

BOQ CUM RATE SCHEDULE						
3 x 800 MW NLC TALABIRA TPP (NTTPP), Jharsuguda, Odisha, INDIA						
Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
100	<b>EARTH WORK: Earth work In excavation, backfilling and disposal including all labour, equipments etc complete as per specification, drawing and as directed by engineer- in-charge for the following.</b>					
101	Earth work in excavation in all types of soil including ash which can be excavated by any means including setting out, levelling, dewatering (but excluding special type of dewatering viz. well point method), 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 for following depths below ground level.					
a	Depth from ground level but not exceeding 2 m	CUM	49428			0.445129000%
b	Depth exceeding 2 m but not exceeding 4 m	CUM	49458			0.557830020%
c	Depth exceeding 4 m but not exceeding 6 m	CUM	13116			0.184630270%
d	Depth exceeding 6 m but not exceeding 8 m	CUM	9113			0.160152250%
e	Depth exceeding 8 m but not exceeding 10 m	CUM	8027			0.169139840%
103	Earth work in excavation in soft rock 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 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 1 Km, spreading / levelling of disposed materials etc all complete for following depths below ground level.					
f	Depth exceeding 10 m but not exceeding 15 m	CUM	8754			0.254308000%
g	Depth exceeding 15 m but not exceeding 20 m	CUM	8754			0.292378560%
108	Earthwork in Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with selected earth directly from excavation within a lead upto 1Km and compacted as specified including watering, ramming/compaction by manual/mechanical means, dressing etc all complete.for the following:					
a	at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	47362			0.194627190%
109	Extra over ST No. 101 and 103 to 108 for carriage of material/earth for every 500m or part thereof beyond an initial lead of 1km.					
b	Carriage for disposal of serviceable/unserviceable material/ earth	CUM	97517			0.110840710%
A111	Supplying and filling sand upto any depth in tank foundations in layers not exceeding 200 mm thickness and compacted so as to achieve at least 85% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete.	CUM	15			0.001531300%
B111	Supplying and filling sand upto any depth under floors, around foundations, plinths etc. in layers not exceeding 300 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete.	CUM	250			0.024306390%
C111	Supplying, stacking and laying sand of approved quality as cushion over base/bed of reservoir and on slopes of embankment including screening, washing (wherever required), 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	500			0.058335330%
200	<b>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 &amp; Reinforcement Steel shall be provided by BHEL free of cost unless noted otherwise)</b>					
202	Concrete of grade <b>M10</b> (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 below finished floor level <b>upto depth of 10m from FFL.</b> (For depth greater than 10m from FFL, extra over for additional depth to be paid in Item No 224)	CUM	274			0.091466510%

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204	Concrete of grade <b>M20</b> (1 part cement, 1.5 part sand, 3 parts of 10-20 mm graded aggregate by volume) under floors, paving, plinth protection, pipe encasing etc complete below finished floor level <b>upto depth of 10m from FFL.</b> (For depth greater than 10m from FFL, extra over for additional depth to be paid in Item No 224).	CUM	31			0.010337560%
205	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with sand and graded hard stone aggregate of 20mm nominal size in foundations/substructure, grade slab, paving, drains, under floors etc for 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 below finished floor level upto a <b>depth of 10m from FFL</b> (For depths greater than 10m from FFL, extra over for additional depth to be paid in Item No 224), for the following.					
b	M 25 Grade	CUM	50			0.018369680%
c	M 30 Grade	CUM	372			0.137483570%
206	Providing and laying Design Mix cement concrete of grade conforming to IS:456 & IS 10262-2009 for reinforced concrete works with sand and graded hard stone aggregate of 20mm nominal size in superstructure for 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 <b>upto 10m level above finished floor level</b> (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 225), for the following.					
b	M 25 Grade	CUM	50			0.018911770%
c	M 30 Grade	CUM	1091			0.415134910%
A211	Providing and <b>encasing of structural steel member</b> 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					
a	M 30 design mix	CUM	10			0.003338190%
212	<b>Screed concrete</b> conforming to IS 456 with sand and graded hard stone aggregate 12.5mm/6 mm nominal size on the roof upto 10m level above finished floor level (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 225) or thickness, drains etc complete as per following.					
a	01:02:04	CUM	363			0.121176430%
213	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in <b>precast works</b> 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 preacast 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.					
b	M25	CUM	10			0.006330150%
214	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 <b>water retaining/conveying structures</b> 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 upto depth of 10m from FFL, (For depth greater than 10m from FFL, extra over for additional depth to be paid in Item No 224). for following grades. Watertightness is to be ensured including structural grouting if required.					
b	M30	CUM	7529			3.036003150%
215	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	20			0.002014460%

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b	Reinforced cement concrete of all grades	CUM	20			0.003093380%
216	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	100			0.000769410%
217	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	100			0.000061200%
218	Cutting Reinforced concrete with mechanised tools like Core drilling machine etc. for cutting pockets, holes, cores in slab, beam, column or foundation as per direction of engineer in charge.	CUDM	50			0.001193460%
224	Extra over item no. 201 to 205 and 214 for depth below FFL (Finished Floor Level) as per following:					
(a)	Depth exceeding 10m from FFL but not exceeding 20m	CUM	800			0.023362110%
225	Extra over item no. 206 and 212 for height above FFL (Finished Floor Level) as per following:					
(a)	Height exceeding 10m from FFL but not exceeding 20m	CUM	100			0.003654700%
300	<b>FORMWORK: Providing, fixing and removing formwork at all elevations for all structures, as per specifications and including all labour, material, scaffoldings and centering etc. complete as per drawing, specifications and as per direction of engineer in charge for the following.</b>					
301	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 & slabs (for which scaffolding work not required for vertical support of bottom face of formwork), mass concrete, trenches, grade slab, paving etc.including chamfering of edges as per drawing, specification and instruction of engineer in charge.					
a	Upto Depth 10m From FGL	SQM	12021			0.739927010%
b	Depth exceeding 10m From FGL	SQM	1200			0.081207820%
302	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/intermediate 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.					
a	For Height Upto 20m from FGL	SQM	5852			0.432351180%
304	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	10			0.000222080%
b	Pockets of depths more than 150mm and upto 300 mm depth	Each	10			0.000364600%
c	Pockets of depths more than 300mm and upto 600 mm depth	Each	10			0.000640880%
d	Pockets of depths more than 600mm and upto 1000 mm depth	Each	10			0.000994990%
305	Extra over item no.301 and 302 for curved form work for foundations, footings, beams, walls, trenches, domes, arches etc as per specification.					
a	Extra for Curve Shuttering for Item No. 301	SQM	10			0.000123280%
b	Extra for Curve Shuttering for Item No. 302	SQM	10			0.000147760%
400	<b>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. (Reinforcement Steel shall be provided by BHEL free of cost unless noted otherwise)</b>					

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ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
A402	Transporting, straightening, cutting, bending, placing in position at all level, binding in position of steel reinforcements of <b>TMT corrosion resistant steel (CRS) of grade Fe-500/500D/550/550D conforming to IS:1786</b> including cost of reinforcement steel, binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer. (Reinforcement Steel shall be provided by BHEL free of cost)	MT	1126			1.129625620%
405	Providing & fixing of Rebar in existing concrete surface by inserting reinforcement bar with Epoxy based suitable bonding compound of Hilti or equivalent make (HIT-RE-500 of Hilti or equivalent make) for interconnection of new R.C. structure with existing R.C. structure. Depth of drilled hole should be suitable to develop maximum recommended strength as per approved manufacturer's recommendation. This item includes supply of all materials including bonding chemicals, T&P required to execute the work, cost of all labour, transportation of chemical, staging to reach work place etc. all complete as directed by Engineer - in - Charge. Random Pull out non destructive test as directed by engineer shall be conducted to ensure strength of bond and same is included in this item. Reinforcement bar shall be paid separately under item no. 402, 403, 405 as applicable.					
a	12mm Reinforcement bar	Nos.	20			0.001138380%
b	16mm Reinforcement bar	Nos.	20			0.001851830%
c	20mm Reinforcement bar	Nos.	20			0.002684190%
406	Supply and fixing reinforcement bar couplers (of approved manufacturer's as per the relevant IS code) in position for steel reinforcements of TMT steel of grade Fe-500D or 500EQR or any other Grade conforming to IS:1786 including, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer.(Agency has to supply reinforcement bar couplers).					
a	12mm dia	Nos.	20			0.000106670%
b	16mm dia	Nos.	20			0.000111910%
c	20mm dia	Nos.	20			0.000141640%
d	25mm dia	Nos.	20			0.000209840%
e	28mm dia	Nos.	20			0.000258800%
f	32mm dia	Nos.	20			0.000327000%
g	36mm dia	Nos.	20			0.000430170%
h	40mm dia	Nos.	20			0.000577060%
500	<b>Roof Treatment works: Roof treatment works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, curing, sampling, testing etc at all level as per specification, drawings and as directed by engineer - in - charge. (Cement shall be provided by BHEL free of cost unless noted otherwise)</b>					
A501	Providing and laying underbed/topping grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of <b>35 mm</b> including preparation of surface, batching, mixing, leveling etc. all complete.	SQM	1036			0.022554580%
506	Providing and applying PU based water proofing treatment with one coat of polyurethane or any other equivalent material based primer with an application rate of minimum 6 sq.m per litre and two successive liquid coatings of high solids content urethane pre-polymers or equivalent material based finish coats as per relevant IS/ASTM standards to form an elastomeric membrane with overall dry film thickness 1.5 mm subject to minimum 500 gm/sqm/coat application rate. Item includes surface preparation, polyscrim cloth /fabric, polymerised mortar base preparation, etc all complete as per specifications and directions of engineer in charge.	SQM	1036			0.108334440%
A510	Providing and laying pressed clay tiles of 18mm thickness and size 230x230mm conforming to indian standard with 8 mm thick 1:3 cement mortar mixed with water proofing compound over the top most layer of roofing treatment in pathway or entire area with fine joints including sealing of joints (silicon/elastomeric sealant) and providing expansion gap in both directions including underbed (as per drawings) filled up with (silicon/elastomeric) joint sealant etc all complete. (Water proofing paid elsewhere) (including cost of cement for tiles making)	SQM	1036			0.066123870%

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511	Providing and applying two coats of bitumen grade 85/25 as per IS 702 (@ 1.7kg/sqm)with 1% antistripping compound conforming to IS 6241 in foundation, wall, column etc on concrete surfaces exposed to soil / ash including surface preparation etc. all complete.	SQM	2589			0.055232860%
A519	<b>Screed concrete of 1:2:4 (1 part cement, 2 part sand, 4 parts of aggregate by volume) M15</b> having average thickness of 75mm conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5mm/6 mm nominal size including green saw cutting in panels of size 3m x 4m with grooves 10mm x 10mm and sealing of grooves with elastomeric sealant on the roof at all level or thickness, drains etc complete as per specification.	SQM	1036			0.103941280%
A518	Providing and placing approved quality of <b>loosely laid 120-150 GSM geotextile (non-woven polyester)</b> over elasomeric membrane as per specification and as directed by the engineer-in-charge. Minimum width of geotextile shall be 3.5m. (cost of elestomeric membrane pais elsewhere)	SQM	1036			0.006639350%
A522	Providing and applying <b>two coats of acrylic based polymer modified cementitious composite coating system</b> having fine silica/curatz sand of 0.6mm and total thickness shall be 1.5mm of approved make laid as per manufacture's specification etc all complete including surface preparation, minor cleaning works, removal of loose concrete, laitance, dust particles, etc. all complete as per specification.	SQM	11322			0.530443960%
B522	Providing and applying 20mm thick plaster (1:3) mixed with admixture of approved quality water proofing compound etc. all complete as per specification.	SQM	5661			0.098595730%
C522	Providing and applying 10mm thick plaster (1:3) mixed with admixture of approved quality water proofing compound etc. all complete as per specification.	SQM	234			0.002032290%
<b>600</b>	<b>JOINTS AND FILLERS: Joints &amp; fillers including all labour, material, equipment, transportation, handling etc at all level as per specification, drawings and as directed by engineer - in - charge.</b>					
601	Supplying & installation of bitumen impregnated fibre board conforming to IS 1838 as joint filler at joints in concrete including nailing, coating of both faces with coal tar pitch/bitumin etc. all complete.					
c	25 mm wide joints	SQM	50			0.004970570%
603	Providing and applying <b>polysulphide based sealant</b> conforming to IS:12118 in expansion joints in concrete including cleaning of joints, raking out groove, application of primer, scaffolding etc. all complete for following size grooves (10 mm thick baker rod to be paid separatly):					
c	20mmX25mm	RM	508			0.026303150%
610	Providing and fixing <b>PVC water stops</b> in joints conforming to IS 12200 & IS 15058 all complete for the following: (Bulb or Kicker type)					
d	230 mm wide and 6 mm thick	RM	749			0.023575450%
<b>700</b>	<b>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.</b>					
701	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	5			0.048015610%
702	Supply, Fabrication, transportation, delivery at site and erection, installation and alignment of <b>mild steel foundation bolt</b> 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			0.011923940%
704	Supplying, fabricating, erecting and installing following items in concrete/brickwall for all kind of works, including setting material in concrete, layout, scaffolding, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc. all complete.					
d	Expansion anchor fasteners (galvanised) of HILTI make(HUD-1 Universal Fastners) or equivalent of safe tensile capacity as specified below for brick work with expansion sleeve of A6 polyamide:					
i	8mm Dia	Nos	25			0.000111480%
ii	10mm Dia	Nos	25			0.000144260%
iii	12mm Dia	Nos	25			0.000179240%
iv	14mm Dia	Nos	25			0.000275410%

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e	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with expansion sleeve of stainless steel:					
i	HST M8	Nos	25			0.000618590%
ii	HST M10	Nos	25			0.000854660%
iii	HST M12	Nos	25			0.001538820%
iv	HST M16	Nos	25			0.002708240%
v	HST M20	Nos	25			0.004703900%
vi	HST M24	Nos	25			0.009418730%
f	Chemical Expansion fasteners (galvanised)of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with anchoring rod,nuts,washers,chemicals all complete,etc:					
i	HAS-E5.8 M8	Nos	25			0.001206580%
ii	HAS-E5.8 M10	Nos	25			0.001473250%
iii	HAS-E5.8 M12	Nos	25			0.001879810%
iv	HAS-E5.8 M16	Nos	25			0.003189120%
v	HAS-E5.8 M20	Nos	25			0.004988060%
vi	HAS-E5.8 M24	Nos	25			0.006874420%
707	Providing, laying and fixing rails(52kg/rm) and guide rails in concrete for transformer, rail track including cutting of rails, joining of rails, anchoring lugs etc all complete.	MT	2			0.018936600%
800	<b>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.</b>					
804	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 <b>ConbextraGP-1 or equivalent</b> 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	2			0.008323280%
900	<b>DOORS &amp; WINDOWS: Doors, windows, ventilators, louvers, roof ventilators, rolling shutters, partitions including all labour, material (unless otherwise specified in BOQ/contract specification), equipments, transportation, handling, preparation of working drawings etc. at all level as per specification, drawings and as directed by engineer - in - charge.</b>					
904	Providing and fixing <b>single or double steel door shutters with 45mm thk flush</b> design shutter comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centres including void filled with mineral wool (density as per specification), all fittings, Godrej or equivalent make mortice lock with handle on both sides, side, top & bottom edges of shutter shall be reinforced by continous pressed steel chanel with min 18G, shop and final painting etc all complete.	SQM	25			0.030953490%
906	Providing and fixing <b>anodized extruded aluminium doors (single or double shutter)</b> conforming to IS:1948, IS:1949 fabricated from extruded sections of HINDALCO/JINDAL or equivalent make having minimum 3mm wall thickness as per IS:1285, IS:733 and anodized and electro color coating of required shade as per IS 1868 ( minimum anodized coating of grade AC15 ). fixed with rawl plugs, expansion fasteners,SS screws / fixing clips necessary filling of gaps at Junctions, at top, bottom & sides with required PVC / neoprene felt for bi-metallic protection etc. Glazing shall be clear float glass of 6mm thickness including snap fit type beading, concealed screws, fixtures, Godrej or equivalent make Mortice lock with handle on both sides, etc all complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required. (Glazing shall be paid separately)	SQM	22			0.001017550%

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907	Providing and fixing fire proof steel doors (single or double shutter) with vision panel, panic devices shall be 45mm thk flush design comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centers including all fittings, shop painting with approved post office/signal red color fire resistant paint and mineral wool insulation (64 kg/cum density) complete and shall be fire proof as per IS:3614, NBC 2016 & TAC requirements and as per specification. Vision panel shall be provided with interlayered fire rated glass. Minimum ratings shall be 2 Hrs.	SQM	12			0.012726750%
909	Providing and fixing anodised aluminium work of Jindal, Hindalco or other equivalent approved make for door frames, windows, ventilators, partitions, railing etc with extruded standard tubular and other sections including all fittings & fixtures and accessories of approved make conforming to IS733 and IS1285, anodised and electro color dyed to required shade according to IS 1868 (minimum anodic coating of grade AC15), fixed with rawl plugs, expansion fasteners, SS screws or with fixing clips, including necessary filling of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt for bi-metalic protection etc. including preparation of working drawings, aluminium cleat angle, aluminium snap-on-beading for glazing/panelling, stair case tread nosing, with all fittings and fixtures (like tower bolts, handles, door stopper with rubber shoes, 'L' drops, stays, floor springs, hydraulic door closures etc.), CP brass/stainless steel screws, providing and fixing hinges/pivots, and making provision for fixing of fitting wherever required including cost of PVC/neoprene gasket, all complete as per drawing, specification and instructions of engineer in charge (Glazing and panelling shall be paid seperately).Weight of aluminium section only shall be measure.Payment Breakup: a) On Supply & receipt of material at site - 50% b) On complete execution as per item description - 50	Kg	3021			0.203912410%
A912	Providing and fixing pressed galvanised steel frames in single rebate profile of size 100X57mm fabricated from 18 gauge M.S sheet mortised, reinforced drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, back plate bracket, grouting with cement slurry, floor tiles/weather bars ,paintings etc all complete as per specifications. Frames shall be mitered and field assembled with self tabs.	Kg	189			0.003255390%
913	Providing and fixing in position rolling shutter of hot rolled double dipped galvanised steel lath section of 18 SWG tested mild steel strips at 75mm rolling centres interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation including wire springs, top cover, primer & shop coats of approved enamel paint etc, all complete as per IS 6248 and specification of approved make of following types: The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.(partly coiled and lath/full lath).					
b	Mechanically Operated	SQM	40			0.016731190%
c	Electrically operated	SQM	105			0.056248740%
A913	Providing and fixing in position rolling shutter confirming to IS:6248 of hot rolled double dipped galvanised steel lath section of 18 SWG tested mild steel strips at 75mm rolling centres interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation including wire springs, top cover, primer & shop coats of approved enamel paint etc, all complete as per IS 6248 and specification of approved make of following types: The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.(partly coiled and lath/full lath).					
A914	Providing and fixing hard core FRP doors of approved manufacturer's including all fitting & fixtures as per specification, drawing and instructions of engineer in charge.	SQM	6			0.002316630%
915	Providing, fixing and fitting of glazing of first grade class in steel/aluminium/wooden frames, where ever required, cleaning after fixing including hardware, gaskets, clips, beadings etc. all complete.					
a	4 mm thick clear sheet glass	SQM	25			0.003882030%
b	4 mm thick clear float glass	SQM	25			0.003938860%
c	6 mm thick clear float glass	SQM	25			0.004406630%

BOQ CUM RATE SCHEDULE						
3 x 800 MW NLC TALABIRA TPP (NTTPP), Jharsuguda, Odisha, INDIA						
Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
f	5.5 mm thick clear wired glass	SQM	40			0.006470050%
i	4mm thick Polycarbonate sheet	SQM	25			0.003921370%
j	4 mm thick ground glass	SQM	20			0.003235020%
n	8 mm thick clear toughened float glass	SQM	25			0.006409640%
1000	<b>BRICKWORK: Brickwork masonry including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding etc. at all levels as per specification, drawings and as directed by engineer - in - charge. (Cement shall be provided by BHEL free of cost unless noted otherwise)</b>					
1001	Providing brick work in cement mortar 1:6 (1 part cement 6 parts coarse sand) in walls, chambers etc. in thickness varying from 230mm to 460mm at all depths, places and positions below plinth including raking out joints, curing, scaffolding etc. complete excluding plastering and painting.					
b	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 50 kg/cm2(including cost of cement for brick making)	CUM	80			0.034217800%
1002	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in walls, chambers etc. in thickness 230mm upto 10m level above finished floor level (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 1014), places and position above plinth including raking out joints, curing, scaffolding etc complete but excluding plastering and painting.					
b	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 50 kg/cm2(including cost of cement for brick making)	CUM	352			0.206232880%
1005	Breaking of existing brick work at all levels including plastering, removing the rubbish up to a distance of 500 m including transportation, loading, unloading etc. all complete as directed by the engineer.	CUM	5			0.000912360%
1006	Providing and encasing of structural steel member with masonry work around flanges, webs etc. and filling the gap between steel and masonry by minimum 12mm thick mortar of 1:6 upto 10m level above finished floor level (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 1014). Encased member shall be wrapped with chicken wire mesh with 50mm lap etc. complete as per specification. (Chicken wire mesh to paid separately)					
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	CUM	2			0.000936930%
1008	Making openings in existing brick wall or partition wall including making good the broken edges/surface with cement mortar 1:6 etc. complete.	CUM	5			0.001044820%
1009	Supply and placing in position mild steel wire fabric(Chicken Wire Mesh) of square mesh 25 mm size and wire diameter of 2 mm for encasing of steel sections in concrete including cutting, bending, fixing etc. complete.	SQM	5			0.000094430%
1010	Filling existing brick wall/ partition wall opening at all level including making good the broken edges/surface with cement mortar 1:6, painting, finishing to match with existing finishing, scaffolding/supporting at any level, removal of debris upto a lead of 1 km including loading, unloading, transportation etc. all complete.	SQM	5			0.000452470%
1014	Extra over item no. 1002, 1006, 1012 & 1013 for height above FFL (Finished Floor Level) as per following:					
a	Height exceeding 10m from FFL but not exceeding 20m	CUM	10			0.000759790%
1100	<b>DAMP PROOF COURSE: Damp proof course including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, shuttering, centering, curing etc at all level as per specification, drawings and as directed by engineer - in - charge. (Cement shall be provided by BHEL free of cost unless noted otherwise)</b>					
A1101	Providing Damp Proof Course of following thickness with 1:1.5:3 concrete (10mm and down graded aggregate) with 12mm blue granite chips and 2% of approved admixture of water proofing compound all complete. Two layers of hot bitumen coating 85/25 grade as per IS:702 @ 1.7Kg./sqm shall be applied one before & one after the DPC.					
a	40mm thick	SQM	115			0.003680060%
1200	<b>PLASTERING: Cement mortar plaster including making grooves wherever required including all labour, material (unless otherwise specified in BOQ/contract specification), scaffolding, curing etc at all level as per specification, drawings and as directed by engineer - in -</b>					

BOQ CUM RATE SCHEDULE						
3 x 800 MW NLC TALABIRA TPP (NTTTP), Jharsuguda, Odisha, INDIA						
Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
	<b>charge. (Cement shall be provided by BHEL free of cost unless noted otherwise)</b>					
A1201	Providing 20mm thick plaster in two layers outside the building/boundary wall in cement mortar as applicable upto 10m above finished floor level (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 1206) on walls, finished to a smooth finish including providing 3mmx3mm size grooves at junctions of two dissimilar materials all complete					
b	Cement Mortar 1:4	SQM	2982			0.097047770%
1202	Providing 12mm thick plaster internal/external surfaces of building/boundary wall in cement mortar as applicable above finished floor level (For height greater than 10m from FFL, extra over for additional height to be paid in Item No 1206) on walls finished to a smooth finish as per specification all complete.					
b	Cement Mortar 1:4	SQM	3990			0.094889340%
A1204	Providing 10mm thick plaster on ceiling in cement mortar 1:3 finished to a smooth all complete.	SQM	1036			0.036081290%
1300	<b>FINISHES TO CONCRETE / PLASTERED SURFACES: Finishes, painting to concrete, plastered surfaces including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, surface preparation, scaffolding etc. at all level as per specification, drawings and as directed by engineer - in - charge.</b>					
1305	Providing and applying two or more coats of acrylic emulsion paint as per IS 5411 of approved brand, shade and manufacture to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guideline.	SQM	5800			0.085752590%
1311	Two or more coats of synthetic enamel paint of approved make made from synthetic resins and drying oil with rutile titanium dioxide and other selected pigments to give smooth, hard, durable & glossy finish to all interior and exterior surfaces complete.	SQM	500			0.008146040%
A1316	Providing and applying 3 mm thick putty punning on walls including preparation of surface, staging, etc. to achieve a smooth even surface all complete as per specification and as directed by Engineer.	SQM	5800			0.108699390%
A1319	Providing and applying <b>two or more coats of Exterior emulsion paint of anti fungal weather proof quality</b> of approved brand and manufacture and required shade over one coat of primer after necessary cleaning/ washing, preparing the surface using coir brush/ wire brush, sand paper, including filling of cracks with putty wherever required etc. all complete to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellent and extremely durable with color fastness as per specification.	SQM	1892			0.024692160%
A1320	Providing and applying <b>chemical resistant paint</b> having high build, solvent free, self smoothing, primer coat, etc all complete as per specification.	SQM	160			0.005549550%
1400	<b>FLOORING AND SKIRTING: Flooring and skirting at all level including base layer, labour, material (unless otherwise specified in BOQ/contract specification), equipments, transportation, handling, curing, polishing etc. at all level as per specification, drawings and as directed by engineer - in - charge. (Cement shall be provided by BHEL free of cost unless noted otherwise)</b>					
1401	Providing and laying <b>50 mm thick heavy duty cement</b> concrete in flooring with metallic hardener pigmented topping 12mm thick uniform graded treated iron particles in flooring. Under layer of 38mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5 mm 20 well graded) and top layer of 12mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips):	SQM	500			0.028765470%
A1401	Providing and laying 50 mm thick heavy duty granolithic concrete in flooring with metallic hardener pigmented topping 12mm thick uniform graded treated iron particles in flooring. Under layer of 38mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5 mm 20 well graded) and top layer of 12mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including	SQM	351			0.025241700%

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Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
	cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips):					
A1418	Providing and laying 10 mm thk non-skid fully vitrified tiles of make 'MARBONITE' or 'FERRASTONE of BOSS Profile limited' or equivalent in flooring and skirting over 40 mm thick underbed of 1 part cement and 3 parts coarse sand by weight mixed with sufficient water, cement slurry 3.3kg/sqm complete as per specification laid in pattern of following sizes					
a	400X400 mm	SQM	60			0.009042500%
b	600X600 mm	SQM	200			0.032449900%
1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles confirming to IS:4457 in flooring/Dado and shall be laid over bitumastic lining of min 12mm thick ( to be laid in layers of 6mm each). The tiles shall be applied with 6mm thick Potassium Silicate bedding mortar as per IS:4441, 4443 & 4832 and including preparation of surface, application of bitumen primer, curing etc. all complete for following thicknesses. The tiles should be abrasion resistant & durable.					
a	20mm thick	SQM	68			0.019905360%
1428	Providing and laying 3mm thick antistatic PVC flooring / skirting of approved shade, as per IS:3462 and laying as per IS:5318 all complete.	SQM	20			0.001787130%
1600	<b>FALSE CEILING: False ceiling including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, suspension system etc at all level as per specification, drawings and as directed by engineer - in - charge.</b>					
1601	Providing and fixing glass fibre reinforced gypsum plaster board (GRG) ceiling (having gypsum core mixed with glass fibre) system consisting of metal supporting grid system forming panels of specified size, suspended from RCC slab/structural steel or catwalkway grid above with 4 mm (minimum) galvanised wires (rods) with special height adjustment clips, including preparation of working drawing, providing openings for AC ducts, return air grills, light fixtures etc (but excluding the cost of catwalkway grid) all complete as per drawings, specification and instructions of the engineer.					
a	12 mm thick GRG board with galvanised light gauge steel load bearing supporting GI frame and finished flat (seamless).	SQM	40			0.003958970%
1602	Providing, fixing and laying light weight <b>mineral fiber tile false ceiling of minimum thickness 15 mm</b> and exposed surface semi-perforated with depth of perforation as 4 mm and humid resistance of 95% RH and fire performance of class 0/1 as per BS 476 with metal suspension grid system with galvanized Tees of section 24 X 38 mm for main runners of approved colour and make as per specification including 50mm thick mineral wool insulation (density 48kg/cum) as per IS:8183 bound in polythene bags on top of panels. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures. A.C. ducts etc. suitable M.S. channel (minimum MC 75 @ 1.2m) grid shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. complete with cut-outs etc. The size of tiles shall be 600 X 600 mm or 600 X 1200 mm. Required MS channel shall be measured & paid extra under respective item unit rate.	SQM	40			0.007690610%
1700	<b>RAIN WATER DOWN TAKE PIPES: Rain water down take pipes at all level including all labour, material (unless otherwise specified in BOQ/contract specification), transportation, 2 coats of approved paint over one primary coat, fixtures, accessories etc as per specification, drawings and as directed by engineer - in - charge.</b>					
A1704	Providing and fixing <b>galvanised DI down take pipes of 150 mm dia-Medium quality</b> as per IS:1239(part-I) all complete.	RM	240			0.035561880%
A1708	Providing and fixing DI down take pipes conforming to IS:8329 all complete as per specification for following diameters.					
a	100 mm Dia	RM	50			0.006735200%
b	150 mm Dia	RM	50			0.009327770%
c	200 mm Dia	RM	50			0.011738710%

BOQ CUM RATE SCHEDULE						
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Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
1800	<b>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. (Cement shall be provided by BHEL free of cost unless noted otherwise)</b>					
A1801	Providing and Filling in trenches, plinths, area paving and other underground structures with graded stone aggregate of size range <b>63 mm to 45 mm</b> in layers not exceeding <b>250 mm in thickness</b> including breaking of stone boulders to required sizes, filling the interstices with selected sand and compacting to 85 % of original volume of stone stack for all lifts etc. all complete. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	523			0.108739960%
1809	Construction of below ground earthing system test pits as per drawing / sketches including concreting, reinforcement, formwork, providing & fixing GI strip etc as per drawing and specification (excavation & backfilling only will be paid under applicable BOQ items & cement/steel to be supplied by BHEL free of cost)	NO	5			0.005461070%
1810	Construction of below ground earthing system test links as per drawing/ sketches including concreting, reinforcement, formwork, providing & fixing GI strip etc as per drawing & specification (excavation & backfilling only will be paid under applicable BOQ items & cement/steel to be supplied by BHEL free of cost)	NO	5			0.004247060%
1811	Construction of below ground earthing system earth electrodes as per drawing and specification. ( Excavation and backfilling only will be paid under applicable BOQ items & steel shall be supplied by BHEL free of cost.)	NO	5			0.000379900%
1812	Construction of below ground earthing system - Earth connection and riser pig tails as per drawing and specification. ( Excavation and backfilling only will be paid under applicable BOQ items& steel shall be supplied by BHEL free of cost.)	NO	5			0.000283720%
1813	Providing Earthing pit as per drawing with charcoal & salt, GI pipes, GI earth electrodes, GI wire, GI strips, brick chamber with covers including associated earthwork etc. all complete.	NO	5			0.015992820%
1814	Construction of below ground earthing system test pits as per drawing/ sketches including brickwork, plaster, providing & fixing GI strips/pipes, GI wires, covers etc as per drawing & specification including associated earthwork.	NO	5			0.008809750%
1816	Providing and fixing <b>PVC pressure release valve</b> of minimum dia 90mm in water retaining structure including 160 mm dia housing pipe of minimum length 3.75 m with perforation as per IS4558, nylon jali, perforated end plug, collar, graded filter, excavation, fixing in concrete slab/wall etc. all complete.	NO	851			0.925307100%
A1828	<b>Providing and placing approved quality of 1000 micron thick heavy duty high density polyethylene liner (HDPE) films</b> with overlap distance of 0.5M and jointing of LDPE lining with robotic 2 stitch welding, to prevent loss of water due to seepage over fine sand layer in the base of reservoir/pond as well as on side slopes of embankment to prevent seepage including joining with approved method including testing, necessary excavation, fixing at the edges in plain cement concrete by providing 400mm wide and 300mm thick plain cement concrete 1:2:4 on the top of embankment (the cost of plain cement concrete 1:2:4 shall be excluded and shall be payable separately) 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.	SQM	7985			0.178168620%
A1829	<b>Providing and placing 300mmx300mm size and 50mm thick precast concrete tiles</b> of grade <b>M-30</b> over 25 mm thick 1cement:4sand mortar on HDPE/LDPE liner at the bed of reservoir and on side slopes of embankment, filling joints with 1cement : 3sand mortar etc all complete as per specification and as directed by the engineer-in-charge. The rate shall be inclusive of mortar as well. (HDPE/LDPE liner shall be paid extra) (Cement shall be provided by BHEL free of cost)	SQM	7385			0.319618070%
2000	<b>FENCING AND GATES: Fencing and gates 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.</b>					

BOQ CUM RATE SCHEDULE						
3 x 800 MW NLC TALABIRA TPP (NTTTP), Jharsuguda, Odisha, INDIA						
Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
A2001	Supplying and erecting in position <b>2.4 m high PVC coated galvanised chain linked fencing of minimum 8 gauge</b> (including PVC coating ) of <b>mesh size 75mm x 75mm</b> . The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 12 gauge. <b>GI barbed wire</b> fencing of height of <b>600 mm</b> confirming to IS 298 at top of chain link fencing shall be provided with 4 strands of barbed wire hot dip galvanised wire of 12G comprising of 2 ply of wires with barbs of 16G spaced at 100mm. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts, accessories etc. all complete. (Structural post shall be paid separately under item 2007)	RM	100			0.025582910%
B2001	Supplying and erecting in position <b>2.4 m high galvanised chain linked fencing of minimum 3.15mm diameter GI wire of mesh size 75mm</b> . The diameter of steel line wire for chain link fencing shall not be less than 4mm. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts, accessories etc. all complete. Chain link fencing shall be as per IS:2721 and galvanisation on chain link fencing shall be as per IS:12753, hard coated finish. (Structural post shall be paid separately under item 2007)	RM	100			0.024210210%
2007	Supply and fixing of hot dip galvanised mild steel posts for fencing. Rate of zinc coating shall not be less than 710 g/m <sup>2</sup> on steel posts.	MT	10			0.105232670%
2009	Supply, fabrication and installing in position and testing galvanised MS Gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffeners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete.	MT	1			0.011873060%
<b>2100</b>	<b>WATER SUPPLY: Water supply work including men, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge.</b>					
2108	Providing and fixing 25 mm diameter stainless steel towel rails (600mm X 25mm) with C.P. mounting brackets all complete.	NOS	3			0.000372730%
A2110	Providing and fixing stainless steel liquid soap holder mounted with C.P. screws etc all complete as per specification.	NOS	3			0.000291150%
2111	Providing and fixing stainless steel / C.P. liquid soap dispenser. Dispenser shall be round and easily revolving with removable threaded nozzle and mounted on C.P. brackets etc all complete.	NOS	3			0.000189640%
2112	Providing and fixing glazed vitreous wall mounted paper holder with suitable cover cum cutter fitted with CP screws etc. all complete.	NOS	3			0.000221120%
2114	Providing & fixing in position P.V.C. water tank of Syntex or approved equivalent including making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc all complete for following capacities. GI pipes shall be paid separately under ST No. 2105.					
a	500 litres capacity	NOS	2			0.001491260%
b	1000 litres capacity	NOS	2			0.002982690%
<b>2200</b>	<b>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.</b>					
2201	Supply and fixing glazed vitreous china Wash Basin of approved make conforming to IS:2556 part 4 of oval shape with R.S. or C.I. brackets painted white, 15mm chromium plated brass hot & cold faucets with nylon washers, chromium plated brass chain with rubber plug, 32mm chromium plated brass bottle trap and waste of standard pattern, 32mm dia chromium plated brass trap unions, plastic connection pipe with chromium plated nuts, fittings, cutting and making good the walls where required etc all complete.					
a	White	EACH	4			0.005520520%
2204	Providing and fixing colour glazed vitreous china European type water closet conforming to IS:2556 with siphon, open front solid plastic seat and plastic cover, low level 12.5 litre PVC flushing cistern (same colour as WC) with valveless fittings, 2 way bibcock with health faucet necessary C.P connections etc all complete.					
a	Floor mounted	EACH	4			0.003989400%
b	Wall mounted	EACH	4			0.006439970%

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ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
2205	Providing and fixing colour glazed vitreous indian type Orissa pattern (580x440mm) water closet conforming to IS:2556 part 3 with all fittings including foot rests, low level 12.5 litre PVC flushing cistern with valveless fittings, 2 way bibcock with health faucet necessary C.P connections etc all complete.	EACH	4			0.003139200%
2206	Providing and fixing white flat back glazed vitreous china urinals of size 370x315x620 mm with photo voltaic control flushing system as per IS:2556 (part 6, section 1) with flush pipes, lead pipes, gratings, traps and necessary C.P. fittings etc. all complete.	EACH	8			0.018266510%
2207	Supply, laying and jointing UPVC pipes of class 3 as per IS:4985 including bends, branches and all other necessary fittings, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete for following.					
a	75mm dia pipes	RM	50			0.002032820%
b	110mm dia pipes	RM	50			0.003226280%
c	160mm dia pipes	RM	50			0.004450340%
2208	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.					
a	200mm dia	RM	50			0.005901730%
b	300mm dia	RM	50			0.009495230%
c	450mm dia	RM	50			0.012096360%
2213	Providing and fixing square mouth S.W Gully trap grade 'A' complete with CI grating, brick masonry chamber(Clay Brickwork in 1:6 mortar, 12mm plaster in 1:6 mortar & 1:2:4 Cement Concrete) and water tight CI cover with 300x300mm (inside). The weight of cover to be not less than 4.53 Kg and frame to be not less than 2.72 Kg etc all complete for following sizes:					
a	100x100mm P or S Type.	EACH	4			0.000773610%
b	150x100mm P or S Type.	EACH	4			0.000857540%
c	150x150mm P or S Type.	EACH	4			0.000992190%
2220	Providing and fixing heavy duty cast iron pipes for above and below ground sanitary works with water tight lead joint, fixing clamps, excavation, filling, disposal etc. all complete for the following.					
a	75mm dia pipes	RM	20			0.002607250%
b	100mm dia pipes	RM	20			0.003373170%
c	150mm dia pipes	RM	20			0.005186530%
d	200mm dia pipes	RM	20			0.007713340%
A2221	Providing and laying DI pipes conforming to indian standard for following. (Excavation,backfilling,concrete to be paid seperately)					
a	75mm dia	RM	20			0.001482520%
b	100mm dia	RM	20			0.001976700%
c	150mm dia	RM	20			0.002705900%
d	200mm dia	RM	20			0.003607870%
2222	Providing and fixing HDPE pipes in concrete/ brick work of following sizes including cutting, fixing and levelling in position etc. all complete.					
a	Upto 75 mm dia	RM	10			0.000477380%
b	100 mm dia	RM	10			0.000581430%
c	150 mm dia	RM	10			0.001203080%
d	200 mm dia	RM	10			0.001772270%
2300	<b>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.</b>					

BOQ CUM RATE SCHEDULE						
3 x 800 MW NLC TALABIRA TPP (NTTPP), Jharsuguda, Odisha, INDIA						
Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
A2301	Fabrication,erection and alignment of structural steel of grade E250 with mild steel rolled section / built up/tubular 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, 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 20o C for welding over 20 mm and upto 40 mm & 66o C for welding over 40 mm and upto 63 mm & 110o C for thickness over 63 mm) & use of low hydrogen 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 seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL. (Structural Steel shall be supplied by BHEL free of cost) <b>Payment Breakup:- 1) On Completion of Fabrication - 60% 2) On Completion of erection-25% 3) Balance on completion of alignment,welding etc.-15%</b>	MT	32			0.103643840%
B2301	Fabrication,erection and alignment of structural steel of grade E350 with mild steel rolled section / built up/tubular 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, 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 20o C for welding over 20 mm and upto 40 mm & 66o C for welding over 40 mm and upto 63 mm & 110o C for thickness over 63 mm) & use of low hydrogen 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 seperate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL. (Structural Steel shall be supplied by BHEL free of cost) <b>Payment Breakup:- 1) On Completion of Fabrication - 60% 2) On Completion of erection-25% 3) Balance on completion of alignment,welding etc.-15%</b>	MT	3			0.009716610%
A2302	Extra over ST NO. A2301 & C2301 for blast cleaning of steel structures to near white metal surface (Sa 2 1/2 ) confirming to IS:1477 (Part i & II, latest revision) and applying zinc ethyl silicate primer in coats of minimum 75 micron (DFT) and confirming to IS:2074 (latest revision) erection, including touch-up painting etc all complete as per specification. For structures fabricated in shop, one additional coat of primer shall be given at the shop of 75 micron thick.	MT	35			0.013734720%

BOQ CUM RATE SCHEDULE						
3 x 800 MW NLC TALABIRA TPP (NTTPP), Jharsuguda, Odisha, INDIA						
Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
A2304	Extra over ST No. A2301 for providing and applying two coats of synthetic enamel paint conforming to IS:2932 (latest revision) with minimum 100 micron total dry film thickness (DFT) (50 micron of each coats) above primer coat with applicable tie coat of minimum 25 microns of approved make and shade to achieve an even shade over steel sections already having primer coats and keeping overall DFT with primer not less than 200 microns including protection and cleaning, scaffolding etc. all complete as per specification.	MT	35			0.015698600%
2307	Supplying, fabrication, erection and alignment of factory made <b>electroforged galvanised grating</b> 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, packing, grinding, drilling, welding, edge preparation, etc. all complete.					
a	Minimum galvanisation of 610 g/sqm	MT	5			0.056735740%
2311	Providing and fixing in position of <b>permanent mild steel bolts</b> (class 4.6 as per IS : 1367 and grade `C' as per IS: 1363) and nuts, washers etc. up to and inclusive of 39 mm diameter and upto 300mm long for structural steel work etc all complete.	KG	35			0.000434540%
2312	Providing and fixing in positing of <b>high strength structural bolts</b> (of property class 8.8 and product grade `C' as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class `8' as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc. up to and inclusive of 39 mm diameter and upto 300 mm long for structural steel work etc all complete.	KG	350			0.004529030%
A2312	Providing and fixing in position of <b>high strength structural bolts</b> (of property class 10.9 and product grade `C' as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class `10' as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc. up to and inclusive of 39 mm diameter and upto 300 mm long for structural steel work etc all complete.	KG	175			0.002604190%
A2321	Supply, fabrication and fixing of <b>galvanised MS pipe</b> (Medium Class) hand railing of 32 mm/40 mm dia <b>having rate of galvanisation 750gm/sqm</b> including GI toe guard min 6mm thick & min 150 mm wide, transportation, loading/unloading etc. all complete as per specification. <b>Payments Breakup - a)on receipt of materials at site - 65%; b) Erection &amp; fixing - 35%;</b>	MT	3			0.035069130%
2322	Supply, fabrication and fixing of <b>GI pipe hand railing (900 mm high) of 32 mm/40 mm dia (Medium Grade)</b> including transportation, loading/unloading, painting etc. all complete. <b>Payments Breakup - a)on receipt of materials at site - 65%; b) Erection &amp; fixing - 35%;</b>	MT	2			0.025228110%
2329	<b>Design, supply, fabrication, erection of stoplog gates, Sluice gates etc. in Pump Houses &amp; other structures</b> with embedments required, lifting beams, special tools & plants, spare parts for three years, machining, casting, all materials such as structural steel, cast steel, stainless steel, brass used for seals, rubber seals, gears, ball and roller bearing, branch bushings, greasing, bolts, nuts, lugs, threaded fastners etc., cleaning, sand blasting, hot double dip galvanised with minimum coating of zinc 750 gms/sqm., following by an application of etching primer and dipping in black bitumen as per B.S. 3416, erection along with a second stage concreting to true plumb and levels, submission of drawings / fabrication drawings for engineers approval etc all complete. The leakage through rubber seal shall not be more than 5 lit/min/metre length of seal under maximum head.(only weight of structural steel including embedments shall be considered for payment purpose) (SS component shall be measured separately for payment) <b>Payment Breakup:- 1) On Completion of Supply - 60% 2) On Completion of erection, alignment,welding etc.-40%</b>	MT	62			0.862722700%
2330	SS component mentioned under ST No. 2329 <b>Payment Breakup:- 1) On Completion of Supply - 60% 2) On Completion of erection, alignment,welding etc.-40%</b>	MT	16			0.481947750%
A2331	Design, Supplying, fabricating, erecting in position and testing / examining bolted and / or welded structural steel work for <b>stationary screens</b> made out of rolled sections and / or plates including cutting, straightening if required, edge preparation, bolting / welding of joints, cleaning, sand blasting, hot double dip galvanised with minimum coating of zinc as 750 gms./sqm. followed by application of an etching primer and dipping in black bitumen as per BS 3416, submission of drawings / fabrication drawings for engineers approval etc all complete. ( supply of structural steel is in the scope of contractor only) <b>Payment Breakup:- 1) On Completion of Supply - 60% 2) On Completion of erection, alignment,welding etc.-40%</b>	MT	77			1.012571580%

BOQ CUM RATE SCHEDULE						
3 x 800 MW NLC TALABIRA TPP (NTTTP), Jharsuguda, Odisha, INDIA						
Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
	<b>EARTHEN RAW WATER RESERVOIR (Cement &amp; Reinforcement Steel shall be provided by BHEL free of cost unless noted otherwise)</b>					
1	Earth work in stripping of top soil upto a maximum <b>depth of 300 mm</b> below ground level so as to exclude all debris, grass, vegetation, bushes, trees having girth upto 300mm including roots and organic materials etc including dressing to specified levels & grades and compacting the graded/stripped surface by manual/mechanical means, disposal of stripped materials within a <b>lead upto 1km</b> etc all complete as per specification, drawing and as directed by the engineer-in-charge.	Sq.m	86618			0.204478450%
2	<b>Earth work in excavation</b> upto any depth below ground level in <b>all types of soil including moorum, ash</b> which can be excavated by any means inside reservoir/ash pond area and for foundation of reservoir/ash pond embankment and cut-off trench including site clearance, setting out, levelling, dewatering (wherever required), shoring & strutting (wherever required), dressing the sides & bottom, levelling to grade, all lifts, ramming/compacting the excavated bottom, stacking/disposal of surplus excavated materials within a <b>lead upto 1km</b> , spreading/levelling of disposed materials etc all complete as per specification, drawing and as directed by the engineer-in-charge. <b>The final excavated surface inside the dyke area shall be prepared with compaction by minimum two passes of 8 Ton - 10 Ton roller and slope shall be maintained to 1V:4H(min.) for providing the impervious liner.</b>	CUM	1872319			15.617224060%
4	Earth work in embankment filling/bed filling upto any level below/above ground level in layers not exceeding <b>150 mm compacted thickness</b> with selected approved soil from compulsorily excavated soil available within the " <b>raw water reservoir area</b> " or " <b>any other nearby area(lead upto 1km)</b> " and compacted so as to achieve <b>atleast 95% of maximum dry density (Standard Proctor Test) as per IS:2720, Part-7</b> including setting out, re-excavation of stacked earth, sorting, handling, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing, dewatering if required, all lifts etc all complete as per specification, drawing and as directed by the engineer-in-charge.	CUM	1800516			18.733527770%
5	Extra over ST No. 1, 2, 3 and 4 for carriage of soil/excavated materials for every 1 km or part thereof beyond an initial lead of 1km.	CUM	195576			0.341996120%
8	Supplying, stacking and laying sand of <b>approved quality as sand blanket/cushion over base/bed and on slopes of embankment</b> including screening, washing (wherever required), 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	23627			2.881763990%
9	Supplying, stacking and laying sand filter of <b>approved quality inside the body/ slope of embankment</b> including screening, washing (wherever required), 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	45045			6.766208440%
A10	Supplying, stacking and laying <b>300mm thick graded gravel filter of approved quality below/above rock-toe in slopes</b> , on the embankment including screening, washing (wherever required), 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	4212			1.200185420%
11	Providing and placing approved quality of <b>1mm thick heavy duty low density polyethylene liner (LDPE) film</b> manufactured from polyethylene resin in the base/bed of reservoir as well as on side slopes of embankment to prevent seepage including joining with approved method including testing, fixing at the edges in plain cement concrete by providing 400mm wide and 300mm thick plain cement concrete 1:2:4 on the top of embankment <b>(the cost of plain cement concrete 1:2:4 shall be excluded and shall be payable separately)</b> as shown in the drawing etc all complete as per specification and as directed by the engineer-in-charge. Minimum width of LDPE liner shall be 6m. jointing of LDPE lining with robotic 2 stitch welding with overlapping distance of 0.5m.	SQM	472550			3.883749790%
A12	Providing and placing 300mmx300mm size and 50mm thick precast concrete tiles of grade M-30 over 25mm thick 1cement:4sand mortar on LDPE liner at the bed of reservoir of embankment, filling joints with 1cement : 3sand mortar etc all complete as per specification and as directed by the engineer-in-charge. The rate shall be inclusive of mortar as well. (LDPE liner to be paid extra) (Cement shall be provided by BHEL free of cost) Payment Breakup:- a) Completion of Manufacturing of tiles - 50% b) Completion of fixing all complete - 50%	SQM	472550			20.451661140%
13	Supplying, stacking and laying <b>hand placed rock toe at the down stream side of embankment</b> with approved quality of rock fragments including	CUM	13536			3.019092550%

BOQ CUM RATE SCHEDULE						
3 x 800 MW NLC TALABIRA TPP (NTTPP), Jharsuguda, Odisha, INDIA						
Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
	materials etc all complete as per specification, drawing and as directed by the engineer-in-charge.					
14	Providing and laying 300mm thick stone pitching with rip rap including caulking with 1 cement: 4 sand mortar on the slopes on the slope of embankment 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.	CUM	2430			0.615503310%
15	Providing and placing turfing with approved quality of grass on the outer slopes of embankment including materials, transportation, watering etc all complete as per drawing, specification and as directed by the engineer-in-charge.	SQM	8100			0.036026530%
16	Providing and laying of 1000 mm diameter R.C.C hume pipes of class NP4 conforming to IS:458 with collars, jointing the pipes with 1cement : 1sand mortar and testing of joints etc all complete as per specification and as directed by the engineer-in-charge.	RM	200			0.099984940%
18	Providing & laying water bound macadam (WBM) as per IRC 19 sub base course in layers of required thickness with crushed stone aggregates 90 to 45 mm down size, stone screening & blinding material including screening, sorting, spreading to template & consolidation with road roller including carriage, spreading & consolidation of blinding material moorum etc all complete.	CUM	4866			1.181047020%
19	Providing and laying Water Bound Macadam (WBM) as per IRC 19 base course using crushed or broken stone aggregates of size 63mm to 45mm including packing with screenings, binding materials, watering and consolidation/compaction with road roller to make required line, slope and level etc all complete as per drawing, specification and as directed by the engineer-in-charge.	CUM	1460			0.358958130%
20	Providing and laying Water Bound Macadam (WBM) as per IRC 19 base course using crushed or broken stone aggregates of size 53mm to 22.4mm including packing with screenings, binding materials, watering and consolidation/compaction with road roller to make required line, slope and level etc all complete as per drawing, specification and as directed by the engineer-in-charge.	CUM	1460			0.366872570%
21	Providing & applying tack coat of low viscosity liquid bitumen of grade 80/100 confirming to IS 73, 217 or 454 as applicable @10 kg/ 10 sqm for untreated WBM surface including scraping, cleaning with compressed air etc all complete.	SQM	19464			0.188899450%
22	Providing and applying liquid seal coat comprising of an application of a layer of bituminous binder using medium setting grade bitumen at the rate of 9.8kg/10sqm followed by a cover of stone chips at the rate of 0.09 cum/10sqm including rolling etc all complete.	SQM	4400			0.046934060%
23	Providing, mixing & laying of bituminous macadam binder course of specified thickness with 12 mm downgraded BG metal using bitumen of grade 60/70 conforming to IS 73, aggregates and binder material including hot mixing, hot laying, rolling etc all complete for the following.					
a	40 mm compacted thickness	SQM	4400			0.173309790%
24	Supplying and erecting in position GI chain link fencing of height of 2.4 m confirming to IS 298 at top of 600 mm high toe wall shall be provided with 4 strands of barbed wire hot dip galvanised wire of 12G comprising of 2 ply of wires with barbs of 16G spaced at 100mm. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts, accessories, structural posts etc. all complete.	RM	4524			1.095269950%
25	Supply, fabrication and fixing of GI pipe hand railing (1000 mm high) of 32 mm/40 mm dia (Medium Grade) over 300 mm high toe wall including transportation, loading/unloading, painting etc. all complete..	MT	3			0.037842160%
26	Supplying and laying 450mmx100mmx600mm deep precast concrete kerb stone of grade M-15 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.	RM	7532			0.285477170%
	<b>Earth work In excavation for foundations, trenches, drains, pipelines, sumps, substructures etc, backfilling and disposal including necessary labour, materials, equipment, loading, transportation, unloading, dewatering etc as per specification, drawing and as directed by engineer- in-charge for the following.</b>					
27	<b>Earth work in excavation up to any depth in all types of soil including moorum, ash</b> which can be excavated by any means including setting out, levelling, dewatering (but excluding special type of dewatering viz. well point method), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking,	CUM	12429			0.115190770%

BOQ CUM RATE SCHEDULE						
3 x 800 MW NLC TALABIRA TPP (NTTTP), Jharsuguda, Odisha, INDIA						
Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
	disposal of surplus excavated materials <b>within a lead upto 1km</b> , spreading/levelling of disposed materials etc all complete.					
28	<b>Back filling</b> upto any depth below ground level around foundations, plinths, trenches, drains, pipe lines, sumps, substructures etc to proper grade and level in layers not exceeding 250 mm thickness with <b>selected materials from compulsorily excavated soil</b> available within a lead upto 1km and compacted so as to acheive at least 90% maximum dry density as per IS-2720 (Part-VII) including re-excavation of stacked earth, watering, ramming/compaction by manual/mechanical means, dressing etc all complete.	CUM	3301			0.034345360%
29	Extra over ST No. 26 and 27 for carriage of excavated earth for every 1 km or part thereof beyond an initial lead of 1km.	CUM	9128			0.015961780%
	<b>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) 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.</b>					
30	Concrete of <b>grade M10</b> (1 part cement, 3 part sand, 6 parts of 40 mm graded aggregate by volume) as <b>lean concrete/ levelling course/encasement</b> , mud mat under and around foundations/floors, drains, pits, sumps etc at all levels complete.	CUM	1121			0.374211520%
31	Concrete of <b>grade M15</b> (1 part cement, 2 part sand, 4 parts of 40 mm graded aggregate by volume) with plaster finish as <b>lean concrete, levelling course</b> , mud mat under and around foundations/floors at any depth etc at all levels complete.	CUM	202			0.067431510%
32	Providing and laying design mix cement concrete of grade M30 conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size <b>in foundations/ substructure, superstructures, drains, under floors, sumps, culverts</b> etc at all levels including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete.	CUM	6080			2.247043340%
33	Breaking/dismantling existing concrete work at any level including reinforced concrete, removing the rubbish materials and disposal of the same within a lead of 1 km including transportation, loading, unloading etc all complete.	CUM	5			0.000773350%
	<b>Providing, fixing and removing formwork at any elevation for all structures as per specification including labour, materials, scaffolding, centering, providing pockets etc. complete as per drawing, specification and as per directions of engineer in charge for the following.</b>					
34	<b>Fairface form work</b> with good quality water proof ply wood of required thickness and smooth surface <b>at any level/elevation</b> for foundations, footings, base of columns, walls, columns, pilasters, beams, drains, sumps mass concrete, trenches etc for enexposed/exposed concrete works all complete.	SQM	34369			2.115510460%
	<b>REINFORCEMENTS</b>					
35	Providing, straightening, cutting, bending, placing in position at all levels, binding in position of <b>mild steel reinforcements</b> conforming to grade-1 of IS:432, Part-1 in concrete including cost of reinforcement, binding wire, labour etc all complete as per specification, drawing and as directed by the engineer-in-charge.(Reinforcement Steel shall be provided by contractor)	MT	5			0.037902660%
36	Transporting, straightening, cutting, bending, placing in position at all level, binding in position of <b>steel reinforcement of TMT corrosion resistant steel (CRS) of grade Fe-500/500D/550 conforming to IS:1786</b> including cost of reinforcement steel, binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer. <b>(Reinforcement Steel shall be provided by BHEL free of cost)</b>	MT	608			0.609957710%
37	Providing and laying of approved quality of woven geotextile (min thickness 2.2mm) along with sand filter/sand blanket/coarse aggregate as required for internal drainage arrangement on the bottom of the bed of reservoir including unrolling, cutting, wrapping of woven geotextile with filter material etc all complete as per specification and as directed by Engineer-in-charge. Rate shall include the woven geotextile, sand/coarse filter as per design also.	Cum	2500			0.832843510%

BOQ CUM RATE SCHEDULE						
3 x 800 MW NLC TALABIRA TPP (NTTTPP), Jharsuguda, Odisha, INDIA						
Civil, Structural & Architectural Works of Raw Water Reservoir along with inspection road, Raw Water Pump House, Rain Water harvesting Pond and associated works						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE %
38	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in <b>precast works</b> 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 preacast 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.					
	M30	Cum	12			0.007622410%
39	Supplying, fabrication, erection and alignment of factory made <b>electroforged galvanised grating</b> 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, packing, grinding, drilling, welding, edge preparation, etc. all complete.					
a	Minimum galvanisation of 610 g/sqm	MT	3			0.034041450%
A40	Supplying, fabricating, erecting and installing following items in concrete/brickwall/Rock toe for all kind of works, including setting material in concrete, layout, scaffolding, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc. all complete.					
a	PVC pipes having diameter of 250mm	Rm	1500			0.270905840%
	<b>Total</b>					<b>100.000000000%</b>