

TENDER SPECIFICATIONS

TENDER NO. BHEL/ NR/SCT/ ANPARA D/ PILING / 648

FOR

Piling and Foundations works including supply of all materials except those proposed to be supplied by BHEL for 2 x 500 MW units (UNIT 6 &7) at Anpara-D Thermal Power Plant (PTPP) of UPRUVNL at Anpara , Sonebhadra , UP.

PART II – PRICE BID

BOQ PACKAGE – A 1 and A 2



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



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

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

PURCHASER OF THIS TENDER DOCUMENT IS ADVISED TO CHECK AND ENSURE COMPLETION OF ALL PAGES OF TENDER DOCUMENT AND REPORT ANY DISCREPANCY TIMELY FOR CORRECTIVE ACTION, IF ANY, TO THE ISSUING AUTHORITY BEFORE THE BIDS ARE SUBMITTED. ORIGINAL COPY OF TENDER DOCUMENT COMPLETE IN ALL RESPECTS MUST BE SUBMITTED BACK AS PART OF THE BID WITHOUT WHICH THE SAME IS LIABLE TO BE REJECTED BY BHEL.

THIS TENDER SPECIFICATION ISSUED TO:

M/S-----

**BHARAT HEAVY ELECTRICALS LIMITED
(A GOVERNMENT OF INDIA UNDERTAKING)
HRDI & PSNR COMPLEX, PLOT NO. 25 SECTOR-16A,
NOIDA, DISTT. -GAUTAM BUDH NAGAR –201 301**

PROCEDURE FOR SUBMISSION OF SEALED TENDERS:

The tenderers must submit their tenders as required in **two parts** in separate sealed covers **prominently superscribed as Part-I Technical bid and Part-II ,Price bid** also indicating on each of the cover tender specification no., date and time as mentioned in tender notice.

TECHNICAL BID (COVER-I)

Except Price bid Part-II, complete set of tender document consisting of General conditions of Contract, “Technical specification & Special terms and condition” (Part-I) issued by BHEL shall be enclosed in **Part I Technical Bid only**. All schedules, data sheets and details called for in the specification shall also be submitted along with technical bid. All details / Data / Schedules including offer letter duly signed and stamped are to be **submitted in duplicate**.

PRICE BID (COVERS - FOR PRICE BIDS “PART A1” & “PART A2”)

Tenderers may please note that price bids for “**Part A1**” & “**Part A2**” is **to be submitted only in original copy** of Tender **in separate** sealed covers i.e. Price bid (Part-II) for “**Part A1**” and Price bid (Part-II) for “**Part A2**” issued by BHEL and no duplicate copy of same is required. This two sealed cover shall be superscribed with **Price bid Part A1 and price bid Part A2**.

These **three** separate covers i.e. technical bid cover I, Price bid cover Part A1 and Price bid cover Part A2 shall together be enclosed in a forth envelope (Cover-IV) and this sealed cover shall be superscribed with tender specification No., due date, time and submitted to officer inviting tender as indicated in tender notice on or before due date as indicated.

TENDER SPECIFICATIONS

TENDER NO. BHEL/ NR/SCT/ ANPARA D/ PILING / 648

FOR

Piling and Foundations works including supply of all materials except those proposed to be supplied by BHEL for 2 x 500 MW units (UNIT 6 &7) at Anpara-D Thermal Power Plant (PTPP) of UPRUVNL at Anpara , Sonebhadra , UP.

PART II – PRICE BID

BOQ PACKAGE – A 1



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

RATE SCHEDULE FOR CIVIL WORKS PACKAGE -A1
2 X 500 MW ANPARA -D PROJECT

(TENDER NO. BHEL/ NR/SCT/
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SI No	ST. NO	DESCRIPTION	UNIT	PACKAGE - A 1	RATE IN RUPEES	AMOUNT IN RUPEES
					In figures	In figures
	100	EARTH WORK IN EXCAVATION, BACKFILLING AND DISPOSAL AS PER SPECIFICATION AND DRAWINGS				
	101	Excavation including providing cofferdams, shoring, strutting, sheeting, bracing, draining and pumping out water, clearing all grass, vegetation etc. including trimming of excavation bottom, staking, levelling, grading etc. of excavated materials all complete as per specifications, drawings and instructions of the engineer, including a lead up to 100 meters and a lift up to 2.0 meters.				
1	i)	In all types of soils including ash, morrum, laterite	CUM	162575		
	102	Extra over item 101 above, for all types of soil/rock, for additional lifts beyond the initial lift of 2 meters (included in item 1 above) all complete as per specifications, drawings and instructions of the engineer for the following lifts:				
	i)	In all types of soils				
2	a	beyond 2 m and upto 4 m	CUM	117893		
3	b	beyond 4 m and upto 7 m	CUM	48084		
4	c	beyond 7 m and upto 10 m	CUM	3753		
5	d	beyond 10 m and upto 15 m	CUM	50		
	103	Extra over item 101 above for excavation below ground water table including lowering of ground water table to maintain dry working conditions for all activities up to filling/testing, water proofing all complete as per specifications, drawings and instructions of the engineer.	CUM	43731		
	104	Extra over item 101 above for carriage of all types of excavated materials beyond the initial lead of 100 m (included in item 1 above) all complete as per specifications, drawings and instructions of the engineer for the following leads				

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SI No	ST. NO	DESCRIPTION	UNIT	PACKAGE - A 1	RATE IN RUPEES	AMOUNT IN RUPEES
					In figures	In figures
	i)	Carriage beyond initial lead of 100 m but not exceeding 500 m	CUM	65356		
	ii)	Carriage beyond initial lead of 500 m but not exceeding 2 Km	CUM	65360		
	iii)	Carriage beyond initial lead of 2 Km but not exceeding 5 Km	CUM	15211		
	iv)	Carriage beyond initial lead of 5 Km but not exceeding 10 Km	CUM	59031		
	105	Filling using selected excavated materials in trenches, plinths, sides of foundations and other underground structures, pipes, are levelling etc. in layers not exceeding 150 mm thickness including lead upto 100 m and all lifts and including loading from stock pile, carting, unloading, filling, watering and compacting/ramming each layer, all complete as per specifications, drawings and as directed by the engineer to achieve the following densities:				
	i)	Ordinary manual compaction	CUM	4622		
	ii)	90% Standard Proctor density	CUM	64574		
	iii)	95% Standard Proctor density	CUM	10382		
	106	Filling using selected materials in trenches, plinths, sides of foundations, in the space below the grade level slab and other under ground structures, pipes etc. in layers not exceeding 150 mm in thickness including all lifts and including excavating, loading, unloading, carting, filling, watering and compacting/ramming each layer, all complete as per specifications, drawings and as directed by the engineer for the following works				
	i)	With selected soil brought from borow areas arranged by contractor, including royalties, fees etc. or ash obtained from the ash pond for all leads and compacted to following densities				

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SI No	ST. NO	DESCRIPTION	UNIT	PACKAGE - A 1	RATE IN RUPEES	AMOUNT IN RUPEES
					In figures	In figures
	a	Ordinary manual compaction	CUM	330		
	b	90% Standard Proctor density	CUM	15551		
	c	95% Standard Proctor density	CUM	9449		
	ii)	With selected sand brought from quarries/river bed arranged by contractor, and compacting to 80% relative density etc. for all leads	CUM	52546		
	iii)	With non expansive material having permissible concentration of Sulphates and chlorides approved by the owner arranged by the bidder.	CUM	5760		
	107	Filling in trenches, plinths, area paving and other underground structures with stone (63 mm down graded), in layers not exceeding 200 mm thickness including breaking of boulders to required sizes, filling the interstices with selected sand and compacting to 85 % of original volume of stone stack for all lifts all complete as per instructions of engineer-in-charge.	CUM	1964		
	108	Filling in transformer pits etc. , with clean 40 mm nominal size stone aggregate including all labour, materials, royalties, equipments etc. complete as per instructions of engineer in charge.	CUM	211		
	108A	Providing and laying C.N.S. material, in layers, well compacted with 95% proctor density, with all materials(from 1 to 4 K.M.) tools, labours etc., and complete	CUM	17350		
	109	Bulldozing earth for grading of ground including removable of vegetation complete including disposal of debris upto 5 kms.	CUM	1000		
	111	Cutting of trees , including transportation, stacking at storage yard and disposal of unused material as per the direction of engineer in charge.				
	i)	300 mm upto 600 mm girth	Nos.	18		

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SI No	ST. NO	DESCRIPTION	UNIT	PACKAGE - A 1	RATE IN RUPEES	AMOUNT IN RUPEES
					In figures	In figures
	ii)	601 mm upto 900 mm girth	Nos.	34		
200		PROVIDING AND PLACING CONCRETE WORK INCLUDING COST OF LABOUR, MATERIALS AND EQUIPMENT FOR HANDLING, TRANSPORTATION, BATCHING, MIXING, PLACING, VIBRATING AND CURING, (EXCLUDING COST OF CENTERING, SHUTTERING AND REINFORCEMENT) COMPLETE AS PER DRAWING AND SPECIFICATIONS UNLESS SPECIFIED OTHERWISE FOR THE FOLLOWING (OPC and PPC Cement will be issued as FOC item):				
201		Concrete of grade M7.5 as filling course at any level below finished floor level, under and around foundations/floors, mass dumps etc with 40 mm nominal size graded aggregate.	CUM	2498		
202		Concrete of grade M10 as levelling course , under and around foundations/floors etc.	CUM	9030		
202A		Concrete of grade M-20 in foundations, under floors etc complete.	CUM	1884		
202B		Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 12.5 mm graded aggregate by volume) as under bed to floors etc complete.	CUM			
203		Concrete of grade M-25 in foundations, under floors etc complete.	CUM	29647		
203A		Concrete of grade M-30 in foundations, under floors etc complete.	CUM	3086		
212		Cutting and making openings in existing concrete work including cutting of reinforcement, making good all surfaces, complete as per engineer in charge.	CUM	3		
213		Minimum Two coats of hot bitumen painting, below ground level, of grade 85/25 @ 1.7 Kg/sqm/coat for water/damp proofing conforming to IS:702 on soil face with anti-stripping compound.	SQM	40000		

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SI No	ST. NO	DESCRIPTION	UNIT	PACKAGE - A 1	RATE IN RUPEES	AMOUNT IN RUPEES
					In figures	In figures
	214	Chipping of concrete in reinforced concrete work, cutting pockets, making openings at all levels and according to shapes, disposal of waste materials upto a lead of 2 km as directed by engineer including equipment, safety precautions etc all complete as per specification, drawing, instructions of engineer in charge but excluding cutting of reinforcement	CUM	46		
	300	SUPPLYING, FIXING AND REMOVING FORMWORK AT ANY ELEVATIONS, AS PER SPECIFICATIONS AND INCLUDING ALL LABOUR MATERIAL, SCAFFOLDINGS COMPLETE INCLUDING POCKETS ETC. FOR THE FOLLOWING:				
	301	Ordinary form work below finished ground floor level for foundations, footings, bases of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.	SQM	7554		
	302	Fairface form work below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc. for exposed concrete works.	SQM	81826		
	303	Ordinary form work above finished ground floor level for columns, beams, suspended floors, roofs, lintels, cantilevers, staircases, landings, balconies, domes, arches etc. for all heights.	SQM	30		
	304	Fairface form work above finished ground floor level for columns, beams, suspended floors, roofs, lintels, cantilevers, staircases, landings, balconies, domes, arches etc. for all heights.	SQM	7212		
	306	Providing, fixing and removing formwork in block-outs/pockets and openings (below 0.1 sqm contact surface area with concrete) at all elevations including cutting, formation of all shapes and all other operations required for making the required shape and size all complete as per specification, drawing and instruction of engineer in charge.				
	i)	Upto 300 mm depth	Nos.	36		

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SI No	ST. NO	DESCRIPTION	UNIT	PACKAGE - A 1	RATE IN RUPEES	AMOUNT IN RUPEES
					In figures	In figures
	ii)	From 301 mm upto 600 mm depth	Nos.	38		
	iii)	From 601 mm upto 1000 mm depth	Nos.	22		
	400	REINFORCEMENTS (TMT will be issued as FOC item):				
	401	Providing, straightening cutting, bending, placing in position at any level, binding of mild steel reinforcements including cost of reinforcement and binding wire, labour etc. complete all as per specifications & drawings.	MT	18		
	402	Providing, straightening, cutting, bending, placing at any level, binding in position high yield strength steel reinforcements including cost of reinforcement and binding wire, labour etc. complete all as per specifications & drawings.	MT	5208		
	403	Providing, straightening, cutting, bending, placing at any level, binding in position high yield strength steel reinforcements in brickwork including cost of reinforcement and binding wire, labour etc. complete all as per specifications & drawings.	MT	0.720		
	500	WATER PROOFING AS PER SPECIFICATIONS. (Contractor has to furnish a guarantee for material and workmanship for a minimum period of 20 years.)				
	504	Providing and mixing approved water proofing compound in concrete or cement mortar for works wherever specified or directed as per specification/manufacturer's instructions, testing of samples for water proofing etc. complete.	KG	1018		
	600	SUPPLYING & INSTALLATION OF JOINT FILLER AND SEALING COMPOUND:				

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SI No	ST. NO	DESCRIPTION	UNIT	PACKAGE - A 1	RATE IN RUPEES	AMOUNT IN RUPEES
					In figures	In figures
	601	Supplying & installation of bitumin impregnated fibre board confirming to IS 1838 as joint filler at joints in concrete including nailing, coating of both faces with coal tar pitch/bitumin, labour, material, equipments etc all complete at all levels as per specification, drawings and instruction of engineer in charge:				
	a	12mm thick joints.	SQM	1		
	b	20mm thick joints.	SQM	2		
	c	25mm thick joints.	SQM	422		
	d	50mm thick joints.	SQM	341		
	602	Supplying and filling in position hot applied bitumin sealing compound (Grade A) confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints at all levels including application of primer, labour, material, equipments etc. all complete as per specification/drawing, instruction of engineer in charge.	Kg	249		
	700	M.S. EMBEDMENTS				
	701	Supply, fabricating and fixing of embedments , MS inserts, pipe sleeves, guide rails, angle pieces, foundation bolts, anchor bolts, rungs of various diameters, plates of dimensions as required including cost of all labour, materials and equipment, transportation, loading, unloading, handling, welding, rivetting, bolting, cutting, drilling, scaffolding and setting as per specifications and drawings.	MT	78		

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SI No	ST. NO	DESCRIPTION	UNIT	PACKAGE - A 1	RATE IN RUPEES	AMOUNT IN RUPEES
					In figures	In figures
	701A	Fabricating and fixing of embedments , MS inserts, pipe sleeves, guide rails, angle pieces, foundation bolts, anchor bolts, rungs of various diameters, plates of dimensions as required including cost of all labour, materials and equipment, transportation, loading, unloading, handling, welding, rivetting, bolting, cutting, drilling, scaffolding and setting as per specifications and drawings. (Steel will be issued as FOC item)	MT	5		
	702	Fixing of embedments, MS inserts, pipe sleeves, rails, guide rails angle pieces, anchor bolts of various diameters, plates of dimensions as required including cost of all labour, materials and equipment for fixing in position, scaffolding and setting in position, transportation from stores within the plant boundary to work spot, loading, unloading etc. complete as per specifications and drawings.	MT	40		
	703	Providing, fabricating, transporting, erecting and installing at all elevations miscellaneous steel/PVC pipes, expansion fasteners in concrete/brickwall, for all kind of works, including the cost of labour, material and equipment, setting material in concrete, layout, scaffolding, handling at site, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc. all complete as per drawings and specifications and instructions of engineer.				
	i	MS pipes of all diameters	Quintal	37		
	ii	PVC conduits of all sizes	Quintal	16		
	iii	Expansion fasteners (galvanised) of HILTI make or equivalent of safe tension capacity as specified below:				
		250 kg	Each	120		
		500 kg	Each	84		
		750 kg	Each	30		

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SI No	ST. NO	DESCRIPTION	UNIT	PACKAGE - A 1	RATE IN RUPEES	AMOUNT IN RUPEES
					In figures	In figures
	704	Fabrication, erection, installation and alignment of MS foundation bolt assembly in concrete along with nuts, lock nuts, anchor plates, stiffner plates, protective tape etc. upto and including 80 mm dia, 3000 mm long including furnishing of labour, materials, equipments, welding, cutting, grinding, threading, drilling etc. all complete as per specification, drawing and instruction of the engineer.	MT	77		
	800	GROUTING AS PER SPECIFICATION FOR THE FOLLOWING: (OPC and PPC Cement will be issued as FOC item):				
	801	Providing & grouting cement slurry mix at any elevation/depth with pressure pump for water retaining concrete structures , including fixing nozzles, cost of approved cement, admixture, curing, etc all complete as per specification and as directed by the Engineer.	SQM	21		
	803	Providing & grouting of pocket holes, pipe sleeves of any shape and size under base plate after erection, and alignment if necessary, of main structural steel work at any elevations including roughening surface, cleaning, ramming, curing, etc with ConbextraGP-1 or equivalent all complete as per specifications. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	53		
	804	Providing & grouting of pocket holes, pipe sleeves of any shape and size under base plate after erection and alignment if necessary, of secondary structures, machinery and pipe supporting structures at any elevations including roughening surface, cleaning, ramming, curing, etc with 1:1:2 cement - sand - 6 mm down stonechips all complete as per specifications. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	23		
	1800	MISCELLANEOUS				
	1808	Laying of earthing mats/rods including transportation from yard stores, loading, unloading, cutting to length, welding etc. complete as per specification and as directed by Engineer-in-charge.	MT	112		

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SI No	ST. NO	DESCRIPTION	UNIT	PACKAGE - A 1	RATE IN RUPEES	AMOUNT IN RUPEES
					In figures	In figures
	2500	PILING WORK				
	2501	Installation of bored RCC cast in situ vertical pile as per IS:2911, Part-1, Section-2 with diameter and length as specified below (length to be measured from pile cut-off level to the bottom of pile) using cement concrete M25 grade conforming to IS:456 with 20 mm nominal size stone aggregates with a minimum cement content of 400 Kg per cum of concrete including materials, boring/drilling in all type of strata from ground level to termination depth of pile including socketing of pile inside rock wherever required, providing 6mm thick permanent mild steel liner for a depth of 10 m below pile cut off level, providing bentonite slurry/casing for drilling/stabilization of pile bore, flushing of pile bore, cleaning, providing plasticizer wherever required, breaking pile head to cut off level and exposing pile reinforcement for embedment in pile cap etc all complete as per specification, drawings and as directed by the engineer-in-charge.				
	a	Pile with 900 mm diameter and 25 m length below cut off level - Safe load carrying capacity of pile in axial compression=280MT	Each	1800		
	b	Pile with 600 mm diameter and 25 m length below cut off level - Safe load carrying capacity of pile in axial compression=130MT	Each	5050		
	2502	Extra over the following item for pile length more than the specified length of 25 m.				
	a	item no. 2501 a	M	150		
	b	item no. 2501 b	M	575		
	2503	Rebate on the following item for pile length less than the specified length of 25 m.				

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					In figures	In figures
	a	item no. 2501 a	M	45		
	b	item no. 2501 b	M	187		
	2504	Conducting initial load test upto three times the safe load carrying capacity on single pile in accordance with IS: 2911 Part-4 including installation of bored RCC cast in situ vertical pile as per IS:2911, Part-1, Section-2 down to a depth of 25 m below pile cut off level using cement concrete M25 grade conforming to IS:456 with 20 mm nominal size stone aggregates with a minimum cement content of 400 Kg per cum of concrete including materials, boring/drilling in all type of strata from ground level to termination depth of pile including socketing of pile inside rock wherever required, providing 6mm thick permanent mild steel liner for a depth of 10 m below pile cut off level, providing bentonite slurry/casing for stabilization of pile bore, flushing of pile bore, cleaning, providing plasticizer wherever required, breaking pile head to cut off level and exposing pile reinforcement for embedment in pile cap, constructing test pile cap including materials, excavation, all arrangements of loading, unloading, equipments, jacks, recording of results, labour, dismantling the pile cap after test, submission of test report etc complete for the following as per specification, drawing and as directed by engineer-in-charge.				
	a	for lateral load test:				
	i	900 mm diameter pile-10.3 MT safe load carrying capacity	Each	4		
	ii	600 mm diameter pile-5.4 MT safe load carrying capacity	Each	7		
	b	for vertical compression test (cyclic load test):				
	i	900 mm diameter pile-280 MT safe load carrying capacity	Each	4		

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					In figures	In figures
	ii	600 mm diameter pile-130 MT safe load carrying capacity	Each	6		
	c	for tension/uplift test::				
	i	900 mm diameter pile-56 MT safe load carrying capacity	Each	4		
	ii	600 mm diameter pile-26 MT safe load carrying capacity	Each	7		
	2505	Extra over the following item for providing and installing 6mm thick permanent mild steel liner over the specified depth of 10 m below pile cut off level and upto a maximum depth of 25 m below pile cut off level.				
	a	item no. 2501a, 2504a(i), 2504b(i) & 2504c(i)	M	1112		
	b	item no. 2501b, 2504a(ii), 2504b(ii) & 2504c(ii)	M	2764		
	2506	Conducting routine load test on job pile in accordance with IS:2911, Part-4 including necessary excavation, all arrangements of loading, unloading, test equipments, jacks, recording of results, necessary materials, submission of test report etc but excluding the cost of installation of job pile complete as per specification, drawing and as directed by the engineer-in-charge for the following.				
	a	for lateral load test:				
	i	900 mm diameter pile-10.3 MT safe load carrying capacity	Each	9		
	ii	600 mm diameter pile-5.4 MT safe load carrying capacity	Each	24		
	b	for vertical compression test (Maintained Load Method):				

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					In figures	In figures
	i	900 mm diameter pile-280 MT safe load carrying capacity	Each	9		
		600 mm diameter pile-130 MT safe load carrying capacity	Each	23		
	2507	Conducting low strain pile integrity test conforming to relevant ASTM on job pile and test pile including all arrangements for test, equipments, necessary materials, submission of test report etc but excluding the cost of installation of pile complete as per specification and as directed by the engineer-in-charge.	Each	6527		
	2508	Mobilisation of minimum 8 nos complete sets of Rotary Hydraulic Rigs and Ancillary Equipments at site for installing 600 and 900 mm Dia Bored Cast in Situ RCC Piles as per specifications . Payments : a) 75% to be released on mobilisation of 6 nos in 2 months including 2 nos in 3 weeks from Date of Start as decided by BHEL . b) Balance 25% on mobilisation of minimum 2 nos within 1 additional month .	LS	1		
		TOTAL				
		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.				
	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.				