

PREAMBLE FOR BOQ CUM RATE SCHEDULE	
1	Preamble for the Schedule of Quantities/BOQ Cum Rate Schedule:
1.1	Details of the items in the BOQ Cum Rate Schedule shall be read in conjunction with the Corresponding Consultants/ Customer specifications, drawings and other documents and shall have precedence over any contrary statement mentioned anywhere in this document.
1.2	The work shall be carried out as per construction drawings, specifications, the description of the items in this schedule and/or Engineer's instructions, Drawings enclosed with these documents are only indicative giving some idea of the type of work involved. The layout, sizes and details of the building, structures and foundations shown in tender drawings may vary at a large extent during actual construction. Final drawings will be issued progressively during the execution of the work.
1.3	Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.
1.4	Unless specifically mentioned otherwise in the contract, the contractor shall quote his rates for the finished items and shall provide for the complete cost towards fuel, tools, tackle, equipment, constructional plant , temporary works, labour materials, levies , taxes , transport, layout, repairs, rectification, maintenance till handing over, supervision, shops, establishments, services, temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.
1.5	The rate shall also be inclusive of carrying out topography survey of site to establish levels and coordinates at suitable intervals, form existing grid levels and coordinates furnished by the owner, establish bench marks, setting out the location and levels of the proposed structures, constructions and making references, pillars and other identification marks etc. No separate payment will be made towards the same.
1.6	The quantities of the various items mentioned in the BOQ cum Rate Schedule are approximate and may vary up to any extent or be deleted altogether. The overall variation in contract value on execution shall be dealt as per GCC. Contractor has to obtain prior approval of BHEL/ Customer before procurement of bought out items/ building materials.
1.7	BHEL Engineer's decision shall be final and binding on the contractors regarding clarification of items in BOQ cum Rate schedule with respect to the other sections of the contract.
1.8	In case of any discrepancy between item description, relevant specification, clarification shall be sought at tender stage itself. Otherwise it shall be assumed that the contractor has quoted for the more stringent requirement.

BOQ CUM RATE SCHEDULE						
1 x 800 MW NTPC DARLIPALI STG-2, Odisha, INDIA						
Civil, Structural & Architectural works of Entire Plant Road & Drain (including Priority Roads & Drains & Excluding CHP-AHP), Workers' Rest Room (RCC+Truss), Parking sheds,Covered Steel Shed, Boundary Wall (Pre-Cast RCC), Dismantling of existing boundary wall,Watch Tower (RCC), etc.						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE (%)
100	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.					
A101	Earth work in excavation in all types of soil including ash which can be excavated by any means including setting out, levelling, removing of surface water accumulated due to rain but excluding dewatering to lower the ground water table, 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	31285			0.54872063765%
b	Depth exceeding 2 m but not exceeding 4 m	CUM	9745			0.21452406334%
A102	Extra over ST No. A101 for dewatering of ground water by sump pump method as per IS 9759. Ground water table shall be lowered up to 1 m below the founding level to make the site workable for foundation construction till backfilling up to ground level.Mode of measurement shall be the quantity of excavation of soil including ash below ground water table to founding level of the footing.	CUM	4745			0.18672017800%
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.					
a	Depth from ground level but not exceeding 2 m	CUM	2512			0.06563893869%
b	Depth exceeding 2 m but not exceeding 4 m	CUM	2500			0.07839045226%
c	Depth exceeding 4 m but not exceeding 6 m	CUM	6000			0.22576450250%
A105	Earth work in excavation up to any depth below ground level in hard rock which can be excavated by mechanical means i.e. hydraulic excavator, rock breaker or combination of both including setting out, levelling, removing of surface water accumulated due to rain or any other reason but excluding dewatering to lower the ground water table, 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. Note: Hydraulic excavator,rock breaker, hammer of required capacity shall be deployed by agency. Rate should be inclusive of all capacities of excavation equipments.					
b	Depth exceeding 2 m but not exceeding 4 m	CUM	302			0.02637641847%
A107	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 300 mm compacted thickness using/with selected materials from compulsorily excavated earth available within a lead upto 1 Km and compacted as specified including re-excavation of stacked earth, watering, rammina/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	24521			0.40814096352%
109	Extra over ST No. A101 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	111292			0.25893833965%
200	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 will be supplied by BHEL free of cost unless otherwise noted)					
201	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 below finished floor level upto depth of 10m from FGFL (Finished Ground Floor Level) . (For depth greater than 10m from FGFL, extra over for additional depth to be paid in Item No 224)	CUM	2271			1.53190675495%
204	Concrete of grade M20 (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 upto depth of 10m from from FGFL (Finished Ground Floor Level) . (For depth greater than 10m from FGFL, extra over for additional depth to be paid in Item No 224).	CUM	211			0.13961142676%
A205	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 high performance PCE-based BIS approved water reducing admixture of Type-G/F as per ASTM C-494 of approved make FOSROC/SIKA/BASF or Equivalent having minimum water reduction capability of 30% to achieve required slump in concrete all complete as per specification & drawing below finished ground floor level (FGFL) upto a depth of 10m from FGFL (For depths greater than 10m from FGFL, extra over for additional depth to be paid in Item No 224), for the following:					
b	M 25 Grade	CUM	10122			7.41838380369%
c	M30 Grade	CUM	1000			0.73755035104%
A206	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 high performance PCE-based BIS approved water reducing admixture of Type-G/F as per ASTM C-494 of approved make FOSROC/SIKA/BASF or Equivalent having minimum water reduction capability of 30% to achieve required slump in concrete all complete as per specification & drawing upto 10m level above FGFL (Finished Ground Floor Level) (For height greater than 10m from FGFL, extra over for additional height to be paid in Item No 225), for the following.					
b	M 25 Grade	CUM	343			0.25881162631%
c	M 30 Grade	CUM	178			0.13513869664%
210	Extra over ST Nos. 205 to 207 for conducting UPV test for concrete at all levels including all equipments, making necessary arrangements, staging, submission of report etc. all complete as directed by engineer in charge and as per specification.	CUM	200			0.02677445584%
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 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.					
b	M25	CUM	260			0.33089719535%
c	M 30	CUM	450			0.57480067579%
A214	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 conforming 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 finished ground floor level (FGFL). (For depth greater than 10m from FGFL, 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	M 30	CUM	30			0.02413459472%
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 unserviceable 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	135			0.02684336069%
b	Reinforced cement concrete of all grades	CUM	550			0.16891531699%
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	275			0.00418350872%
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	44			0.00005512388%

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ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE (%)
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	30			0.00142284040%
300	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.					
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	41974			5.12334724882%
A302	Fairface form work with good quality water proof Plywood with film face 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	3709			0.54366302169%
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			0.00044027514%
b	Pockets of depths more than 150mm and upto 300 mm depth	Each	10			0.00072484322%
c	Pockets of depths more than 300mm and upto 600 mm depth	Each	20			0.00254858457%
d	Pockets of depths more than 600mm and upto 1000 mm depth	Each	20			0.00395531734%
e	Pockets of depths more than 1000mm and upto 1500 mm depth	Each	15			0.00425241357%
305	Extra over item no. A301 and A302 for curved form work for foundations, footings, beams, walls, trenches, domes, arches etc as per specification.					
a	Extra for Curve Shuttering for Item No. A301	SQM	50			0.00121702072%
400	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.					
401	Providing, straightening, cutting, bending, placing in position at any level, binding of mild steel reinforcements conforming to grade 1 of IS:432 part 1 in concrete including cost of reinforcement and binding wire, labour, scaffolding, transportation to & from stores etc. all complete as per specifications & drawings.	MT	5			0.06857106376%
A402	Transportation, straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements of TMT steel of grade Fe-500D / Fe-550D conforming 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	1184			2.36064048632%
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. A402, 403, 405 as applicable.					
a	12mm Reinforcement bar	Nos.	5			0.00056555669%
b	16mm Reinforcement bar	Nos.	7			0.00128789428%
c	20mm Reinforcement bar	Nos.	10			0.00266670717%
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).					
b	16mm dia	Nos.	10			0.00011275339%
c	20mm dia	Nos.	5			0.00007069459%
d	25mm dia	Nos.	5			0.00010469958%
e	28mm dia	Nos.	4			0.00010237292%
f	32mm dia	Nos.	3			0.00009718268%
g	36mm dia	Nos.	2			0.00008554940%
500	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 will be supplied by BHEL free of cost unless otherwise noted)					
501	Providing and laying underbed/topping grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 25 mm including preparation of surface, batching, mixing, leveling etc. all complete.	SQM	52			0.00228943074%
502	Providing and laying underbed/topping grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 15 mm including preparation of surface, batching, mixing, leveling etc all complete.	SQM	141			0.00370958654%
A502	Providing and laying Screed concrete of grade M15 (1:2:4) with sand and graded hard stone aggregate 12.5mm/6 mm nominal size having minimum 25 mm thickness at the lowest point of the slope to maintain roof slope including preparation of surface, batching, mixing, leveling etc. all complete as per specification and as per direction of Engineer-in-charge.	CUM	7			0.00475558900%
A506	Providing and applying two component, instant setting, 100% solid content spray hot applied hybrid polyurea polyurethane liquid applied elastomeric seamless waterproofing membrane having excellent tensile strength of 15MPa (As per ASTM D412), elongation more than 450% (as per ASTM D 412), tear strength of 60 KN/m (As per ASTM D1004/ASTM D624), adhesion to concrete of 2MPa (as per ASTM D 4541), abrasion resistance of 60mg loss (1 Kg,CS 10 Wheels,1000cycles - As per ASTM D4060), Shore A Hardness of MIN.80 (As per ASTM D2240), resistance to hydrostatic pressure head of 7 Bar (As per ASTM D 5385/ DIN 16726), puncture resistance of min.800N (As per ASTM E154), water vapour permeability of 25 mg/m2/day (As per ASTM E96), Impact resistance of min.10 N.m (As per ASTM D2794), Low temperature crack bridging ability up to 3.2mm (As per ASTM C 1305), dynamic crack bridging ability class B 3.2 (as per EN 1062-7 Method B- B3.2) with no crack observed in the coating after 20000 sinusoidal cycles, resistance to root (As per CENTS/14416).The coating shall be applied with a total consumption of 1.6 Kg/Sqm to achieve a total system DFT of 1.5mm, thereby satisfy the requirements of LAM as per ASTM C898/C836 and shall be applied on the entire horizontal surface extending up to 300mm above the FFL on the vertical surface as per the methodology. The application system includes base preparation of cleaning, brushing and removal of flaky materials, grouting the porous area with cementitious grout, proper coving between slab and wall junctions and priming the surface with two component solvent free epoxy primer which is applied with a consumption of 200 grams per Sqm, followed by spray application of hybrid polyurea waterproofing coating. Protective geo textile fabric of minimum 150GSM over the entire membrane with proper overlaps shall be applied. The application of waterproofing treatment shall be carried by authorised applicator of approved Manufacturer of Waterproofing materials. Item includes surface preparation, polyscrim cloth /non woven geotextile fabric, polymerised mortar base preparation, etc. all complete as per specifications and directions of engineer in charge.	SQM	141			0.02933122129%
A507	Providing and laying wearing course consisting of 20 mm thick plain cement mortar 1:4 (1 cement : 4 sand)) cast in panels of maximum size 1.2mx1.2m and reinforced with 0.56 mm dia. galvanised chicken wire mesh and sealing of joints (in grooves of 6mm X 6mm) using silicon /elastomeric compound etc all complete.	SQM	141			0.01226434733%
A510	Providing and laying cement concrete chequered roof / floor tiles of 22 mm thickness and size min. 200x200 mm conforming to IS 13801 with 8 mm thick 1:4 cement mortar over the top most layer of roofing treatment in pathway or entire area with fine joints including sealing of joints (polysulphide joint sealant) and providing expansion gap in both directions including underbed (as per drawings) filled up with polysulphide joint sealant etc all complete. (Water proofing paid elsewhere) (including cost of cement for tiles making).	SQM	14			0.00177899793%
B510	Providing and laying cement concrete chequered roof / floor tiles of minimum 20 mm thickness and size min. 200x200 mm conforming to IS 13801 with 8 mm thick 1:4 cement mortar over the top most layer of roofing treatment in pathway or entire area with fine joints including sealing of joints (polysulphide joint sealant) and providing expansion gap in both directions including underbed (as per drawings) filled up with polysulphide joint sealant etc all complete. (Water proofing paid elsewhere) (including cost of cement for tiles making).	SQM	127			0.01533115006%

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ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE (%)
A514	Providing and applying two component transparent polyamide cured epoxy sealer coating (having solid by volume minimum 40% ±2%) of minimum 50 micron DFT followed by epoxy phenolic coating (solid by volume minimum 63%) of minimum 400 micron DFT. This coat shall be applied after an interval of minimum 24 hours (from the application of primer coat) by airless spray technique on beams,wall, column, slab, basin floor, basin wall, fill supporting beams and columns, internal surfaces of fan stack, underside of fan deck roof slab etc on concrete surfaces as per IS 9862 and IS 3384, including surface preparation, primer etc. all complete as per specifications and direction of engineer-in-charge.	SQM	55			0.00620773633%
B514	Providing and applying Food grade two-component hi-build solvent-free polyurethane coating complying to FDA Title 21, Part 175.300 on the inner side of the water storage tanks having 100% volume solids, adhesion of concrete > 1.5 Mpa (ASTM D4541).With the recommended primer applied by roller in one layer and with a Coverage 200 – 400 gms / m². Mix the 2 component PU and apply manually or by spray as per the manufacturer like MYK or equivalent makerecommendation and apply a total thickness of minimum1 mm in 2 or more coats. The Products shall conform to have following properties. Thickness: 1000 Microns, Tensile strength: 9 Mpa ASTM D 412 after 7 days of minimum 400 micron DFT over absolutely dry, clean and dust free surafe of water retaining structures storing drinking water. This coat shall be applied by airless spray technique and shall conform to as per IS 9862, including surface preparation, primer etc. all complete as per specifications and direction of engineer-in-charge.	SQM	25			0.00313011465%
A517	Providing and laying Cinder / foam concrete blocks in the toilets,pantry,sunken slab etc. after water proofing and laying of plumbing pipes complete as directed by engineer in charge.	cum	10			0.00496830812%
A518	Providing and laying water proofing treatment for wet areas like toilets,kitchen,pantry for sunken slab etc.with two component acrylic cementitious coating material like Aquaarm 2c plus or equivalent make with a coverage of 2.0 kg /m2 over primer surface using a suitable primer. The coating shall be applied on floor level and on the vertical walls of sunken area.The coating shall have an elongation of >200%, Crack Bridging Capability upto 2mm as per,Tensile strength of 2 N/mm2, adhesion to concrete of >1.20N/mm2 as per ASTM D 4541 to achieve a DFT of 1 mm.Protective layer of avg. 15 mm thick, CM 1:4 plaster admixed with Integral Waterproofing Compound @ 150 ml / bag of cement shall be applied over it, all complete with water ponding test as per IS Code and as directed by engineer in charge.	SQM	70			0.00769992902%
A519	Providing and laying an angular fillet at junction of roof level and vertical wall / parapet wall of min.150mm x 150mm, cast in-situ concrete mix of 1:11:2:3 followed by 12mm thk 1:4 cement sand plaster. A latex based bonding agent should be added (10% by weight of cement) and also a glass cloth must be inserted while the angle fillet is being constructed etc. all complete as per specification & as directed by engineer in charge	RM	140			0.01529938224%
A521	Providing and laying Vitrified ceramic Glazed. Heat Resistant light coloured tile of Min. 9 mm thk. from reputed / approved manufacturer Simpolo or equivalent with SRI (solar reflective index)>78,solar reflection>0.70 and initial emittance > 0.75 on waterproof and sloped surface of terrace and skirting along parapet. laid on 20mm thick cement sand mortar in the ratio of 1:4 (1 cement : 4 coarse sand), topped with spreading the white cement slurry at an average rate of 2.5kg/sqm,grouting the joints with mix of white cement& marble powder in ratio of 1:1.including rubbing and polishing of the surface all complete, laid to plumb and water level in desired pattern, casted in panels, all complete as per drawing and as directed by engineer in charge.	SQM	45			0.01315582396%
600	JOINTS AND FILLERS: Joints & fillers including all labour, material, equipment, transportation, handling etc at all level as per specification, drawings and as directed by engineer - in charge.					
A601	Supplying & installation of preformed 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	34			0.00671795437%
d	50 mm wide joints	SQM	50			0.02058196806%
610	Providing and fixing PVC water stops 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	500			0.03123089936%
700	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.					
A701	Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including manual cleaning with primer coat of chlorinated rubber based zinc phosphate primer of Minimum 50 Micron Dry Film Thickness (DFT) welding, bolting, cutting, drilling, scaffolding, setting etc. all complete. Payment Breakup: 1. On Supply & receipt of materials at site - 60% 2. On completion of fabricating, fixing, welding, etc. complete as per description/specification - 40%	MT	60			1.05846117549%
A702	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, stiffener plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling, all threaded & other surfaces of foundation bolts shall be coated with temporary rust preventive fluid and during execution of civil works, the dried film of coating shall be removed using organic solvents, etc. all complete. Payment Breakup: 1. On Supply & receipt of materials at site - 70% 2. On completion of fixing, welding, etc. complete as per description/specification - 30%	MT	14			0.29935273418%
A703	Fixing of Anchor / Foundation Bolts of various diameters along with nuts, lock nuts, washers, anchor plates, stiffener plates, protective tape, pipe sleeves, templates, pipe sleeves etc. including scaffolding, setting in position, transportation from BHEL site stores to work spot etc. all complete. Note: Fabricated structural steel material shall be issued by BHEL free of cost.	MT	2			0.00969607567%
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.					
a	MS pipes of all diameters	kg	50			0.00098435499%
b	PVC pipes / conduits of all diameters	kg	25			0.00167787783%
c	UPVC pipes / conduits of all diameters	kg	20			0.00169309059%
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	10			0.00008948682%
ii	10mm Dia	Nos	8			0.00009163450%
iii	12mm Dia	Nos	5			0.00007069459%
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	10			0.00049038776%
ii	HST M10	Nos	10			0.00067831008%
iii	HST M12	Nos	10			0.00122238993%
iv	HST M16	Nos	10			0.00215305283%
v	HST M20	Nos	10			0.00373875924%
vi	HST M24	Nos	10			0.00748646716%
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	10			0.00095929869%
ii	HAS-E5.8 M10	Nos	10			0.00117048757%
iii	HAS-E5.8 M12	Nos	10			0.00149442985%
iv	HAS-E5.8 M16	Nos	10			0.00253426668%
v	HAS-E5.8 M20	Nos	10			0.00396605576%
vi	HAS-E5.8 M24	Nos	10			0.00546585482%

BOQ CUM RATE SCHEDULE						
1 x 800 MW NTPC DARLIPALI STG-2, Odisha, INDIA						
Civil, Structural & Architectural works of Entire Plant Road & Drain (including Priority Roads & Drains & Excluding CHP-AHP), Workers' Rest Room (RCC+Truss), Parking sheds,Covered Steel Shed, Boundary Wall (Pre-Cast RCC), Dismantling of existing boundary wall,Watch Tower (RCC), etc.						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE (%)
800	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.					
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 ConbextraGP-1 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	5			0.04419395976%
900	DOORS & 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.					
A903	Providing, fitting and fixing solid core flush door shutter as per IS 2202 part II, 35mm thick homogenous particle board bonded with BWP type phenolformaldehyde synthetic resin, partial board core conforming to IS 3087 type I, 35x12 mm thick teakwood beading all around including preparation of working drawings. godrej,doorset or equivalent make mortice lock with handles on both sides,approved ISI mark anodised fittings like door stopper,375mm long tower bolts,16x300mm long aldrops ,150mm long handles on both sides etc. butt hinges, sliding bolt, knobs, (all fittings shall be anodised aluminium color dyed), finish synthetic paint over primer, screws etc. all complete as per drawing, specification and instruction of engineer in charge. with commercial faces and teak wood edges. (Finish painting paid separately).	SQM	15			0.01964056674%
A904	Providing and fixing single or double steel door shutters with 35mm (min) thick flush design shutter as per IS 4351 comprising of two outer sheets of 18 gauge(1.2mm min.) steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge (1.0 mm) 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,doorset or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete. Payment Breakup: a) On Supply & receipt of material at site - 50% b) On complete execution as per item description - 50%	SQM	55			0.13130281736%
A906	Providing and fixing anodized extruded aluminium doors (single or double shutter) conforming to IS:1948, IS:1949 fabricated from extruded sections of HINDALCO/JINDAL or equivalent make of aluminium alloy grade 63400, having minimum 2mm 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,Doorset 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). Payment Breakup: a) On Supply & receipt of material at site - 50% b) On complete execution as per item description - 50%	KG	250			0.03246089567%
A907	Providing and fixing Automatically closing Fire proof steel flush insulated doors along with frame of minimum 44mm thk flush shutter 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 center to center of approved make conforming to IS:3616-2021(latest revision), & CBRI tested- ISI marked for both single leaf & Double leaf, comply IS/ISO 3008 satisfisfing LPA regulations and shall carry a unique label with certification/test report number,fire rating embossment, fixed at all elevations, with or without removable panels,with panic bar,panic trim,smoke seal with following fire rating using galvanised MS sheets for frames conforming to IS 277, made out of 1.6mm (16 SWG) for both frame and shutter, G.I. sheet (min.zinc coating 120 gsm), and leaves, mineral wool / PUF/ any other fire retardant insulation material filled with required density, mastic caulking anCENTS/14416).The coating shall be applied with a total consumption of 1.6 Kg/Sqm to achieve a total system DFT of 1.5mm, thereby satisfy the requirements of LAM as per ASTM C898/C836 and shall be applied on the entire horizontal surface extending up to 300mm above the FFL on the vertical surface as per the methodology. The application system includes base preparation of cleaning, brushing and removal of flaky materials, grouting the porous area with cementitious grout, proper coving between slab and wall junctions and priming the surface with two component solvent free epoxy primer which is applied with a consumption of 200 grams per Sqm, followed by spray application of hybrid polyurea waterproofing coating. Protective geo textile f	SQM	12			0.06447352681%
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-metallic 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 fore execution as per item description - 50% with a total consumption of 1.6 Kg/Sqm to achieve a total system DFT of 1.5mm, thereby satisfy the requirements of LAM as per ASTM C898/C836 and shall be applied on the entire horizontal surface extending up to 300mm above the FFL on the vertical surface as per the methodology. The application system includes base preparation of cleani	Kg	1250			0.16756406604%
A909	Providing and fixing powder coated 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 of aluminium alloy grade 63400, including all fittings & fixtures and accessories of approved make conforming to IS733 and IS1285, powder coated in required shade with minimum thickness 50 microns according to relevant IS , 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-metallic 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 CENTS/14416).The coating shall be applied with a total consumption of 1.6 Kg/Sqm to achieve a total system DFT of 1.5mm, thereby satisfy the requirements of LAM as per ASTM C898/C836 and shall be applied on the entire horizontal surface extending up to 300mm above the FFL on the vertical surface as per the methodology. The application system includes base preparation of cleaning, brushing and rem	Kg	75			0.01056888534%
A912	Providing and fixing pressed steel frames(complying general requirements of IS 4531) fabricated from 1.6 mm thick M.S sheet mortised, reinforced drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, floor tiles/weather bars ,paintings etc all complete as per specifications.	Kg	550			0.01880118039%
A913	Providing and fixing in position rolling shutter of tested, bright, cold rolled, annealed MS strip slats of not less than 0.9 mm thick for shutters upto 4.5 m wide and not less than 2.25 mm thick for shutters 5.5 m wide and above machine rolled 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, red lead or zinc chromate primer & shop coats of approved enamel paint etc, all complete as per IS 6248 and specification of approved make of following types: The bottom slat shall be coupled to a lock plate fabricated from 3mm thick annealed steel plate and securely rivetted with stiffening angles.(partly coiled and slatfull slat). Hoods shall be formed of not less than 20 G steek, suitable reinforced to prevent sag. Payment Breakup: a) On Supply & receipt of materCENTS/14416). The coating shall be applied with a total consumption of 1.					
b	Mechanically Operated	SQM	25			0.02078331340%
A915	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.					
bd	6 mm thick toughened heat-reflecting tinted glass	SQM	185			0.07650391801%
ah	8 mm thick toughened glass	SQM	35			0.01984672647%
bh	10 mm thick toughened glass	SQM	15			0.01020688790%
ak	One outer 6mm thick tinted heat-reflecting toughened glass and one inner 6mm thick clear toughened float glass hermetically sealed and separated by 12 mm thick gap for thermal insulation (only single elevation area to be measured).The glazing to be used in all exterior walls shall be of Saint Gobain or equivalent.The glazing to be used should comply to mentioned standards VLT (Visible Light Transmittance) ≥62 %, SHGC/ SF (Solar Heat Gain Coefficient/ Solar Factor) 0.2 ≤ 0.32 and U- Value 1.2 TO 2.5 W/MSq K,The properties of performance glass shall be as per detail design values as approved by engineer incharge.The glass to be used should be from the approved manufacturers of glass and should be free from distortion and thermal stress.	SQM	25			0.14327452490%
916	Supplying and fixing weather stripping of approved make and quality to doors as per instructions of engineer in charge and specification complete.	RM	30			0.00165908560%
917	Providing and fixing 12 mm thick BWP particle board, decorative veneer (prelaminated) on both sides, as panels in aluminium framed door shutter, fixed with necessary snap-on-beading etc. all complete (excluding aluminium works).	SQM	10			0.00300496734%
918	Providing and fixing steel louvered window with ISMC 100 frame all round including verticals with 18G pressed steel louvers, painting etc. all complete.	SQM	10			0.00619785699%

BOQ CUM RATE SCHEDULE						
1 x 800 MW NTPC DARLIPALI STG-2, Odisha, INDIA						
Civil, Structural & Architectural works of Entire Plant Road & Drain (including Priority Roads & Drains & Excluding CHP-AHP), Workers' Rest Room (RCC+Truss), Parking sheds,Covered Steel Shed, Boundary Wall (Pre-Cast RCC), Dismantling of existing boundary wall,Watch Tower (RCC), etc.						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE (%)
A936	Providing and fixing anodised aluminium grill (anodised transparent or dyed to required shade according to IS: 1868 with minimum anodic coating of grade AC 15) of approved design/pattern, with approved standard section and fixed to the existing window frame with C.P. brass/ stainless steel screws @ 200 mm centre to centre, including cutting the grill to proper opening size for fixing and operation of handles and fixing approved anodised aluminium standard section around the opening, all complete as per requirement and direction of Engineer-in-charge. (Only weight of grill to be measured for payment).	Kg	50			0.00514925046%
A937	Providing and fixing MS grills of approved design/pattern, with approved standard section and fixed to the existing window frame with C.P. brass/ stainless steel screws @ 200 mm centre to centre, including cutting the grill to proper opening size for fixing and operation of handles all complete as per requirement and direction of Engineer-in-charge. (Only weight of grill to be measured for payment).	Kg	50			0.00127286049%
1000	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 will be supplied by BHEL free of cost unless otherwise noted)					
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.					
a	Using fly ash lime bricks conforming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	CUM	10			0.00903100964%
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	CUM	10			0.01158675315%
A1002	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 ground 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.					
a	Using fly ash lime bricks conforming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	CUM	429			0.52225544825%
A1003	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc. in thickness 115mm upto 10m above finished ground floor level (FGFL) (For height greater than 10m from FGFL, extra over for additional height to be paid in Item No 1015), places and position above or below plinth/graded level including providing two nos. 6 mm diameter MS bars at every fourth layer, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification. (Reinforcement payment shall be made separately as per applicable BOQ in 400 Series)					
a	Using fly ash lime bricks conforming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making).	SQM	124			0.01870847204%
B1003	Providing factory made factory made composite modular light weight aerated concrete panels , (minimum 2 hours of fire rating) consisting of 2 fiber reinforced cement sheets (minimum 4 mm thick) on either side of light weight concrete core, having minimum compressive strength of 35 Kg / Cm2 and the density in the range of 700-900 Kg. / cu.m. of the thickness and fire rating as specified below, to provide external wall and internal partition at all levels, capable of sustaining wind pressure of 3.00 M height (H) within limiting deflection of span/250, fixed in position in tongue and groove jointing system by screwing the panels to top and bottom U channels, (channels minimum 1.25 mm thick and galvanised to grade 180 (minimum) as per IS : 277), fixing U profiled top and bottom channels to concrete / primary steel members which are placed at the maximum vertical spacing of 4.5m with the help of galvanised steel expansion fasteners, filling the joints from both faces with silicon acrylic paste and making the same water tight by covering with fibre glass tape (minimum 50 mm wide and minimum 0.5 mm thick) or by any other suitable material, so as to ensure that the entire construction done with the light weight aerated concrete panels are weather proof and panel surfaces are flush for painting, creating opening for doors / windows /ventilators / ducts / pipes/fans/AC etc. and finishing the opening face with the same U profiled galvanized steel channel which is used at the top and bottom.	SQM	4943			2.21279022481%
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	725			0.26288542420%
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	1			0.00041593473%
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	1			0.00018040542%
1100	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 will be supplied by BHEL free of cost unless otherwise noted)					
1101	Providing Damp Proof Course of following thickness with 1:1.5:3 concrete (10mm and down graded aggregate) with 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.					
b	50mm thick	SQM	209			0.01484997944%
1200	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 - charge. (Cement will be supplied by BHEL free of cost unless otherwise noted)					
A1201	Providing 18mm thick plaster in two layers outside the building/boundary wall in cement mortar as applicable upto 10m above finished ground floor level (For height greater than 10m from FGFL, 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					
a	Cement Mortar 1:6	SQM	3674			0.21567611663%
A1202	Providing 12mm thick plaster internal/external surfaces of building/boundary wall in cement mortar as applicable above finished ground floor level (For height greater than 10m from FGFL, extra over for additional height to be paid in Item No 1206) on walls finished to a smooth finish as per specification all complete.					
a	Cement Mortar 1:6	SQM	6562			0.31239704861%
1204	Providing 6mm thick plaster on ceiling in cement mortar 1:4 finished to a smooth all complete.	SQM	306			0.01276046225%
A1207	Forming groove of uniform size from 12X12 mm upto 20X15 mm in plastered surface as per approved pattern, using wooden battens nailed to the under layer, including removal of wooden battons, repair of the edges of plaster panel and finishing the groove etc. complete as per specification, drawing and the instructions of engineer in charge.	RM	50			0.00035794727%
1208	Providing and laying encasement to box type steel beams at all levels with lath plaster 50 mm nominal thickness with cement plaster (1:4) over chicken wire mesh including all labour, materials, equipment, handling, transporting, mixing, placing, leveling, curing and cleaning, finishing the exposed surfaces etc including centering and shuttering all complete as per specification, drawing and instructions of engineer in charge. (chicken wire mesh to be paid separately)					
A1210	Providing drip course in cement mortar(1:3) in parapet, chajjas, window/door heads, architectural facias, fins,etc all complete with all labour, T&Ps as per specification, drawing and instruction of engineer.	RM	65			0.00039553173%
B1210	Providing moldings and cornices on plastered surface at all elevations for all type of work such as chajjas, parapet, projections etc. including scaffolding, finishing etc. complete with all labour, tools and plants as per specification, drawing and instructions of engineer in charge.	RM	40			0.00036532098%
1300	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.					
A1304	Two or more coats of Low VOC (volatile organic compound) acrylic distemper of approved brand shade and as per manufacturers guidelines Nerolac / Berger /Sakarni / JK wall maxo/Asian or equivalent, to give smooth, hard, durable & glossy even shade finish over a coat of primer over prepared plaster surface as per manufacturers guideline.All necessary documentation (certificates, manufacturer declarations) should be provided by the contractor to engineer in charge.	SQM	5551			0.12130423151%
A1317	Providing and applying 2 mm thick Acrylic wall putty (in Two Coats) over cement plastered surfaces in interior of building of approved brand and manufacturer JK wall maxo/ Sakarni or equivalent,including preparation of surface, staging, etc. to achieve a smooth even surface all complete as per specification and as directed by Engineer.	SQM	5551			0.13618660159%
A1319	Providing and applying two or more coats of weather coat paint of Premium Acrylic Smooth Paint with Silicone additives, over and including Texture base coat , 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 repellant and extremely durable with color fastness as per specification. Textured base coat (Two or more coats applied @ 6.5Kg/10 sqm over and including priming coat of exterior primer applied @ 2.20Kg/10 sqm) of High Quality Exterior Acrylic Modified resin and special quality Silica Quartz with Trowel Texture as per selection of owner.	SQM	3674			0.11244090227%

BOQ CUM RATE SCHEDULE						
1 x 800 MW NTPC DARLIPALI STG-2, Odisha, INDIA						
Civil, Structural & Architectural works of Entire Plant Road & Drain (including Priority Roads & Drains & Excluding CHP-AHP), Workers' Rest Room (RCC+Truss), Parking sheds,Covered Steel Shed, Boundary Wall (Pre-Cast RCC), Dismantling of existing boundary wall,Watch Tower (RCC), etc.						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE (%)
1400	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 will be supplied by BHEL free of cost unless otherwise noted)					
1401	Providing and laying 50 mm thick heavy duty cement 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 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	4008			0.45837152503%
1402	Providing and laying 25 mm thick heavy duty cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates) flooring with metallic hardener pigmented topping of 10 mm thick uniform graded treated iron particles in skirting and dado. Under layer of 15mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5 mm 20 well graded) and top layer of 10mm 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 as per specification.	SQM	51			0.00498369985%
A1404	Providing and laying interlocking M35 Grade concrete blocks confirming to IS:15658 in paving with approved colour and pattern and should be laid on the subbase and bedding of sand minimum 50mm thick as per specifications and recommendations of manufacturer.(inclusive of cost of cement for paver manufacturing). Kerb blocks or concrete block specified for various uses shall be precast blocks made of alkali-activated concrete /Geopolymer concrete as per IS:17452- 2020.					
a	80mm	SQM	2395			0.44021518665%
A1416	Providing and laying vitrified ceramic tiles of size 600x600/600X1200 with Digitally Glazed (Matt/glossy/metallic finish) in flooring, skirting approved shade, colour, pattern and make from reputed / approved manufacturer as Simpolo,AGLor equivalent, complete including underbed of 1:3 cement mortar 40 mm average thick underbed for flooring and 12 mm thick underbed with cement mortar 1:3 for dado/skirting with neat cement slurry @3.3Kg/sqm etc. all complete for following.For Dado chemical motar/adhesive to be used of approved manufacturer SP-35 of Laticrete or approved equivalent. Payment Breakup: a) On Supply & receipt of material at site - 50% b) On complete execution as per item description - 50%					
b	10mm thick tiles In flooring	SQM	360			0.10168100731%
d	10mm thick tiles in skirting and dado upto specific height	SQM	391			0.11646203716%
A1417	Providing and laying vitrified ceramic tiles (DGMT/PGVT) of matt finish of size 1000x1000mm /1200X1200 from reputed / approved manufacturer as Simpolo,Varmora or equivalent including underbed of cement mortar 1:3 with neat cement slurry etc. all complete for following.NOTE: All vitrified tiles to be used should be with appropriate % of recycled content. The contractor to provide the material sample/ declaration from manufacturer mentioning the recycled content used in manufacturing of vitrified tiles to be used to engineer in charge) Payment Breakup: a) On Supply & receipt of material at site - 50% b) On complete execution as per item description - 50%					
b	9.00 mm (min.) thick tiles In flooring	SQM	245			0.09517238050%
1500	ROOFING / SIDE CLADDING: Roofing / side cladding work including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, scaffolding, laps, hooks, washers, corner pieces etc. at all level as per specification, drawings and as directed by engineer - in - charge.					
A1501	Designing, providing and fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour over roof purlins for cast-in-situ roof slab as per relevant IS code and Grade as per specification. Bare metal thickness(BMT) of deck plate shall be minimum 0.8mm with minimum trough depth of 44mm of grade G250 as per AS1397/grade SS255 as per ASTM A653M/ grade S250GD as per EN 10326 with zinc coating to class Z275 and shall serve as permanent shuttering to the slab minimum 40mm to 100mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 100 kg/sqm (for two span condition) during construction between beams as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to beams, side lapping, end lapping etc. all complete for below mentioned spans. The sheet shall be permanently coated with silicon modified polyester(SMP silicon content 30%-50%) paint or super polyester paint of minimum 20 micron DFT on exposed surface (facing operating floor) over primer coat of minimum 5 micron(nominal) and minium 10 micron (nominal) SMP or super polyester paint over primer coat of minium 5 micron (nominal) on other face. SMP and polyester paint system sahll be of idutrial finish of product type 4 of AS/NZ2728, including fixing of sheet to top flange of beam with drawn arc welding of headed shear anchor studs @ 260mm c/c in the trough and stich screws between two adjacent sheets and sealing with epoxy sealant.The shear anchor studs shall confirm to type B studs specified in AWS D1.1/D1.1M or equivalent as shear connector of 16 mm dia & 65 mm length manufactured from cold drawn round steel bars confirming to ASTM A 29 of grade designation 1010 through 1020 of standard quality with either semi killed or killed welded by drawn arc stud welding through metal deck sheet. Measurement of profile sheeting shall be of the plan area of roof/ floor covered by MS trough metal decking. (Shear anchor studs to be paid separately under BOQ item No A1503). Payment Breakup: a) On Supply & receipt of material site - 60% b) On complete execution as per item description - 40%					
a	Span Upto 1800mm	SQM	2500			0.76779689541%
A1503	Providing and fixing shear anchor studs for fixing metal deck sheet to floor structural beams conforming to Type-B studs specified in AWS D1.1/D1.1M or equivalent as shear connector of 16mm diameter and 65mm length manufactured from cold drawn round steel barsconforming to the requirement of ASTM A 29, of grade designation 1010 through 1020, of standard quality with either semi-killed or killed, welded by Drawn Arc Stud Welding through metal deck sheet etc all complete as per specification.	QUINTAL	12			0.09475794915%
B1503	Providing and fixing shear anchor studs for fixing metal deck sheet to roof structural purlins conforming to Type-B studs specified in AWS D1.1/D1.1M or equivalent as shear connector of 19mm diameter and 100mm length manufactured from cold drawn round steel bars conforming to the requirement of ASTM A 29, of grade designation 1010 through 1020, of standard quality with either semi-killed or killed, welded by Drawn Arc Stud Welding through metal deck sheet etc all complete as per specification.	QUINTAL	2			0.01579299153%
A1505	Designing, providing and fixing External/ Inner sheet of Permanent colour coated metal cladding / roofing with troughed M.S. sheets of minimum 0.5 mm bare metal thickness of min. grade G350 as per AS1397/grade SS340 class 4 or as per ASTM A792M/ grade S350 GD as per EN 10326 with zinc coating to class Z275 / aluminium zinc alloy coating to class AZ150 on both sides including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing, etc. all complete over columns, beams, bracings etc. at all levels. The exposed face the sheet shall be permanently coated with silicon modified polyester(SMP silicon content 30%-50%) paint or super polyester paint of minimum 20 micron DFT on exposed surface over primer coat of minimum 5 micron and minium 10 micron SMP or super polyester paint over primer coat of minimum 5 micron on other face. SMP and polyester paint system sahll be of industrial finish of product type 4 of AS/NZ2728. Payment Breakup: a) On Supply & receipt of material site - 60% b) On complete execution as per item description - 40%	SQM	1336			0.28310479167%
A1519	Designing, providing and fixing Factory made (Continuous Line) prefabricated sandwiched Permanent colour coated metal cladding comprising top sheet as troughed(minimum depth of trough shall be 30 mm) permanently colour coated sheet & bottom sheet as plain permanently colour coated for covering of exposed metal/concrete / brick surfaces with insulation shall be of Polyurethane type of minimum 50mm thick (excluding trough). The polyurethane shall be Chlorofluorocarbon (CFC) free and self-extinguishing and shall conform to IS 12436: 1988. It shall have Modular Density 40 +/- 2 Kg/m3 and Thermal Conductivity @ 10 Deg.C 0.017 - 0.020 W/M Ok, Water absorption (% by vol) 3.1, Critical Oxygen Index 23 and Compressive Strength 1.2 Kg/sq.cm , sandwiched between the two sheets, each sheet shall be high strength tensile steel sheet 0.5mm bare metal thickness (minimum) of YS350 as per IS 15961 /grade G350 as per AS1397 / grade SS340 class 4 as per ASTM A792M / grade S350GD as per EN 10326 with zinc coating to class Z 275 / aluminium-zinc alloy coating to class AZ150 on both sides, both sheet shall be permanently coated with silicon modified polyester (SMP with silicon content of 30% to 50%) paint of minimum 20 micron DFT on exposed surface on 5 microns (min.) epoxy primer/phosphate primer coat and 10 micron (min.) SMP on 5 micron (min.) epoxy primer/phosphate primer on other face, SMP paint system shall be of industrial finish of product type 4 of AS/NZS 2728,troughed sheet shall be of approved profile, sectional properties, (suitable for the specified loading / deflection and purlins / runner spacing), colour and shade, at all levels, including all labour, materials, equipment, handling, transportation, special coated fastener conforming to corrosion resistant Class 3 of AS3566 and tested for 1000 hours salt spray test , fixing insulated sandwiched metal sheet with the structural members below for supporting the sheeting system, scaffolding, equipment, end and side laps, cutting of openings, preparation of working drawings, testing, etc., all complete, as per specifications. Sealant used for cladding shall be butyl based, two parts poly sulphide or equivalent approved, non stainless material and be flexible enough not to interface with fit of the sheets. Coated surface shall be provided with a protected guard film (polyethylene) of about 40 microns to avoid any damage to the coating during handling. Overlap shall be min. 100 mm or as specified by manufacturer. Payment Breakup: a) On Supply & receipt of material site - 60% b) On complete execution as per item description - 40%	SQM	1581			0.81838613082%

BOQ CUM RATE SCHEDULE						
1 x 800 MW NTPC DARLIPALI STG-2, Odisha, INDIA						
Civil, Structural & Architectural works of Entire Plant Road & Drain (including Priority Roads & Drains & Excluding CHP-AHP), Workers' Rest Room (RCC+Truss), Parking sheds,Covered Steel Shed, Boundary Wall (Pre-Cast RCC), Dismantling of existing boundary wall,Watch Tower (RCC), etc.						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE (%)
1700	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.					
1704	Providing and fixing galvanised MS down take pipes of 150 mm dia- Medium quality as per IS:1239(part-I) all complete. Payment Breakup: a) On Supply & receipt of material site - 60% b) On complete execution as per item description - 40%	RM	724			0.24515951741%
1800	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.					
A1801	Providing and Filling in trenches, plinths, area paving, grade slab , other underground structures, etc. with 63 mm downgraded hard stone aggregate as per IRC specification watering and compaction to minimum of 90% Standard Proctor density, including filling the interstices of stone aggregates with sand) in layers not exceeding 200 mm in thickness all complete as per drawings/specifications. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	1930			0.84834934918%
1804	Providing and fixing weep holes in Retaining wall, drains, etc consisting of 100 mm dia HDPE pipe sleeves with single side covering for the pipe mouth with galvanised welded wire fabric of 20 mm sq. opening all complete.	EACH	10474			0.44989676545%
1831	Providing random rubble (RR) stone masonry in foundation, super structure, boundary wall, retaining wall and embankment with cement mortar 1:6 at all elevations including all labour, material, equipment, handling, scaffolding etc. all complete.	CUM	7506			5.72009546150%
B1847	Supplying and installation of pipes in concrete / Duct bank for all kind of works, including setting material in concrete, layout, cutting, forming, grinding, jointing etc. all complete as per specification and as guided by engineer-in-charge for the following: (Concrete, Reinf. paid separately)					
a	200 mm dia HDPE Pipes	RM	50			0.01760071473%
b	200 mm dia PVC pipe ISI mark 6 Kg/cm2	RM	20			0.00488343882%
2000	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.					
A2003	Supplying and erecting in position 2.4 m high PVC coated G.I. welded wire mesh fencing of minimum 4 mm diameter (including PVC coating) of mesh size 75mmX75mm including providing concertina of 600 mm height over chain link fencing. The diameter of the steel wire for chain link fence (excluding PVC coating) shall not be less than 2.5 mm. The PVC coated chain link will be stretched by the clips at 0.5m intervals to three strands of galvanised high tensile spring steel wire (HTSSW) of 2.5 mm diameter interwoven with chain link wire mesh and kept under tension which in turn are attached to the fence post with security nuts and bolts. On every fourth post a clamping strip will be threaded through the links of chain link and bolted to the fence post with the help of security nuts and bolts.Concertina of height of 600 mm at top of chain link fencing shall be provided with all accessories. Concertina shall be of high tensile serrated galvanised wire (HTSW) with wire diameter of 2.5mm stretched to 6m and attached to two strands of galvanised HTSSW of 2.5 mm diameter by means of clips at 1m intervals. These two HTSSW strands will be attached to the fence posts with 12 mm security fasteners etc. all complete. (Structural post shall be separately under ST No. 2007)	RM	30			0.01599487379%
2006	Supplying and fixing 600mm high concertina on top of boundary wall including GI tension wires, clips, anchors, accessories etc. all complete. Concertinal shall be from tensile serrated galvanised wire (HTSW) made with wire diameter of 2.5 mm which will be stretched to 6m and attached on two strands of galvanised HTSSW (high tensile spring steel wire) of 2.5mm dia by means of clips at 1m interval. These two HTSSW strands will be attached to the fence posts/ angles with 12 mm security fasteners. (Structural post shall be separately under ST No. 2007)	RM	1200			0.08204151442%
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	4			0.08436101273%
2200	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.					
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			0.01173172179%
b	300mm dia	RM	150			0.05661830952%
c	450mm dia	RM	600			0.28854129482%
d	600mm dia	RM	600			0.35511948715%
e	900mm dia	RM	100			0.08003700970%
2300	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.					
B2301	Fabrication (Site Welded as per specification), transportation from fabrication yard and erection of Medium and High Tensile structural steel (Grade designation E250 Quality B0 (Fully killed), conforming to IS 2062. Plates beyond 40mm thickness shall be vacuum degassed & furnace normalised.Plates beyond 40mm thickness shall be vacuum degassed & furnace normalised and shall also be 100% ultrasonically tested as per ASTM –A578 level BS2.)with 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, 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, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of temporary 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/ 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. (BHEL shall supply structural steel free of cost) This item is excluding appointment of a separate agency, approved by BHEL, for connection design & preparation of fabrication drgs (Using 3D model software like Tekla or equivalent) preparation and submission of fabrication drgs in consultation with BHEL. (Rate shall be exclusive of surface preparation and primer) Payment Breakup:- 1) On Completion of Fabrication - 60% 2) On Completion of erection-25% 3) Balance on completion of alignment,welding etc.-15%	MT	771			4.69006802254%
A2302	Extra over ST NO. A2301,B2301 for blast cleaning of steel structures to near white metal surface(Sa 2 1/2) & providing and applying two component moisture curing zinc (ethyl) silicate primer coat (having minimum 80% of metallic Zinc content in dry film, solid by volume minimum 60% ±2%) of minimum 70 micron DFT . Zinc dust composition and properties shall be Type-II as per ASTM D520-00. The primer coat shall be applied over shot blast cleaned surface including touch-up painting etc all complete as per specification and direction of engineer-in-charge. Primer coat shall be applied in Shop immediately after blast cleaning by airless spray technique.	MT	771			0.61932628086%
A2305	Providing and applying intermediate coat of . two component polyamide cured epoxy with MIO Content (containing lamellar MIO minimum 30% on pigment, solid by volume minimum 80% ±2%) of minimum 100 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	771			0.36589904414%
B2305	Providing and applying Top coat of two pack aliphatic Isocyanate cured acrylic finish paint (solid by volume minimum 55% ±2%) with Gloss retention (SSPC Paint Spec No 36, ASTM D 4587 D 2244, D 523) of Level 2 (after minimum 1000 hours exposure, Gloss loss less than 30 and colour change less than 2.0 ΔE) and minimum 70 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	771			0.36589904414%
2307	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. Payment Breakup:- a) On Supply & receipt of material at site - 60% b) On completion of alignment, fixing, etc. complete as per description/specification - 40%					
a	Minimum galvanisation of 610 g/sqm	MT	10			0.22550857021%

BOQ CUM RATE SCHEDULE						
1 x 800 MW NTPC DARLIPALI STG-2, Odisha, INDIA						
Civil, Structural & Architectural works of Entire Plant Road & Drain (including Priority Roads & Drains & Excluding CHP-AHP), Workers' Rest Room (RCC+Truss), Parking sheds,Covered Steel Shed, Boundary Wall (Pre-Cast RCC), Dismantling of existing boundary wall,Watch Tower (RCC), etc.						
ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE (%)
A2307	Supplying, fabrication, erection and alignment of factory made Heavy Duty electroforged galvanised grating units with mild steel having minimum hot dipped galvanisation conforming to IS:2062, finish blast cleaned to Sa 2 ½ finish or cleaned by acid pickling as per ISO 8501-1, 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. Payment Breakup:- a) On Supply & receipt of material at site - 60% b) On completion of alignment, fixing, etc. complete as per description/specification - 40%					
a	Minimum galvanisation of 610 g/sqm	MT	60			1.42070399229%
2311	Providing and fixing in position of permanent mild steel bolts (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	77			0.00205336452%
2312	Providing and fixing in posting of high strength structural bolts (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	3853			0.11860869169%
2313	Dismantling of steel structure, lowering of material and carriage of the dismantled material up to field fabrication shop / projects storage including temporary dismantling, cutting, re-welding, supporting, and restoring to correct position all temporarily dismantled members, re-alignment of all adjacent connected members to their correct positions (weight of such adjacent members and temporarily dismantled members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	4			0.00731357863%
2314	Addition to, alterations in and/or modification of "Erection Marks" including cutting of parts, gauging of welds, cutting, grinding, fabrication, welding, drilling holes, straightening, removal of bends, raising to the required level, painting, transportation, return of unutilised steel pieces to the project store, temporarily dismantling, cutting, re-welding, supporting and restoring to correct position of all the temporarily dismantled members, realignment of adjacent connected members (weight of such temporarily dismantled and adjacent members not payable) etc all complete for the following:					
a	In erected position	MT	4			0.01966275947%
b	In fabrication yard	MT	4			0.01627729418%
2315	Re-erection of dismantled fabricated structural steel members including carriage of modified "Erection Marks" from the field fabrication shop to erection site, lifting to required posion, aligning in position, tack welding, final welding and touch up painting including temporary dismantling and re-erection of temporarily dismantled members, cutting, rewelding, supporting and restoring to the correct position of all temporarily dismantled members, re-alignment of adjacent connected members(weight of such temporarily dismantled members and adjacent members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	4			0.01222031982%
2322	Supply, fabrication and fixing of GI pipe hand railing (900 mm high) of 32 mm/40 mm dia (Medium Grade) including transportation, loading/unloading, painting etc. all complete.Payments terms - a)on receipt of materials at site - 65%; b) Erection & fixing - 35%;	MT	2			0.05013731624%
2323	Conducting radiography test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	3			0.00544437799%
2324	Conducting ultrasonic test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	3			0.00066631884%
2325	Conducting ultrasonic test on steel plates as per ASTM-A435 or equivalent wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	SQM	7			0.00071661044%
2326	Conducting magnetic particle test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	3			0.00045745661%
2327	Conducting dye penetration test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges etc. all complete (over and above the work already specified in the specifications.)	RM	3			0.0004859802%
A2332	Touch up paintings on damaged areas (exposed metal surface) including Surface preparation by manual tools, wire brush/ emery paper etc. Minimum 6 inches peripheral area, adjoining to damaged area to be covered. For exposed metal surface , it is to be painted with Zinc rich epoxy (70 micron) or suitable primer with existing paint scheme as per description of paint specified under item no. A2301, B2301, D2301, E2301, A2302, A2305 & B2305. The mode of measurement for payment in SQM shall be the actual area of touch up paint.	SQM	40			0.00266649240%
A2333	Touch up paintings on damaged areas(surface exposed to prime coat) including surface preparation by manual tools, wire brush/ emery paper etc. Minimum 6 inches peripheral area, adjoining to damaged area to be covered. .For damaged surface, intermediate & top coat to be provided as per description of paint specified under item no. A2301, B2301, D2301, E2301, A2302, A2305 & B2305. The mode of measurement for payment in SQM shall be the actual area of touch up paint.	SQM	40			0.00164727334%
2400	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. (Cement will be supplied by BHEL free of cost unless otherwise noted)					
2401	Preparation of sub grade by excavating earth to required depth for all types of soil/ rock, dressing to camber and consolidating the base including making good the undulation etc and disposal of surplus earth within a lead upto 1 km etc. all complete.	CUM	23167			0.48760278776%
A2402	Supplying and filling with selected good earth of approved quality in layers not exceeding 300 mm loose thickness using excavated soil within a lead upto1km soil and compacted so as to achieve at least 95 % maximum dry density as per IS-2720 (Part-VII) including 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 etc all complete.	CUM	7920			0.46493055082%
A2404	Providing & laying granular sub-base using close graded material conforming to specification, mixing in a mechanical mix plant at OMC, carriage of mixed material to work site, for all leads & lifts, spreading in uniform layers of specified thickness on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.	CUM	17375			8.16909498100%
A2406	Providing & Laying water bound macadam sub base/base course with stone aggregate 53 mm to 22.4 mm size stone conforming to MORTH specification (Table 400-7) (IRC 19 -grading -3) mixing in a mechanical mix plant at OMC, carriage of mixed material to work site, for all leads & lifts, spreading in uniform layers of specified thickness on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications, drawings and directions of Engineer-in-Charge.	CUM	4684			2.29362302110%
A2410	Providing & laying 40mm bitumen mastic wearing course over concrete pavement with industrial bitumen of grade 85/25 conforming to IS : 702, prepared by using mastic cooker and laid to required level and slope, including providing antiskid surface with bitumen fine grained hard stone chipping of approved size at the rate of 0.005 precoated cum per 10 sqm and at approximate spacing of 10 cm centre to centre in both directions, pressed into surface protruding 1 mm to 4 mm over mastic surface, including cleaning the surface, removal of debris etc. all complete as per specification, drawings and as per direction of engineer-in-charge. (Considering bitumen using 10.2% as per MORTH specification).	SQM	57916			12.03893687520%
A2413	Supplying and laying 450mmx250mmx500mm deep precast concrete kerb stone of grade M-25 with 20 mm nominal size stone aggregate and of shape as per detailed drawing including fixing with cement mortar (1:6) in 13mm thick joints, finishing of joints with neat cement paste, making drainage opening where required etc all complete.	RM	11500			1.84385890797%
B2413	Supplying and laying 300mmx250mmx150mm deep PCC block of grade M-25 with 20 mm nominal size stone aggregate and of shape as per detailed drawing including fixing with cement mortar (1:6) in 13mm thick joints, finishing of joints with neat cement paste, making drainage opening where required etc all complete.	RM	2500			0.12025166791%
A2415	Supply and laying 200mm dia R.C.C NP-3 type Hume pipe in raised shoulders as rain water drains as per detailed drawing including fixing with cement mortar (1:2) in 13mm thick joints, finishing of joints with neat cement paste etc all complete.	RM	2500			0.58658608967%
A2419	Providing and laying concrete of grade M35 using 20 mm nominal size stone aggregate with approved admixture (if required), in road pavement using fully mechanized paver fitted with electronic sensors, provision for necessary joints including compaction, finishing to lines and grades, curing and providing & fixing forwork etc. all complete. (Excluding the cost of reinforcement and dowel bar)	CUM	10000			7.37550351041%
A2421	Providing & laying concrete of grade M10 for dry lean concrete (DLC) with 20 mm nominal size graded stone aggregate over a prepared sub-grade including compaction, finishing, curing etc all complete. (Cement will be supplied by BHEL free of cost as per TCC)	CUM	6100			3.96192146711%
B2421	Providing and laying of plain cement concrete of grade M15 using 40 mm graded stone aggregate including providing and fixing formwork, compaction etc. all complete	CUM	6100			4.11476495165%
A2422	Providing and fixing in position MS dowel bar reinforcement including surface painted with bitumen and greasing, dowel end caps with cotton fills etc all complete as per specification, drawing and as directed by Engineer. Payment Breakup:- a) On Supply & receipt of material at site - 80% b) On completion of fixing, etc. complete as per description/specification - 20%	MT	130			1.78284765770%
A2423	Providing, straightening cutting, bending, placing in position at any level, binding in position of steel reinforcement of mild steel reinforcements including cost of binding wire, labour, scaffolding transportation to & from stores etc all complete as per specifications, drawings and as directed by Engineer. . Payment Breakup:- a) On Supply & receipt of material at site - 80% b) On completion of fixing, etc. complete as per description/specification - 20%	MT	9			0.12342791476%
A2424	Providing & installation of bitumen impregnated fibre board of specified thickness confirming to IS 1838 as joint filler including nailing, coating of both faces with coal tar pitch/bitumin etc. all complete as per specification, drawing and as directed by engineer.	RM	15110			0.56974016045%
A2425	Providing and filling in position hot applied bitumen sealing compound (Grade A) of specified thick confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints, sealant primer etc all complete as per specification, drawing and as directed by Engineer.	RM	15110			0.20823045545%

BOQ CUM RATE SCHEDULE

1 x 800 MW NTPC DARLIPALI STG-2, Odisha, INDIA

Civil, Structural & Architectural works of Entire Plant Road & Drain (including Priority Roads & Drains & Excluding CHP-AHP), Workers' Rest Room (RCC+Truss), Parking sheds,Covered Steel Shed, Boundary Wall (Pre-Cast RCC), Dismantaling of existing boundary wall,Watch Tower (RCC), etc.

ST NO	Item Description	UNIT	QUANTITY	RATE (INR)	AMOUNT (INR)	WEIGHTAGE (%)
A2426	Providing and laying debonding strip/tape of specified thickness before applying sealant including cleaning etc all complete as per specification, drawing and as directed by Engineer.	RM	15110			0.14757319421%
A2427	Providing & laying 80 mm thick precast interlocking concrete pavers of grade M35 of approved colour and pattern as per specification and recommendation of manufacturer.(Cost of cement is included in the item) . Payment Breakup:- a) On Supply & receipt of material at site - 60% b) On completion of fixing, etc. complete as per description/specification - 40%	SQM	21683			3.98546383807%
A2428	Providing and laying 20mm thick sand layer below concrete pavers including compaction etc all complete as per specification, drawing and as directed by Engineer.	SQM	15178			0.14635179909%
A2429	Providing and laying Impermeable plastic sheeting 125 microns thick laid flat without creases as per IRC 15 etc all complete as per specification, drawing and as directed by Engineer.	SQM	40541			0.11906718814%
A2430	Supplying, fixing and removing formwork for concrete road pavement complete as per specification and as directed by the engineer-in-charge.	SQM	3018			0.36837713816%
A2431	Providing and installation of Variable message signs including Cantilever type MS supports etc. all complete as per drawings, specifications, manufacturer's recommendations, indian standards.	EACH	100			0.07002540352%
A2432	Supplying and filling sand for preparation of road sub-base/ sub-grade in layers not exceeding 250 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	4238			0.94962981350%
A2433	Providing & laying dry lean cement concrete of grade M15 with 20 mm nominal size graded stone aggregate over a prepared sub-grade including compaction, finishing, curing etc all complete.	CUM	4238			2.85874981395%
					Total	100.00000000000%