

TENDER NO. BHEL/NR/SCT/BATHINDA/RNM/CIVIL/667

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## TENDER SPECIFICATIONS

TENDER NO. BHEL/NR/SCT/BATHINDA/RNM/CIVIL/667

FOR

**Complete Civil, Structural and Architectural works for R&M OF  
MAIN PLANT, BTG AREA AND ESP AREA AT 1X110 MW (UNIT  
4) GNDTP AT BATHINDA, PUNJAB**

**PART II – PRICE BID**



**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**Power Sector – Northern Region,**  
Plot No. 25 , Sector - 16A ,  
Distt. Gautam Budh Nagar, NOIDA – 201 301 (INDIA)

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**ISO 9001-2000, ISO 14001  
and OHSAS 18001 certified  
company  
SubContract and Purchase  
Deptt.**

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(A Govt. Of India Undertaking)  
Power Sector – Northren Region,  
Plot No. 25 , Sector - 16A ,  
Distt. Gautam Budh Nagar, NOIDA – 201 301(INDIA)  
Phone: 0091-0120-2515476 / 2515464 / 2515479  
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THIS TENDER SPECIFICATION ISSUED TO:

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BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS FOR R OF MAIN PLANT, BTG AREA AND ESP AREA AT 1X110 MW (UNIT 4) GNDTP  
AT BATHINDA, PUNJAB

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SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE (IN Rs.)	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
	<b>Civil / Structural Works -</b>				
<b>1</b>	<b>PILE WORK</b>				
i)	Boring, providing and installing bored-cast-in-situ reinforcement cement concrete pile of specified diameter and length below the pile cap, M25 in cement concrete, to carry a safe working load not less than specified, excluding the cost of steel reinforcement but including the cost of cement concrete, boring with, bentonite solution and temporary casing of appropriate length for setting out and removal of same and the length of the pile to be embedded in the pile cap, breaking of pile head to cut-off level, exposing pile reinforcement for embedment in pile cap etc. all materials & labour complete, including removal of excavated earth with all lifts and leads <b>(length of pile for payment shall be measured from Cut-off Level to bottom of pile).</b>				
a)	400MM DIA. BORED CAST-IN-SITU PILE	M	360		
b)	500MM DIA. BORED CAST-IN-SITU PILE	M	4184		
<b>1a</b>	<b>TESTS FOR PILE</b>				
i)	Initial load tests on single vertical test piles in accordance with IS 2911 with loading equal to 2 times the proposed capacity, including all necessary arrangements such as jacks, measuring devices, structural frame work for platform, kentledges, loading, unloading recording of results, preparation of pile head or construction of test cap and dismantling of test cap after test etc. and submission of test report, excavation upto cut off level and back filling if required, all complete as required (boring, providing and installing of piles shall be measured and paid for separately as per item no. 1(i) above) for following sub-items:				
a)	Vertical Load test				
I	400 mm dia pile ( For Maximum 54 MT)	per test	1		
II	500 mm dia pile ( For Maximum 84 MT)	per test	1		
b)	Pull out Load test				
I	400 mm dia pile ( For Maximum 32 MT)	per test	1		
II	500 mm dia pile ( For Maximum 46 MT)	per test	1		
c)	Lateral Load test				
I	400 mm dia pile ( For Maximum 6.6 MT)	per test	1		
II	500 mm dia pile ( For Maximum 9.4 MT)	per test	1		

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ii)	Carrying out routine load tests on single vertical piles in accordance with IS2911. Routine test shall be carried out to one-and-a-half times the estimated safe load or 12 mm total displacement whichever is earlier. including all necessary arrangements such as jacks, measuring devices, structural framework for platforms and kentledges for following sub-items				
a)	Routine Vertical Load test				
I	400 mm dia. pile	per test	1		
II	500 mm dia. pile	per test	5		
<b>2</b>	<b>Earth Work &amp; soling work</b>				
i)	Earthwork in excavation in all kinds of soils, mooram, earth mixed with stone soling, plant debris in foundation of structures, Equipments, drains, walls, columns etc. to required levels, grades and complete dressing as per specifications and direction of engineer-in-charge in both dry and wet conditions including stacking the excavated earth (to be used in back filling) as directed by the Engineer, lead upto 50m & lift/depth up to 2m including dewatering if required, strutting, shoring/ sheet piling, dressing of sides and slope stability and disposal of surplus earth within plant boundry at specified location . <b>Measurement shall be based on basis of dimensions given in the relevant foundation drawings.</b>	m <sup>3</sup>	3485		
ia)	EXTRA FOR EXCAVATION EXCEEDING 2 M UPTO 4 M DEPTH	m <sup>3</sup>	460.51		
ib)	EXTRA FOR EXCAVATION EXCEEDING 4 M UPTO 6 M DEPTH (EXTRA RATE IS OVER BASIC ITEM FOR DEPTH UP TO 2M)	m <sup>3</sup>	45		
ic)	EXTRA FOR EVERY ADDITIONAL LEAD OF 50M OR PART THEREOF BEYOND 50M UPTO 9 SUCH ADDITIONAL LEADS	m <sup>3</sup>	850		
ii)	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm in depth: consolidating each deposited layer by ramming and watering, lead upto 50 m and lift upto 2.0 m.	m <sup>3</sup>	1564		
iia)	EXTRA FOR EVERY ADDITIONAL LIFT OF 2M OR PART THEREOF IN ALL KIND OF SOILS	m <sup>3</sup>	280		
iib)	EXTRA FOR EVERY ADDITIONAL LEAD OF 50M OR PART THEREOF BEYOND 50M UPTO 9 SUCH ADDITIONAL LEADS	m <sup>3</sup>	425		
iii)	Providing, laying and compacting dry rubble soling 150mm thick compacted thickness below foundations, of all structures, rafts, Grade slab etc. including handpacking in regular lines, filling the interstices with stone chips/grits and murrum/stone dust.	m <sup>3</sup>	72		

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SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
iv)	Supplying and filling in plinth with sand under floors including, watering, ramming consolidating and dressing complete.	m <sup>3</sup>	65.0		
<b>3</b>	<b>Concrete Work (Plain &amp; Reinforced Cement Concrete)</b>				
<b>a)</b>	<b>PCC WORK</b>				
i)	Providing and laying plain cement concrete 1:3:6 (1 cement: 3 coarse sand: 6 stone aggregate 40mm and down graded) in foundations including shuttering, ramming and curing complete.	m <sup>3</sup>	425		
ii)	Providing and laying plain cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 stone aggregate 20mm nominal size) in all work upto and above plinth level excluding cost of centering and shuttering but including ramming and curing etc. complete.	m <sup>3</sup>	10		
iii)	Providing 1000 mm wide Plinth Protection consist of 100mm thick PCC 1:2:4 (1 cement : 2 coarse sand :4 stone aggregate 20mm and down graded) over 100mm thick PCC 1:3:6 (1 cement : 3 coarse sand :6 stone aggregate 20mm and down graded) complete as per direction of Engineer In-charge.	sqm	30.00		
iv)	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size) including using water proofing material in cement concrete work @ 1 kg per 50kg of cement and applying a coat of hot bitumen grade 80/100 with application rate as 1.45 kg/sqm with spreading of dry coarse sand on top of it for proper bonding with superstructure.	m <sup>2</sup>	1		
<b>b)</b>	<b>RCC WORK</b>				
i)	Providing and laying in position Design Mix M20 grade of reinforced cement concrete in Paving. Including all materials, labour, curing etc. complete in all respect as per specification.	m <sup>3</sup>	15.0		
ii)	Providing and laying in position precast reinforced cement concrete covers, like on Drains, Trench etc of M25 grade using 20mm & down graded aggregates including all centering, shuttering, reinforcement, vibrating, compacting, curing, lifting hook arrangement	m <sup>3</sup>	1.5		

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iii)	Providing and laying in position machine batched, machine mixed and machine vibrated design mix concrete M25 grade reinforced cement concrete by using 410Kg of cement per cum of concrete including pumping of concrete to site of laying but excluding the cost of centring, shuttering, finishing and reinforcement but including the cost and provision of Admixtures in recommended proportion as per IS9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of incharge at all heights.	m <sup>3</sup>	2485		
iii(a)*	<b>Deduct</b> for using less cement than quantity as provided in the item of batch mix concrete as arrived as per mix design.	Quintal (100 Kg)	<b>745.50</b>		
iv)	Providing and laying in position Reinforcement of grade Fe415 (T.M.T. BARS) for RCC work including straightening, cutting, bending, placing in position and binding all complete including all heights.	Mt	246		
iv)a	Providing pocket hole depth up to 1500mm in concrete at all heights as per drawings including all necessary tools complete.				
I	POCKET SIZE ABOVE 200X200MM AND UP TO 400X400MM	nos	30		
II	POCKET SIZE UP TO 200X200MM	nos	250		
v)	Fixing anchor bolts in position as per drawings in column pedestal including all tools complete ( Anchor bolts to be supplied either by the client or to be paid separately under item 5(vii))				
I	Anchor bolts DIA UP TO 32MM (APPROX. WT. 15kg)	nos.	250		
II	Anchor bolts DIA MORE THAN 32MM (APPROX. WT. 15kg TO 25 kg)	nos.	25		
vi)	Fixing plate/angle inserts in position as per drawings in beams/slabs/column pedestal, cover slab, trenches etc. including all tools complete ( Inserts to be supplied by the client or to be paid separately)				
I	PLATE INSERTS	MT	1.6		
II	ANGLE INSERTS	MT	1.6		
vii)	Making openings in existing RCC slab of required size as per drawings and as directed by Engineer.( Rate is based on area measured as perimeter of opening multiplied by thickness)				
a)	Openings in floor thk. 150mm to 200mm, In mill bay at 13500 floor as per drawings	Sqm	3.2		
b)	Openings in floor thk. 150mm to 200mm, at feeder floor as per drawings at approx.EL31.0M in mill bay	Sqm	4		

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viii)	Approved non shrink quality Grout material (premix type), free flow grout of brand 'TILO GROUT' make Sika India Pvt. Ltd. / 'FOSROC' make Foroc chemicals Pvt. Ltd. or equivalent make as approved by customer/BHEL shall be provided for all anchor bolt sleeves, pockets and spaces under column bases, shoe plates and for strengthening RCC in any other area. with a crushing strength of (28 days) minimum 30 MPa.	m3	7.5		
ix)	Fixing Rebars with proper anchorage as per standards using provision of full utilisation capacity of 8mm dia to 32mm dia reinforcing bars. Testing of sample rebar for full utilisation capacity and subsequent routine test for working load capacity shall be included in the rates. Contractor shall refer to clause no.06.00.00 for more information.( Rates to be given for each dia bar i.e. 8mm, 10mm, 12mm, 16mm, 20mm, 25mm, 28mm, 32mm).				
	8Dia	Nos.	30		
	10Dia	Nos.	40		
	12Dia	Nos.	50		
	16Dia	Nos.	50		
	20Dia	Nos.	50		
	25Dia	Nos.	50		
	32Dia	Nos.	40		
c)	<b>SHUTTERING WORK</b>				
i)	Providing centering & steel shuttering including struting, propping, bracing etc. and removal of form for foundations, footings, base of columns etc. at all heights.(All machine foundations shall be paid under this item only)	m <sup>2</sup>	2394		
ii)	Providing centering & steel shuttering including struting, propping, bracing etc. and removal of form for suspended floors, roofs, landings, balconies and access plat form.	m <sup>2</sup>	1080		
iii)	Providing centering & steel shuttering including struting, propping, bracing etc. at all heights and removal of form for lintels, beams, plinth beams, girders, bressumers and cantilevers.	m <sup>2</sup>	190.00		
iv)	Providing centering & steel shuttering including struting, propping, bracing etc. at all heights and removal of form for columns, pillars, piers, abutments, posts and struts.	m <sup>2</sup>	46.00		
4	<b>Brick Work</b>				

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SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
i)	Brick work with first class bricks having minimum strength of 105 Kg per sqcm in cement mortar 1:5 (1 cement : 5 coarse sand) in foundation, plinth & superstructure etc as per specifications complete in all respect.	m <sup>3</sup>	160.00		
ii)	Half brick masonry with bricks of class designation 105 in foundation, plinth and super structure in cement mortar 1:4 (1 cement : 4 coarse sand)	Sqm	5.00		
iii)	Extra for providing and placing in position 2 Nos. 6mm dia. M.S. bars at every third course of half brick masonry (with F.P.S. brick).	sqm	5.00		
<b>5</b>	<b>Door/Window/False ceiling/Wall cladding</b>				
i)	Providing, fabricating and fixing in position door made out of Hollow Metal Pressed Steel(HMPS) main frame 60mm x 125mm x 16 guage sheet, shutter frame & stiffeners 40mm x 40mm x 16 guage sheet on both side and 5mm thick glass view panel. Doors shall be painted with 2 coats of zinc chromate primer and 2 coats of synthetic enamel paint of approved colour and brand be provided with Brass Oxidised butt hinges and powder coated accessories complete in all respect.	m <sup>2</sup>	10.00		
ii)	Providing & fixing in position M.S. Steel windows and ventilators (fully open/partly open/fixd) as per IS:1038 with standard rolled sections including 5mm thick plain sheet glass with necessary holdfasts, oxidised brass fixtures/fasteners, putty glazing clips, peg stay, handles, screws etc. complete as per drawing and specifications including two coats of red oxide zinc chromate primer and two coats of synthetic enamel paint(1st Quality) of approved make and colour including providing 12mm x 12mm square guard bars at spacing of 125mm complete as directed by Engineer In-charge.	m <sup>2</sup>	45.00		
iii)	Providing & Fixing partly paneled & partly glazed partition using anodised aluminium section (Minimum anodic coating of grade AC 15) of 100mmx 44mm x12 gauge with glazing of 5.5 mm thick clear glass and panelling of 12 mm thick prelaminated Nova Pan particle board grade I, type II conforming to IS:12823 with necessary rubber gasket, aluminium beading clips etc. The rate also includes cost for providing all necessary fittings screws cleats etc. all complete as per the direction of Engineer-in charge. Panel size shall be as per the architectural drawings. All hardwares like clamps holding down bolts shall be of properly treated materials. All gaskets, packing shall be EPDM, neoprene or Nylon for long life. Brackets to be fixed to slab/beam after properly marking the layout of verticals. Main frame will be fixed to these brackets and then aligned to get perfect panel openings. Proper sealing shall be ensured to ensure air/water tightness.	m <sup>2</sup>	240.00		

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SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
iv)	Providing & Fixing single leaf partly paneled partly glazed door made of anodised aluminium (Minimum anodic coating of grade AC 15) section 100 mmx44mmx12 gauge as bottom , middle & top rail and 85 mmx44 mmx12 gauge as styles. The rate also to include 12 mm thick prelaminated Nova Pan board upto required height as per architectural drawing and providing and fixing 5.5 mm thick clear glass on upper portion with necessary Al beading, rubber gaskets, one number 200 mm tower bolt ,two numbers disc type Al handles, Godrej make mortice lock-01 no, approved make (Derma/Sevax/Ozone or Equivalent) heavy duty hydraulic door closer/floor spring-01 no. Heavy Duty SS butt hinges 125 mm-04 Nos (This may not be required in case of floor spring is provided), door stopers etc as directed. Sealing shall be done using proper sealent for making the door air/water tight(The door is to be fitted in Al partition work).	m <sup>2</sup>	40.00		
v)	<b>False ceiling/Wall Cladding</b> work with Armstrong, acoustical ceiling, 15mm exposed grid system for Microlook edge detail tiles to the Silhouette/Interlude reveal profile suspension system. Ceiling tiles shall be Armstrong Fissused RH 90/ Prima Adria RH95 tiles, lightly textured with microperforations, size 600x600x15mm.				
	<b>Suspension system</b> shall be the Armstrong Trulok Silhouette reveal profile grid system with 15mm wide flanges incorporating a 6 mm central recess. Silhouette main runners and cross tees to have mitred ends and "birdsmouth" notches to provide mired cruciform junction.				
	<b>Installation</b> to comprise main runners spaced at 1200mm centres securely fixed to the structural soffit by approved hangers at 1200mm maximum centres and not more than 150mm from spliced Joints. The last hanger at the end of each main runner should not be greater than 600mm from the adjacent wall. 1200mm long cross ties to be interlocked between main runners at 600 mm centres to form 1200x600 mm module, cross ties longer than 600mm long cross tees.The 1200mm cross ties to have central "birdsmount" notches to facilitate fitting of 600mm cross tees. Perimeter trim to be Armstrong trulok.	m <sup>2</sup>	850		
<b>6</b>	<b>Structural Steel Work</b>				
i)	Providing, Fabricating & Fixing in position structural Steel work in single or built up welded section as per drawing & specification complete in all respect and applying two coats of Zinc chromate primer and two or more coats of synthetic enamel paint of approved make shade and colour.	MT	30.0		
ii)	Removing existing Main beams for raising the level of the floor from 8.0m to 9.0m. {To be re-eracted later as per item no.-5-(iv)}	MT	22.5		

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iii)	Modifying and/or strengthening the removed beams and existing columns as per drawing and specification complete in all respect (for raising the floor from 8.0M to 9.0M) in Mill bay .(Payment shall be made for only actual structural steel supplied/added)Two coats of Zinc chromate primer and two or more coat synthetic enamel paint of approved make shade and colour to be included in the item	MT	7.5		
iv)	Re-erecting / erecting modified beams and connecting with strengthened columns complete in all respects as per drawings and specifications.	MT	40		
v)	Removing by cutting, De-welding corroded structural steel plates, angle, channel of existing structure. Providing and replacing the same by new fabricated member single or built up welded section as per drawing & specification complete in all respect.( Payment of structural steel part replaced shall only be paid) Two coats of Zinc chromate primer and two or more coat synthetic enamel paint of approved make shade and colour to be included in the item	MT	51		
vi)	Providing & fixing in position MS chequered plates non slip type of required size and thickness cut & stiffened in floors, trench covers, staircase treads & risers, platform floors as per drawing including two coats of zinc chromate primer & two coats of approved make, colour, shade synthetic enamel paint after surface preparation and inclusive of all clamps, angles, bolts, washers, welding etc. complete as per drawings & specifications.	MT	5.6		
vii)	Supplying & fabricating M.S. anchor bolts conforming to IS:1363 & IS:1367, Grade C property class 4.6 including consumables like washers, nuts, check nuts as per drawings including sleeves with bottom plates complete up to 45mm dia bolts.	MT	3.00		
viii)	Providing, fabricating & fixing in position heavy duty GI grating covers for open rectangular drains in panels of required sizes & shapes with flats 40mm x 5mm as main bars at 30mm c/c & 12mm x 3mm cross bars fusion welded to main bars at 100mm c/c & with outer frame of 40mm x 5mm including all consumables such as welding rods etc. complete.	MT	0.10		
ix)	providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing and stair case railing including applying a priming coat of approved steel primer				
	M. S. Pipes	MT	0.7		
<b>7</b>	<b>Flooring</b>				

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i)	Flooring shall consists of 100 mm thick with "hard Crete" concrete hardener topping with under layer 88 mm thick RCC(M25) (8 dia tor steel bar @ 200 mm c/c) over 75 mm thick PCC 1:3:6 over 150mm thick boulder soling and top layer 12 mm thick hardcrete cement hardener consisting of mix 1:2(1 cement hardener mix: 2 stone aggregate 6 mm nominal size) by volume in which Hardcrete hardening compound of Snowcem India Ltd. or equivalent shall be mixed with cement in proportion as recommended by manufacturer.	m <sup>2</sup>	660.00		
ii)	Providing and laying anti skid ceramic floor tiles 300x300mm (thickness to be specified by the manufacturer ) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except white, ivory, Grey, Fume Red Brown laid on 20mm thick bed of cement mortar 1:4 (1 Cement : 4 coarse sand) including pointing the joints with white cement and matching pigments etc., complete	m <sup>2</sup>	270.00		
iii)	<b>for NEW WORK</b> Providing and laying 40 thk Vitrified flooring over 20mm (average) thick base laid over and jointed with white cement slurry mixed with pigment to match the shade of the slab complete with base of 1 : 4 ( 1 cement : 4 coarse sand)	m <sup>2</sup>	200.00		
iv)	<b>ON EXISTING WORK</b> providing and fixing vitrified floor tiles with cement based high polymer modified quick set tile adhesive (water based) conforming to IS : 15477, using 5kg. Adhesive per sqm of tile area , in average 3 mm thickness	m <sup>2</sup>	80.00		
v)	Providing and fixing 1st quality ceramic glazed wall tiles (thickness to be specified by the manufacturer ) conforming to IS : 15622 of approved make in all colours, shades, except burgundy, bottle green, black of any size as approved by the Engineer-in-Charge in skirting, risers of steps and dados over 12mm thick bed of cement mortar 1:3 (1 cement : 4 coarse sand) and jointing with grey cement slurry @3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete	m <sup>2</sup>	100.00		
<b>8</b>	<b>Plastering &amp; Finishing</b>				
i)	Providing 12 mm thick finished cement plaster in mortar 1:4 (1 cement : 4 sand) on brickwork or reinforced cement concrete surfaces internally including scaffolding and curing etc. as per specifications complete in all respect.	M <sup>2</sup>	560.00		
ii)	Providing 20mm thick cement plaster in two coats, under layer 12mm thick in cement mortar (1:4) mix and above layer 8mm thick with water proofing compound in cement mortar (1:4) sand faced including scaffolding and curing etc.complete as per specification.	M <sup>2</sup>	630.00		

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iii)	Providing 6 mm thick finished cement plaster on ceiling, soffits to RCC slab, chajjas, stairs etc. internally or externally in mortar 1:3 (1 cement : 4 sand) including scaffolding and curing etc. complete as per specifications complete in all respect.	M <sup>2</sup>	550.00		
iv)	Providing and applying Plastic Emulsion paint of approved brand and manufacture (two or more coats) and of required shade on new work, over and including suitable priming coat. Rate shall include preparation of surface as per specification complete in all respects	M <sup>2</sup>	1,290.00		
v)	Providing and applying Oil Bound Distemper of approved brand and manufacture (two or more coats) and of required shade on new work, over and including suitable priming coat. Rate shall include preparation of surface as per specification complete in all respect.	M <sup>2</sup>	550.00		
vi)	Providing and applying Water Proffing Cement Paints "Snowcem Plus" or equivalent (two or more coats) in required shade and colour on exterior surface over and including suitable priming coat as per specification complete in all respect.	M <sup>2</sup>	1,280.00		
vii)	Providing and Applying priming coat with ready mixed red oxide Zinc chromate primer of approved brand and manufacture on steel work	M <sup>2</sup>	900		
viii)	Providing and Applying two or more coats on new work with synthetic enamel paint (1st Quatity) of approved brand and manufacture to give an even shade. On steel work	M <sup>2</sup>	900		
<b>9</b>	<b>Roof Work</b>				
i)	Grading roof for water proofing treatment with cement concrete 1:2:4 (1cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) complete as per direction of Engineer In-charge.	m <sup>3</sup>	10.00		

( SIGNATURE OF BIDDER )

BOQ CUM RATE SCHEDULE FOR CIVIL, STRUCTURAL AND ARCHITECTURAL WORKS FOR R OF MAIN PLANT, BTG AREA AND ESP AREA AT 1X110 MW (UNIT 4) GNDTP  
AT BATHINDA, PUNJAB

**TENDER NO. BHEL/NR/SCT/BATHINDA/RNM/CIVIL/667**

SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
ii)	Providing and laying Seven course water proofing treatment with APP (Atactic poly Propylene) modified polymeric membrane manufactured by Bengal Bitumen, Integrated Waterproofing ltd. or general membranes over roof consisting of first coat of bitumen primer @ 0.40 kg per sqm, 2nd, 4th & 6th course of bonding material @ 1.20 Kg/sqm, which shall consists of blown type bitumen of grade 85/25 conforming to IS:702, 3rd and 5th layers of roofing membrane APP modified polymeric membrane 1.5mm thick of 2.25 kg/sqm weight consisting of five layers prefabricated with center core as 20 micron HMHDPE film sandwiched on both sides with polymeric mix and polymeric mix is protected on both sides with 20 micron HMHDPE film. 7th, the top most layer shall be finished with brick tiles of class designation 100 grouted with cement mortar 1 : 3 (1 cement : 3 fine sand ) mixed with 2 % integral water proofing compound by weight of cement over a 12mm layer of cement mortar 1:3 (1 cement : 3 fine sand) and finished	m <sup>2</sup>	190.00		
iii)	Providing and Fixing 110mm dia Single Socketed unplasticised rigid PVC rain water pipes Type B With all fittings and fixtures conforming to IS : 13592 including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for thermal expansion complete	m	110.00		
iv)	Providing Khurras of size 450mm x 450mm x 50mm shall be formed of cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) for Rain water Pipes. The khurra and the sides of the outlet shall be rendered with 12mm coat	Nos.	6.00		
<b>10</b>	<b>DISMANTLING WORK</b>				
i)	Demolishing brick work in cement mortar including stacking of serviceable material and disposal of unserviceable material within plant premises as directed by the Engineer In-charge.	m <sup>3</sup>	200		
ii)	Demolishing RCC of existing Bowl mill, RCC slab at EL0.0M, RCC columns and pedestals supporting 0.0M slab and RCC floor at 8.0M in mill bay using concrete saw/diamond wire method ( causing least vibrations to adjoining structure and having least noise, including stacking of steel bars and disposal of unserviceable material within plant premises.Rate includes the cost of staking, removing, cleaning and handing over the reinforcing steel. (All Demolishing and dismantling shall be carried out as per attached technical specifications & as directed by the Engineer In-charge).	m <sup>3</sup>	600		

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**TENDER NO. BHEL/NR/SCT/BATHINDA/RNM/CIVIL/667**

SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
iii)	Demolishing RCC work in other areas & structures by jack hammer or any other tools including stacking of steel bars and disposal of unserviceable material within plant premises.Rate includes the cost of staking, removing, cleaning and handing over the reinforcing steel (All Demolishing and dismantling shall be carried out as per attached technical specifications & as directed by the Engineer In-charge).	m <sup>3</sup>	1200.00		
iv)	Dismantling of concrete flooring ,Paving and disposing within plant premises as directed by the Engineer	m3	246		
v)	Dismantling of false ceiling and wall cladding including stacking and disposing within plant premises as directed by the Engineer	m2	170.00		
vi)	Dismantling of toilet fittings like wash basins, seats, water taps, GI pipes, CI pipes and clearing complete toilet fittings including depositing the fitting as directed by the Engineer.( Toilet size 2.8m x4.42m having 2 Nos wash basin, 2 Nos. WC, 2 Nos. Urinals)	ONE TOILET			
(vii)	Dismantling Structural Steel work in built up section in angles, tees, flats and channels including all gusset plates, bolts, nuts, cutting rivets, welding etc. including dismembering and stacking within 50 meters lead as per dircection of Engineer In-charge.	MT	32		
11	<b>Miscellaneous Work</b>				
i)	Repairing the damaged RCC Pipe supports ( pedestals) by new M25 grade RCC after removing the loose old concrete as per drawing complete in all respects.PAYMENT TO BE DONE ON AMOUNT OF RCC CONSUMED	CUM	5		
ii)	Providing 50 mm thick guniting in patches on to the required area on RCC/PCC columns, beams, stairs, lintels, retaining walls, sunshades, roofing slab etc. of all sizes and shapes at all heights from existing ground floor and all locations with cement and mortar 1:3 (1 cement : 3 sand) under 2 to 2.8 Kg/Cm2 pressure after removing the damaged loose spalt concrete portions by chipping, removal of dust and applying one coat of rust convertor/kp-100 equivalent grade over reinforcement wherever necessary providing and tying in position 75x75x10 g MS welded mesh or smaller size over treated surface ready to receive grouts, curing for 10 days etc, complete operation all as directed including labour charges hire for all tools and plant machineries cost of consumables, scaffolding all types of protective equipments, plant floors, pipelines, vessels, materials etc. so as to do guniting in plant, removing the debris etc. rebound materials etc. to low lying areas in the factory compound and leveling as directed, complete all as directed by Engineer-In-Charge.	SQM	140		

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AT BATHINDA, PUNJAB

**TENDER NO. BHEL/NR/SCT/BATHINDA/RNM/CIVIL/667**

SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
iii)	Providing additional/extra reinforcement with steel bars/MS rods for replacing worn out, corroded rods, insert plates removing old corroded steel rods/plates to scrap yard including the cost of 18 guage GI binding wire, straightening cutting bending in position including tying/welding (if necessary)	MT	1.1		
iv)	Repairing cracks in RCC in carbonated zones as directed by Engineer, by fixing M.S. non return nipple of 13mm diameter taper at bottom with epoxy putty including drilling of holes of 14mm to a depth of 100mm to 150mm in concrete or as per requirement at site, including cleaning of cracks and removal of loose particles, providing and injecting with low viscosity pre-approved epoxy grout into nipples with special injection at a pressure of 3kg/sqcm to 5 kg/sqcm till firm resistance from the surface is received. The rate should include providing all materials, tools, machinery, labour etc. complete in all respects.	cum	2.5		
v)	Providing & supplying impregnated fibre board SHALITEX or equivalent for expansion joints and joints around equipment foundations to separate them from paving, flooring or other structure and also between the two structures including joint sealant of polysulphide sealant PIDS				
a)	20mm thick	m <sup>2</sup>	22.5		
b)	50mm thick	m <sup>2</sup>	42.5		
vi)	providing and laying GI strip for earthing 65mm x8 mm including cost of excavation, backfilling welding, construction of masonry chambers with MS covers (for electrodes),filling with sand, charcoal and salt (for test pits), labour, material etc. complete	m	45		
<b>12</b>	<b>Disposal</b>				
1	Transportation and disposal of earth / debris etc. including dressing at disposal site complete as directed by the Engineer In-charge lead upto 5 Km from plant boundary.	m <sup>3</sup>	1352		
<b>13</b>	<b>Sanitary Installations</b>				
i)	Providing and fixing water closet squatting pan (Indian type W.C. pan) with 100 mm sand cast Iron P or S trap, 10 litre low level white flushing cistern with manually controlled device (handle lever) conforming to IS : 7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required. White vitreous china Orissa pattern W.C. pan of size 580 x 440 mm with integral type foot rests.	each	3		

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AT BATHINDA, PUNJAB

**TENDER NO. BHEL/NR/SCT/BATHINDA/RNM/CIVIL/667**

SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
ii)	Providing and fixing white vitereous china pedestal type water closet European type (EWC ) with seat and lead, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS : 7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.	each	3		
iii)	Providing and fixing white vitereous china flat back or wall corner type lipped front urinal basin of 430x260x350mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass union and G.I. clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors floors wherever required.	each	3		
iv)	Providing & fixing in position of white vitreous china large urinal partition with concealed C.I. Bracket including cutting and making good the walls and floors where required.	each	6		
v)	Providing and fixing wash basin with C.I./M.S brackets, 15 mm C.P. brass pillar taps, Kingston/Gem/Techno/Parko, 32mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required A)White vitreous china Flat back wash basin size 550 x 400 mm with single 15 mm C.P. brass pillar tap.	each	6		
vi)	Providing and Fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fitting complete.Flexible pipe 32 mm dia 6 nos .	each	6		
	40 mm dia 6 nos.	each	6		
vii)	Providing and fixing mirror thickness not less than 5.5 mm of required shape and size with plastic moulded frame of approved make Modo guard/Atul or equivalent and shade with 6mm thick hard board backing Rectangular shape 453 x 357 mm	each	6		
viii)	Providing and fixing 600x120x5mm glass shelf with edges round of supported on anodised aluminium angle frame with C.P. brass brackets and gurad rail complete fixed with 40 mm long screws, rawl plugs etc., complete	each	3		
ix)	Providing and fixing TOWEL RAIL OF C.P. brass with two C.P. brass brackets coated with nickel chromium plating of thickness not less than grade no.2 of IS: 4827	EACH	3		
x)	Providing and fixing soil, waste and vent pipe: 100mm dia. Centrifugally cast SCI S&S pipe				
a)	for 100 Dia. Pipe as per IS:3989	RM	25		

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TENDER NO. BHEL/NR/SCT/BATHINDA/RNM/CIVIL/667

SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
b)	for 75 Dia. Pipe as per IS:3989	RM	10		
xi)	providing and fixing M.S holder bat clamps of approved design to sand cast iron/cast iron ( spun ) pipe embedded in and including cement concrete blocks 10 x 10 cm of 1 : 2 4 ( 1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size ) including the cost of cutting holes and making good the walls etc.				
a)	for 100 Dia. Pipe	EACH	8		
b)	for 75 Dia. Pipe	EACH	4		
xii)	providing and filling the joints with spun yarn and cement yarn cement slurry and cement mortar 1:2 ( 1 cement:2 coarse sand) in S.C.I./C.I. pipes				
a)	for 100 Dia. Pipe	EACH	6		
b)	for 75 Dia. Pipe	EACH	3		
xiii)	Providing and fixing bend of required with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.				
a)	for 100 Dia. Pipe as per IS:3989	each	6		
b)	for 75 Dia. Pipe as per IS:3989	each	6		
xiv)	Providing and fixing plain bend of required degree.				
a)	for 100 Dia. Pipe as per IS:3989	EACH	6		
b)	for 75 Dia. Pipe as per IS:3989	EACH	6		
xv)	Providing and fixing terminal guard :				
a)	for 100 Dia. Pipe as per IS:3989	EACH	6		
b)	for 75 Dia. Pipe as per IS:3989	EACH	6		
xvi)	Providing lead caulked joints to centrifugally cast (spun) iron pipes and fittings of diameter				
a)	for 100 Dia. Pipe as per IS:3989	EACH	6		
b)	for 75 Dia. Pipe as per IS:3989	EACH	6		
xvii)	Providing and fixing trap of self cleansing design with screwed down or hinged grating without vent arm complete, including the cost of cutting and making good the walls and floor				
a)	100 mm inlet and 75 mm outlet as per IS:3989	EACH	6		
xviii)	Providing, laying and jointing glazed stone ware pipes grade 'A' with stiff mixture of cement mortar in the proportion of 1 : 1 ( 1 cement : 1 fine sand ) including testing of joints etc. complete				
a)	150 mm dia pipe	RM	20		
	Providing and laying cement concrete 1 : 5 : 10(1 cement :5 coarse sand :10 graded stone agg. 40 mm nominal size) around S.W. pipes including bed concrete as per standard design:				

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SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE (IN Rs.)	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
a)	150 mm dia S.W. pipe	RM	20		
xix)	Providing and fixing square-mouth 150 x 100 mm size P type S.W. gully trap grade "A" complete with C.I. grating brick masonry chamber with F.P.S. bricks of class designation 75 and water tight C.I. cover with frame of 300 x 300 mm size (inside). The weight of the cover to be not less than 4.5 kg and frame to be not less than 2.70 kg as per standard design.	EACH	1		
xx)	Constructing brick masonry manhole with F.P.S. bricks 75 class designation in cement mortar 1:4 (1 cement : 4 coarse sand), R.C.C. top slab with 1 : 2 : 4 (1cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1 : 4 : 8 mix (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick cement mortar 1 : 3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement and making channels in cement concrete 1 : 2 : 4 (1cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design:				
a)	Inside size 90 x 80 x 45 cm deep including C.I. cover with frame (light duty) 455 x 610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg.)	EACH	1		
<b>14</b>	<b>Water Supply</b>				
i)	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc. (internal work exposed on wall):				
a)	15 mm dia. nominal bore	metre	20		
b)	20 mm dia. nominal bore	metre	15		
c)	25 mm dia. nominal bore	metre	15		
ii)	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc. (external work):				
a)	15 mm dia. nominal bore	metre	15		
b)	20 mm dia. nominal bore	metre	15		
c)	25 mm dia. nominal bore	metre	15		
d)	32 mm dia. nominal bore	metre	15		
e)	40 mm dia. nominal bore	metre	15		

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SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
ii)	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including cutting and threading the pipe etc. complete.				
	25 to 40 mm nominal bore	each	40		
iii)	Providing and fixing gun metal valve with C.I. Wheel of approved quality (screwed end)				
	25 mm nominal bore	each	40		
iv)	Providing and fixing unplasticised PVC connection pipe with brass unions				
	45 cm length				
	15 mm nominal bore	each	40		
v)	Painting G.I. pipes and fittings with synthetic enamel white paint over a ready mixed priming coat, both of approved quality for new exposed work:				
a)	15 mm dia. nominal bore	metre	15		
b)	20 mm dia. nominal bore	metre	15		
c)	25 mm dia. nominal bore	metre	15		
ix	Providing and fixing C.P. Brass bib cock of approved quality conforming to IS: 8931 (Prayag or equivalent make)				
a)	15mm nominal bore	each	5		
x	Providing and fixing C.P. brass angle valve of standard design and of approved make conforming to IS: 8931 .				
a)	15 mm nominal bore	each	5		
xi	Providing and fixing C. P. brass stop cock of approved quality and make conforming to IS: 8931				
a)	15 mm nominal bore	each	5		

**TOTAL (\* Please note Item No. 3(b)iii(a) as deduction in Amount and the amount is to be deducted in Total amount)**

**NOTES:**

- 1** In case of omission in quoting any rate, the evaluation will be done considering the highest quoted rate obtained against that item but the work, if awarded, will be on the lowest quoted rate obtained against that item.

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SR NO.	WORK DESCRIPTION	UNIT	QTY	UNIT RATE ( IN Rs. )	TOTAL AMOUNT (IN Rs FIGURES AND WORDS)
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- 2 The rate shall be entered in figures as well as in words. In case of difference in rates between words and figures, the lesser of the two will be treated as valid rate.
- 3 The bidders shall enter both 'Unit Rate' & 'Amount'. In case of any mismatch between 'Total Amount based on Unit Rate' & 'Total Amount as quoted', the higher of the two shall be considered for evaluation and the lower of the two shall be considered for award.
- 4 The quantities indicated against each item above are tentative and are liable to vary depending upon the site requirement. The contractor has to supply / install actual quantities as per advice of BHEL Engineer and accordingly the final contract price shall be worked out.
- 5 Evaluation of the bids shall be done based on total price against this BOQ.

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