2.5 meters from plinth level, except those close to the existing boundary wall of STPS. The floor of Watch Towers adjacent to the factory boundary wall shall be 400mm above the top of boundary wall. The floor area of Watch Tower shall be not less than 1.5 meter X 1.5 meter and the room height shall not be less than 2.5 meter. Each tower shall be erected completely with the facilities as detailed in the specification hereinafter. Provision of ladder from ground/ plinth to the floor must be provided.

The Watch Towers shall have solid RCC foundation and columns upto plinth above which the steel towers shall be erected.

1. **SCOPE OF WORK: -**

The scope of work broadly includes design, preparation of drawings; obtain approval from BHEL, construction & insulation of 2 nos of Watch Towers including all facilities. The work shall be executed on the basis of item rate contract in accordance with the Bill of Quantities accompanied with the Work Order. The conceptual drawing is attached with this document for reference.

2. **COMPREHENSIVE SPECIFICATION: -**

All Towers shall be of 4 legged structural steel frame, chequered plate flooring topped with rubber mat for making them electric shock proof, steel windows with glass panes on all 4 sides, movable sitting iron platform of Window height for use by the sentry, rubber platform flooring for making electric shock proof, electric wiring shall be concealed through PVC pipe, sodium vapour lamps at outer ends of each tower. The roof shall be of corrugated asbestos cement.

The foundation shall be RCC at about 1.5 meter below ground level and RCC columns shall be extended upto a height of 300mm above ground level. The structural steel legs of the tower shall be connected and grouted with the RCC columns.

Foundations and Columns: -

The foundation and columns shall be RCC (nominal Mix 1: 2: 4 by volume). One leveling course of 75mm thick PCC (1: 4: 8) shall be laid over excavated earth below foundation. The column above plinth level shall be plastered and painted with water proof paint after application of primer.

Plinth: -

The plinth level shall be 200mm above ground level and shall be made up of fine sand filling topped with one Layer of brick flat soling, interstices filled with cement sand mortar.

Ladder for climbing to the floor of Watch Tower: -

One structural steel ladder shall be provided to each Watch Tower for going to the Watch Tower and return. The Ladders shall have flat treads and shall be fitted with hand rails. The inclination of ladders shall not be more than 65° to the horizontal.

Flooring rubber mat: -

Good quality electric shock proof rubber mat of thickness not less than 5mm shall be provided to the floor of each tower.

Skirting: -

The skirting of each tower shall be of steel plate extending from the top of floor to the bottom of window.

Windows: -

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The Watch Towers shall be provided with steel windows fitted with 5mm thick clear glass pans for vision of the sentry through the windows.

Walls above windows: -

The Wall above windows shall be done with steel plates leaving 300mm from the ceiling which shall be covered with expanded metal net for adequate ventilation.

Roof: -

The pitched roof of all the Watch Towers shall be of corrugated asbestos cement sheets and shall extend adequately on all sides so that rain water is not entered through the expanded metal net below the ceiling.

Wind Ties: -

Adequate wind ties shall be provided over the asbestos cement roof for protection of roof against wind forces.

Painting: -

All Structural steel, expanded metal nets, etc. of the Watch Towers shall be adequately painted with best quality red oxide primer and finished with 2 coats of best quality aluminium paint.

Drinking Water line: -

Each Tower shall be provided with one drinking water line connected with nearest available supply line of the STPS.

Electrical: -

Each Watch tower shall have concealed wiring through PVC pipes. Two nos. sodium vapour lamps with all fittings shall be provided at the two end walls of each Tower. Inside the room of each Watch Tower one room light point with one switch, one plug & socket shall be provided.

Drawings:

Two nos of drawings should be submitted by the contractor after design of watch tower and due approval by BHEL.

Return of Drawing: -

All drawings/ documents are confidential in nature. The contractor shall not copy any drawing and / or document but return them to BHEL on completion of work/ along with offer.

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VOLUME – II

SECTION –IVB

GENERAL AND SPECIFIC TECHNICAL REQUIREMENTS FOR HPSV

1.High pressure Sodium Vapour Lamps : 400 W

Luminous efficacy of at least 110-130 lumens/Watt with inbuilt integrated antenna

Robust internal construction with excellent reliability through life, fast re-ignition time less than 180 seconds

High lumen maintenance of 95 % at the end of 15000 hrs,

Life at 50% mortality >30000 burning hours

2. Light Fittings suited for 400 W High Pressure Sodium Vapour Lamps

— Luminaire housing should be completely made of High Pressure Die Cast Aluminum (corrosion resistant). Single /multi pc in construction

Aerodynamic shape with adequate strength to with stand max wind speed

Precision optical system for tubular lamp, Optical compartment duly brightened and anodized aluminum with Lamp position adjustable from back without use of tools. The optics should be suitable for adjustment of toe-in/throw and spread to suit different road widths and spacing

IP66 protection for optimum performance over lifetime

Luminaires should be duly chromatised and coated with pure polyester to minimum 45 micron thickness. Colour/shade of luminaries shall be as per IS-5 matching in colour shade & tone with the Galvanized pole.

Toughened heat resistant glass, sealed with gasket and SS toggles, or any other suitable alternative arrangement.

Luminaire should have a Electro Magnetic Choke

Choice of self stopping igniters

Luminaire should be open from top and fixed with the help of two nos clamps

Luminaire conforming to IEC

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VOLUME – II

SECTION – V

SPECIAL CONDITION OF CONTRACT

These special condition shall be read and construed along with general condition of contract and in case any conflict or in consistency between the general and this special condition of the contract, the content in this special condition shall prevail.

1. SITE VISIT

Before quoting for this job, tenderers are advised to visit worksite and satisfy themselves about the worksite and working conditions thereof. Tenderer shall be solely responsible for gathering first-hand information and to inform themselves fully of all local conditions and factors, which may have any effect on the work under this scope. No claim on account of lack of information/ knowledge in respect of the above shall be entertained by BHEL

2. CONSUMABLES:

- A) All consumables, like gas, electrodes, chemicals, lubricants etc. required for the contractor at his cost shall arrange the job unless otherwise specifically mentioned in the contract.
- B) All consumables to be used for the job shall have to be approved by BHEL prior to use.
- C) In the event of failure of contractor to bring necessary and sufficient consumables, BHEL shall arrange for the same at the risk and cost of the contractor. The entire cost towards this along with overhead shall be paid by the contractor or deducted from the contractor's bills.

3. REVISION OF RATES / OVER RUN CHARGES:

No revision of rates / over run charges shall be paid to the contractor in the event of the completion period is extended for any reason whatsoever.

4. DEVIATIONS:

The bidder is required to submit with his offer in the relevant schedule / format list. Bidder is required to visit site and acquaint himself about the situation of sites, law and order situation etc. and submit their bid accordingly. Any assumptions, presumptions, deviations etc. indicated or implied anywhere by the bidder may lead to cancellation offer.

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5. LAND:

- a) Minimum land will be provided free of cost for construction of temporary office, stores area etc. within the project premises. Contractor has to make his own arrangement to develop the land by backfilling, cutting of grass, bushes, dense vegetation, jungles and stem of various sizes etc. at his own cost.
- b) Land will be provided to the contractor for Labour Colony outside the project premises at free of cost. The contractor has to construct labour sheds / hutment as per their own plan, layout and type after obtaining approval from BHEL. Contractor has to make his own arrangement to develop the land by backfilling, cutting of grass, bushes dense vegetation, jungles and stem of various sizes etc. at his own cost.
- c) The contractor will be responsible for handing back all lands, as handed over to him for his temporary use to BHEL as per the instruction of BHEL Engineer.
- d) The areas which will be allocated for construction of equipment sheds etc. have to be cleaned by cutting of grass, bushes dense vegetation, jungles and stem of various sizes etc if any, free of cost by the vendor, before start of work. Area development if required, is to be done by the contractor with earth/ash/cinder as arranged by BHEL at the rate quoted by the contractor & approved by BHEL.

6. WATER:

Contractor will make their own arrangement for drinking / construction water at site at his own cost. Drinking water required for staff / labour colony will be arranged by the contractor at his own cost.

7. CONSTRUCTION POWER

No construction power will be provided by BHEL. Contractor will have to arrange the same at their own cost. However, BHEL may provide one point construction power within project premises free of cost as and when the same will be ready. Contractor will have to provide necessary calibrated meters (tamper-proof suitably housed in a weather proof box with lock and key arrangement) along with calibration certificate from authorized / accredited agency for working out the power consumption at his own cost. In case of re-calibration required for any reason, the necessary charges including replacements by calibrated meters is to be borne by the contractor.

Contractor will make his own arrangement for electric power required for his labour colony including distribution network.

The contractor shall have to make arrangements at their own cost for illumination that will be required in the working areas for execution of the work.

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The contractor shall be charged, for power supply to labour and staff colony at rates prevalent at the site.

8. CONSTRUCTION OF TEMPORARY OFFICE ETC

The contractor shall arrange at his own cost the construction office, stores, labour colony etc and also the watch and ward of all the above.

9. TOOLS & PLANT (To be provided by contractor)

All T&P to be provided by the contractor for successful completion of work as mentioned elsewhere in the specification.

10. CONSTRUCTION SCHEDULE

While submitting the offer, the contractor shall furnish the construction schedule (L-2 /L-3) indicating all milestones on the basis of major activities indicated below: -

- 10.1 Civil foundations for removable/re-erectable type storage shed: 1 months from the date of issue of foundation drawings
- 10.2 Material storage yard Development : 3 months from the date of issue of LOI
- 10.3 Watchtowers (2 Nos): 5 months from the date of issue of LOI

11. COMPLETION PERIOD

- 11.1 The contractor shall mobilize T&P required to start the actual work within 10 days from the date of placement of LOI.
- 11.2 The entire work including area development and all finishing works shall be successfully completed in all respects within 5 (five) months from the date of placement of LOI.

12. MOBILIZATION ADVANCE

No mobilization advance shall be paid to the contractor.

13. PRICE VARIATION CLAUSE

The item-wise rates shall remain firm throughout the execution of contract period and extension period, if any, for reasons whatsoever and no escalation shall be payable to the contractor.

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14. **SPLITTING OF WORK**

BHEL reserves the right to split the work and award any part of the work to any agency without assigning any reason whatsoever. The decision of BHEL in this regard shall be final and binding on the contractor.

15. **DEWATERING**

No separate payment for dewatering the sub-soil or surface water, if required at any time during the execution of the work including monsoon period would be made by BHEL.

16. **MATERIALS**

No material will be supplied by BHEL. All material including Cement, Structural Steel and Reinforcement Steel etc. as per scope of work or any material that may be required for proper completion of work shall be arranged by the contractor within the quoted-accepted price.

17. **INTERIM PAYMENT**

IMPORTANT CONDITIONS FOR PAYMENT:

- a) It may be noted that the first running bill will be released only on production of the following:
 - i. PF REGISTRATION NUMBER.
 - ii. LABOUR LICENCE NUMBER.
 - iii. WORKMEN INSURANCE POLICY NO.
- b) For all items of work as per Bill of quantities, the monthly R.A. bill payment shall be limited to 95% of the gross value of R.A. bill on item rate basis. All admissible recovery / adjustment etc. shall be made within 30 days of the receipt of correct and complete invoice by BHEL site office, accompanied by BHEL Engineer's certificate / jointly signed measurement sheet subject to its completeness and correctness in all respect. The measurement will be taken as per relevant clauses of Volume – 1 (GCC) of tender document and certified by BHEL Engineer for the actual work done.

17.1 Balance 5% of gross value of bill shall be paid along with the final bill after adjusting all recoveries due from the contractor.

17.2 All Taxes(except Service Tax including Educational Cess), Works contract tax under VAT act, charges, royalties, duties, octroi etc and other taxes for materials obtained for the work and for execution of the contract shall be borne by the contractor and shall not be payable extra. Any increase of the same at any stage during execution of the contract. Shall have to be borne by the contractor. Quoted price of the bidder shall be inclusive of all such requirements. The contractor is liable to furnish all documentary evidence towards payment of works contract tax

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as and when require by BHEL. SERVICE TAX including educational cess on service tax (as applicable) shall be paid extra on submission of documentary evidence to the satisfaction of BHEL. As such, bidders' quoted rate shall be exclusive of service tax. Any changes in service tax rules(by Government) shall be complied with.

- 17.3 For reimbursement of service tax, following documents are to be submitted.
- a. Original invoice indicating service tax separately.
 - b. Copy of service tax paid challan duly certified by bidders authorized signatory stating that the amount paid in the said challan includes above service tax of BHEL.

17.3 Any payment due to the contractor shall be paid by a/c payee cheque only

18. CLEANLINESS

The Contractor shall be responsible for keeping the entire area allotted to him clean and free from rubbish, debris etc. during the period of Contract. The Contractor shall employ enough number of special personnel to thoroughly clean his work-area at least once in a day. All such rubbish and scrap material shall be stacked or disposed in a place to be identified by the Employer. Materials and stores shall be so arranged to permit easy cleaning of the area. In areas where equipment might drip oil and cause damage to the floor surface, a suitable protective cover of a flame resistant, oil proof sheet shall be provided to protect the floor from such damage. Similarly the labour colony, the offices and the residential areas of the Contractor's employees and workmen shall be kept clean and neat to the entire satisfaction of the Employer. Proper sanitary arrangements shall be provided by the Contractor, in the work-areas, office and residential areas of the Contractor.

19. HSE REQUIREMENTS(HEALTH,SAFETY AND ENVIRONMENT)

19.1 The Contractor shall ensure proper safety of all the workmen, materials, plant and equipments belonging to him or to Employer or to others, working at the Site. The Contractor shall also be responsible for provision of all safety notices and safety equipment required both by the relevant legislation and BHEL as deemed necessary.

19.2 The contractor will notify the Engineer of his intention to bring on to site any equipment or any container, with liquid or gaseous Fuel or other substances, which may create hazard. The Engineer shall have the right to prescribe the conditions under which the equipments or container may be handled and used during the performance of the work and the contractor shall strictly adhere to such instructions. The Engineer shall have the right to inspect any construction plant and to forbid its use, if in his opinion, it is unsafe. No claim due to such prohibition shall be entertained by BHEL.

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- 19.3 Where it is necessary to provide and / or store petroleum products or petroleum mixtures and explosives, the contractor shall be responsible for carrying out such provision and / or storage in accordance with the rules and regulations laid down in Petroleum act 1934, Explosives Act 1948 and Petroleum and Carbide of Calcium Manual published by the Chief Inspector of Explosives of India. All such storage shall have prior approvals of the Engineer. In case any approvals are necessary from the Chief Inspector of Explosives or any statutory authorities, the contractor shall be responsible for obtaining the same.
- 19.4 Periodical Examinations and all tests for all lifting/ hoisting equipment & tackles shall be carried-out in accordance with the relevant provisions of Factories Act 1948, Indian Electricity Act 1910 and associated Laws/Rules in force from time to time. A register of such examinations and tests shall be properly maintained by the Contractor and will be promptly produced as and when desired by Employer or by the person authorised by him.
- 19.5 The Contractor shall provide suitable safety equipment of prescribed standard to all employees and workmen according to the need, as may be directed by Employer who will also have right to examine these safety equipments to determine their suitability, reliability, acceptability and adaptability.
- 19.6 The Contractor shall not interfere or disturb electric fuses, wiring and other electrical equipment belonging to BHEL or other Contractors under any circumstances, whatsoever, unless expressly permitted in writing by BHEL to handle such fuses, wiring or electrical equipment.
- 19.7 Before the Contractor connects any electrical appliances to any plug or socket , belonging to the other Contactor or Employer, he shall:
- (a) Satisfy BHEL that the appliance is in good working condition:
 - (b) Inform BHEL of the maximum current rating, voltage and phases of the appliances;
 - (c) Obtain permission of BHEL detailing the sockets to which the appliances may be connected.
- 19.8 BHEL will not grant permission to connect until he is satisfied that;
- (a) The appliance is in good condition and is fitted with suitable plug;
 - (b) The appliance is fitted with a suitable cable having two earth conductors, one of which shall be an earthed metal sheath surrounding the cores.

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- 19.9 No electric cable in use by the Contractor/Employer will be disturbed without prior permission. No weight of any description will be imposed on any cable and no ladder or similar equipment will rest against or attached to it.
- 19.10 No repair work shall be carried out on any live equipment. The equipment must be declared safe by BHEL and a permit to work shall be issued by BHEL before any repair work is carried out by the Contractor. While working on electric lines/equipments whether live or dead, suitable type and sufficient quantity of tools will have to be provided by Contractor to electricians/workmen/officers.
- 19.11 In case any accident occurs during the construction/ erection or other associated activities undertaken by the Contractor thereby causing any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be the responsibility of the Contractor to promptly inform the same to BHEL in prescribed form and also to all the authorities envisaged under the applicable laws. Report should be submitted within 24 hours of its occurrence.
- 19.12 BHEL shall have the right at his sole discretion to stop the work, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and/or property, and/or equipments. In such cases, the Contractor shall be informed in writing about the nature of hazards and possible injury/accident and he shall comply to remove shortcomings promptly. The Contractor after stopping the specific work can, if felt necessary appeal against the order of stoppage of work to BHEL within 3 days of such stoppage of work and decision of BHEL in this respect shall be conclusive and binding on the Contractor.
- 19.13 The Contractor shall not be entitled for any damages/ compensation for stoppage of work due to safety reasons as listed above and the period of such stoppage of work will not be taken as an extension of time for completion of the facilities and will not be the ground for waiver of levy of liquidated damages.
- 19.14 The Contractor shall follow and comply with all Safety Rules of BHEL, relevant provisions of applicable laws pertaining to the safety of workmen, employees, plant and equipment as may be prescribed from time to time without any demur, protest or contest or reservation. In case of any inconformity between statutory requirement and Safety Rules of BHEL referred above, the later shall be binding on the Contractor unless the statutory provisions are more stringent.
- 19.15 If the Contractor fails in providing safe working environment as per BHEL's Safety Rules or continues the work even after being instructed in writhing to stop work by BHEL Manager, the Contractor shall promptly pay to BHEL, on demand by BHEL compensation at the rate of Rs. 5,000/- per day or part thereof till the instructions are complied with and so certified by BHEL. However, in case of accident taking place, causing injury, to any individual, the provisions contained in relevant

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paragraph above shall also apply in addition to compensation mentioned in this paragraph.

19.16 If the Contractor does not take all safety precautions and/or fails to comply with the Safety Rules as pre-scribed by BHEL or under the applicable law for the safety of the equipment and plant and for the safety of personnel and the Contractor does not prevent hazardous conditions which cause injury to his own employees or employees of other Contractors, or BHEL's employees or any other person who are at Site or adjacent thereto, the Contractor shall be responsible for payment of compensation to Employer as per the following schedule.

- (a) Fatal injury or accident- Rs. 1,00,000/- per person These are causing death applicable
- (b) Major injuries or accident Rs. 20,000/- per person for death/causing 25% or more injury to any permanent disablement to person Workmen or employees Whosoever.

19.17 Permanent disablement shall have same meaning as indicated in Workmen's Compensation Act. The compensation mentioned above shall be in addition to the compensation payable to the workmen/employees under the relevant provisions of the Workmen's Compensation Act and rules framed there under or any other applicable laws as applicable from time to time. In case BHEL is made to pay such Compensation then the Contractor is liable to reimburse BHEL such amount in addition to the compensation indicated above.

19.18 SAFETY FOR T & P ETC.

19.18.1 T&P used by contractor should be tested quality bearing ISI marks. Necessary test certificates to be produced by the contractor for all the T&P received by him at site for acceptance by BHEL Engineer. BHEL will reject any T&P without IS test certificate and the same cannot be utilized on job.

19.18.2 Only trained and experienced personnel to be used on the job. Signaling for rigging operations must be given by workers who are possessing required skill and experience in handling materials.

19.18.3 Contractor shall strictly follow all safety conditions as per relevant clause and its sub clauses of G.C.C. Booklet. Non-conformity of safety rules and safety appliances will be viewed seriously and the BHEL has the right to impose fines on the contractor as under:

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Sl. No.	Safety Measure	Fine (Rs.)
01	Not wearing safety helmet	50/-
02	Not wearing safety belt	100/-
03	Grinding without goggles	50/-
04	Not using 24V supply for internal work	500/-
05	Electrical plugs not used for hand machines	100/-
06	Not slinging properly	200/-
07	Using damaged sling	200/-
08	Lifting cylinders without cage	500/-
09	Not using proper welding cable with lot of joints and not insulated properly	200/-
10	Not removing small scrap from platforms	200/-
11	Gas cutting without taking proper precaution or not using sheet below gas cutting	200/-
12	Not maintaining elec. Winches which are being operated dangerously	500/-
13	Improper earthing of electrical T&P's.	500/-

20. CHARGES FOR MISCELLANEOUS ITEMS OF WORK

If any miscellaneous (new or additional) items of work, which are not incorporated in the BOQ schedule, but incidental to the proper execution of the job, have to be executed by the contractor, the rate of such miscellaneous item of work shall be as per the following: -

- a) If the items are covered under PWD schedule of rates (1999-2000), Presidency Circle (I & II), West Bengal for building, sanitary & plumbing works, the rates shall be derived from the percentage quoted on the PWD schedule of rates as per item nos. 29 and 27 of Schedule I and II respectively.
- b) If the items are not covered under PWD schedule, the rate of such items shall be derived, if possible, from the available rates, agreed upon in the rate schedule of this contract.
- c) If the items are not covered in above schedule [sl,no (a) & (b)], the rates have to be mutually agreed upon mainly on the basis of prevailing market rates for which all documentary evidences, as required by BHEL/Site Engineer shall have to be produced by the contractor. Decision of BHEL in such cases shall be final and binding on the contractor.
- d) In the event of any dispute regarding acceptance of any work under the above category, the work has to be carried by the contractor and measurement to be signed jointly with remark "FOR HQ DECISION". Under no circumstances, the contractor can refuse to carry out such miscellaneous work with any pre-condition,

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save and except of keeping the records for the particular job for further consideration by HQ at Kolkata.

21. INSURANCE

BHEL shall arrange insurance coverage for the material and properties of BHEL/Customer covering the risks during transit, storage, erection and commissioning.

It is the entire responsibility of the contractor to insure his workmen against accident and injury while at work as required by the relevant rules and to pay compensation, if any, to their workmen as per workmen's compensation act. The contractor has also to insure his staff against accident/injury. The contractor has to take insurance cover for his tools and plants, assets etc.

These insurance covers have to taken prior to start of his work at the subject project and he shall make available the Policy to BHEL Site in-charge for necessary verification before commencement of work. However, irrespective of such verification / acceptance, the sole responsibility to maintain adequate insurance cover for his workmen, T&P, assets etc. at all times during the period of contract shall lie with the contractor. Regarding the aforesaid insurance cover, the contractor shall directly deal with the Insurance Company for all matters regarding the insurance in his scope.

Insurance covers to be taken by BHEL is stipulated under relevant clauses of Vol – I of this specification (G.C.C.)

21.1 Workmen's Compensation Insurance

This insurance shall protect the Contractor against all claims applicable under the Workmen's Compensation Act, 1948 (Government of India). This policy shall also cover the Contractor against claims for injury, disability disease or death of his or his Sub-Contractor's employees, which for any reason are not covered under the Workmen's Compensation Act, 1948. The liabilities shall not be less than the following:

Workmen's Compensation	-	As per Statutory Provisions
Employee's Liability	-	As per Statutory Provisions

21.2 Comprehensive Automobile Insurance

This insurance shall be in such a form to protect the Contractor against all claims for injuries, disability, disease and death to members of public including BHEL's men and damage to the property of other arising from the use of motor vehicles

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during on or off the Site operations, irrespective of the Ownership of such vehicles. The liability covered shall be as herein indicated:

Fatal Injury	:	Rs.100,000 each person
	:	Rs.200,000 each occurrence
Property Damage	:	Rs.100,000 each occurrence

22 OTHER IMPORTANT CONDITIONS

22.1 In addition to the local laws and regulations, the Contractor shall also comply with the Minimum Wages Act and the Payment of Wages Act (both of the Government of India) and the rules made there under in respect of its labour currently employed on or connected with the contract.

22.2 REMOVAL OF MATERIAL

22.2.1 No material brought to the Site shall be removed from the Site by the Contractor without the prior written approval of BHEL.

22.3 ACCESS TO SITE AND WORKS ON SITE

22.3.1 The contractor shall have to make arrangements at their own cost for necessary access to the works site. If required, the contractor at his own cost shall make the temporary approach road for execution of the work. Permission to work at the Site shall be accorded to the Contractor by BHEL in reasonable time.

22.3.2 In the execution of the Works, no person other than the Contractor or his duly appointed representative, shall be allowed to do work on the Site, except by the special permission, in writing by BHEL or his representative.

22.4 CONTRACTOR'S SITE OFFICE ESTABLISHMENT

22.4.1 The Contractor shall establish a Office at the Site and keep posted an authorised representative for the purpose of the Contract. Any written order or instruction of BHEL or his duly authorised representative, shall be communicated to the said authorised resident representative of the Contractor and the same shall be deemed to have been communicated to the Contractor at his legal address.

22.5 CO-OPERATION WITH OTHER CONTRACTORS

22.5.1 The Contractor shall co-operate with all other Contractors or tradesmen of BHEL, who may be performing other works on behalf of BHEL and the workmen who may be employed by BHEL and doing work in the vicinity of the works under the

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Contract. The Contractor shall also arrange to perform his work as to minimise, to the maximum extent possible, interference with the work of other Contracts and their workmen. Any injury or damage that may be sustained by the employees of the other Contractors and BHEL, due to the Contractor's work shall promptly be made good at his own expense. BHEL shall determine the resolution of any difference or conflict that may arise between the Contractor and other Contractors or between the Contractor and the workmen of BHEL in regard to their work. If the work of the Contractor is delayed because of any acts of omission of another Contractor, the Contractor shall have no claim against BHEL on that account other than an extension of time for completing his works.

22.5.2 Employer shall have full access to visit the contractor's site at any time for inspection and surveillance checks.

22.5.3 BHEL shall be notified promptly by the Contractor of any defects in the other Contractor's works that could affect the Contractor's Works. BHEL shall determine the corrective measures if any, required to rectify this situation after inspection of the works and such decisions by BHEL shall be binding on the Contractor.

22.6 DISCIPLINE OF WORKMEN

22.6.1 The Contractor shall adhere to the disciplinary procedure set by BHEL in respect of his employees and workmen at Site. BHEL shall be at liberty to object to the presence of any representative or employee of the Contractor at the Site, if in the opinion of BHEL such employee has misconducted himself or is incompetent, negligent or otherwise undesirable then the Contractor shall remove such a person objected to and provide in his place a competent replacement.

22.7 CONTRACTOR'S FIELD OPERATION

22.7.1 The Contractor shall keep BHEL informed in advance regarding his field activity plans and schedules for carrying out each part of the works. Any review of such plan or schedule or method of work by BHEL shall not relieve the Contractor of any of his responsibilities towards the field activities. Such reviews shall also not be considered as an assumption of any risk or liability by BHEL or any of his representatives and no claim of the Contractor will be entertained because of the failure or inefficiency of any such plan or schedule or method of work reviewed. The Contractor shall be solely responsible for the safety, adequacy and efficiency of plant and equipment and his material management methods.

22.7.2 The Contractor shall have the complete responsibility for the conditions of the Work Site including the safety of all persons employed by him and all the properties under his custody during the performance of the work. This requirement shall apply continuously till the completion of the Contract and shall not be limited to normal working hours. The construction review by BHEL is not intended to include review

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of Contractor's safety measures in, on or near the Work-Site, and their adequacy or otherwise.

22.8 PHOTOGRAPHS AND PROGRESS REPORT

22.8.1 The Contractor shall furnish three (3) prints each to BHEL of progress photographs of the work done at Site. Photographs shall be taken as and when indicated by BHEL or his representative. Each photograph shall contain the date, the name of the Contractor and the title of the photograph. The above photographs shall accompany the monthly progress report, detailing out the progress achieved on all areas of work as compared to the schedules. The report shall also indicate the reasons for the variance between the scheduled and actual progress and the action proposed for corrective measures, wherever necessary.

22.8.2 The Contractor shall submit the progress of work in video cassettes quarterly highlighting the progress and constraints at site.

22.9 MAN-POWER REPORT

22.9.1 The Contractor shall submit to BHEL, on the first day of every month, a man-hour schedule for the month, detailing the man-hours scheduled for the month, skill-wise and area-wise. Review of same by BHEL is to be done.

22.9.2 The Contractor shall also submit to BHEL on the first day of every month, a man power report of the previous month detailing the number of persons scheduled to have been employed and actually employed, skill- wise and the areas of employment of such labour. Review of same by BHEL is to be done.

22.10 PROTECTION OF WORK

22.10.1 The Contractor shall have total responsibility for protecting his works till it is finally issued from his custody to respective erection agencies. No claim will be entertained by BHEL or the representative of BHEL for any damage or loss to the materials under custody of Contractor' and the Contractor shall be responsible for complete restoration of the damaged works to original conditions to the satisfaction of BHEL" s engineer. Should any such damage to the Contractor's Works occur because of other party not being under his supervision or control, the Contractor shall make his claim directly with the party concerned. If disagreement or conflict or dispute develops between the Contractor and the other party or parties concerned regarding the responsibility for damage to the materials etc under Contractor's custody the same shall be resolved as per the provisions of the as specified at clause no 11.5 - of this chapter entitled "Co-operation with other Contractors." The Contractor shall not cause any delay in the repair of such damaged Works because of any delay in the resolution of such disputes. The Contractor shall proceed to

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repair the Work immediately and no cause thereof will be assigned pending resolution of such disputes.

22.11 EMPLOYMENT OF LABOUR

22.11.1 In addition to all local laws and regulations pertaining to the employment of labour to be complied with by the Contractor pursuant to GCC, the Contractor will be expected to employ on the work only his regular skilled employees with experience of the particular work. No female labour shall be employed after darkness. No person below the age of eighteen years shall be employed.

22.11.2 All travelling expenses including provisions of all necessary transport to and from Site, lodging allowances and other payments to the Contractor's employees shall be the sole responsibility of the Contractor.

22.11.3 The hours of work on the Site shall be decided by BHEL and the Contractor shall adhere to it. Working hours will normally be eight (8) hours per day - Monday to Saturday.

22.11.4 Contractor's employees shall wear identification badges while on work at Site.

22.11.5 In case BHEL becomes liable to pay any wages or dues to the labour or any Government agency under any of the provisions of the Minimum Wages Act, Workmen Compensation Act, Contract Labour Regulation Abolition Act or any other law due to act of omission of the Contractor, BHEL may make such payments and shall recover the same from the Contractor's Bills.

22.12 FIRE PROTECTION

22.12.1 The work procedures that are to be used during the material handling work shall be those, which minimise fire hazards to the extent practicable. Combustible materials, combustible waste and rubbish shall be collected and removed from the Site at least once each day. Fuels, oils and volatile or flammable materials shall be stored away from the construction and equipment and materials storage areas in safe containers. Untreated canvas, paper, plastic or other flammable flexible materials shall not at all be used at Site for any other purpose unless otherwise specified. If any such materials are received with the equipment at the Site, the same shall be removed and replaced with acceptable material before moving into the construction or storage area.

22.12.2 Similarly corrugated paper fabricated cartons etc. will not be permitted in the storage area either for storage or for handling of materials. All such materials used shall be of waterproof and flame resistant type. All the other materials such as working drawings, plans etc., which are combustible but are essential for the works

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to be executed shall be protected against combustion resulting from welding sparks, cutting flames and other similar fire sources.

22.12.3 All the Contractor's supervisory personnel and sufficient number of workers shall be trained for fire fighting and shall be assigned specific fire protection duties. Enough of such trained personnel must be available at the Site during the entire period of the Contract.

22.12.4 The Contractor shall provide enough fire protection equipment of the types and number for the warehouses, office, temporary structures, labour colony area etc. Access to such fire protection equipment, shall be easy and kept open at all time.

22.13 SECURITY

22.13.1 The Contractor shall have total responsibility for all equipment and materials in his custody stores, loose, and/or semi-assembled by him at Site. The Contractor shall make suitable security arrangements including employment of security personnel to ensure the protection of all materials, equipment and works from theft, fire, pilferage and any other damages and loss. All materials of the Contractor shall enter and leave BHEL Site only with the written permission of BHEL in the prescribed manner.

22.14 CONTRACTOR'S AREA LIMITS

22.14.1 BHEL will mark-out the boundary limits of access roads, parking spaces, storage and construction areas for the Contractor and the Contractor shall not trespass the areas not so marked out for him. The Contractor shall be responsible to ensure that none of his personnel move out of the areas marked out for his operations. In case of such a need for the Contractor's personnel to work out of the areas marked out for him the same shall be done only with the written permission of BHEL.

22.15 CONTRACTOR'S CO-OPERATION WITH BHEL

22.15.1 In case where the performance of the material handling work by the Contractor affects the operation of the system facilities of BHEL, such material handling work of the contractor shall be scheduled to be performed only in the manner stipulated by BHEL and the same shall be acceptable at all times to the contractor. BHEL may impose such restrictions on the facilities provided to the Contractor such as electricity, etc. as he may think fit in the interest of BHEL and the Contractor shall strictly adhere to such restrictions and co-operate with BHEL.

22.15.2 The Contractor shall bring to Site all equipment, components, parts, materials, including construction equipment, tools and tackles for the purpose of the Works

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under intimation to BHEL. All such goods shall, from the time of their being brought vest in BHEL, but may be used for the purpose of the Works only and shall not on any account be removed or taken away by the Contractor without the written permission of BHEL. The Contractor shall nevertheless be solely liable and responsible for any loss or destruction thereof and damage thereto.

22.15.3 BHEL shall have a lien on such goods for any sum or sums, which may at any time be due or owing to him by the Contractor, under, in respect of or by reasons of the Contract. After giving a fifteen (15) days notice in writing of his intention to do so, BHEL shall be at liberty to sell and dispose off any such goods, in such manner as he shall think fit including public auction or private treaty and to apply the proceeds in or towards the satisfaction of such sum or sums due as aforesaid.

22.15.4 After the completion of the Works, the Contractor shall remove from the Site under the direction of BHEL the materials such as construction equipment, erection tools and tackles, scaffolding etc. with the written permission of BHEL. If the Contractor fails to remove such materials, within fifteen (15) days of issue of a notice by BHEL to do so then BHEL shall have the liberty to dispose off such materials and credit the proceeds thereto to the account of the Contractor.

22.16 PROTECTION OF PROPERTY AND CONTRACTOR'S LIABILITY

22.16.1 The Contractor shall be responsible for any damage resulting from his operations. He shall also be responsible for protection of all persons including members of public and employees of BHEL and the employees of other Contractors and all public and private property including structures, building, other plants and equipments and utilities either above or below the ground.

22.16.2 The Contractor will ensure provision of necessary safety equipment such as barriers, sign - boards, warning lights and alarms, etc. to provide adequate protection to persons and property. The Contractor shall be responsible to give reasonable notice to BHEL and owner of public or private property and utilities when such property and utilities are likely to get damaged or injured during the performance of his Works and shall make all necessary arrangements with such Employers, related to removal and/or replacement or protection of such property and utilities.

22.17 UNFAVORABLE WORKING CONDITIONS

22.17.1 The Contractor shall confine all his field operations to those works which can be performed without subjecting the equipment and materials to adverse effects during inclement weather conditions, like monsoon, storms, etc. and during other unfavorable construction conditions. No field activities shall be performed by the

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Contractor under conditions, which might adversely affect the quality and efficiency thereof, unless the Contractor takes special precautions or measures in a proper and satisfactory manner in the performance of such Works and with the concurrence of BHEL. Such unfavorable construction conditions will in no way relieve the Contractor of his responsibility to perform the Works as per the schedule.

22.18 PROTECTION OF MONUMENTS AND REFERENCE POINTS

The Contractor shall ensure that any finds such as relic, antiquity, coins, fossils, etc. which he may come across during the course of performance of his Works either during excavation or elsewhere, are properly protected and handed over to BHEL. Similarly the Contractor shall ensure that the bench marks, reference points, etc., which are marked either with the help of Employer or by BHEL shall not be disturbed in any way during the performance of his Works. If, any work is to be performed which disturb such reference, the same shall be done only after these are transferred to other suitable locations under the direction of BHEL. The Contractor shall provide all necessary materials and assistance for such relocation of reference points etc.

23. SITE ORGANISATION

The contractor will depute a competent Engineer/Supervisor for all site operation with sufficient level of authority to take site decision. The organization chart for site should indicate the various levels of experts to be posted for supervision in the various fields as applicable. For proper supervision of the work, the vendor shall ensure providing one qualified supervisor against deployment of 15 workmen.

The contractor shall maintain a site organization of adequate strength in respect of manpower, construction machinery and other implements at all times for smooth execution of the contract. This organisation shall be reinforced from time to time, as required to make up for slippage from the schedule without any commercial implication to BHEL. The site organisation shall be headed by a competent construction manager having sufficient authority to take decisions at site.

On award of contract, the contractor shall submit to BHEL site organisation chart indicating the various levels of experts to be deployed on the job. BHEL reserves the right to reject or approve the list of personnel proposed by the Contractor. The persons, whose bio-data have been approved by BHEL, will have to be posted at site and deviations in this regard will not generally be permitted.

24. PROGRESS REVIEW MEETINGS

During the course of work if the progress is found unsatisfactory, or if the target dates fixed from time to time for every milestone are to be advanced or in the opinion of BHEL, if it is found that the workmen employed are not sufficient, BHEL will induct

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required additional workmen, to improve the progress and recover them from the contractor's bills, all charges incurred on this account including all expenses together with BHEL overheads.

The progress report shall indicate the progress achieved against planned with reasons indicating delays if any, shall also furnish in details the reasons for the same and shall give remedial action which the contractor intends to take to make good the slippage or lost time so that further works can proceed as per the original programme and the slippage do not accumulate and affect the overall programme.

The contractor shall submit daily, weekly and monthly progress reports, manpower reports, material reports, consumables report and other reports considered necessary by the Engineer.

The manpower reports shall clearly indicate the manpower deployed category wise daily specifying also the activities in which they are engaged. The periodicity of the reports will be decided by BHEL Engineer at site.

The contractor shall arrange for weekly progress review meetings with the Engineer at site during which actual progress during the week vis-à-vis scheduled programme shall be discussed for action to be taken for achieving targets. The programme for subsequent week shall also be presented by contractor for discussions. The contractor shall constantly update / revise his works programme too meet the overall requirement and suit the material availability.

The contractor shall submit a detailed monthly plan after discussion with BHEL Engineer and the same has to be forwarded by the first week of the month (Working month or calendar month).

The above clause 11.0 is to be read in conjunction with clause no. 10.8.

25 Support Service to BHEL Store management.

Computerised pkg, (may be provided by BHEL) as suitable, for civil work shall be used by Vendor.

The contractor shall provide one number of computer having Microsoft operating system and minimum office '2000 professional, loaded for record keeping and Generation of reports. The configuration of computers must be Pentium IV, 1GHZ, 40 GB & 512 MB RAM. The report will be submitted through Floppy (1.44Mb) or by CD OR HARD COPY, as the case may be, regularly to BHEL site office. One inkjet printer is to be arranged by the contractor along with the Computer. The computer system will remain the property of the contractor. The same can be taken back by the contractor after completion of the work. (The period of completion of work is inclusive of the extended time period of work, if any). All necessary

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software/hardware & consumables like papers, ribbons, floppy, printer cartridge etc. required for the work and the contractor will arrange report generation for the entire period of the contract. The computer along with printer is to be arranged during the mobilisation. If contractor fails to provide computer/printer as per requirement for a continuous period of 15 days or more, BHEL shall have the right to apply the following alternative:

Deduct the amount as per following from Contractor's RA bill or any other dues:

- @ Rs 5000/- (five thousand) /month for the computer.
- @ Rs5500/- (five thousand five hundreds)/month for the computer with printer. AMC of the computer is to be arranged by the vendor to ensure uninterrupted services at his cost.

The contractor shall also provide BHEL site one number computer operator having knowledge of data base applications.

If contractor fails to provide the operator as above for a continuous period of 15 days or more, BHEL shall have the right to apply the following alternative:

- Deduct the amount as per following from Contractor's RA bill or any other dues:
@ Rs 6000 (six thousand) /month for the computer.

26 GENERAL

- 26.1 Contractor shall provide temporary barricade all round the working area to avoid any untoward incident.
- 26.2 No medical facilities to be provided by BHEL at site. Contractor should arrange first aid facility with compounder at site.
- 26.3 Any other non-conformity noticed not listed above will also be fined. The decision of BHEL engineer is final on the above. The amount will be deducted from bills of the contractor. The amount collected on the above will be utilized for giving award to the employees of various contractors working at site who could avoid accidents by following safety rules and for improving the safety at site. Such award will be decided by the committee consisting of employees of contractors working within the project and be awarded in presence of BHEL representative.
- 26.4 The contractor shall be responsible for providing all necessary facilities like residential accommodation, transport, electricity, water, medical, insurance etc to the personnel engaged by the contractor for the work.
- 26.5 The contractor shall comply with all state and central laws, various labour laws, statutory rules and regulations etc such as.

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VOL-II	TECHNICAL SPECIFICATION CUM SPECIAL CONDITION OF CONTRACT	

- 26.6 The payment of wages act, minimum wages act, workman compensation act, Employers Liability act, Industrial dispute act, Employees provident fund scheme, Employees state insurance, contract labour (Regulation and abolition) act 1970 and other acts, rules and regulation for labour as may be enacted by the Government during the tenure of the contract and having force or jurisdiction at site. The contractor shall give to the local government body police and other relevant authorities all such notices as may be required by Law.
- 26.7 The contractor shall make arrangement at their own cost for necessary access to the work site.
- 26.8 The security laws as applicable from time to time shall have to be strictly followed by the contractor.
- 26.9 Person below 18 years shall not be engaged / employed by the contractor.
- 26.10 The contractor may have to work round the clock for timely completion of work. The contractor shall not be eligible for any extra charges on this account.
- 26.11 No secured advance shall be paid for this contract.
- 26.12 There is no provision of any idle charges in this contract.
- 26.13 LIQUIDATED DAMAGE
- 0.25% of total contract price (supply/services) per week or part thereof with a ceiling of 10% of total contract price. LD shall be imposed separately on supply and service package.

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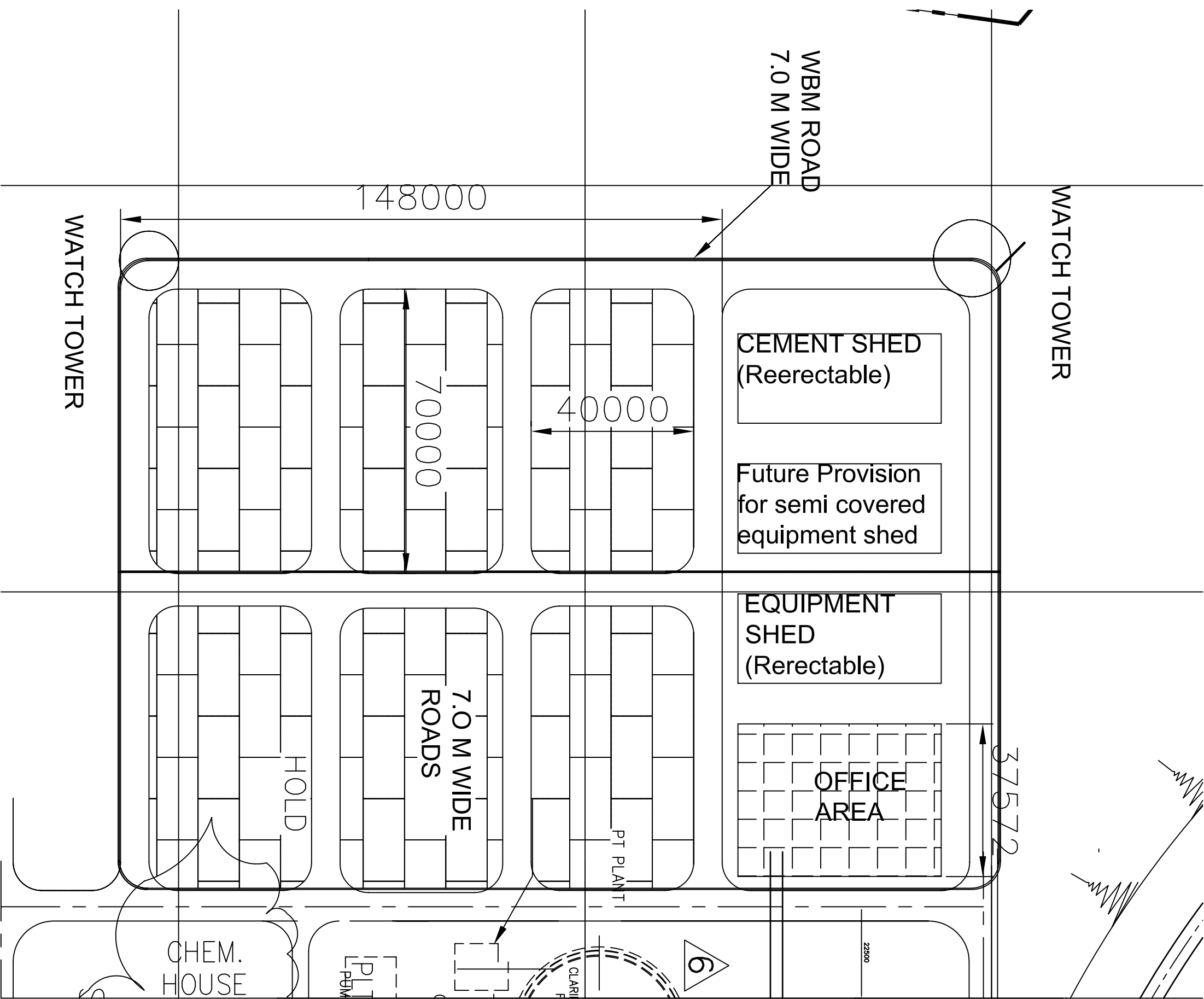
VOLUME-II

ANNEXURE-I

LIST OF T & P TO BE PROVIDED BY THE CONTRACTOR

SL	DESCRIPTION	QUANTITY
1	10/7 CONCRETE MIXER MACHINE	03 NOS
2	DIESEL/PETROL DRIVEN CONCRETE VIBRATOR MACHINES	05 NOS
3	100 KVA DG SET	01 NO
4	WELDING GENERATOR SET	04 NOS

Contractor may please note that the above list of T & P is not exhaustive & given for guidance purpose. The contractor may be required to deploy additional T & Ps not mentioned above at their cost for proper execution of the job.



WATCH TOWER

148000

WBM ROAD
7.0 M WIDE

WATCH TOWER

CEMENT SHED
(Reerectable)

Future Provision
for semi covered
equipment shed

70000

40000

EQUIPMENT
SHED
(Rerectable)

OFFICE
AREA

HOLD

7.0 M WIDE
ROADS

PT PLANT

37572

CHEM.
HOUSE

PLT
PFM

CLARI
F

6

22500

VOLUME-III (REV-1) - TCN-02	
PRICE/RATE SCHEDULE, ABSOLUTE VALUES, REV-1	
JOB	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS & CIVIL WORKS(FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED
TENDER NO :- PSER:SCT:SND-C785:07	
PREAMBLE	
01	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully in rates for various items. Clauses under this preamble shall be read in conjunction with various volumes of tender as per NIT together with subsequent changes/modifications etc thereto as applicable as on date of submission of price offer.
02	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions. Drawings enclosed with this document are only preliminary for giving some idea of the work involved
03	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
04	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc equipment, strengthening of roads/culverts/bridges etc including arranging all clearances etc required for carrying out different activities & tests, materials, levies, taxes & duties (except service Tax), transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the tender document and this schedule.
05	The quantites of the various items mentioned in this schedule of items are approximate, based on the preliminary information and may vary to any extent or to be deleted altogether. The quoted rates shall remain firm and valid for any decrease or increase in the individual quantities affecting upto +/- 30% of the total awarded value as given in the LOI/WO throughout the period of execution including extension, for reasons what-so-ever.
06	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing and leveling etc including fixing of grid pillars, benchmarks etc required for commencement of site activities. No separate payment will be made towards the same.
07	Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English
08	The tender shall be deemed to have visited site and made himself aware of all the site conditions, studied the specifications and details of work to be done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
09	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.
10	Summation of quoted prices all the price/rate schedules shall be considered for evaluation.
11	All works item wise shall be measured upon completion and paid for at the rates quoted & accepted.

VOLUME-III A (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (ABSOLUTE VALUES) REV-1				
JOB:	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS AND CIVIL WORKS (FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED			
TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN RUPEES & IN WORDS)
1)	Earth work in excavation of foundation trenches or drains or septic tank, soak well etc. in all sorts of soil (including mixed soil but excluding laterite,sand stone or moorum) stacking the spoil within a lead of 75m as directed and including trimming the side of trenches, levelling, dressing and ramming the bottom, bailing or pumping out water etc. as required complete.			
A)	Depth of excavation not exceding 1.50 m (not required shoring)	1200	CU M	
B)	Depth of excavation exceding 1.50 m with a lift upto 3.0 m (not required shoring)	400	CU M	
C)	Add extra for excavation in moorum soil.	750	CU M	
D)	Add extra for excavation in laterite and sand stone. requiring chiselling.	100	CU M	
2)	Earth work in excavation upto minimum depth of 0.3 M below natural ground level for levelling and grading including dressing to specified levels and grades and ramming of graded surface including removal of vegetation, bushes, trees, elephant grass etc for all type of soil. The materials unsuitable for filling should be disposed by trucks at a lead of upto 500 M.	25000	SQ M	
3)	Earth wok in filling in foundation trenches and plinth with good earth in layers not exceding 15cm, including watering and ramming etc. layer by layer complete.			
A)	With earth obtained from excavation.	1800	CU M	
B)	With carried earth supplied by the contractor including cost of carried earth and including any lead and lift, land compensaton, royalties taxes etc. as may be necessary. (Payment to be made on measurement of finished qty)	15000	CU M	
4)	Sand filling in foundation or plinth in layers not exceding 15cm as directed and consolidating same by thorough saturation with water and ramming complete including the cost of supply of sand. (Payment to be made on measurement of finished qty).	700	CU M	
5)	Single brick flat soling of picked jhama bricks including ramming and dressing bed to the proper level and filling the joints with powder earth or local sand including all materials, labour etc.	2700	SQ M	
6)	Brick on edge soling of picked jhama bricks including ramming and dressing bed to the proper level and filling the joints with powder earth or local sand including all materials, labour etc.	17100	SQ M	
7)	Plain cement concrete with graded trap stone ballast 32mm down excluding shuttering but including all materials, labours, curing etc. complete.			

VOLUME-III A (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (ABSOLUTE VALUES) REV-1				
JOB:	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS AND CIVIL WORKS (FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED			
TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN RUPEES & IN WORDS)
A)	1 : 3 : 6 proportion	15	CU M	
B)	1 : 4 : 8 proportion	315	CU M	
8)	25 mm thick Damp Proof course with stone chips 4:2:1, double chequered with water proofing compound of approved brand @ 1.5 Kg per bag or as per manufacturer's specification including cost of all materials, labours, curing etc. complete.	80	SQ M	
9)	Cement concrete 1:2:4 with approved trap stone chips 20mm down for structural concrete excluding shuttering and reinforcement if any but including all materials, labour, curing	85	CU M	
10)	Hire and labour charges for 25mm thick shuttering for bldg. works for concrete foundations, floor/roof slabs, beams, lintels, columns, chajja, fins etc. including fitting, fixing and striking out carefully after completion of work.			
A)	Without vertical props.	1280	SQ M	
B)	With vertical props at all levels.	750	SQ M	
11)	Reinforcement for reinforced concrete work including distribution bars, strups, binders etc. including supply of bars, straightening etc. of any dia and removal of loose rust, cutting to requisite length and binding with 1.626 mm black annealed wire at every intersection complete as per drawing diriction and cost of binding wire.			
A)	With M S round bars.	0.1	MT	
B)	With TOR steel	79	MT	
12)	Brick work in cement mortar (1:6) in foundation, plinth, pier, abutment, wing wlls, drains, culvert etc including all materials, labours, scaffolding and other incidental etc. complete.			
A)	Ordinary Clay Bricks Class designation 75	250	CU M	
B)	Clay fly ash bricks Class designation 75	10	CU M	
13)	Brick work in cement mortar (1:6) in superstructure including all materials, labours, scaffolding and other incidental etc. complete at all levels.			
A)	Ordinary Clay Bricks Class designation 75	90	CU M	
B)	Clay fly ash bricks Class designation 75	10	CU M	
14)	12.5 cm thick brick work in cement mortar (4 : 1) including cost of scaffolding and other incidental work etc. completed.			
A)	Ordinary Clay Bricks Class designation 75	50	CU M	
B)	Fly ash bricks / Clay fly ash bricks Class designation 75	10	CU M	

VOLUME-III A (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (ABSOLUTE VALUES) REV-1				
JOB:	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS AND CIVIL WORKS (FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED			
TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN RUPEES & IN WORDS)
15)	Plaster to wall floor, slab soffits, fins, sills etc. with sand cement mortar including rounding off or chenefering corners as directed and racking out joints or roughening of concrete surface including chipping & application of cement slury where necessary etc complete as per drawing and direction of engineer.			
A)	With 1:6 cement mortar 12.5mm thick plaster	500	SQ M	
B)	With 1:6 cement mortar 19 mm thick plaster.	500	SQ M	
C)	With 1:4 cement mortar 12.5 mm thick plaster.	100	SQ M	
16)	Dismantling all type of masonry and stacking serviceable materials at site and removing rubbish as directed.	5	CU M	
17)	Dismantling plain cement concrete in floor including artificial stone flooring or any other floor finish and stacking the materials at site, removing rubbish as directed.	2	CU M	
18)	Construction of masonry surface drain avarage depth 300 mm inside width 300 mm with first class brickwork in cement mortar (4:1) 250mm thick on each side as a check over 75mm brick flat soling and 100mm thick cement concrete (6:3:1) with jhama khoa finished with 12.5 mm thick cement plaster (4:1) including rounding off corners and neat cement finishing including excavating earth to proper grade and slope in all sorts of soil, filling the sides of drain with earth obtained in excavation and removing surplus earth from compound as per direction of Engineer in charge.	1500	RM	
19)	Rehandling, removal and re stacking of structural materials, cutpieces, pipes, skids, cabledrums, reinforcement steel pieces etc and other assorted items either manually or by means of crane, hydra etc.(Crane & Hydra will be provided by BHEL free of cost subject to availability) within a lead of 250M diatance. Tractors, trailors etc to be arranged by vendor. Provision of Cranes and Hydra is as per discretion of Engineer in charge.	200	MT	
20)	Spreading of boulders/stones for sub-base preparation of erection roads/approaches/open area development (Stone to be arranged and transported from WBPDCCL coalyard to site/BHEL store yard/ fabrication yard etc (Free supply by WBPDCCL) by engaging truck and manpower for loading, unloading etc and weightment of material at WBPDCCL/BHEL weighbridge etc complete with all material, labou, truck etc complete	4000	CU M	
21)	Supply and Spreading including Consolidation of moram with power roller (10 T- 12 T) average thickness- 40 mm	1000	CU M	

VOLUME-III A (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (ABSOLUTE VALUES) REV-1				
JOB:	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS AND CIVIL WORKS (FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED			
TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN RUPEES & IN WORDS)
22)	Supplying and laying boulder souling, 150 MM thickness including dressing, breaking, hand packing and ramming down small pieces in the interstices including rolling and preparing the bed to proper camber and grade with necessary cushioning over bed and ultimately filling voids with moorum or kiln rubbish including the cost of all materials.	60	CU M	
23)	Providing and laying 75 MM thick WBM with coarse aggregate 63 mm to 45 mm (to be measured after compaction) base/ sub-base course in layers of required thickness, screening and binding materials including screening, sorting, spreading to template and consolidation with road roller 10/12 T including carriage, spreading and consolidation of binding material, moorum etc including cost of material, labour all complete.	1000	CU M	
24)	Patching of potholes by draining water cutting to regular shape with vertical sides, removing loose and disintegrated materials, screening and stacking the same for reuse with new materials as per requirement and filling the potholes with coarse aggregate, compacting the same with power roller including cost of all materials, hire charges of machinery etc complete as per direction.	50	CU M	
25)	Providing and laying 450 MM dia non- pressure NP-3 class RCC pipe with collars jointed with strip mixture of cement mortar 1:2 including testing of joints etc complete as per specification and direction of engineer.	50	RM	
26)	Providing and laying 600 MM dia non- pressure NP-3 class RCC pipe with collars jointed with strip mixture of cement mortar 1:2 including testing of joints etc complete as per specification and direction of engineer.	50	RM	
27)	Fabrication and erection of MS Structural for Lighting tower	5	MT	
28)	Supply of 400W HPSV lamps alongwith fittings of reputed/approved brand with all taxes and duties complete	32	NOS	
29)	E & C of HPSV(of reputed/ approved brand)	16	NOS	
30)	Supply and fixing of 32 AMP TPN Switch (of reputed/ approved brand)with all taxes and duties complete.	16	NOS	
31)	STRUCTURAL STEEL WORK IN SINGLE SECTION FIXED WITH CONNECTING PLATE INCLUDING CUTTING,HOISTING,FIXING IN POSITION AND APPLYING A PRIMING COAT OF APPROVED STEEL PRIMER ALL COMPLETE	KG	700	

VOLUME-III A (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (ABSOLUTE VALUES) REV-1				
JOB:	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS AND CIVIL WORKS (FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED			
TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN RUPEES & IN WORDS)
32)	PROVIDING & FIXING 1 MM THICK MS SHEET DOOR WITH FRAME OF 40X40X6 MM ANGLE IRON AND 3MM MS GUSSET PLATES AT THE JUNCTIONS AND CORNERS, ALL NECESSARY FITTINGS COMPLETE, INCLUDING APPLYING A PRIMING COAT OF APPROVED STEEL PRIMER, USING MS ANGLES 40X40X6 MM FOR DIAGONAL BRACES	SQM	10	
33)	PROVIDING AND FIXING MS ROUND HOLDING DOWN BOLTS WITH NUTS AND WASHERS COMPLETE	KG	1	
34)	Structural steel work welded in built up sections, trusses and framed work including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete:	KG	700	
35)	Providing and fixing ISI marked steel glazed doors, windows and ventilators of standard rolled steel sections, joints mitred and welded with 15x3mm lugs, 10cm long, embedded in cement concrete blocks 15x10x10cm of 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) or with wooden plugs and screws or rawl plugs and screws or with fixing clips or with bolts and nuts as required, including providing and fixing of glass panes with glazing clips and special metal sash putty of approved make complete including applying a priming coat of approved steel primer ; excluding the cost of metal beading and other fitting except necessary hinges or pivots as	SQM		
	Windows fixed			13.2
	Ventilators-TOP hung			3.96
36)	Steel work welded in built up sections/framed work including cutting hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc as required	KG		
	In stringers, treads, landings etc. of stair cases including use of chequered plate wherever required ; all complete			450
	In gratings, frames, guard bar, ladders, railings, brackets, gates & similar works.			450
37)	Providing and fixing expanded metal 20x60mm strands 3.25mm wide and 1.6mm thick for windows etc. including 62x19mm beading of IInd class teak wood	SQM	6	
38)	Providing asbestos cement 6 mm thick corrugated sheets roofing and fixing with polymer coated J, or L hooks, bolts and nuts 8mm dia. G.I. plain and bitumen washers complete excluding the cost of purlins, rafters and trusses: corrugated sheets			
	Upto 60 degrees pitch	SQM	10	

VOLUME-III A (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (ABSOLUTE VALUES) REV-1				
JOB: 1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS AND CIVIL WORKS (FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED				
TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN RUPEES & IN WORDS)
39)	Providing flat iron brackets 50x3mm size with necessary bolts, nuts and washers etc. for fixing asbestos cement/G.S. sheets gutters with purlins	metre	16	
40)	Painting top of roofs with bitumen of approved quality at 17kg per 10sqm impregnated with a coat of coarse sand at 60 cudm per 10sqm including cleaning the slab surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil complete:With residual type petroleum bitumen of penetration 80/100	SQM	10	
41)	DESIGN OF WATCHTOWER AND SUBMISSION OF TWO SETS OF DRAWING(AS PER ENCLOSED DIAGRAM GIVEN FOR GUIDANCE PURPOSE. DESIGN SHOULD BE ECONOMICAL AND SUCH THAT THE TOWER CAN BE DISMANTLED AND TRANSPORTED TO BE REERECTED AT OTHER LOCATION. CONTRACTOR MUST GET THE DRAWINGS APPROVED BY BHEI	LumpSum		
	TOTAL			
42)	Quote % above or % below or at par with Delhi schedule of rate 2002 (DSR 2002).for items not covered in this Rate Schedule above.			
	Rate of complete item	(+/-)%		
	Rate of supply of materials at site only.	(+/-)%		
	Rate for execution complete excluding supply of materials.	(+/-)%		

VOLUME-III A (REV-1) - TCN-02	
PRICE/RATE SCHEDULE, (PERCENTAGE VALUES) REV-1	
JOB	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS & CIVIL WORKS(FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED
TENDER NO :- PSER:SCT:SND-C785:07	
PREAMBLE	
01	This preamble forms part of tender document and schedule of items. The tenderer should read this preamble carefully in rates for various items. Clauses under this preamble shall be read in conjunction with various volumes of tender as per NIT together with subsequent changes/modifications etc thereto as applicable as on date of submission of price offer.
02	The work shall be carried out strictly as per specifications, description of the items in these schedule and / or engineer's instructions. Drawings enclosed with this document are only preliminary for giving some idea of the work involved
03	Items of work provided in this schedule but not covered in this specification shall be executed strictly as per instruction of the engineer.
04	Unless specifically mentioned otherwise in the tender document, the tenderer shall quote for the finished items and shall provide for the complete cost towards power, fuel, tools, tackles, equipment, constructional plants, temporary works, labour, dismantling of all temporary piping, structures, valves, pumps, tanks & other misc equipment, strengthening of roads/culverts/bridges etc including arranging all clearances etc required for carrying out different activities & tests, materials, levies, taxes & duties (except service Tax), transport, layout, repairs, rectification, maintenance till handing over, supervisions, colonies, shops, establishments, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the work according to the tender document and this schedule.
05	The quantites of the various items mentioned in this schedule of items are approximate, based on the preliminary information and may vary to any extent or to be deleted altogether. The quoted rates shall remain firm and valid for any decrease or increase in the individual quantities affecting upto +/- 30% of the total awarded value as given in the LOI/WO throughout the period of execution including extension, for reasons what-so-ever.
06	The rates quoted shall be inclusive of cleaning of site of any vegetation, dressing and leveling etc including fixing of grid pillars, benchmarks etc required for commencement of site activities. No separate payment will be made towards the same.
07	Rates shall be quoted in figures and in words in clear legible writing. No overwriting is allowed. All scoring and cancellations should be countersigned and in case of illegibility the interpretation of engineer shall be final. All entries shall be in English
08	The tender shall be deemed to have visited site and made himself aware of all the site conditions, studied the specifications and details of work to the done within the time schedule attached and to have acquainted himself of the conditions prevailing at site.
09	Engineer's decision shall be final and binding on the contractor regarding clarification of items in the schedule with respect to the other sections/volumes of the contract.
10	Summation of quotated prices all the price/rate schedules shall be considered for evaluation.
11	All works item wise shall be measured upon completion and paid for at the rates quoted & accepted.

VOLUME-IIIB (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (PERCENTAGE VALUES) REV-1				
JOB:	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS AND CIVIL WORKS (FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED			
TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN PERCENT OF TOTAL)
1)	Earth work in excavation of foundation trenches or drains or septic tank, soak well etc. in all sorts of soil (including mixed soil but excluding laterite,sand stone or moorum) stacking the spoil within a lead of 75m as directed and including trimming the side of trenches, levelling, dressing and ramming the bottom, bailing or pumping out water etc. as required complete.			
A)	Depth of excavation not exceding 1.50 m (not required shoring)	1200	CU M	
B)	Depth of excavation exceeding 1.50 m with a lift upto 3.0 m (not required shoring)	400	CU M	
C)	Add extra for excavation in moorum soil.	750	CU M	
D)	Add extra for excavation in laterite and sand stone. requiring chiselling.	100	CU M	
2)	Earth work in excavation upto minimum depth of 0.3 M below natural ground level for levelling and grading including dressing to specified levels and grades and ramming of graded surface including removal of vegetation, bushes, trees, elephant grass etc for all type of soil. The materials unsuitable for filling should be disposed by trucks at a lead of upto 500 M.	25000	SQ M	
3)	Earth wok in filling in foundation trenches and plinth with good earth in layers not exceeding 15cm, including watering and ramming etc. layer by layer complete.			
A)	With earth obtained from excavation.	1800	CU M	
B)	With carried earth supplied by the contractor including cost of carried earth and including any lead and lift, land compensaton, royalties taxes etc. as may be necessary. (Payment to be made on measurement of finished qty)	15000	CU M	
4)	Sand filling in foundation or plinth in layers not exceeding 15cm as directed and consolidating same by thorough saturation with water and ramming complete including the cost of supply of sand. (Payment to be made on measurement of finished qty).	700	CU M	
5)	Single brick flat soling of picked jhama bricks including ramming and dressing bed to the proper level and filling the joints with powder earth or local sand including all materials, labour etc.	2700	SQ M	
6)	Brick on edge soling of picked jhama bricks including ramming and dressing bed to the proper level and filling the joints with powder earth or local sand including all materials, labour etc.	17100	SQ M	
7)	Plain cement concrete with graded trap stone ballast 32mm down excluding shuttering but including all materials, labours, curing etc. complete.			

VOLUME-IIIB (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (PERCENTAGE VALUES) REV-1				
JOB:	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS AND CIVIL WORKS (FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED			
TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN PERCENT OF TOTAL)
A)	1 : 3 : 6 proportion	15	CU M	
B)	1 : 4 : 8 proportion	315	CU M	
8)	25 mm thick Damp Proof course with stone chips 4:2:1, double chequered with water proofing compound of approved brand @ 1.5 Kg per bag or as per manufacturer's specification including cost of all materials, labours, curing etc. complete.	80	SQ M	
9)	Cement concrete 1:2:4 with approved trap stone chips 20mm down for structural concrete excluding shuttering and reinforcement if any but including all materials, labour, curing etc. complete all the levels.	85	CU M	
10)	Hire and labour charges for 25mm thick shuttering for bldg. works for concrete foundations, floor/roof slabs, beams, lintels, columns, chajja, fins etc. including fitting, fixing and striking out carefully after completion of work.			
A)	Without vertical props.	1280	SQ M	
B)	With vertical props at all levels.	750	SQ M	
11)	Reinforcement for reinforced concrete work including distribution bars, strrups, binders etc. including supply of bars, straightening etc. of any dia and removal of loose rust, cutting to requisite length and binding with 1.626 mm black annealed wire at every intersection complete as per drawing diriction and cost of binding wire.			
A)	With M S round bars.	0.1	MT	
B)	With TOR steel	79	MT	
12)	Brick work in cement mortar (1:6) in foundation, plinth, pier, abutment, wing wlls, drains, culvert etc including all materials, labours, scaffolding and other incidental etc. complete.			
A)	Ordinary Clay Bricks Class designation 75	250	CU M	
B)	Clay fly ash bricks Class designation 75	10	CU M	
13)	Brick work in cement mortar (1:6) in superstructure including all materials, labours, scaffolding and other incidental etc. complete at all levels.			
A)	Ordinary Clay Bricks Class designation 75	90	CU M	
B)	Clay fly ash bricks Class designation 75	10	CU M	
14)	12.5 cm thick brick work in cement mortar (4 : 1) including cost of scaffolding and other incidental work etc. completed.			
A)	Ordinary Clay Bricks Class designation 75	50	CU M	
B)	Fly ash bricks / Clay fly ash bricks Class designation 75	10	CU M	

VOLUME-IIIB (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (PERCENTAGE VALUES) REV-1				
JOB:	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS AND CIVIL WORKS (FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED			
TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN PERCENT OF TOTAL)
15)	Plaster to wall floor, slab soffits, fins, sills etc. with sand cement mortar including rounding off or chenefering corners as directed and racking out joints or roughening of concrete surface including chipping & application of cement slury where necessary etc complete as per drawing and direction of engineer.			
A)	With 1:6 cement mortar 12.5mm thick plaster	500	SQ M	
B)	With 1:6 cement mortar 19 mm thick plaster.	500	SQ M	
C)	With 1:4 cement mortar 12.5 mm thick plaster.	100	SQ M	
16)	Dismantling all type of masonry and stacking serviceable materials at site and removing rubbish as directed.	5	CU M	
17)	Dismantling plain cement concrete in floor including artificial stone flooring or any other floor finish and stacking the materials at site, removing rubbish as directed.	2	CU M	
18)	Construction of masonry surface drain avarage depth 300 mm inside width 300 mm with first class brickwork in cement mortar (4:1) 250mm thick on each side as a check over 75mm brick flat soling and 100mm thick cement concrete (6:3:1) with jhama khoa finished with 12.5 mm thick cement plaster (4:1) including rounding off corners and neat cement finishing including excavating earth to proper grade and slope in all sorts of soil, filling the sides of drain with earth obtained in excavation and removing surplus earth from compound as per direction of Engineer in charge.	1500	RM	
19)	Rehandling, removal and re stacking of structural materials, cutpieces, pipes, skids, cabledrums, reinforcement steel pieces etc and other assorted items either manually or by means of crane, hydra etc.(Crane & Hydra will be provided by BHEL free of cost subject to availability) within a lead of 250M diatance. Tractors, trailors etc to be arranged by vendor. Provision of Cranes and Hydra is as per discretion of Engineer in charge.	200	MT	
20)	Spreading of boulders/stones for sub-base preparation of erection roads/approaches/open area development (Stone to be arranged and transported from WBPDCCL coalyard to site/BHEL store yard/ fabrication yard etc (Free supply by WBPDCCL) by engaging truck and manpower for loading, unloading etc and weighment of material at WBPDCCL/BHEL weighbridge etc complete with all material, labou, truck etc complete	4000	CU M	
21)	Supply and Spreading including Consolidation of moram with power roller (10 T- 12 T) average thickness- 40 mm	1000	CU M	

VOLUME-IIIB (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (PERCENTAGE VALUES) REV-1				
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TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN PERCENT OF TOTAL)
22)	Supplying and laying boulder souling, 150 MM thickness including dressing, breaking, hand packing and ramming down small pieces in the interstices including rolling and preparing the bed to proper camber and grade with necessary cushioning over bed and ultimately filling voids with moorum or kiln rubbish including the cost of all materials.	60	CU M	
23)	Providing and laying 75 MM thick WBM with coarse aggregate 63 mm to 45 mm (to be measured after compaction) base/ sub-base course in layers of required thickness, screening and binding materials including screening, sorting, spreading to template and consolidation with road roller 10/12 T including carriage, spreading and consolidation of binding material, moorum etc including cost of material, labour all complete.	1000	CU M	
24)	Patching of potholes by draining water cutting to regular shape with vertical sides, removing loose and disintegrated materials, screening and stacking the same for reuse with new materials as per requirement and filling the potholes with coarse aggregate, compacting the same with power roller including cost of all materials, hire charges of machinery etc complete as per direction.	50	CU M	
25)	Providing and laying 450 MM dia non- pressure NP-3 class RCC pipe with collars jointed with strip mixture of cement mortar 1:2 including testing of joints etc complete as per specification and direction of engineer.	50	RM	
26)	Providing and laying 600 MM dia non- pressure NP-3 class RCC pipe with collars jointed with strip mixture of cement mortar 1:2 including testing of joints etc complete as per specification and direction of engineer.	50	RM	
27)	Fabrication and erection of MS Structural for Lighting tower	5	MT	
28)	Supply of 400W HPSV lamps alongwith fittings of reputed/approved brand with all taxes and duties complete	32	NOS	
29)	E & C of HPSV(of reputed/ approved brand)	16	NOS	
30)	Supply and fixing of 32 AMP TPN Switch (of reputed/ approved brand)with all taxes and duties complete.	16	NOS	
31)	STRUCTURAL STEEL WORK IN SINGLE SECTION FIXED WITH CONNECTING PLATE INCLUDING CUTTING,HOISTING,FIXING IN POSITION AND APPLYING A PRIMING COAT OF APPROVED STEEL PRIMER ALL COMPLETE	KG	700	

VOLUME-IIIB (REV-1) - TCN-02				
PRICE/RATE SCHEDULE, (PERCENTAGE VALUES) REV-1				
JOB:	1X250 MW STPS, UNIT #6, DEVELOPMENT OF MATERIAL STACKING YARD ALONGWITH ASSOCIATED ELECTRICAL WORKS, CONSTRUCTION OF TWO NOS OF WATCHTOWERS AND CIVIL WORKS (FOUNDATIONS ETC) FOR 2 NOS OF REERECTABLE TYPE STORE SHED			
TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN PERCENT OF TOTAL)
32)	PROVIDING & FIXING 1 MM THICK MS SHEET DOOR WITH FRAME OF 40X40X6 MM ANGLE IRON AND 3MM MS GUSSET PLATES AT THE JUNCTIONS AND CORNERS, ALL NECESSARY FITTINGS COMPLETE, INCLUDING APPLYING A PRIMING COAT OF APPROVED STEEL PRIMER, USING MS ANGLES 40X40X6 MM FOR DIAGONAL BRACES	SQM	10	
33)	PROVIDING AND FIXING MS ROUND HOLDING DOWN BOLTS WITH NUTS AND WASHERS COMPLETE	KG	1	
34)	Structural steel work welded in built up sections, trusses and framed work including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete:	KG	700	
35)	Providing and fixing ISI marked steel glazed doors, windows and ventilators of standard rolled steel sections, joints mitred and welded with 15x3mm lugs, 10cm long, embedded in cement concrete blocks 15x10x10cm of 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size) or with wooden plugs and screws or rawl plugs and screws or with fixing clips or with bolts and nuts as required, including providing and fixing of glass panes with glazing clips and special metal sash putty of approved make complete including applying a priming coat of approved steel primer ; excluding the cost of metal beading and other fitting except necessary hinges or pivots as required.	SQM		
	Windows fixed			13.2
	Ventilators-TOP hung			3.96
36)	Steel work welded in built up sections/framed work including cutting hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc.as required.	KG		
	In stringers, treads, landings etc. of stair cases including use of chequered plate wherever required ; all complete			450
	In gratings, frames, guard bar, ladders, railings, brackets, gates & similar works.			450
37)	Providing and fixing expanded metal 20x60mm strands 3.25mm wide and 1.6mm thick for windows etc. including 62x19mm beading of IInd class teak wood	SQM	6	
38)	Providing asbestos cement 6 mm thick corrugated sheets roofing and fixing with polymer coated J, or L hooks, bolts and nuts 8mm dia. G.I. plain and bitumen washers complete excluding the cost of purlins, rafters and trusses: corrugated sheets			
	Upto 60 degrees pitch	SQM	10	

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TENDER NO - PSER:SCT:SND-C785:07				
SL NO	Description of item	QTY	UNIT	AMOUNT (IN PERCENT OF TOTAL)
39)	Providing flat iron brackets 50x3mm size with necessary bolts, nuts and washers etc. for fixing asbestos cement/G.S. sheets gutters with purlins	metre	16	
40)	Painting top of roofs with bitumen of approved quality at 17kg per 10sqm impregnated with a coat of coarse sand at 60 cudm per 10sqm including cleaning the slab surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil complete:With residual type petroleum bitumen of penetration 80/100	SQM	10	
41)	DESIGN OF WATCHTOWER AND SUBMISSION OF TWO SETS OF DRAWING(AS PER ENCLOSED DIAGRAM GIVEN FOR GUIDANCE PURPOSE. DESIGN SHOULD BE ECONOMICAL AND SUCH THAT THE TOWER CAN BE DISMANTLED AND TRANSPORTED TO BE REERECTED AT OTHER LOCATION. CONTRACTOR MUST GET THE DRAWINGS APPROVED BY BHEL	LumpSum		
TOTAL				100%
42)	Quote % above or % below or at par with Delhi schedule of rate 2002 (DSR 2002).for items not covered in this Rate Schedule above.			
	Rate of complete item	(+/-)%		
	Rate of supply of materials at site only.	(+/-)%		
	Rate for execution complete excluding supply of materials.	(+/-)%		