

# **TENDER SPECIFICATION BHEL PSSR SCT 2105**

**FOR**

Package-1: Civil works involved in Construction of complete Ash dyke including drainage system, decantation well & associated civil works as per the specifications including grading of ash pond area for Lagoon 1 area, (Total Lagoon-1 area & boundary) and part of lagoon 2 & OFL at 2x660MW Udangudi Power project, Kallamoli, Tiruchendur Taluk, Tuticorin District., Tamil Nadu;

Package-2: Civil works involved in Construction of complete Ash dyke including drainage system, decantation well & associated civil works as per the specifications including grading of ash pond area for Lagoon 2 & Over Flow Lagoon area, at 2x660MW Udangudi Power project, Kallamoli, Tiruchendur Taluk, Tuticorin District., Tamil Nadu

**PRICE BID**

**VOLUME –II**



**BHARAT HEAVY ELECTRICALS LIMITED**

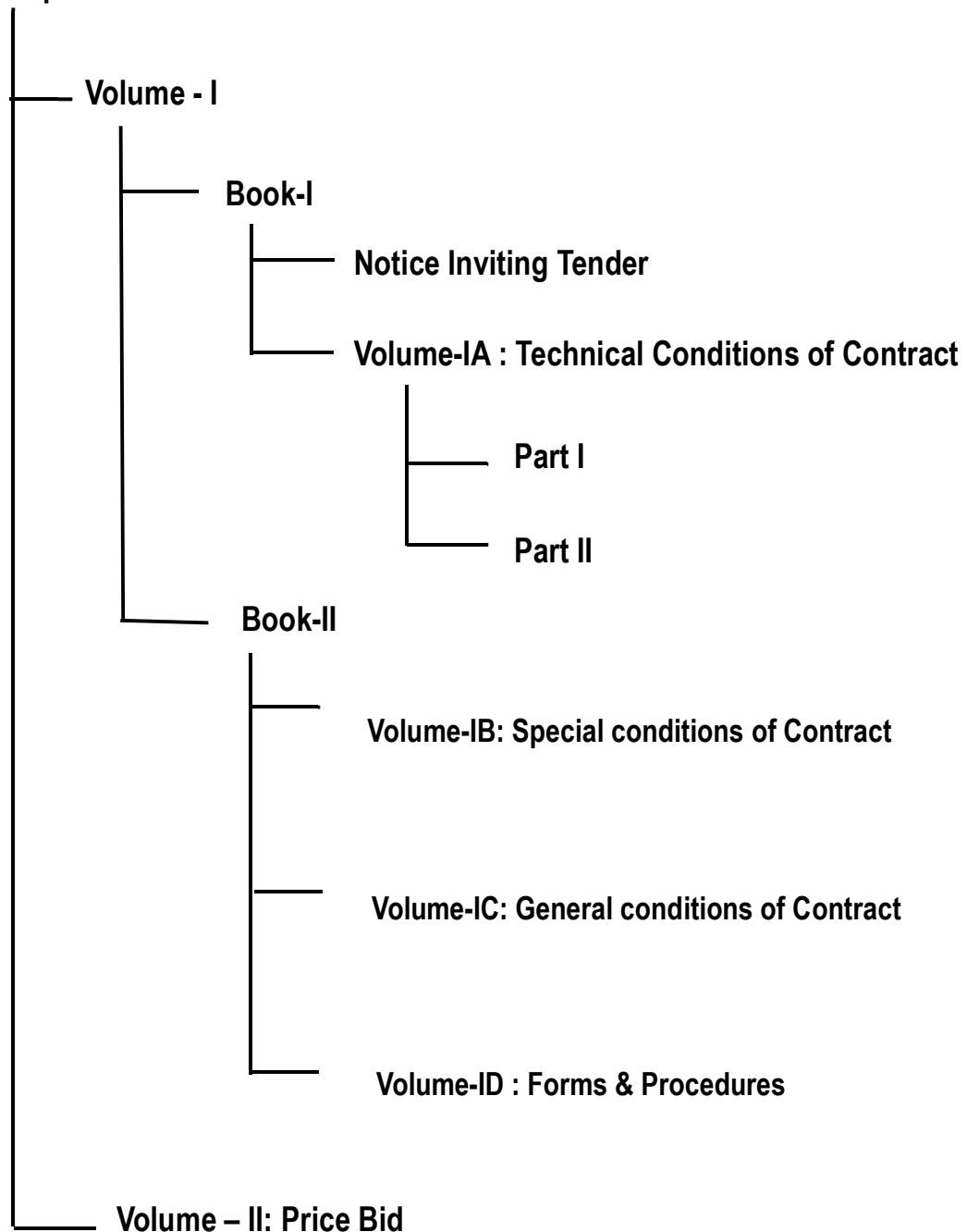
(A Government of India Undertaking)

Power Sector – Southern Region

Integrated Office Complex, 26/4, Velachery-Tambaram Main Road,  
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**TENDER SPECIFICATION CONSISTS OF**

**Tender Specification**



## PRICE BID

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### **PART A**

#### **Instruction to Bidders:**

1. The quantity indicated in the BOQ / Price bid (Part C) is approximate only and is liable for variation. Payment will be as per actual quantity executed as certified by BHEL Engineer.
2. Tenderers are requested to affix their company seal and authorized signature in all pages.
3. Bidders shall quote 'Total Amount' in the format enclosed as a separate Excel File in BHEL NIC e-Procurement portal for the subject tender and upload the same under 'Packet details - > Tender covers -> Finance '(Cover Type Description – Price Bid)' and same shall be taken into account for evaluation and awarding and hence, shall be complete in all respect for the full scope of work defined in specification and in accordance with terms & conditions of the tender. Any other entry elsewhere in the price bid shall be treated as Null and Void. Quoting of rates in any other form/ formats will not be entertained.
4. The above mentioned 'Total amount' is for the entire Bill of Quantity (BOQ) given in Part -C of the Price Bid.
5. BHEL has pre-fixed the weightages for the amount of individual items of Bill of Quantity with respect to the 'Total Amount' in Part-C.
6. Based on the pre-fixed weightages, the amount for the individual items of the Bill of Quantity shall be arrived at. This amount shall be rounded off to the nearest rupee.
7. Based on the quantities of individual item and the amount arrived in SI No: 6 above, unit rate of individual items shall be derived. This unit rate shall be rounded off to four decimal places.
8. Bidders to note that this is an item rate contract. Payment shall be made for the actual quantities of work executed at the unit rate arrived at as per SI No.7 above
9. Bidder has to quote for Package-1 only. Please refer SI no. 35 Mode of Award of NIT.

## Part C : Bill of Quantities

### Tender Specification for Civil works of Ashdyke - Package 1 at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
200.0	CONCRETE WORK: Providing and placing concrete work including cost of labour, materials (unless otherwise specified in BOQ/contract specification) and equipment for handling, transportation, batching, mixing, placing, vibrating and curing (excluding cost of centering, shuttering and reinforcement) with mechanised equipments like batching plant, transit mixer, concrete pump etc. complete as per drawing, specifications and as per direction of engineer in charge for the following. Cement shall be supplied by BHEL as free issue.	--		
201.0	Concrete of grade M7.5 (1 part cement, 4 part sand, 8 parts of 40 mm graded aggregate by volume) as mass filling course, lean concrete, levelling course, mud mat under and around foundations/floors, at any depth below finished floor level etc.	CUM	50	.0003263
202.0	Concrete of grade M10 (1 part cement, 3 part sand, 6 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc	CUM	10	.0000653
203.0	Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc.	CUM	425.55	.0027768
204.0	Concrete of grade M20 (1 part cement, 1.5 part sand, 3 parts of 20 mm graded aggregate by volume) under floors, paving, plinth protection, pipe encasing etc complete.	CUM	1	.0000067
205.0	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in foundations/substructure, grade slab, paving, drains, under floors etc at all level below finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.	--		
a	M 25 Grade	CUM	150	.0011322
b	M 30 Grade	CUM	250	.0019001

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at Udangudi Thermal Power Station**

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
206.0	Providing and laying Design Mix cement concrete of grade conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in superstructure at all level above finished floor level, any shape, position or thickness etc complete including use of plasticizer/superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.	--		
a	M 25 Grade	CUM	581	.0043326
b	M 30 Grade	CUM	100	.0007509
211.0	Providing and encasing of structural steel member with concrete using nominal aggregate size of 12.5mm down. Encased member shall be wrapped with welded wire mesh/chicken wire mesh with proper lap etc. complete as per specification for the following grades. (Payment of welded wire mesh, chicken wire mesh shall be made separately)	--		
b	M 25	CUM	1	.0000068
213.0	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in precast works like roof slabs/trench covers, fins, lintels, chajas, beams, columns, wall panels, facias etc.at all levels in all kinds of work including formwork/moulds, curing, rendering the top exposed surface with cement sand mortar (1:3), handling, storing, transpoting, all leads, erection without damage, setting in position with cement sand mortar (1:3), filling the gaps between adjacent precast units with M30 grade concrete or cement sand mortar (1:3) and including making of holes for bolts for fixing, welding etc.complete with graded aggregate (20/12.5/10 mm) and as per specification and drawing for following grades.	--		
a	M25	CUM	1	.0000134
b	M30	CUM	1	.0000135

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
214.0	Providing and laying Design Mix cement concrete as per IS:456, IS 3370 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in water retaining/conveying structures including addition of suitable plastisizer cum waterproofing cement additives confirming to IS 9103 latest to achieve a slump more than 125 mm in concrete as per manufacturers recommendation and conforming to limits of permeability as per IS 2545 and specification with 20 mm nominal size graded aggregate for following grades. Watertightness is to be ensured including structural grouting if required.	--		
a	M25	CUM	1	.0000102
b	M30	CUM	1	.0000103
215.0	Dismantling concrete work for all types of structures at all levels including stacking of servicable material to a lead of 500 m and disposal of unservicable material upto a lead of 2 km, cutting of reinforcement, labour, equipment, safety precautions etc all complete as per drawings, specification and instructions of engineer in charge.	--		
a	Plain cement concrete of all grades	CUM	1	.0000017
b	Reinforced cement concrete of all grades	CUM	1	.0000025
216.0	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, making good the broken surface etc all complete as per specification, drawing, instructions of engineer in charge but excluding cutting of reinforcement .	CUDM	1	.0000002
217.0	Extra over and above St No 216 for cutting of reinforcement, all sizes and types including labour, equipment, return of cut reinforcement to store etc all complete as per specification, drawings and instructions of engineer in charge. Measurement shall be on the cross sectional area of reinforcement cut.	SQCM	1	
220.0	Providing & laying Plum cement concrete 1:3:6 with 75% graded metal of maximum size 40 mm and 25% plums of maximum size 150 mm.	CUM	1	.0000066

## Part C : Bill of Quantities

### Tender Specification for Civil works of Ashdyke - Package 1 at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
221.0	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in sloped surface of canal lining or channel cast in alternate panels with provision of expansion gap/construction joints at all level below finished floor level, any shape, position or thickness etc complete including use of plasticizer/superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete, compaction with special equipments, etc all complete as per specification & drawing for the following.	--		
b	M25 Grade	CUM	350	.0030944
300.0	FORMWORK: Providing, fixing and removing formwork at all elevations for all structures, as per specifications and including all labour, material, scaffoldings and centereing etc. complete as per drawing, specifications and as per direction of engineer in charge for the following.	--		
301.0	Fairface form work with good quality water proof ply wood of minimum 12mm thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.including chamfering of edges as per drawing, specification and instruction of engineer in charge.	SQM	350	.0004638
302.0	Fairface form work with good quality water proof ply wood of minimum 12mm thickness and smooth surface above finished ground floor level for columns, beams, suspended floors, roofs, lintels, cantilevers, staircases, landings, balconies, etc. including chamfering of edges as per drawing.for all heights as per specification, drawing and instruction of engineer in charge.	SQM	5,500	.0088253
304.0	Providing, fixing and removing formwork in block-outs/pockets and openings (below 0.1 sqm plan area) 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.	--		
a	Upto 150 mm depth	Each	1	.0000005
d	Pockets of depths more than 600mm and upto 1000 mm depth	Each	1	.0000025



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### Tender Specification for Civil works of Ashdyke - Package 1 at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
e	Pockets of depths more than 1000mm and upto 1500 mm depth	Each	1	.0000036
305.0	Extra over item no.301 and 302 for curved form work for foundations, footings, beams, walls, trenches, domes, arches etc as per specification.	SQM		
a	Extra for Curve Shuttering for Item No. 301	SQM	100	.0000266
b	Extra for Curve Shuttering for Item No. 302	SQM	100	.000032
400.0	REINFORCEMENT WORK : Reinforcement work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling etc at all level as per specification, drawings and as directed by engineer - in - charge.	--		
403a	Transportation, straightening, cutting, bending, placing in position at all level, binding in position of steel reinforcements of corrosion resistant steel of grade Fe-500D or 500EQR confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer.(BHEL to supply steel free of cost)	MT	72	.0022404
700.0	MS EMBEDMENTS: Embedments including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.	--		
701.0	Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete.	MT	0.5	.0001027
702.0	Supply, Fabrication, transportation, delivery at site and erection, installation and alignment of mild steel foundation bolt assembly conforming to IS:2062 and grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling etc. all complete.	MT	0.5	.0001201

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**Tender Specification for Civil works of Ashdyke - Package 1  
at Udangudi Thermal Power Station**

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
800.0	GROUTING: Grouting including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, roughening surface, cleaning, ramming, curing etc. at all level , drawings and as directed by engineer - in - charge. OPC Cement shall be supplied by BHEL as free issue	--		
801.0	Providing & grouting with cement slurry mix of approved ratio using pressure pump for water retaining concrete structures as per approved procedure including cost of nipples/ nozzles, cement, admixture, curing, pressure pumps, slurry agitator etc. all complete. Cost shall include fixing of nipples at maximum 500 mm centre to centre spacing, cutting of nipples after completing of grouting, making good of the nipple hole with appropriate non-shrink cement paste, water tightness test etc. all complete wherever specified in the drawing.	SQM	50	.000064
803.0	Providing & grouting of pocket holes, pipe sleeves and under base plate of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips ) using non shrink admixture as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	0.2	.0000089
805.0	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing, etc. all complete with Conbextra GP-2 or equivalent as per specification, drawing and direction of engineer-in-charge.(Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	0.2	.0000353
806.0	Providing Chemical (epoxy) injection grouting with pressure pump for water retaining concrete structures conforming to IS:6494, including fixing nozzles, cost of approved chemical, admixture, curing etc. all complete . Payment shall be made as per the consumption of chemical grout.	Kg	50	.000219
1800.0	MISCELLANEOUS: Miscellaneous works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level unless otherwise specified as per specification, drawings and as directed by engineer - in - charge.	--		

**Part C : Bill of Quantities****Tender Specification for Civil works of Ashdyke - Package 1  
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<b>Ref.No.</b>	<b>Description</b>	<b>Unit of Measurement</b>	<b>Qty.</b>	<b>Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount</b>
1815.0	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/sqm etc. all complete.	Kg	30	.0000047
2200.0	SANITARY: Sanitary work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge. Cement shall be supplied by BHEL as free issue.	--		
2208.0	Providing, laying light duty non pressure NP3 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc all complete for following.	--		
c	450mm dia	RM	50	.0002124
d	600mm dia	RM	50	.0002713
e	900mm dia	RM	300	.0025405
2300.0	STRUCTURAL WORKS: Structural steel works including all labour, material (unless otherwise specified in BOQ/contract specification), equipments unless otherwise specified, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.	--		

## Part C : Bill of Quantities

### Tender Specification for Civil works of Ashdyke - Package 1 at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2301a	Transportation from BHEL store, Fabrication, erection and alignment of structural steel with mild steel rolled section / built up section / combination of both conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS:3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc including 2 coats of zinc-silicate primer (one coat at shop and one coat after erection, Dry film thickness of each primer coat shall be 50 microns.), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 200 C for welding over 20 mm and upto 40 mm & 660 C for welding over 40 mm and upto 63 mm & 1100 C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL (BHEL to supply steel free of cost).	MT	2	.0001121
2302a	Extra over ST NO. 2301 for blast cleaning of steel structures to near white metal surface (Sa 2 1/2 ) finish as per SIS05-5900 all complete.	MT	2	.0000242
2305 a	Providing and applying two coat of High built epoxy of minimum 180 micron DFT on steel surfaces already having primer coats, of approved make and shade to achieve an even shade including protection and cleaning, scaffolding etc. all complete.	MT	2	.0000215

## Part C : Bill of Quantities

### Tender Specification for Civil works of Ashdyke - Package 1

#### at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2307.0	Supplying, fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel having minimum galvanisation conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.	--		
a	Minimum galvanisation of 610 g/sqm	MT	0.1	.000019
2400.0	ROAD WORKS: Road works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. as per specification, drawings and as directed by engineer - in - charge.	--		
2413.0	Supplying and laying 400mmx150mmx350mm deep precast concrete kerb stone of grade M-20 with 20 mm nominal size stone aggregate and of shape as per detailed drawing including fixing with cement mortar (1:2) in 13mm thick joints, finishing of joints with neat cement paste, making drainage opening where required etc all complete. Cement shall be supplied by BHEL as free Issue for Cement Mortar only. Cement for Precast kerb stone shall be in the scope of bidder.	RM	6,093.6	.0059582
2600.0	LEVELING & GRADING: Levelling & grading works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. as per specification, drawings and as directed by engineer - in - charge.	--		
2601.0	Cutting of trees having girth more than 300 mm measured at a height of 1m above ground level including removal of roots, stacking the serviceable material like trunks, branches etc at specified area within the plant boundary and disposal of unserviceable parts/materials within a lead upto 1km etc all complete.	--		
a	300 mm upto 600 mm girth.	Nos	10	.0000093
b	601 mm upto 1200 mm girth.	Nos	20	.0000836
c	1200mm and above.	Nos	4	.0000779

## Part C : Bill of Quantities

### Tender Specification for Civil works of Ashdyke - Package 1 at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2602a	Earth work in stripping of top soil (minimum 300mm depth) for seat of embankment including minimum 3m wide strips beyond and continuous with the base of the embankment on downstream side and inside the ash pond & stilling basins so as to exclude all debris, grass, bushes, trees including roots and organic materials etc from the ash pond area and disposal of the stripped materials outside ash pond area all complete as per specification and as directed by the Engineer-in-Charge.	SQM	120,000	.0068184
2603.0	Earth work in excavation upto any depth below ground level in all types of soil including moorum, ash which can be excavated by any means for grading including setting out, levelling, dewatering (wherever required), dressing the sides & bottom, levelling to grade, all lifts, ramming/compacting the excavated bottom/graded surface, stacking/disposal of surplus excavated materials within a lead upto 1km, spreading/levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	1,500	.0003409
2604.0	Earth work in excavation upto any depth below ground level in soft rock (rock without any recovery of excavated materials in the form of hard tone/boulder) including weathered rock which can be excavated by means of crow bar, pick axe, pneumatic rock breaker attachment with excavator machine etc (but does not require chiselling or blasting) for grading including setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, ramming/ compacting the excavated bottom, stacking/disposal of surplus excavated materials within a lead upto 1km, spreading/levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	500	.0002102
2605.0	Earth work in excavation upto any depth below ground level in hard rock requiring blasting (but excluding controlled blasting) including wedging, line drilling, pre shearing etc as required for grading, setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, necessary licenses/statutory clearances for blasting, supply, storage & handling of blasting materials, stacking/ disposal of surplus excavated material within a lead upto 1km, spreading / levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	10	.0000069

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<b>Ref.No.</b>	<b>Description</b>	<b>Unit of Measurement</b>	<b>Qty.</b>	<b>Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount</b>
2606.0	Earth work in excavation upto any depth below ground level in hard rock requiring controlled blasting including wedging, line drilling, pre shearing etc as required for grading, setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, necessary licenses/statutory clearances for blasting, supply, storage & handling of blasting materials, stacking/disposal of surplus excavated materials within a lead upto 1km, spreading / levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	10	.0000072
2607.0	Earth work in excavation upto any depth below ground level in hard rock requiring chiselling including wedging, line drilling, pre shearing etc as required for grading, setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, stacking/disposal of surplus excavated material within a lead upto 1km, spreading / levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	10	.0000417
2608.0	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300mm loose thickness so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII) with selected approved soil/soft rock directly from excavation within a lead upto 1km and compacted as specified including dewatering if required, sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing etc all complete as per specification, drawing and as directed by the engineer for the following.	CUM	2,500	.0002046
2609.0	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300mm loose thickness so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII) with selected approved soil/soft rock from compulsorily excavated earth available within a lead upto 1km and compacted as specified including re-excavation of stacked earth, all lifts, sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing etc all complete as per specification, drawing and as directed by the engineer for the following.	CUM	700	.0001607

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**Tender Specification for Civil works of Ashdyke - Package 1  
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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2610.0	Extra over ST No. 2601 to 2609 for carriage of unserviceable material/earth for every 500m or part thereof beyond an initial lead of 1km.	--		
a	Carriage for stacking/ backfilling of serviceable material/ earth	CUM	1	
b	Carriage for disposal of serviceable/unserviceable material/ earth	CUM	1	
2611.0	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300 mm loose thickness so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII) with approved borrowed soil (borrowed soil to be arranged by the bidder) and compacted as specified including supplying boorowed soil, royalty/seignorage fee (if any), sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing, all lead and lifts etc all complete as per specification, drawing and as directed by the engineer for the following.	CUM	80,000	.0623657
2612.0	Providing and laying 225mm thick stone pitching including caulking with 1 cement: 4 sand mortar on the slopes of earth fill/cut with approved quality of rock fragments including materials, testing, necessary excavations if any, compaction etc all complete as per specification, drawing and as directed by the engineer. Cement shall be supplied by BHEL as free issue.	CUM	10	.00005
2613.0	Providing and laying 300mm thick good quality dry stone pitching on the slopes of earth fill/cut with approved quality of rock fragments including materials, testing, necessary excavations if any, compaction etc all complete as per specification, drawing and as directed by the engineer. Cement shall be supplied by BHEL as free issue.	CUM	10	.0000435
2618.0	Earthwork in embankment filling using selected approved quality of soil from compulsory excavated soil from ash pond area including setting out, sorting, breaking clods, handling, transportation, spreading, watering, compaction in layers of thickness 150mm to minimum 95% of maximum dry density (modified Proctor compaction Test), levelling, dressing, finishing to required slopes and grades, dewatering if necessary including all lifts and leads etc all complete as per specification and as directed by the Engineer-in-charge.	CUM	1,000	.0002296



## Part C : Bill of Quantities

### Tender Specification for Civil works of Ashdyke - Package 1 at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2619.0	Earthwork in excavation upto any level for embankment/structure foundations, trenches, drains, pipelines, base of ash pond, sumps and substructures etc including site clearance, setting out, dewatering, shuttering and shoring if required, dressing of sides, levelling to grade and ramming the bottom, stacking/disposal of surplus excavated materials within a lead of 1km etc complete for all types of soils etc all as per the specification, drawings and as directed by Engineer-in-Charge	cum	2,000	.0004546
2620.0	Earthwork in embankment filling using selected approved quality of soil of 'GC', 'CI' or 'CL' type from approved borrow areas (to be acquired by the bidder at no extra cost) including stripping of borrow areas, excavation, lifting, handling, sorting, breaking clods, transportation, watering, compaction in layers of thickness 150mm to 95% of maximum dry density (modified Proctor compaction Test), levelling, dressing, finishing to required slopes and grades, dewatering if necessary including all lifts and leads etc all complete as per specification and as directed by the Engineer-in-Charge.	Cum	238,714.797	.2956908
2621.0	Supplying, stacking and laying sand of approved quality as sand blanket/filter/sand chimney in body and slopes of embankment, bed of ash pond area including screening, washing, watering, compaction, dressing, necessary trimming if any including all leads and lifts etc all complete as per specification and as directed by the Engineer-in-Charge.	Cum	10,660.64	.0765411
2622.0	Providing and placing approved quality of 750micron thick High density polyethylene liner (HDPE) films, HDPE-Grade -1( i.e High Modular Mass High Density polyethylene -HMHDPE) conforming to IS:10889 on embankment slope. This lining shall have 150mm thick sand cushion at the bottom. The liner shall be protected by provideing one layer of Fly ash brick (minimum compressive strength 75KG/SQCM) 75 mm thick (1:4 CM) over 150mm thick sand spread over the HDPE Liner. The liner shall be Manufactured from polyethylene resin to prevent seepage including joining with approved method, fixing at the edges in plain cement concrete by providing 300mm wide and 100mm thick plain cement concrete 1:2:4 on the top of embankment as shown in the drawing etc all complete as per specification and as directed by the engineer-in-charge. Minimum width of HDPE liner shall be 6m. The rate shall be inclusive of PCC, Brick lining and sand filling as well. Cement shall be supplied by BHEL free of cost.	SQM	48,139.199	.1068629

## Part C : Bill of Quantities

### Tender Specification for Civil works of Ashdyke - Package 1 at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2623.0	Providing and placing approved quality of 750micron thick High density polyethylene liner (HDPE) films, HDPE-Grade -1( i.e High Modular Mass High Density polyethylene -HMHDPE) conforming to IS:10889 on pond floor. This lining shall have 150mm thick sand cushion each at both the bottom of the liner and 150mm thick sand cushion at the top of the HDPE Liner. The liner shall be Manufactured from polyethylene resin to prevent seepage including joining with approved method, fixing at the edges in plain cement concrete by providing 300mm wide and100mm thick plain cement concrete 1:2:4 on the top of embankment as shown in the drawing etc all complete as per specification and as directed by the engineer-in-charge. Minimum width of HDPE liner shall be 6m. The rate shall be inclusive of PCC, Brick lining and sand filling as well. Cement shall be supplied by BHEL free of cost.	SQM	189,826.906	.2917314
2624.0	Supplying, stacking and laying 200 mm thick coarse aggregate filter of approved quality above rock-toe in slopes inside the embankment including screening, washing, watering, compaction, dressing, necessary trimming if any including all leads and lifts etc all complete as per specification and as directed by the Engineer-in-Charge.	Cum	2,739.6	.0125652
2625.0	Supplying, stacking and laying 150 mm thick coarse sand filter of approved quality above rock-toe in slopes inside the embankment including screening, washing, watering, compaction, dressing, necessary trimming if any including all leads and lifts etc all complete as per specification and as directed by the Engineer-in-Charge.	Cum	3,085.77	.0221552
2626.0	Supplying, stacking and laying 150 mm thick Fine sand filter of approved quality above rock-toe in slopes inside the embankment including screening, washing, watering, compaction, dressing, necessary trimming if any including all leads and lifts etc all complete as per specification and as directed by the Engineer-in-Charge.	Cum	3,085	.0221496
2627.0	Supplying, stacking and laying hand placed rock toe/rip rap at the down stream end of embankment with approved quality of rock fragments including materials and necessary excavations if any etc all complete as per specification, drawing and as directed by the Engineer-in-Charge.	Cum	6,750	.0293788
2628.0	Providing and placing turfing with approved quality of grass on the outer slopes of the embankment including cost of all labour, materials, transportation and watering etc all complete as per specification and as directed by the Engineer-in-Charge.	SQM	11,581.2	.0108768

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### Tender Specification for Civil works of Ashdyke - Package 1 at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2629.0	Providing and fixing of 150mm square and 900mm long guard stones over the top of embankment (cost of PCC grade M10 for encasement will be paid seperately) etc all complete as per drawing, specification and as directed by the Engineer-in-Charge.	Each	1,635.6	.001955
2630.0	Supplying, stacking and providing crushed or broken stone aggregates for WBM (to be laid in two/three courses with suitable gradings as per drawing) including necessary excavation, packing with screenings, binding materials, watering and consolidation with road rollers to make required line, slope and levels etc all complete as per drawing, specification and as directed by the Engineer-in-Charge.	Cum	1,945.2	.007812
2631.0	Back filling around foundations, plinths and drains etc to proper grade and level with selected good soil free from shingle, salts, organic materials, roots, sods or any other foreign substances within a lead of 1 Km from available excavated soil including re excavating loose thickness, watering and ramming in layers of 25cm thickness (loose) compacted to 90% maximum dry density by manual/ mechanical means, dressing and transportation etc all complete.	Cum	200	.0000459
2632.0	Disposal or surplus excavated earth beyond an initial lead of 1km and upto a lead of 5 Km., dumping and levelling the dumped soil all as specified and directed by Engineer-in charge.	Cum	50	.0000051
--	BRICK WORK MASONARY INCLUDING SUPPLY OF MATERIAL, COST OF LABOUR ETC COMPLETE AS PER SPECIFICATION.	--		
2634.0	Providing brick work in cement sand mortar 1:3 ( 1 part cement : 3 part coarse sand) in walls, chambers etc at all depths, places and positions below plinth including berm drains, slope drains, toe drains, connecting drains etc on embankment at all levels including raking out joints, curing, scaffolding etc all complete excluding plastering and painting using bricks of class designation 7.5 of nominal dimensions as per specification. Cement shall be supplied by BHEL free of cost.	Cum	299.73	.0045179
2635.0	Breaking existing brick work work at any level including plastering, cutting of reinforcement, removing the rubbish within a lead of 1 km including transportation, loading, unloading etc all complete as directed by the Engineer-in-charge.	Cum	1	.000004
--	CEMENT MORTAR PLASTER INCLUDING ALL MATERIALS, SCAFFOLDING, CURING ETC COMPLETE AS PER SPECIFICATION	--		

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**Tender Specification for Civil works of Ashdyke - Package 1  
at Udangudi Thermal Power Station**

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2636.0	Providing 15mm thick plaster in cement sand mortar 1:4 on walls including drains etc finished to a smooth finish as per specification. Cement shall be supplied by BHEL free of cost.	Sqm	5,000	.0027842
E1	Extra over ST No. 2603 to 2607, 2619 for dewatering of ground water by well point method as per IS 9759.	Cum	250	.0001903
E2	Supplying, stacking and providing 200mm THK Granular Sub Base to be laid with suitable gradings as per drawing) including necessary excavation, packing with screenings, binding materials, watering and consolidation with road rollers to make required line, slope and levels etc all complete as per drawing, specification and as directed by the Engineer-in-Charge.	CUM	2,236.8	.0078697
<b>TOTAL Weightage</b>				0.9999999

**Part C : Bill of Quantities****Tender Specification for Civil works of Ashdyke - Package 2  
at Udangudi Thermal Power Station**

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
200.0	CONCRETE WORK: Providing and placing concrete work including cost of labour, materials (unless otherwise specified in BOQ/contract specification) and equipment for handling, transportation, batching, mixing, placing, vibrating and curing (excluding cost of centering, shuttering and reinforcement) with mechanised equipments like batching plant, transit mixer, concrete pump etc. complete as per drawing, specifications and as per direction of engineer in charge for the following. Cement shall be supplied by BHEL as free issue.	--		
201.0	Concrete of grade M7.5 (1 part cement, 4 part sand, 8 parts of 40 mm graded aggregate by volume) as mass filling course, lean concrete, levelling course, mud mat under and around foundations/floors, at any depth below finished floor level etc.	CUM	35	.0003414
202.0	Concrete of grade M10 (1 part cement, 3 part sand, 6 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc	CUM	8	.000078
203.0	Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc.	CUM	238.87	.0023297
204.0	Concrete of grade M20 (1 part cement, 1.5 part sand, 3 parts of 20 mm graded aggregate by volume) under floors, paving, plinth protection, pipe encasing etc complete.	CUM	1	.0000101
205.0	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in foundations/substructure, grade slab, paving, drains, under floors etc at all level below finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.	--		
a	M 25 Grade	CUM	100	.0011282
b	M 30 Grade	CUM	250	.00284

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**Tender Specification for Civil works of Ashdyke - Package 2  
at Udangudi Thermal Power Station**

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
206.0	Providing and laying Design Mix cement concrete of grade conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in superstructure at all level above finished floor level, any shape, position or thickness etc complete including use of plasticizer/superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.	--		
a	M 25 Grade	CUM	221	.0024633
b	M 30 Grade	CUM	100	.0011224
211.0	Providing and encasing of structural steel member with concrete using nominal aggregate size of 12.5mm down. Encased member shall be wrapped with welded wire mesh/chicken wire mesh with proper lap etc. complete as per specification for the following grades. (Payment of welded wire mesh, chicken wire mesh shall be made separately)	--		
b	M 25	CUM	1	.0000102
213.0	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in precast works like roof slabs/trench covers, fins, lintels, chajas, beams, columns, wall panels, facias etc.at all levels in all kinds of work including formwork/moulds, curing, rendering the top exposed surface with cement sand mortar (1:3), handling, storing, transpoting, all leads, erection without damage, setting in position with cement sand mortar (1:3), filling the gaps between adjacent precast units with M30 grade concrete or cement sand mortar (1:3) and including making of holes for bolts for fixing, welding etc.complete with graded aggregate (20/12.5/10 mm) and as per specification and drawing for following grades.	--		
a	M25	CUM	1	.0000201
b	M30	CUM	1	.0000201

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**Tender Specification for Civil works of Ashdyke - Package 2  
at Udangudi Thermal Power Station**

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
214.0	Providing and laying Design Mix cement concrete as per IS:456, IS 3370 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in water retaining/conveying structures including addition of suitable plastisizer cum waterproofing cement additives confirming to IS 9103 latest to achieve a slump more than 125 mm in concrete as per manufacturers recommendation and conforming to limits of permeability as per IS 2545 and specification with 20 mm nominal size graded aggregate for following grades. Watertightness is to be ensured including structural grouting if required.	--		
a	M25	CUM	1	.0000153
b	M30	CUM	1	.0000154
215.0	Dismantling concrete work for all types of structures at all levels including stacking of servicable material to a lead of 500 m and disposal of unservicable material upto a lead of 2 km, cutting of reinforcement, labour, equipment, safety precautions etc all complete as per drawings, specification and instructions of engineer in charge.	--		
a	Plain cement concrete of all grades	CUM	1	.0000026
b	Reinforced cement concrete of all grades	CUM	1	.0000038
216.0	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, making good the broken surface etc all complete as per specification, drawing, instructions of engineer in charge but excluding cutting of reinforcement .	CUDM	1	.0000003
217.0	Extra over and above St No 216 for cutting of reinforcement, all sizes and types including labour, equipment, return of cut reinforcement to store etc all complete as per specification, drawings and instructions of engineer in charge. Measurement shall be on the cross sectional area of reinforcement cut.	SQCM	1	
220.0	Providing & laying Plum cement concrete 1:3:6 with 75% graded metal of maximum size 40 mm and 25% plums of maximum size 150 mm.	CUM	1	.0000099

## Part C : Bill of Quantities

### Tender Specification for Civil works of Ashdyke - Package 2

#### at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
221.0	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in sloped surface of canal lining or channel cast in alternate panels with provision of expansion gap/construction joints at all level below finished floor level, any shape, position or thickness etc complete including use of plasticizer/superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete, compaction with special equipments, etc all complete as per specification & drawing for the following.	--		
b	M25 Grade	CUM	150	.0019822
300.0	FORMWORK: Providing, fixing and removing formwork at all elevations for all structures, as per specifications and including all labour, material, scaffoldings and centereing etc. complete as per drawing, specifications and as per direction of engineer in charge for the following.	--		
301.0	Fairface form work with good quality water proof ply wood of minimum 12mm thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.including chamfering of edges as per drawing, specification and instruction of engineer in charge.	SQM	350	.0006932
302.0	Fairface form work with good quality water proof ply wood of minimum 12mm thickness and smooth surface above finished ground floor level for columns, beams, suspended floors, roofs, lintels, cantilevers, staircases, landings, balconies, etc. including chamfering of edges as per drawing.for all heights as per specification, drawing and instruction of engineer in charge.	SQM	4,600	.0110325
304.0	Providing, fixing and removing formwork in block-outs/pockets and openings (below 0.1 sqm plan area) 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.	--		
a	Upto 150 mm depth	Each	1	.0000008
d	Pockets of depths more than 600mm and upto 1000 mm depth	Each	1	.0000038



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**Tender Specification for Civil works of Ashdyke - Package 2  
at Udangudi Thermal Power Station**

<b>Ref.No.</b>	<b>Description</b>	<b>Unit of Measurement</b>	<b>Qty.</b>	<b>Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount</b>
e	Pockets of depths more than 1000mm and upto 1500 mm depth	Each	1	.0000054
305.0	Extra over item no.301 and 302 for curved form work for foundations, footings, beams, walls, trenches, domes, arches etc as per specification.	SQM		
a	Extra for Curve Shuttering for Item No. 301	SQM	100	.0000397
b	Extra for Curve Shuttering for Item No. 302	SQM	100	.0000479
400.0	REINFORCEMENT WORK : Reinforcement work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling etc at all level as per specification, drawings and as directed by engineer - in - charge.	--		
403a	Transportation, straightening, cutting, bending, placing in position at all level, binding in position of steel reinforcements of corrosion resistant steel of grade Fe-500D or 500EQR confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer.(BHEL to supply steel free of cost)	MT	48	.0022325
700.0	MS EMBEDMENTS: Embedments including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.	--		
701.0	Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete.	MT	1	.0003071
702.0	Supply, Fabrication, transportation, delivery at site and erection, installation and alignment of mild steel foundation bolt assembly conforming to IS:2062 and grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling etc. all complete.	MT	1	.000359

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### Tender Specification for Civil works of Ashdyke - Package 2 at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
800.0	GROUTING: Grouting including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, roughening surface, cleaning, ramming, curing etc. at all level , drawings and as directed by engineer - in - charge. OPC Cement shall be supplied by BHEL as free issue	--		
801.0	Providing & grouting with cement slurry mix of approved ratio using pressure pump for water retaining concrete structures as per approved procedure including cost of nipples/ nozzles, cement, admixture, curing, pressure pumps, slurry agitator etc. all complete. Cost shall include fixing of nipples at maximum 500 mm centre to centre spacing, cutting of nipples after completing of grouting, making good of the nipple hole with appropriate non-shrink cement paste, water tightness test etc. all complete wherever specified in the drawing.	SQM	1	.0000019
803.0	Providing & grouting of pocket holes, pipe sleeves and under base plate of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips ) using non shrink admixture as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	1	.0000662
805.0	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing, etc. all complete with Conbextra GP-2 or equivalent as per specification, drawing and direction of engineer-in-charge.(Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	1	.0002638
806.0	Providing Chemical (epoxy) injection grouting with pressure pump for water retaining concrete structures conforming to IS:6494, including fixing nozzles, cost of approved chemical, admixture, curing etc. all complete . Payment shall be made as per the consumption of chemical grout.	Kg	1	.0000065
1800.0	MISCELLANEOUS: Miscellaneous works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level unless otherwise specified as per specification, drawings and as directed by engineer - in - charge.	--		

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
1815.0	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/sqm etc. all complete.	Kg	30	.000007
2200.0	SANITARY: Sanitary work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge. Cement shall be supplied by BHEL as free issue.	--		
2208.0	Providing, laying light duty non pressure NP3 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc all complete for following.	--		
c	450mm dia	RM	50	.0003175
d	600mm dia	RM	50	.0004054
e	900mm dia	RM	250	.0031644
2300.0	STRUCTURAL WORKS: Structural steel works including all labour, material (unless otherwise specified in BOQ/contract specification), equipments unless otherwise specified, transportation, handling etc. at all level as per specification, drawings and as directed by engineer - in - charge.	--		

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### Tender Specification for Civil works of Ashdyke - Package 2 at Udangudi Thermal Power Station

Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2301a	Transportation from BHEL store, Fabrication, erection and alignment of structural steel with mild steel rolled section / built up section / combination of both conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS:3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc including 2 coats of zinc-silicate primer (one coat at shop and one coat after erection, Dry film thickness of each primer coat shall be 50 microns.), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 200 C for welding over 20 mm and upto 40 mm & 660 C for welding over 40 mm and upto 63 mm & 1100 C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL (BHEL to supply steel free of cost).	MT	1	.0000838
2302a	Extra over ST NO. 2301 for blast cleaning of steel structures to near white metal surface (Sa 2 1/2 ) finish as per SIS05-5900 all complete.	MT	1	.0000181
2305 a	Providing and applying two coat of High built epoxy of minimum 180 micron DFT on steel surfaces already having primer coats, of approved make and shade to achieve an even shade including protection and cleaning, scaffolding etc. all complete.	MT	1	.000016

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at Udangudi Thermal Power Station**

<b>Ref.No.</b>	<b>Description</b>	<b>Unit of Measurement</b>	<b>Qty.</b>	<b>Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount</b>
2307.0	Supplying, fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel having minimum galvanisation conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.	--		
a	Minimum galvanisation of 610 g/sqm	MT	0.1	.0000284
2400.0	ROAD WORKS: Road works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. as per specification, drawings and as directed by engineer - in - charge.	--		
2413.0	Supplying and laying 400mmx150mmx350mm deep precast concrete kerb stone of grade M-20 with 20 mm nominal size stone aggregate and of shape as per detailed drawing including fixing with cement mortar (1:2) in 13mm thick joints, finishing of joints with neat cement paste, making drainage opening where required etc all complete. Cement shall be supplied by BHEL as free Issue for Cement Mortar only. Cement for Precast kerb stone shall be in the scope of bidder.	RM	4,936.8	.007215
2600.0	LEVELING & GRADING: Levelling & grading works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment etc. as per specification, drawings and as directed by engineer - in - charge.	--		
2601.0	Cutting of trees having girth more than 300 mm measured at a height of 1m above ground level including removal of roots, stacking the seviceable material like trunks,branches etc at specified area within the plant boundary and disposal of unseviceable parts/materials witthin a lead upto 1km etc all complete.	--		
a	300 mm upto 600 mm girth.	Nos	10	.0000139
b	601 mm upto 1200 mm girth.	Nos	1	.0000062
c	1200mm and above.	Nos	1	.0000291

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<b>Ref.No.</b>	<b>Description</b>	<b>Unit of Measurement</b>	<b>Qty.</b>	<b>Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount</b>
2602a	Earth work in stripping of top soil (minimum 300mm depth) for seat of embankment including minimum 3m wide strips beyond and continuous with the base of the embankment on downstream side and inside the ash pond & stilling basins so as to exclude all debris, grass, bushes, trees including roots and organic materials etc from the ash pond area and disposal of the stripped materials outside ash pond area all complete as per specification and as directed by the Engineer-in-Charge.	SQM	60,000	.0050957
2603.0	Earth work in excavation upto any depth below ground level in all types of soil including moorum, ash which can be excavated by any means for grading including setting out, levelling, dewatering (wherever required), dressing the sides & bottom, levelling to grade, all lifts, ramming/compacting the excavated bottom/graded surface, stacking/disposal of surplus excavated materials within a lead upto 1km, spreading/levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	1,500	.0005096
2604.0	Earth work in excavation upto any depth below ground level in soft rock (rock without any recovery of excavated materials in the form of hard tone/boulder) including weathered rock which can be excavated by means of crow bar, pick axe, pneumatic rock breaker attachment with excavator machine etc (but does not require chiselling or blasting) for grading including setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, ramming/ compacting the excavated bottom, stacking/disposal of surplus excavated materials within a lead upto 1km, spreading/levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	500	.0003142
2605.0	Earth work in excavation upto any depth below ground level in hard rock requiring blasting (but excluding controlled blasting) including wedging, line drilling, pre shearing etc as required for grading, setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, necessary licenses/statutory clearances for blasting, supply, storage & handling of blasting materials, stacking/ disposal of surplus excavated material within a lead upto 1km, spreading / levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	10	.0000104

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<b>Ref.No.</b>	<b>Description</b>	<b>Unit of Measurement</b>	<b>Qty.</b>	<b>Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount</b>
2606.0	Earth work in excavation upto any depth below ground level in hard rock requiring controlled blasting including wedging, line drilling, pre shearing etc as required for grading, setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, necessary licenses/statutory clearances for blasting, supply, storage & handling of blasting materials, stacking/disposal of surplus excavated materials within a lead upto 1km, spreading / levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	10	.0000107
2607.0	Earth work in excavation upto any depth below ground level in hard rock requiring chiselling including wedging, line drilling, pre shearing etc as required for grading, setting out, levelling, dewatering (wherever required), dressing the sides & bottom, all lifts, stacking/disposal of surplus excavated material within a lead upto 1km, spreading / levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	10	.0000623
2608.0	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300mm loose thickness so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII) with selected approved soil/soft rock directly from excavation within a lead upto 1km and compacted as specified including dewatering if required, sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing etc all complete as per specification, drawing and as directed by the engineer for the following.	CUM	2,500	.0003057
2609.0	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300mm loose thickness so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII) with selected approved soil/soft rock from compulsorily excavated earth available within a lead upto 1km and compacted as specified including re-excavation of stacked earth, all lifts, sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing etc all complete as per specification, drawing and as directed by the engineer for the following.	CUM	700	.0002402

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2610.0	Extra over ST No. 2601 to 2609 for carriage of unserviceable material/earth for every 500m or part thereof beyond an initial lead of 1km.	--		
a	Carriage for stacking/ backfilling of serviceable material/ earth	CUM	1	
b	Carriage for disposal of serviceable/unserviceable material/ earth	CUM	1	
2611.0	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300 mm loose thickness so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII) with approved borrowed soil (borrowed soil to be arranged by the bidder) and compacted as specified including supplying boorowed soil, royalty/seignorage fee (if any), sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing, all lead and lifts etc all complete as per specification, drawing and as directed by the engineer for the following.	CUM	50,000	.0582607
2612.0	Providing and laying 225mm thick stone pitching including caulking with 1 cement: 4 sand mortar on the slopes of earth fill/cut with approved quality of rock fragments including materials, testing, necessary excavations if any, compaction etc all complete as per specification, drawing and as directed by the engineer. Cement shall be supplied by BHEL as free issue.	CUM	10	.0000747
2613.0	Providing and laying 300mm thick good quality dry stone pitching on the slopes of earth fill/cut with approved quality of rock fragments including materials, testing, necessary excavations if any, compaction etc all complete as per specification, drawing and as directed by the engineer. Cement shall be supplied by BHEL as free issue.	CUM	10	.0000651
2618.0	Earthwork in embankment filling using selected approved quality of soil from compulsory excavated soil from ash pond area including setting out, sorting, breaking clods, handling, transportation, spreading, watering, compaction in layers of thickness 150mm to minimum 95% of maximum dry density (modified Proctor compaction Test), levelling, dressing, finishing to required slopes and grades, dewatering if necessary including all lifts and leads etc all complete as per specification and as directed by the Engineer-in-charge.	CUM	1,000	.0003431



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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2619.0	Earthwork in excavation upto any level for embankment/structure foundations, trenches, drains, pipelines, base of ash pond, sumps and substructures etc including site clearance, setting out, dewatering, shuttering and shoring if required, dressing of sides, levelling to grade and ramming the bottom, stacking/disposal of surplus excavated materials within a lead of 1km etc complete for all types of soils etc all as per the specification, drawings and as directed by Engineer-in-Charge	cum	2,000	.0006794
2620.0	Earthwork in embankment filling using selected approved quality of soil of 'GC', 'CI' or 'CL' type from approved borrow areas (to be acquired by the bidder at no extra cost) including stripping of borrow areas, excavation, lifting, handling, sorting, breaking clods, transportation, watering, compaction in layers of thickness 150mm to 95% of maximum dry density (modified Proctor compaction Test), levelling, dressing, finishing to required slopes and grades, dewatering if necessary including all lifts and leads etc all complete as per specification and as directed by the Engineer-in-Charge.	Cum	172,620	.3195942
2621.0	Supplying, stacking and laying sand of approved quality as sand blanket/filter/sand chimney in body and slopes of embankment, bed of ash pond area including screening, washing, watering, compaction, dressing, necessary trimming if any including all leads and lifts etc all complete as per specification and as directed by the Engineer-in-Charge.	Cum	6,775	.072706
2622.0	Providing and placing approved quality of 750micron thick High density polyethylene liner (HDPE) films, HDPE-Grade -1( i.e High Modular Mass High Density polyethylene -HMHDPE) conforming to IS:10889 on embankment slope. This lining shall have 150mm thick sand cushion at the bottom. The liner shall be protected by provideing one layer of Fly ash brick (minimum compressive strength 75KG/SQCM) 75 mm thick (1:4 CM) over 150mm thick sand spread over the HDPE Liner. The liner shall be Manufactured from polyethylene resin to prevent seepage including joining with approved method, fixing at the edges in plain cement concrete by providing 300mm wide and 100mm thick plain cement concrete 1:2:4 on the top of embankment as shown in the drawing etc all complete as per specification and as directed by the engineer-in-charge. Minimum width of HDPE liner shall be 6m. The rate shall be inclusive of PCC, Brick lining and sand filling as well. Cement shall be supplied by BHEL free of cost.	SQM	31,021	.1029279

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2623.0	Providing and placing approved quality of 750micron thick High density polyethylene liner (HDPE) films, HDPE-Grade -1( i.e High Modular Mass High Density polyethylene -HMHDPE) conforming to IS:10889 on pond floor. This lining shall have 150mm thick sand cushion each at both the bottom of the liner and 150mm thick sand cushion at the top of the HDPE Liner. The liner shall be Manufactured from polyethylene resin to prevent seepage including joining with approved method, fixing at the edges in plain cement concrete by providing 300mm wide and100mm thick plain cement concrete 1:2:4 on the top of embankment as shown in the drawing etc all complete as per specification and as directed by the engineer-in-charge. Minimum width of HDPE liner shall be 6m. The rate shall be inclusive of PCC, Brick lining and sand filling as well. Cement shall be supplied by BHEL free of cost.	SQM	151,519.203	.3480507
2624.0	Supplying, stacking and laying 200 mm thick coarse aggregate filter of approved quality above rock-toe in slopes inside the embankment including screening, washing, watering, compaction, dressing, necessary trimming if any including all leads and lifts etc all complete as per specification and as directed by the Engineer-in-Charge.	Cum	696	.0047714
2625.0	Supplying, stacking and laying 150 mm thick coarse sand filter of approved quality above rock-toe in slopes inside the embankment including screening, washing, watering, compaction, dressing, necessary trimming if any including all leads and lifts etc all complete as per specification and as directed by the Engineer-in-Charge.	Cum	539	.0057843
2626.0	Supplying, stacking and laying 150 mm thick Fine sand filter of approved quality above rock-toe in slopes inside the embankment including screening, washing, watering, compaction, dressing, necessary trimming if any including all leads and lifts etc all complete as per specification and as directed by the Engineer-in-Charge.	Cum	573	.0061492
2627.0	Supplying, stacking and laying hand placed rock toe/rip rap at the down stream end of embankment with approved quality of rock fragments including materials and necessary excavations if any etc all complete as per specification, drawing and as directed by the Engineer-in-Charge.	Cum	500	.0032527
2628.0	Providing and placing turfing with approved quality of grass on the outer slopes of the embankment including cost of all labour, materials, transportation and watering etc all complete as per specification and as directed by the Engineer-in-Charge.	SQM	1,336.8	.0018766

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Ref.No.	Description	Unit of Measurement	Qty.	Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount
2629.0	Providing and fixing of 150mm square and 900mm long guard stones over the top of embankment (cost of PCC grade M10 for encasement will be paid seperately) etc all complete as per drawing, specification and as directed by the Engineer-in-Charge.	Each	1,342.8	.0023991
2630.0	Supplying, stacking and providing crushed or broken stone aggregates for WBM (to be laid in two/three courses with suitable gradings as per drawing) including necessary excavation, packing with screenings, binding materials, watering and consolidation with road rollers to make required line, slope and levels etc all complete as per drawing, specification and as directed by the Engineer-in-Charge.	Cum	1,596	.0095803
2631.0	Back filling around foundations, plinths and drains etc to proper grade and level with selected good soil free from shingle, salts, organic materials, roots, sods or any other foreign substances within a lead of 1 Km from available excavated soil including re excavating loose thickness, watering and ramming in layers of 25cm thickness (loose) compacted to 90% maximum dry density by manual/ mechanical means, dressing and transportation etc all complete.	Cum	200	.0000686
2632.0	Disposal or surplus excavated earth beyond an initial lead of 1km and upto a lead of 5 Km., dumping and levelling the dumped soil all as specified and directed by Engineer-in charge.	Cum	50	.0000076
--	BRICK WORK MASONARY INCLUDING SUPPLY OF MATERIAL, COST OF LABOUR ETC COMPLETE AS PER SPECIFICATION.	--		
2634.0	Providing brick work in cement sand mortar 1:3 ( 1 part cement : 3 part coarse sand) in walls, chambers etc at all depths, places and positions below plinth including berm drains, slope drains, toe drains, connecting drains etc on embankment at all levels including raking out joints, curing, scaffolding etc all complete excluding plastering and painting using bricks of class designation 7.5 of nominal dimensions as per specification. Cement shall be supplied by BHEL free of cost.	Cum	228.73	.0051532
2635.0	Breaking existing brick work work at any level including plastering, cutting of reinforcement, removing the rubbish within a lead of 1 km including transportation, loading, unloading etc all complete as directed by the Engineer-in-charge.	Cum	1	.000006
--	CEMENT MORTAR PLASTER INCLUDING ALL MATERIALS, SCAFFOLDING, CURING ETC COMPLETE AS PER SPECIFICATION	--		

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<b>Ref.No.</b>	<b>Description</b>	<b>Unit of Measurement</b>	<b>Qty.</b>	<b>Weightage for amount of each item (Nearest to the 7 decimal points) w.r.t the total amount</b>
2636.0	Providing 15mm thick plaster in cement sand mortar 1:4 on walls including drains etc finished to a smooth finish as per specification. Cement shall be supplied by BHEL free of cost.	Sqm	3,600	.0029963
E1	Extra over ST No. 2603 to 2607, 2619 for dewatering of ground water by well point method as per IS 9759.	Cum	250	.0002845
E2	Supplying, stacking and providing 200mm THK Granular Sub Base to be laid with suitable gradings as per drawing) including necessary excavation, packing with screenings, binding materials, watering and consolidation with road rollers to make required line, slope and levels etc all complete as per drawing, specification and as directed by the Engineer-in-Charge.	CUM	1,837.2	.0096614
<b>TOTAL Weightage</b>				0.9999999