



ISO 9001, ISO 14001,
OHSAS 18001 & SA 8000
certified company
SubContract Deptt.

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CORRIGENDUM – 01 Dated 02/11/2020

Sub: Tender for the work of "ALL CIVIL, ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES) AT KHURJA, UTTAR PRADESH".

TENDER NO. BHEL/NR/SCT/KHURJA/MAIN CIVIL/1211

The Corrigendum contains following amendment and shall be a part of the above tender.

- 1) The due date of bid submission is hereby extended from 02/11/2020 (15:00 Hrs) to 10/11/2020 (15:00 Hrs) Indian Standard Time. Bids shall now be opened on 10/11/2020 at 15:30 Hrs (Indian Standard Time).**
- 2) Item no. A1841 of Annexure -I (BOQ cum Rate Schedule) of TCC stands deleted. Revised BOQ is attached as Annexure –I (Revised).**
- 3) Clause No. 6.6 (Chapter - VI) of TCC is modified as under;**

REF. NO.	DESCRIPTION OF CLAUSE (Existing)	DESCRIPTION OF CLAUSE (Modified)
Clause No. 6.6 (Chapter - VI) of TCC	The contract period for completion of entire work under scope of this contract shall be 34 (Thirty Four) Months from the actual / zero date of start of work.	The contract period for completion of entire work under scope of this contract shall be 32 (Thirty Two) Months from the actual / zero date of start of work.

- 4) All other terms and conditions against this NIT shall remain unchanged.**

AGM/SCP



BOQ-CUM-RATE SCHEDULE

SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)

ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
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.					
101	Earth work in excavation in all types of soil including ash which can be excavated by any means including setting out, levelling, dewatering (but excluding special type of dewatering viz. well point method), shoring & strutting (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	32023	0.008017		
b	Depth exceeding 2 m but not exceeding 4 m	CUM	21704	0.010066		
c	Depth exceeding 4 m but not exceeding 6 m	CUM	3647	0.012560		
d	Depth exceeding 6 m but not exceeding 8 m	CUM	3271	0.015678		
e	Depth exceeding 8 m but not exceeding 10 m	CUM	40	0.018795		
102	Extra over ST No. 101 for dewatering of ground water by well point method as per IS 9759.	CUM	6958	0.004260		
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 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, ramming/compaction by manual/mechanical means, dressing etc all complete for the following.					
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	24079	0.005879		
A108	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 thickness using/with selected earth directly from excavation within a lead upto 1Km and compacted as specified, watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following.					
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	10320	0.002138		
109	Extra over ST No. 101 and 103 to A108 for carriage of material/earth for every 500 m or part thereof beyond an initial lead of 1 km.	CUM	30955	0.000624		
A111	Supplying and filling clean and well graded sand conforming to IS 383 with grading Zone I to III upto any depth under floors, around foundations, plinths, tank foundation etc. in layers not exceeding 300 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by mechanical means, dressing, royalty (if any) etc. all complete.	CUM	18029	0.181806		
200	CONCRETE WORK: Providing and placing concrete work including cost of labour, materials (unless otherwise specified in BOQ/contract specification) and equipment for handling, testing of coarse and fine aggregates as per specifications, 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 issued by BHEL Free of Cost (FOC) Item)					
A201	Concrete of grade M7.5 (1 part cement, 4 part sand, 8 parts of 20 mm graded aggregate by volume) as mass filling course, lean concrete, levelling course, mud mat under and around foundations/floors, at any depth below finished floor level etc.	CUM	4320	0.295558		
A202	Concrete of grade M10 (1 part cement, 3 part sand, 6 parts of 20 mm graded aggregate by volume) as lean concrete, levelling course, filling course, mud mat under and around foundations/floors at any depth below finished floor level etc.	CUM	50	0.295558		
A203	Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 20 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors, at any depth below finished floor level etc.	CUM	45	0.295558		
A204	Concrete under floors, paving, plinth protection, pipe encasing, etc complete with 20 mm nominal size graded aggregate at any depth below finished floor level for the following grades.					
a	M15 Grade	CUM	112	0.295469		
A205	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm/12mm nominal size in in foundations/substructure, grade slab, paving, drains, under floors etc at all level below finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.					
a	M 25 Grade	CUM	11893	0.336088		
c	M 35 Grade	CUM	2312	0.341343		
A206	Providing and laying Design Mix cement concrete of grade conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm/12mm nominal size in superstructure at all level above finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.					
a	M 25 Grade	CUM	9965	0.331367		



BOQ-CUM-RATE SCHEDULE

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ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
207	Providing and laying Design Mix cement concrete confirming to IS:456 & IS 10262-2009 for reinforced concrete works of grade mentioned below in machine foundations for TG, Gas Turbine, ID/FD/PA fans, BFP, Coal mills at all elevations below/above finished floor level except TG deck and top decks supported over vibration isolation system but including TG foundation Columns with addition of suitable plasticizer conforming to IS 9103(latest) to achieve a slump more than 125mm in concrete as per manufacturer's recommendation with 20 mm nominal size graded aggregate in concrete all complete as per specification & drawing			0.000000		
a	M 30 Grade	CUM	2070	0.348024		
b	M 35 Grade	CUM	6546	0.350607		
208	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 of grades mentioned below for reinforced concrete works using graded aggregate in top decks of all machine foundations supported on vibration isolation system (excluding supply and installation of vibration system) and top deck of TG foundation at all levels including addition of suitable plastisizers conforming to IS9103 to achieve a slump more than 125 mm in concrete as per manufacturers recommendation, preparation of scheme for concreting, getting it approved by engineer, labour, materials, equipment, handling, batching, transporting, mixing, pumping, placing, leveling, vibrating, compacting, curing, testing, cleaning and rendering the exposed surface with cement sand mortar to give a smooth and even surface, maintaining and submitting records of concreting, petrographic examination and potential reactivity of aggregate etc. all complete as per specification, drawing and instructions of engineer, including UPV testing as directed by engineer in charge, rectification of the defects in concreting observed by ultra-sonic pulse velocity (UPV) testing by cement/epoxy grout etc, but excluding formwork, staging, reinforcement, embeddments and temperature control of concrete. Payment terms - a) After casting 75% ; b) After receipt of ultrasonic test report - 25%.					
b	M 35 Grade	CUM	3494	0.421424		
A209	Extra over ST. No. 205 to 208 for controlling of temperature of fresh concrete to less than 25 degree centigrade using ice, including all related arrangements for providing, storing and mixing of ice with water, cooling of aggregates etc. All complete as per specification, drawing and instruction of engineer in charge.	CUM	4112	0.074558		
210	Extra over ST Nos. 205 to 208 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	1946	0.037050		
211	Providing and encasing of structural steel member with concrete using nominal aggregate size of 12.5mm down. Encased member shall be wrapped with welded wire mesh/chicken wire mesh with proper lap etc. complete as per specification for the following grades. (Payment of welded wire mesh, chicken wire mesh shall be made separately)					
a	M 20	CUM	2	0.295558		
b	M 25	CUM	309	0.295558		
212	Screed concrete conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5mm/6 mm nominal size on the roof at all level or thickness, drains etc complete as per following.					
a	01:02:04	CUM	325	0.295558		
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.					
a	M25	CUM	270	0.496961		
214	Providing and laying Design Mix cement concrete as per IS:456, IS 3370 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in water retaining/conveying structures including addition of suitable plastisizer cum waterproofing cement additives confirming to IS 9103 latest to achieve a slump more than 125 mm in concrete as per manufacturers recommendation and conforming to limits of permeability as per IS 2545 and specification with 20 mm nominal size graded aggregate for following grades. Watertightness is to be ensured including structural grouting if required.					
b	M30	CUM	1489	0.465250		
215	Dismantling concrete work for all types of structures at all levels including stacking of servicable material to a lead of 500 m and disposal of unservicable material upto a lead of 2 km, cutting of reinforcement, labour, equipment, safety precautions etc all complete as per drawings, specification and instructions of engineer in charge.					
a	Plain cement concrete of all grades	CUM	325	0.097183		
b	Reinforced cement concrete of all grades	CUM	50	0.142702		
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	107	0.003919		

BOQ-CUM-RATE SCHEDULE

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ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
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	95	0.000356		
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	115	0.006770		
220	Providing & laying Plum cement concrete 1:3:6 with 75% graded metal of maximum size 40 mm and 25% plums of maximum size 150 mm.	CUM	25	0.297607		
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.					
A301	Fairface form work with good quality water proof ply wood with film face of required thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.	SQM	30199	0.041599		
A302	Fairface form work with good quality water proof ply wood with film face of required thickness and smooth surface above finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.	SQM	24826	0.049260		
A303	Plywood Formwork with filmface of required thickness and smooth surface for TG superstructure (above base raft level) including preparation of scheme, designing, submission and approval of staging drawing with sufficient props, braces and ties at every tier of height of approx. 4m for all heights.	SQM	5202	0.277831		
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	190	0.020131		
b	Pockets of depths more than 150mm and upto 300 mm depth	EACH	110	0.035809		
c	Pockets of depths more than 300mm and upto 600 mm depth	EACH	65	0.066719		
d	Pockets of depths more than 600mm and upto 1000 mm depth	EACH	63	0.107071		
e	Pockets of depths more than 1000mm and upto 1500 mm depth	EACH	40	0.156954		
305	Extra over item no.301 and 302 for curved form work for foundations, footings, beams, walls, trenches, domes, arches etc as per specification.					
a	Extra for Curve Shuttering for Item No. 301/301A	SQM	10	0.008284		
b	Extra for Curve Shuttering for Item No. 302/ 302A	SQM	10	0.009888		
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 for the following: (Reinforcement Steel will be issued by BHEL as FOC Item)					
402	Providing, straightening, cutting, bending, placing in position at all level, binding in position of steel reinforcements of TMT steel of grade Fe-500D or 500EQR confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer.	MT	4781	0.871174		
A405	Providing & fixing of Rebar in existing concrete surface by inserting reinforcement bar with Epoxy based suitable bonding compound of Hilti or equivalent make (HIT-RE-500 of Hilti or equivalent make) for interconnection of new R.C. structure with existing R.C. structure. Depth of drilled hole should be suitable to develop maximum recommended strength as per approved manufacturer's recommendation. This item includes supply of all materials including bonding chemicals, T&P required to execute the work, cost of all labour, transportation of chemical, staging to reach work place etc. all complete as directed by Engineer - in - Charge. Random Pull out non destructive test as directed by engineer shall be conducted to ensure strength of bond and same is included in this item. Reinforcement bar shall be paid separately under item no. 402, 403, 405 as applicable.					
a	12mm Reinforcement bar	EACH	6	0.031979		
b	16mm Reinforcement bar	EACH	9	0.050774		
c	20mm Reinforcement bar	EACH	9	0.071885		
d	25mm Reinforcement bar	EACH	9	0.107828		
e	28mm Reinforcement bar	EACH	9	0.161742		
f	32mm Reinforcement bar	EACH	9	0.242613		
A406	Supply and fixing reinforcement bar couplers (of approved manufacturer's as per IS code IS :16172) in position for steel reinforcements of TMT steel of grade Fe-500D or 500EQR confirming to IS:1786 including , labour, scaffolding, transportation to & from stores etc all complete as per specifications, drawings and as directed by Engineer in charge.(Agency has to supply reinforcement bar couplers).					
a	12mm dia	EACH	9	0.005256		
b	16mm dia	EACH	7	0.008462		
c	20mm dia	EACH	4	0.010867		
d	25mm dia	EACH	4	0.015499		
e	28mm dia	EACH	4	0.023427		
f	32mm dia	EACH	4	0.027792		



BOQ-CUM-RATE SCHEDULE

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407	Providing, straightening cutting, bending, placing in position at any level, binding of mild steel reinforcements in brickwork including cost of binding wire, labour, scaffolding etc. complete all as per specifications & drawings.	MT	6	0.871174		
408	Providing, straightening, cutting, bending, placing in position at any level, binding in position high yield strength steel TMT reinforcements in brickwork including cost of binding wire, labour, scaffolding etc. complete all as per specifications & drawings.	MT	5	0.871174		
500	Roof Treatment works: Roof treatment works including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, curing, sampling,ensuring water tightness, testing etc at all level as per specification, drawings and as directed by engineer - in - charge. (Material used for roof treatment shall be CFC & HCFC free. The contractor shall submit documentary proof to GRIHA consultant in support of same).					
502	Providing and laying underbed 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	16329	0.007126		
A506	Providing and applying PU based high solid content (minimum 90%) cold liquid applied water proofing treatment with one coat of polyurethane or equivalent material based primer as recommended by manufacturer with an application rate of minimum 6 sq.m per litre and two successive liquid coatings of high solids content urethane pre-polymers or equivalent material based finish coats as per relevant IS/ASTM standards to form an elastomeric membrane with overall dry film thickness 1.5 mm subject to minimum 500 gm/sqm/coat application rate. min. The coating shall have high viscosity, min.450% elongation and forming a perfectly smooth permanently flexible seamless membrane which should have good adhesion to roof substrates.The cured film should have a very low water absorption rate (0.5% maximum at ambient temperature after 7 days).Item includes surface preparation, polyscrim cloth /fabric(non woven polyscrim cloth of 100% polyester with min. weight of 40gsm/sqm), polymerised mortar base preparation, etc all complete as per manufacturer specifications and directions of engineer in charge. The application of waterproofing treatment shall be carried by authorised applicator of approved Manufacturer of Waterproofing materials (The water proofing compound shall have VOC content limit less than 250 grams per litre as prescribed by GRIHA. All necessary documentation (certificates, manufacturer declarations) to be provided by the contractor to green building consultant.).	SQM	16329	0.074558		
507	Providing and laying wearing course consisting of 25mm thick plain cement concrete of grade M15 (1:2:4) with graded aggregate of 12.5mm size 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	16329	0.032691		
510	Providing and laying cement concrete chequered flooring tiles of 22 mm thickness and size 300x300 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 (silicon/elastomeric sealant) and providing expansion gap in both directions including underbed(as per drawings) filled up with (silicon/elastomeric) joint sealant etc all complete. (Water proofing paid elsewhere)	SQM	688	0.047834		
A510	Providing and laying Heat Resistant Terrace light coloured Vitrified tiles of MIN. 300X300X22MM from reputed / approved manufacturer 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) and grouting the joints with mix of white cement & marble powder in ratio of 1:1.including rubbing and polishing of the surface all complete, NOTE: All ceramic tiles to be used should be with appropriate % of recycled content.The contractor should provide the material cutsheet/ declaration from manufacturer mentioning the recycled content used in manufacturing of ceramic tiles to be used).	SQM	1000	0.122936		
A511	Providing and applying two component transparent polyamide cured epoxy sealer coating (having solid by volume minimum 40% ±2%) of minimum 50 micron DFT on external surfaces of RCC Neutralization-pit. Surface to be coated shall be absolutely dry, clean and dust free. Sealer coat shall be followed with the application of 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 etc. all complete.	SQM	1537	0.062176		
513	Providing and mixing water proofing compound conforming to IS:2645 in concrete or cement mortar all complete.	KG	1151	0.009264		
A518	Providing and laying water proofing treatment for wet areas like toilets,kitchen,pantry of sunken slab etc. material like with three coats of Acrylic Polymer Modified Flexible Cementitious Waterproofing Coating material like Danocrete I-protect flex or equivalent make applied @ 0.70 to 0.8 0 Kg./m2 per coat, while embedding 34 gsm polyester scrim armor Armadura IP 34 or equivalent as reinforcing layer between first and second coat, the waterproofing coat applied by stiff bristle brush to build total thickness of 1.3 to 1.5 mm in three coats including reinforcing layer, while maintaining a gap of 4 to 8 hours between the coats all complete with water ponding test as per IS Code and as directed by engineer in charge.	SQM	565	0.080169		
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.					



BOQ-CUM-RATE SCHEDULE

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601	Supplying & installation of bitumen impregnated fibre board confirming to IS 1838 as joint filler at joints in concrete including nailing, coating of both faces with coal tar pitch/bitumin etc. all complete.					
c	25 mm wide joints	SQM	271	0.086761		
d	50 mm wide joints	SQM	3021	0.167821		
603	Providing and applying polysulphide based sealant conforming to IS:12118 in joints in concrete including cleaning of joints, raking out groove, application of primer, scaffolding etc. all complete for following size grooves:					
a	25mmX25mm	RM	1006	0.059058		
b	50mmX25mm	RM	3344.4	0.114375		
A603	Providing and applying polysulphide based sealant with VOC content limited to 250 grams per litre as prescribed by GRIHA, conforming to IS:12118 in expansion joints in concrete including cleaning of joints, raking out groove, application of primer, scaffolding etc. all complete for following size grooves:					
b	50mmX25mm	RM	50	0.114375		
604	Supplying and filling in position hot applied bitumen sealing compound (Grade A) confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc. all complete as per specifications.					
b	12mm X 25mm	RM	115	0.003296		
c	20mmX25mm	RM	115	0.004187		
A604	Supplying and filling in position hot applied bitumen sealing compound (Grade A) confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc. all complete as per specifications.(The sealant should have VOC content limited to 250 grams per litre as prescribed by GRIHA. All necessary documentation (certificates, manufacturer declarations) to be provided by the contractor to green building consultant.					
c	20mmX25mm	RM	30	0.004187		
A605	Supply and installation of Polystyrene flexible board of type-1 conforming to IS: 4671 with density 20 Kg/cum as joint filler at joint of concrete including nailing, coating of both faces with coal tar pitch /bitumen etc. all complete.					
a)	100mm thick	SQM	81	0.140197		
608	Supplying and filling in position hot applied bitumin sealing compound (Grade B) confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc. all complete.					
a	10mm X 40mm	RM	40	0.005523		
b	12mm X 25mm	RM	40	0.004543		
c	20mmX25mm	RM	40	0.006414		
A609	Providing and sealing of joints with premium grade silicon sealant (Silpruf of GE silicon or approved equivalent) including cleaning of joints, raking out groove, joint filler tapes, application of primer, curing, scaffolding etc. all complete as per manufacturer's recommendation for following size groove:Note: The sealant should have VOC content limited to 250 grams per litre. All necessary documentation (certificates, manufacturer declarations) to be provided by the contractor to engineer in charge.NOTE:-sealant should have VOC content limited to 250 grams per litre.All necessary documentation (certificates, manufacturer declarations) to be provided by the contractor to engineer in charge.					
b	50mmX25mm	RM	20	0.102706		
610	Providing and fixing PVC water stops in joints conforming to IS 12200 & IS 15058 all complete for the following: (Bulb or Kicker type)			0.000000		
c	150 mm wide and 6 mm thick	RM	150	0.023784		
d	230 mm wide and 6 mm thick	RM	1248	0.036076		
615	Providing and fixing 300 mm wide Stainless steel strips over expansion joints with minimum lap of 50mm length including stainless steel screws, rawl plugs etc. all complete.	Kg	80	0.035364		
A616	Providing and fixing Stainless steel plate minimum 2 mm thick of Grade SS 316 at all peripheral edges of floor cut-outs/ openings at TG floor level and covered with gratings/ chequered plates, expansion joints along TG Deck, Structural expansion joints over expansion joints with minimum lap of 50mm length including fixtures etc. all complete.	MT	1	33.403904		
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.			0.000000		
701	Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete.	MT	102	6.255438		
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, IS 5624, IS:3138), washers, anchor plates, stiffener plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling etc. all complete.	MT	87	7.852234		
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.			0.000000		
a	MS pipes of all diameters	kg	925	0.006503		
b	PVC pipes / conduits of all diameters	kg	525	0.034651		
c	UPVC pipes / conduits of all diameters	kg	202	0.036343		

BOQ-CUM-RATE SCHEDULE

SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)

ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
d	Expansion anchor fasteners (galvanised) of HILTI make(HRD Universal Fastners) or equivalent of safe tensile capacity as specified below for brick work with expansion sleeve of A6 polyamide as per specification:			0.000000		
i	8mm Dia	EACH	40	0.004721		
ii	10mm Dia	EACH	40	0.005701		
iii	12mm Dia	EACH	40	0.006503		
Ae	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with anchoring rod of cold formed stud type torque controlled mechanical expansion fasteners having 3-way expansion sleeve of SS 316 grade with nut and washer conforming to a minimum grade of 5.8 as per IS: 1367 and galvanized to minimum 5 microns all complete.			0.000000		
i	HST3 M8	EACH	40	0.011580		
ii	HST3 M10	EACH	75	0.016479		
iii	HST3 M12	EACH	75	0.024942		
iv	HST3 M16	EACH	75	0.047389		
Af	Chemical Expansion fasteners (galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with anchoring rod of carbon steel conforming to a minimum grade of 5.8 as per IS: 1367 and minimum galvanization of 5 microns with associated nut and washer,chemicals to be dispensed through mechanical dispenser and self-curing type all complete,etc.			0.000000		
i	HAS-E5.8 M8	EACH	40	0.026634		
ii	HAS-E5.8 M10	EACH	60	0.032602		
iii	HAS-E5.8 M12	EACH	60	0.041332		
iv	HAS-E5.8 M16	EACH	60	0.063601		
v	HAS-E5.8 M20	EACH	60	0.108852		
706	Supply and installation of approved 25mm thick vibration damping resilient pads on/around foundation of vibrating equipment and at other locations all complete.	SQM	25	0.163546		
707	Providing, laying and fixing rails(52kg/rm) and guide rails in concrete for transformer, rail track including cutting of rails, joining of rails, anchoring lugs etc all complete.	MT	114	5.923626		
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. (Cement will be issued by BHEL as Free of Cost (FOC) Item)			0.000000		
801	Providing & grouting with cement slurry mix of approved ratio using pressure pump for water retaining concrete structures as per approved procedure including cost of nipples/ nozzles, cement, admixture, curing, pressure pumps, slurry agitator etc. all complete. Cost shall include fixing of nipples at maximum 500 mm centre to centre spacing, cutting of nipples after completing of grouting, making good of the nipple hole with appropriate non-shrink cement paste, water tightness test etc. all complete wherever specified in the drawing.	SQM	51	0.036789		
803	Providing & grouting of pocket holes, pipe sleeves and under base plate of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips) using non shrink admixture as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	45	1.380606		
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	25	4.320238		
805	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing, etc. all complete with Conbextra GP-2 or equivalent as per specification, drawing and direction of engineer-in-charge.(Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	7	7.515789		
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.			0.000000		
902	Providing and fixing teak wood frame panel door shutter as per IS 1003 with 35 mm x 150 mm vertical rail & 35mm x 125 mm horizontal rail and 12 mm thick interlocked panels of teakwood with proper wood joinery including beading, preparation of working drawings,godrej or equivalent make mortice lock with handles on both sides,approved ISI mark anodised fittings like door stopper,300mm long tower bolts,16x300mm long aldrops ,125mm long handles on both sides etc. butt hinges, sliding bolt ,knobs, (all fitting shall be anodised aluminium color dyed), screws, primer and finish painting / polishing etc. all complete. (Finish painting / polishing paid separately)	SQM	23	0.311057		



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ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
903	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, particle board core conforming to IS 3087 type I, 35x12 mm thick teakwood beading all around including preparation of working drawings. godrej or equivalent make mortice lock with handels on both sides,approved ISI mark anodised fittings like door stopper,300mm long tower bolts,16x300mm long aldrops ,125mm 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	100	0.334841		
904	Providing and fixing single or double steel door shutters with 45 thk flush design shutter comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centres including void filled with mineral wool (density as per specification), all fittings, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	104	0.487519		
A904	Providing and fixing single or double steel door shutters with 35mm (min) thk flush design shutter comprising of two outer sheets of 1.2 mm steel sheets rigidly connected and reinforced inside with continuous vertical 1 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 or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	258	0.487519		
905	Providing and fixing single or double steel door shutters with 18 gauge M.S. sheets shutter presenting a flush surface on the outside and inside stiffened with semitubular edge and central stiffening rail which shall convey the lock including fixtures, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	15	0.508808		
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 having minimum 2 mm wall thickness as per IS:1285, IS:733 and anodized(15 micron coating thickness) and electro color dyed 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 toughened glass of 8/10/12 mm thickness including snap fit type beading, concealed screws, fixtures, Godrej or equivalent make Mortice lock with handle on both sides, etc all complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required. (Glazing shall be paid separately)	KG	752	0.046855		
A907	Providing and fixing automatically closing Fire Proof steel doors (single or double shutter with frame) provided with vision panel, panic devices shall be 45mm thk flush design comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners,spot welded in position at not more than 150mm on centers including all fittings, accessories, shop painting with approved post office/signal red color fire resistant paint and mineral wool insulation (min.64 kg/cum density) complete and shall be fire resistant as per IS:3614, NBC 2016 and TAC requirements.vision panel shall be provided with inter-layered fire rated glass. All hardware and fittings such as ball bearing hinges, door closure,panic trim,panic bar,handles all complete along with test certificate from authorise labs,shop drawings shall be submitted for approval, as per specification and instructions of engineer in charge.Minimum ratings shall be 2 Hrs.	SQM	347	0.725266		
908	Providing and fixing steel windows/ventilator with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision including all fittings, metal beadings, hold fasts, shop and final painting ,glazing etc. all complete. (Glazing shall be paid separately)			0.000000		
a	Openable type	SQM	238	0.189467		
b	fixed type	SQM	245	0.124530		
A909	Providing and fixing anodised aluminium work of Jindal, Hindalco or other equivalent approved make for door/window frames, door/window shutters, 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-metallc 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. as applicable), CP brass/stainless steel screws, providing and fixing hinges/pivots, and making provision for fixing of fitting wherever required including cost of PVC/neoprene gasket, all complete as per drawing, specification and instructions of engineer in charge (Glazing and panelling shall be paid seperately).Weight of aluminium section only shall be measured.	Kg	16140	0.040619		



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A910	Providing, fabricating, supplying and fixing of Aluminium composite panel cladding (ACP) in pan shape in solid or metallic colour of approved shades made out of 4mm thick aluminium composite panel (weight of panel should be 7.5 kg/sqmt) material consisting of 3mm thick FR grade Class B as per EN 13501,mineral core sandwiched between two Aluminium sheets (each 0.5mm thick).The aluminium composite panel cladding sheet shall be coil coated, with Kynar 500 based PVDF conforming to AAMA 2605 or Lumiflon based fluoropolymer resin coating of approved colour and shade on face # 1 and polymer (Service) coating on face # 2 as specified using stainless steel screws, nuts, bolts, washers, cleats, weather silicone sealant, backer rods etc. The top coated surface of ACP shall comply with the "specification for coated coil for the exterior building application" issued by ECCA (European Coil Coating Association). The aluminium composite panel top and bottom skin should conform to Aluminium Alloy 5005 (AlMg 1) marine grade series and H 22/24 temper with mechanical properties conforming to EN 485-2 standard. The ACP product must conform to either BS 476 part 6 & 7 or ASTM E 84 standards along with EN-13501-1. The manufacturer must furnish Class 1A certificate for this ACP produced in the plant from which it is going to be supplied. The panel shall be designed for 12mm groove in horizontal & in verticals with close joint system. Vertical & Horizontal groove shall be filled by non-staining high performance weather sealant. ACP panel shall have sub frame all around panel and aluminium stiffener profile as per structural requirements. The finished surface of ACP shall be protected with a self-adhesive (Rubber based) peel off foil with 70 microns thickness white or black, tested to withstand up to 6 months' exposure to local weather condition without losing the original peel off characteristic or causing stain or other damages on the coated surface of the aluminium composite panel. Installation of ACP Coping/facia at terrace level sealing the top gap of the parapet wall and ACP Panel shall have GI stiffeners below with required aluminium grid work with necessary MS HDG / aluminium alloy brackets & SS fasteners.2nd barrier of 1mm thk GI sheet laid continuously below the coping to seal the parapet wall. Overlap of GI sheet shall be properly sealed with weather sealant, All shade approval shall be as per Architect's Approval.as per approved sample from Alucobond Plus, Aludecor, Reynobond or equivalent. The system shall be designed to withstand a wind pressure of 200kg/Sqm or as per design requirement and shall be fixed to the Masonry/RC walls or aluminium frame with necessary clamps, brackets and anchor fasteners etc. All clamps and brackets shall be Hot dip galvanized minimum 80 microns thick and shall conform to IS: 4759-1996. The extruded aluminium section shall be anodized in approved colour with a anodic coating of minimum 20 microns. Extruded section shall be 6063 T5 or T6 alloy conforming to ASTM B221. Any other fastening straps, nuts, bolts, rivets, washers, etc. shall be in stainless steel SS316 grade. EPDM gaskets, open cell polyethylene backer rods, weather sealant etc. shall be provided as per requirement. Item shall include aluminium base frame with all fixing arrangements to wall/RC members, fastening material and hardware(fastening straps, nuts, bolts, rivets, washers etc.), EPDM gaskets, open cell polyethylene backer rods, weather sealant, scaffolding, approach to all height, material handling, transportation, labour, T&P, preparation of working drawings etc.all complete as per drawing, specification & instructions of engineer in charge. Measurement of payment shall be outer finished area of ACP panel.	SQM	2524	0.366593		
911	Providing and fixing of door closers as per specification ,of approved make & quality all complete of following type :			0.000000		
a	Over head hydraulic door closures as per IS 3564	Each	246	0.118829		
b	Floor mounted Hydraulic door closers as per IS 6315	Each	60	0.225810		
912	Providing and fixing pressed steel frames fabricated from 16 gauge 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	1772	0.010957		
913	Providing and fixing in position rolling shutter of hot rolled double dipped galvanised steel lath section of 18 SWG tested mild steel strips at 75mm rolling centres interlocked together through their entire length and jointed together at the end by end locks mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation including wire springs, top cover, primer & shop coats of approved enamel paint etc, all complete as per IS 6248 and specification of approved make of following types: The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.(partly coiled and lath/full lath).			0.000000		
a	Hand Operated	SQM	60	0.211825		
b	Mechanically Operated	SQM	248	0.278366		
Ac	Electrically and Mechanically operated	SQM	323	0.300546		
915	Providing, fixing and fitting of glazing of first grade class in steel/aluminium/wooden frames, where ever required, cleaning after fixing including hardware, gaskets, clips, beadings etc. all complete.			0.000000		
Ae	10mm thick Polycarbonate sheet multi (twin) wall fire retardant and ultra violet resistant with sealed open edges.	SQM	100	0.205501		
Ag	6 mm thick toughened tinted float glass	SQM	747	0.147957		
h	6 mm thick clear toughened safety glass	SQM	423	0.177085		
Ah	6 mm thick reflective toughened safety glass of Saint Gobain(India) or Asahi (India) or equivalent make and should have solar factor 25% or less, Maximum U-vlaue 3.3W/SQMK, VLT min 30%, light reflection internal 10 to 15%, light reflection external 10 to 20%, shading coefficient (0.25-0.28)	SQM	2268	0.177085		



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Ak	One outer 6mm thick clear float glass and one inner 6mm thick reflective toughened glass hermetically sealed by beading of anodized aluminium with outer edge sealed with silicon sealant and seperated by 12 mm thick gap for thermal insulation . Glass to be used shall be of make Glavebel (Belgium), Saint Gobain(India),Asahi (India), Fort (USA) or equivalent .Outer glass should have solar factor 25% or less, Maximum U-Value of 2.5 to 3.3W/SQMK, VLT min 30%, light reflection internal 10 to 15%, light reflection external 10 to 20%, shading coefficient (0.25-0.28).The properties of performance glass shall be as per detail design values.The glass should be free from distortion and thermal stress. (only single elevation area to be measured).	SQM	530	0.349717		
Am	8 mm thick clear toughened safety glass	SQM	220	0.235510		
An	10 mm thick clear toughened safety glass	SQM	148	0.294388		
Ap	One outer 6mm thick tinted heat-reflecting type toughened glass and one inner 6mm thick plain float glass hermetically sealed by beading of anodized aluminium with outer edge sealed with silicon sealant and seperated 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 ,Asahi,Glavebel , 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) ≤ 0.32 and U- Value 1.2 to 2.5 W/MSq K.The values varies as per detail engineering.The properties of performance glass.colour.specification shall be as per detail design values as approved by engineer incharge.	SQM	350	0.473576		
Aq	Composite double glazing, 24 mm thick, with one outer 6mm thick tinted heat-reflecting type toughened glass and one inner 6mm thick clear toughened glass hermetically sealed by beading of anodized aluminium with outer edge sealed with silicon sealant and seperated by 12 mm thick gap for thermal insulation (only single elevation area to be measured).Glass have following technical characteristics: Solar factor 25% or less, U-value less than 2.8 W/SQMK,VLT (Visible Light Transmittance) ≤ 50%: The glass to be used should be from the manufacturers of glass like Asahi,Glavebel,Saint Gobain Or equivalent. The glass should be free from distortion and thermal stress.The values varies as per detail engineering.The properties of performance glass.colour.specification shall be as per detail design values as approved by engineer incharge.	SQM	350	0.473917		
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	125	0.139584		
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	75	0.252623		
919	Providing and fixing 1 mm thk. MS sheet sliding shutters with frame and diagonal braces of 50X50X6 angle iron, 3 mm MS gusset plates at junction and corners, 25 mm dia pulley, 50X50X6 angle and T-iron guide at the top and bottom respectively including painting etc. all complete.	SQM	95	0.345530		
A920	Providing and erecting Roof skylight structure with 6mm thick embossed clear translucent polycarbonate IR sheet,multi (twin) wall fire retardant, both side UV coated, minimum 55% light transmission, solar control, approved make, texture and shade, fixed to powder coated Aluminium section with 60mm width top & bottom with EPDM rubber gasket in approved shape like dome, pyramidal etc, sealing of joints with sealent, screws with pvc cap, self tapping screws, EPDM rubber gasket etc as per drawing, standards, specification, instruction of engineer in charge etc all complete.	SQM	60	0.664027		
A921	Providing & fixing 120 minutes Fire Rated,Fully Glazed non load bearing fixed partition with valid fire test certificate from national or international lab with Partition Frame manufactured from 1.6 mm galvanized steel sheet (zinc coating not less than 120 gm/sqm) pressed to form a suitable profile & fixed to the supporting construction by means of M 10 X 120 or bigger steel bolts at 150mm from the edges & every 500mm c/c. The frame shall be finished with etch primer for scratch resistance and shall be powder coated of min. 60 micron of approved shade and color and filled with mineral wool insulation with density 96kg/cu.m .The glass panels shall be interlayered minimum 11mm thick, 120 minute fire rating and partially insulated (EW120), with min.15 minute full insulation, Non Wired Toughened Interlayered glass having a sound reduction of greater than or equal to 37dB, light transmission ratio of 86% according to EN410 and compliant to class 2(B)2 category of impact resistance as per EN 12600. The glass should be manufactured in UL & TUV audited Facility and including UL-EU Certification. The glass shall be held in position with minimum 1.6mm G.I Beading, clamped or bolted to the frame profile by 4mm x 35mm steel screws at every 250 mm c/c and a ceramic tape of cross section of 5mm x 20mm on both sides of the glass. The item shall include intumescent putty and fire resistant acrylic sealants and the total assembly shall satisfy the fire resistance criteria of stability, integrity & radiation control and partial insulation (EW120),all complete as per specification. Shop drawings for the item with all construction and anchoring details along with fire rating test reports shall be got approved from Engineer-in-Charge before execution.	SQM	50	3.191077		

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A922	Providing & fixing minimum 25mm thick or more Hermetically sealed double glass (DGU) consisting of Fire resistant glass of minimum 11mm thick, clear, toughened,interlayered glass,120 minutes fire rated for both integrity & radiation control ,remain transparent under both fire and non fire condition and 6mm thick toughened tinted glass with min.8mm gap. The partitions shall be 120 minutes Fire Rated,Fully Glazed non load bearing fixed partition with valid fire test certificate from national or international lab with Partition Frame manufactured from min.1.6 mm galvanized steel sheet (zinc coating not less than 120 gm/sqm) pressed to form a suitable profile to accommodate the glass & fixed to the supporting construction by means of M 10 X 120 or bigger steel bolts at 150 mm from the edges & every 500mm c/c .The frame shall be finished with etch primer for scratch resistance and shall be powder coated of min. 60 micron of approved shade and color and filled with mineral wool insulation with density 96kg/cu.m. The glass panels shall be interlayered minimum 11mm thick, 120 minute fire rating and partially insulated (EW120), with min. 15 minute full insulation, Non Wired Toughened Interlayered glass having a sound reduction of greater than 37dB, light transmission ratio of 86% as per EN 410 and compliant to class 2(B)2 category of impact resistance as per EN 12600. The glass should be manufactured in UL & TUV audited Facility and including UL-EU Certification. The glass shall be held in position with minimum 1.6 mm G.I Beading, clamped or bolted to the frame profile by 4mm x 35mm steel screws at every 250 mm c/c and a ceramic tape of cross section of 5mm x 20mm on both sides of the glass. The item shall include intumescent putty and fire resistant acrylic sealants and the total assembly shall satisfy the fire resistance criteria of stability, integrity & radiation control and partial insulation (EW120) all complete as per specification. Shop drawings for the item with all construction and anchoring details along with fire rating test reports shall be got approved from Engineer-in-Charge before execution.	SQM	50	0.737877		
A923	Providing and fixing electrically operated, self operable/closing, approved anodized aluminium framed glass door with minimum 11 mm thk. fire rated toughened glass, all complete. Automatic Sliding operating system comprising of Advanced DC brushless motor, Automatic Reversing Safety Device, Suitable for door weight 100 kg, Opening speed : 90-110cm /sec (adjustable), Closing Speed : 40-110cm/sec (adjustable), opening time : within1-9 seconds after door stopped in opening, controller : 8 Bit micro computer, Motor (Dortexor equivalent) : DC12V, 35W brushlees motor, Power Voltage : AC 110V - 240V, 50Hz - 60Hz, Power Consumption : 45W including Infra Red Sensors 2No both sides, rails & top & bottom as required, any aother accessories as required etc. all complete of best make and quality as approved by Engineer in charge. The door shall be double panel sliding door of approx. area 5 sq.m. to 7.5 sq.m. each.	EACH	4	19.737178		
B923	Providing and fixing electrically operated, self operable/closing, approved anodized aluminium framed glass door with minimum 8 -10 MM thk. toughened glass, all complete. Automatic Sliding operating system comprising of Advanced DC brushless motor, Automatic Reversing Safety Device, Suitable for door weight 100 kg, Opening speed : 90-110cm /sec (adjustable), Closing Speed : 40-110cm/sec (adjustable), opening time : within1-9 seconds after door stopped in opening, controller : 8 Bit micro computer, Motor (Dortexor equivalent) : DC12V, 35W brushlees motor, Power Voltage : AC 110V - 240V, 50Hz - 60Hz, Power Consumption : 45W including Infra Red Sensors 2No both sides, rails & top & bottom as required, any aother accessories as required etc. all complete of best make and quality as approved by Engineer in charge. The door shall be double panel sliding door of approx. area 5 sq.m. to 7.5 sq.m. each.	EACH	2	19.737178		
A924	Providing and fixing of fully glazed door with steel frame of 120 minutes fire rating, of integrity and radiation control (EW 120) fabricated with 1.6 mm thick galvanized steel sheet. The door frames are manufactured from min.1.6 mm galvanized steel sheet (zinc coating not less than 120 gm/sqm) pressed to form a profile of 35 mm x 60 mm on the vertical sides and 50 x 60 mm on the horizontal side. The door shutter would have a top rail and side rail 60 mm x 60 mm and a bottom rail of 110 mm x 60 mm. The frame shall be finished with approved fire resistant primer or Powder coating of min.60 micron as per approved shade.The sections have a special insulating infill or filled with mineral wool insulation with density 96kg/cu.m.The test is conducted in IFTS as per EN 1634-1: 1999.The glass should be min. 11mm thick or more, clear, toughened, 120 min fire rated for both integrity & radiation control (EW 120) Non Wired toughened glass with a light transmission of 86% and a sound reduction of 37 dB and manufactured in UL & TUV audited Facility and including UL-EU Certification. The glass should be compliant to class 2(B)2 category of Impact Resistance as per EN 12600. The glass should be held in its place with the help of 1.6 mm GI beading and a special ceramic tape with cross section of 5 x 20 mm as per the test evidence. The shutters should be fixed to the frame using SS Ball Bearing Hinges of size 100 mm x 89 mm and 3 mm thickness or equivalent. Beading should be attached using 4 mm x 35 mm SS screws at a distance of 75 mm from the edges and 150 mm c/c henceforth. The door should be fitted with fire rated accessories,handles Dorma Mortise Sash lock and door closer of Dorma,Geze of approved make or equivalent. The inactive leaf should be fixed to the frame using 1200mm long tower bolt.all complete as per specification and approved by Engineer incharge.	SQM	50	3.191077		
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 issued by BHEL as Free of Cost (FOC) Item)			0.000000		
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.			0.000000		
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	CUM	200	0.538649		

BOQ-CUM-RATE SCHEDULE

SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)

ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
A1002	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in walls, chambers etc. in thickness 230mm to 460mm at all heights, places and position above plinth including raking out joints, curing, scaffolding etc complete excluding plastering and painting.			0.000000		
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	CUM	8203	0.615523		
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	CUM	178	0.561720		
1003	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc. in thickness 115mm at all heights, places and position above or below plinth/graded level including providing two nos. 6 mm diameter MS bars at every third layer, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification.			0.000000		
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	SQM	620	0.074647		
A1003	Providing factory made composite modular light weight autoclaved aerated concrete panels of minimum 75mm thick and minimum 2 hours of fire rating, consisting of two fiber reinforced cement sheets(min. 4 mm thick) on either side of light weight concrete core, having min. compressive strength of 35 Kg/Cm2 and density in the range of 700-900 Kg/Cu.M. to provide external wall and internal partition at all levels. The panels shall be fixed in position through tongue and groove jointing system by screwing the panels to top & bottom U channels(channels min. 1.25 mm thick and galvanized to min. grade 180 as per IS:277), fixing U profiled top & bottom channels to concrete/primary steel members which are placed at max vertical spacing of 4.5 M with the help of galvanized steel expansion fasteners, filling the joints from both faces with silicon acrylic paste and making the same water tight by covering with fiber glass tape(min. 50 mm wide & min. 0.5 mm thick) or by any other suitable material, so as to ensure that entire construction done is weather proof and panel surfaces are flush for painting, creating opening for doors/windows/ventilators/ducts/pipes/fans/AC etc. and finishing the opening with same U profiled galvanized steel channel which is used at top & bottom. The wall must be capable of sustaining wind pressure of 3 M height within limiting deflection of span/250.	SQM	2202	0.177080		
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	82	0.102082		
A1005	Making openings in existing AAC panel/block work or partition wall including making good the broken edges/surface with cement mortar etc. all complete 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	40	0.177078		
1006	Providing and encasing of structural steel member with masonry work around flanges, webs etc. and filling the gap between steel and masonry by minimum 12mm thick mortar of 1:6. Encased member shall be wrapped with chicken wire mesh with 50mm lap etc. complete as per specification. (Chicken wire mesh to paid separately)	CUM		0.000000		
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2(including cost of cement for brick making)	CUM	50	0.552545		
1007	Providing and laying 75 mm thick bed of dry brick aggregate including of excavation, disposal of surplus earth spreading of earth, ramming, watering etc. complete in all respects as directed by the engineer.	SQM		0.000000		
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	20	0.120165		
1009	Supply and placing in position mild steel wire fabric of square mesh 25 mm size and wire diameter of 2 mm for encasing of steel sections in concrete including cutting, bending, fixing etc. complete.	SQM	2000	0.007304		
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 all level, removal of debris upto a lead of 1 km including loading, unloading, transportation etc. all complete.	SQM	40	0.068322		
1012	Providing and laying Autoclaved Aerated concrete blocks in cement mortar 1:6 (1 part cement 6 parts coarse sand) with suitable plasticizer,confirming to (IS: 2185 Pt-3) in walls, chambers etc. in thickness 100mm to 300mm having oven dry density of 550kg/m3 to 650kg/m3,at all depths, places and positions below/above plinth including raking out joints, curing, scaffolding etc.complete excluding plastering and painting all complete as per specification and drawing. AAC masonry work shall conform to I.S 60411.S - 1905.All other structural requirements like stiffening of masonry, joint reinforcement etc. Note: Cemet for making of AAC blocks is in the scope of contractor	CUM	1173	0.524861		
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 issued by BHEL as Free of Cost (FOC) Item)			0.000000		
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.			0.000000		
b	50mm thick	SQM	548	0.027614		



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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 issued by BHEL as Free of Cost (FOC) Item)			0.000000		
1201	Providing 18mm thick plaster in two layers outside the building/boundary wall in cement mortar 1:6 on walls, finished to a smooth finish including providing 3mmx3mm size grooves at junctions of two dissimilar materials all complete	SQM	45853	0.035007		
1202	Providing 12mm thick plaster inside the building/boundary wall in cement mortar 1:6 on walls finished to a smooth finish as per specification all complete.	SQM	43212	0.029574		
1204	Providing 6mm thick plaster on ceiling in cement mortar 1:4 finished to a smooth all complete.	SQM	4976	0.028683		
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 battens, 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	1205	0.002761		
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)	SQM	200	0.054159		
1209	Ruled pointing in masonry in Cement Mortar 1:3 (1 cement and 3 fine sand) including raking out joints, curing etc. complete.	SQM	81	0.010511		
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.			0.000000		
1304	Two or more coats of acrylic distemper of approved brand and manufacture to give an even shade including a priming coat with distemper primer complete.	SQM	36325	0.005888		
1305	Providing and applying two or more coats of acrylic emulsion paint as per IS 5411 of approved brand, shade and manufacture to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guideline.	SQM	297	0.008765		
A1305	Providing and applying two or more coats of acrylic emulsion paint as per IS 5411 of approved brand, shade and manufacture to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guideline. Note: The paint should have VOC content limit less than 150 grams per litre. All necessary documentation (certificates, manufacturer declarations) should be provided by the contractor to engineer in charge.	SQM	5081	0.008765		
1306	Providing and applying 2 or more coats of acid/alkali chemical resistant paint of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying bitumen primer conforming to IS 158 complete all as per manufacturer's recommendations and as approved by engineer, at all heights above or below grade level, complete as per specifications.	SQM	2569	0.031391		
A1306	Providing and applying 2 or more coats of oil resistant paint(epoxy based & minimum 150 micron thickness) of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying primer complete all as per manufacturer's recommendations and as approved by engineer, at all heights above or below grade level, complete as per specifications.	SQM	2520	0.031391		
1307	Providing and applying two coats of Epoxy coating with suitable pigments of approved shade as per specification and direction of Engineer. The epoxy paint shall be a two pack material and shall be resistant to water, oil, splash, spillage & acidic environment. The epoxy paint coating shall be of minimum 150 micron thickness over epoxy primer.	SQM	550	0.018047		
1308	Providing and applying 2 or more coats of Chlorinated Rubber paint of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying chlorinated rubber zinc phosphate primer conforming to IS 158 complete all as per manufacturer's recommendations and as approved by engineer, at all heights above or below grade level, inclusive of intermediate coat of Titanium dioxide / micaceous iron oxide complete as per specifications.	SQM	935	0.016800		
1312	Providing and applying 3 coats of water proof cement paint of approved make and color on exterior surface at all heights including material, labour, scaffolding, curing etc including primer coat complete as per specification.	SQM	1640	0.007260		
A1312	Providing and applying 3 coats of water proof cement paint of approved make and color on exterior surface at all heights including material, labour, scaffolding, curing etc including primer coat complete as per specification. Note: The paint should have VOC content limit less than 200 grams per litre. All necessary documentation (certificates, manufacturer declarations) should be provided by the contractor to engineer in charge.	SQM	250	0.007260		
A1316	Providing and applying 2 mm thick Acrylic wall putty (in two coats) on walls including preparation of surface, staging, etc. to achieve a smooth even surface all complete as per specification and as directed by Engineer.	SQM	15059	0.006253		
1317	Providing and applying 2 mm thick white cement punning on walls including preparation of surface, staging, etc. to achieve a smooth even surface all complete as per specification and as directed by engineer.	SQM	130	0.007091		

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A1319	Providing and applying two or more coats of Premium Acrylic Smooth Paint with Silicon additives weather coat paint of approved brand (for exterior use) and manufacture and required shade over one or more coat of primer of water proof cement paint applied @ 2.2 kg./10 sqm after necessary cleaning/ washing, preparing the surface using coir brush/ wire brush, sand paper, including filling of cracks with putty wherever required etc. all complete to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellent and extremely durable with color fastness as per specification.	SQM	44084	0.014764		
B1319	Providing and applying two or more coats of Premium Acrylic Smooth Paint with Silicone additives weather coat paint of approved brand and manufacture and required shade applied @ 1.43 ltr./10 sqm over one coat of primer of water proof cement paint applied @ 2.2 kg./10 sqm after necessary cleaning/ washing, preparing the surface using coir brush/ wire brush, sand paper, including filling of cracks with putty wherever required etc. all complete to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellent and extremely durable with color fastness as per specification.(The sealant should have VOC content limit less than 250 grams per litre as prescribed by GRIHA. All necessary documentation (certificates, manufacturer declarations) to be provided by the contractor for green building documentation).	SQM	1654	0.014764		
1322	Providing and applying 400 micron thick food grade epoxy coating complying to FDA Title 21, Part 175.300.on Internal surfaces of RCC water retaining structures. Surface to be coated shall be absolutely dry, clean and dust free.	SQM	50	0.047211		
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 issued by BHEL as Free of Cost (FOC) Item)			0.000000		
A1401	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 1:1.5:3 (1 cement: 1.5 sand : 3 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 as per specifications(Quoted item rate shall be inclusive of providing glass joint strips):	SQM	18809	0.039016		
B1401	Providing and laying 50 mm thick heavy duty cement concrete in flooring pigmented topping 12mm thick non-metallic hardener under layer of 38mm thick cement concrete mix 1:1.5:3 (1 cement: 1.5 sand : 3 stone aggregates 12.5 mm well graded) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete as per specifications (Quoted item rate shall be inclusive of providing glass joint strips):	SQM	24872	0.033748		
1403	Providing and laying precast polished heavy duty cement concrete tiles (Carborundum topping pigment content is 3.5 kg per 50 Kg of Cement) of size 300X300X25 thick of approved shade as per IS 1237, including minimum 20mm cement mortar bedding of 1:3 (1 cement : 3 sand) jointed with neat cement slurry@4.4 kg/sqm,labour,materials, etc. all complete with pigment to match the shade of the tiles including rubbing, curing, grinding and polishing complete with laying as per IS 1443 etc.(inclusive of cost of cement for tiles manufacturing) all complete for following:			0.000000		
a	Laid in floors	SQM	2040	0.089433		
b	Laid in skirting	SQM	20	0.115177		
A1404	Providing and laying interlocking M35 Grade concrete blocks in paving with approved colour and pattern and should be laid on the subbase and bedding of sand minimum 20mm thick as per specifications and recommendations of manufacturer.(inclusive of cost of cement for paver manufacturing)			0.000000		
b	80mm	SQM	1269	0.067520		
1410	Marble stone Flooring laid in 50mm overall thickness with 18-20mm thick marble slabs (grade -1) with minium 30mm thick underbed of 1 cement : 2 sand : 4 stone aggregate by volume and brought to proper level.The marbel slabs/tiles laid over underbed with mortar 1:3, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry @4.4kg/sqm spread over the surface with fine joint finished including pigments, curing, grinding, granite polishing etc. all complete.	SQM	50	0.156241		
A1412	Providing and laying 18-20mm thick Flame Finished Granite stone of approved color and texture in flooring with brass/ stainless steel strips. Under bed shall average 30 mm thick of cement sand mortar of 1:4 (1 cement : 4 sand) by volume and brought to proper level. The granite stone slabs/tiles laid over under bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry @3.3kg/sqm spread over the surface with fine joint finished including pigments, curing, grinding, granite polishing etc. all complete.	SQM	20	0.427481		

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B1412	Providing and laying 18-20mm thick Flame Finished Granite stone of approved color and texture in flooring with brass/ stainless steel strips. Under bed shall average 50 mm thick of cement sand mortar of 1:4 (1 cement : 4 sand) by volume and brought to proper level. The granite stone slabs/tiles laid over under bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry @3.3kg/sqm spread over the surface with fine joint finished including pigments, curing, grinding, granite polishing etc. all complete.	SQM	25	0.427481		
1414	Providing and laying polished Granite stone 18-20mm thk in skirting and dado with 6mm thick projection from adjacent plaster minimum 12 mm thick cement mortar bedding of 1:3 (1 cement : 3 sand) with thick cement slurry @3.3kg/sqm spread over the surface with fine joint finished including cutting brickwall upto the required depth, edging, finishing etc. all complete. including mortar ,cement slurry ,pigments, curing, grinding,moulding, granite polishing etc. all complete.	SQM	751	0.428194		
1416	Providing and laying vitrified ceramic tiles of polished variety of size 600x600 from reputed / approved manufacturer, complete including underbed of cement mortar 1:3 minimum 20mm thick underbed for flooring and 12mm thick underbed for dado/skirting with neat cement slurry @3.3Kg/sqm etc. all complete for following			0.000000		
b	10mm thick tiles In flooring	SQM	79	0.121768		
d	10mm thick tiles In skirting and dado upto specific height	SQM	10	0.124530		
A1416	Providing and laying heavy duty antiskid full body vitrified tiles 20 mm thick of size 600x600mm in flooring, of approved make Johnson Endura Tiles or equivalent , shade, colour and pattern from reputed / approved manufacturer, complete including underbed of cement mortar 1:3 minimum 30mm thick for flooring with neat cement slurry @3.3Kg/sqm etc. all complete. Full body Vitrified Tiles shall be laid on properly laid levelled floor, with joints 3 to 5mm wide & 8 to 10mm deep & shall be filled with approved Epoxy Grout mix of 0.70kg of organic coated filler of desired shade (0.10kg of hardener and 0.20kg of resin per kg). Full body Vitrified Tiles shall have water absorption less than 0.5%, Modulus of Rupture more than 38N/mm ² , Breaking strength more than 7500N, Moh's scale more than 6, Abrasion resistance less than 144 mm ³ and coefficient of friction more than 0.4. Vitrified Tiles shall generally conform to IS: 15622.	SQM	18725	0.132341		
A1417	Providing and laying Mirror polished Digitally glazed vitrified & Matt Finish Digitally glazed Vitrified ceramic tiles of size 600x600mm/605x605mm (of Somany/ Johnson,varmora,Qutone or equivalent)with 3mm groove joints as per approved pattern pointed neatly with 3x4mm stainless epoxy grout of 0.70kg of organic coated filter of desired shade (0.10kg of hardener and 0.20kg of resin per kg) from reputed / approved manufacturer complete including underbed of cement mortar 1:3 minimum 20mm thick underbed for flooring and 12mm thick underbed for dado/skirting with neat cement slurry @3.3Kg/sqm etc. all complete as per specification for following			0.000000		
a	9-10mm thick tiles In flooring.	SQM	70	0.121768		
b	9-10mm thick tiles In skirting and dado upto specific height.	SQM	70	0.124530		
B1417	Providing and laying Mirror polished Digitally glazed vitrified & Matt Finish Digitally glazed Vitrified ceramic tiles of size 800x800mm (of Premium Series Somany/ Johnson,varmora,Qutone or equivalent) with 3mm groove joints as per approved pattern pointed neatly with 3x4mm stainless epoxy grout of 0.70kg of organic coated filter of desired shade (0.10kg of hardener and 0.20kg of resin per kg) from reputed / approved manufacturer complete including underbed of cement mortar 1:3 minimum 20mm thick underbed for flooring and 12mm thick underbed for dado/skirting with neat cement slurry @3.3Kg/sqm etc. all complete as per specification for following			0.000000		
a	10mm minimum thick tiles In flooring.	SQM	4093	0.121768		
b	10mm minimum thick tiles In skirting and dado upto specific height.	SQM	255	0.124530		
A1419	Providing and laying Mirror polished (6 layers of polish) granite stone slab of 18mm thickness single piece for wash basin / sink slab /facia of black or approved colour including 20mm underbed of cement mortar 1:3 with cutting,making corners,moulding and opening etc. all complete.	SQM	70	0.483956		
1420	Providing and laying Heavy Duty dust pressed Ceramic Tiles of 7mm thick of reputed manufacturer of approved finish shade and colour including 20mm underbed of cement mortar 1:3 with neat cement slurry @3.3kg/sqm etc. all complete.			0.000000		
a	300X300 mm	SQM	10	0.063957		
b	600X600 mm	SQM	10	0.063957		
A1421	Providing and laying Heavy Duty dust pressed (grade-5) Ceramic Tiles of size 300x300mm (approved size) and 7mm thick of reputed / approved manufacturer (Kajaria,johnson,Spartek or equivalent) of approved finish, shade and colour. The tiles shall be scratch resistance of minimum 5 on Mohr's scale and shall have a bending strength of 350 Kg./sqm,with Under bed shall average 43mm thk of 1 cement : 2 sand : 4 stone aggregates by volume and brought to proper level including cement mortar with neat cement slurry @3.3kg/sqm all complete.	SQM	216	0.090770		
A1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles conforming to IS:4457 in flooring/Dado and shall be laid over bitumastic lining of min 12/18 mm thick (to be laid in layers of 6mm each). The tiles shall be applied with 6mm thick Potassium Silicate bedding mortar as per IS:4441, 4443 & 4832 and including preparation of surface, application of bitumen primer, curing, pointing joint of bedding 20mm deepx6mm wide with epoxy/Furane morteretc. all complete as per specifications for following thicknesses. The tiles should be abrasion resistant & durable.			0.000000		
a	12 mm thick	SQM	50	0.179579		



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b	20 mm thick	SQM	1791	0.299299		
c	38 mm thick	SQM	92	0.434963		
d	75 mm thick	SQM	198	0.858480		
1424	Providing & fixing chemical resistant (AR) (Acid / Alkali) bricks (75mm thick) conforming to IS:4860 in the floor of neutralization pit. Surface on which lining to be applied shall be prepared in accordance with IS:2395. Bitumen primer as per IS:158 followed by 18mm thick bituminastic followed by 6mm thick potassium silicate mortar bedding shall be provided before laying AR bricks. The joints between AR bricks shall be filled with resin type of mortar conforming to IS:4832, part II, seal coat of readymade epoxy paint shall be provided on joints to cover up any porosity that may be left in mortar. End sealing shall be done with bituminastic AR bricks shall be laid with 6mm wide & 50mm deep pointing (epoxy / furnace / CNSL) & acid curing shall be done all complete as per specification.	SQM	184	0.290659		
A1424	Providing & fixing chemical resistant (AR) (Acid / Alkali) bricks (115mm thick) conforming to IS:4860 in the floor of neutralization pit. Surface on which lining to be applied shall be prepared in accordance with IS:2395. Bitumen primer as per IS:158 followed by 18mm thick bituminastic followed by 6mm thick potassium silicate mortar bedding shall be provided before laying AR bricks. The joints between AR bricks shall be filled with resin type of mortar conforming to IS:4832, part II, seal coat of readymade epoxy paint shall be provided on joints to cover up any porosity that may be left in mortar. End sealing shall be done with bituminastic AR bricks shall be laid with 6mm wide & 50mm deep pointing (epoxy / furnace / CNSL) & acid curing shall be done all complete as per specification.	SQM	266	0.290659		
1427	Providing and fixing digitally glazed ceramic tiles of approved color and design of size 200x300mm / 300x300mm/300X600mm (Of make Kajaria/Nitco/Somany make or equivalent) in dado of approved size, projecting 6mm uniformly from adjacent plaster or wall finish. The mix for 20mm thick underbed plaster shall consist of 1part cement and 3 parts sand by weight. fairly moist but firm, tiles shall be pressed over under bed by applying cement slurry @ 3.3kg/sqm including pigments, curing etc all complete for following thicknesses:			0.000000		
a	5mm thick	SQM	50	0.084356		
b	7mm thick	SQM	50	0.084356		
1428	Providing and laying 3mm thick antistatic PVC flooring / skirting of approved shade,as per IS:3462 and laying as per IS:5318 all complete.	SQM	30	0.026100		
A1429	Providing and fixing Removable type flooring system (raised access floor) consisting of of fire resistant Cementitious panels of 600 x 600x 35 mm and Laminated with 1.2 mm thick fire retardant food grade antistatic laminate top finish to ensure max bonding to the steel surface. Cementitious panels shall be steel welded construction, with an enclosed bottom pan of 64 hemispherical and top plain sheet which are fuse welded at multiple location to form a panel. The panel is coated with 40-60-micron epoxy coat after cleaning, de-greasing, phosphate by several tank processes & is heated to achieve max adhesion to the panel surface & corrosion resistance. The inner empty core of the panel is injected with a light weight fire retardant, non-combustible cementitious compound at high pressure to fill in all the crevices of the panel and ensures support of not less than 90% of the top surface area of the panel. Pedestal (300mm – 800 mm) must be 25mm dia. pipe with min.2.0 mm thickness with bottom plate of 100x100x min.2.0mm thick & top plate must be 75x75x3.0 mm. All pedestal shall be tightening to Stringer of 20x30x575x1.0 mm Rectangular tube. The system shall be design for Uniformly distributed load (UDL) of 13 KN (1300 kg/ sqm), for the same all complete as per specification.	SQM	10	0.297785		
1430	Providing and fixing dividing strips in joints of cast in situ floorings at various elevations, finishing, all labour, material etc. complete as per drawing, specification and instructions of engineer in charge.			0.000000		
a	Glass strips 40 mm wide and minimum 6 mm thick.	RM	1000	0.003919		
b	Aluminium strips 40 mm wide and minimum 3 mm thick	RM	1000	0.009442		
A1431	Providing and fixing minimum 11mm thick laminated wooden panel flooring and skirting of Pergo, Greenlam or equivalent multi-layered engineered wooden planks treated with VOC free lacquers and stains to provide extra strengthening, longevity and durability to planks. In all planks each layers are arranged at cross grain to each other for provide the balancing and stability to all three layers. Top layer of flooring is made up of about 3.0 mm thick thermosetting re-polish able natural veneer setting on a core of about 10 mm thick pine wood that produce natural characteristic of wood with 2.0mm thick bottom ply based veneer balancing layer. The planks are joint to each other through plankloc system with glue less technology system and laid on 2mm thick dual barrier underlay protecting sheet having anti-bacterial, Anti-termite, fire-resistant, noise reduction, high wear and abrasion resistance, water resistant properties. The system includes all accessories like beading, Quadrant, Veneered/solid wood skirting, end profile etc.as per as per manufacturer specification and approved by Engineer Incharge.	SQM	84	0.235430		
A1432	Providing and laying Decorative/designer pre-polished, plain and pigmented, high wearing resistance concrete tiles of 20mm thickness (minimum) in various non-standard interlocking patterns of approved color,shade all complete as per specification.	SQM	100	0.106447		



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A1433	Providing and laying Tactile, tac liner & tac button fully vitrified unglazed porcelain tile (for guiding band/s for visually impaired persons), size 300x300 15mm thick having Tile body 10mm thick plus profile 4.5mm thick. Low water absorption below 0.5%. MOR > 38NCM2, MOH Hardness >7 & Breaking strength > 4000 N. Tile confirming RNIB (The royal national institute for the blind, UK) , DETR (Department of the environment, transport and the regions, UK), & ADA (American With Disabilities Act, USA) , high stain and chemical resistance. Confirming IS 4457: 2007. Tile will be laid on 20mm thick cement & sand mortar with cement slurry having 4mm spacer & pointing with 3X4mm stainless epoxy grout / polymer based SP- 100 of Laticrete or approved equivalent in approved colour.	SQM	50	0.197083		
A1434	Providing and fixing carpet flooring over cement concrete floor. The carpet shall be of tile/roll form, machine/hand made tuped un-cut loop pile and lay with under lay of 10mm thick and shall be laid as per manufacturer's recommendations, in matching grains, treated with anti fungus and anti-termite before laying etc all complete as per specification.(Cement concrete flooring to be paid separately).	SQM	344	0.133170		
A1435	Providing and fixing Glass mosaic tiles at finished plain wall surface of size 24 mm x 24 mm x 3.8 mm in all colour, design , fixing in customize design as per direction of Engineer-in- Charge. The glass mosaic tiles to be fixed on the wall surface with the help of approved adhesive applied at the rate of 2.5 kg per sqm and grouting of the same. The rate is inclusive of all operation, material and required pattern approved by Engineer-in- Charge:	SQM	20	0.368896		
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.			0.000000		
A1502	METAL DECK SHEET Type-I, Designing, providing and fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour over roof purlins/secondary beams 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 (or as per design whichever is higher) with minimum trough depth of 44mm of grade YS250 as per IS 15961/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 roof slab 40mm 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 minum 10 micron (nominal) SMP or super polyester paint over primer coat of minum 5 micron (nominal) on other face. SMP and polyester paint system shall be of industrial 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 @ 250mm 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. (Supply and Fixing of shear connectors shall be paid separately)			0.000000		
a	Span Upto 1800mm	SQM	4182	0.141365		
b	Span Exceeding 1800mm and upto 2500 mm	SQM	6000	0.141365		
B1502	METAL DECK SHEET Type-II, Designing, providing and fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour over roof purlins/Secondary Beams 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 44 mm of grade YS250 as per IS 15961/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 floor slab 150 mm 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 minum 10 micron (nominal) SMP or super polyester paint over primer coat of minum 5 micron (nominal) on other face. SMP and polyester paint system shall be of industrial 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 19 mm dia & 100 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. (Supply and Fixing of shear connectors shall be paid separately)			0.000000		



BOQ-CUM-RATE SCHEDULE

SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)

ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
a	Span Upto 1800mm	SQM	9471	0.141365		
b	Span Exceeding 1800mm and upto 2500 mm	SQM	22873	0.141365		
A1503	Providing and fixing shear connectors of mild steel studs having 16 mm dia and minimum 65 mm projected length above purlin passing through metal decking as per relevant IS codes and specification.	QUINTAL	30	1.937694		
B1503	Providing and fixing shear connectors of mild steel studs having 19 mm dia and minimum 100 mm projected length above purlin passing through metal decking as per relevant IS codes and specification.	QUINTAL	97	1.937694		
A1504	Designing, providing and fixing Single skin Permanent colour coated metal cladding sheet with troughed M.S. sheets of minimum 0.6mm bare metal thickness of grade G250 as per AS1397/grade SS255 as per ASTM A653/ grade S250GD 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 special coated fasteners conforming to corrosion resistant class 3 of AS 3566 and tested for 1000 hours salt spray test with suitable cap, flashing etc. all complete. The exposed face of 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(nominal) and minimum 10 micron (nominal) SMP or super polyester paint over primer coat of minimum 5 micron (nominal) on other face. SMP and polyester paint system shall be of industrial finish of product type 4 of AS/NZ2728.	SQM	23640	0.081951		
A1505	Design, supply & erection of prefabricated permanent colour coated sandwiched insulated metal cladding of approved color comprising of top sheet as troughed permanently colour coated sheet & bottom sheet as plain permanently colour coated for covering of exposed metal with 50mm thick fire retardant rock wool insulation sandwiched between the two sheets, each sheet shall be of steel with zinc coated to class 275 with minimum bare metal thickness (i.e. excluding the thickness of galvanizing/aluminium-zinc coating and painting) of 0.6mm of grade G250 as per AS1397 / grade SS255 as per ASTM A653m / grade S250GD as per EN 10326 with zinc coating to class Z275/ aluminium zinc alloy coating to class AZ150. The exposed face of the sheet to be permanently color coated with at least 40 micron DFT silicon modified polyester paint (SMP with silicon content of 30% to 50%) or polyester paint of minimum 20 microns (nominal) SMP or polyester paint on one side (exposed face) , over 5 micron (nominal) primer coat and minimum 10 micron (nominal) SMP or polyester paint over 5 micron (nominal) primer coat on other side. SMP and polyester paint shall conform to product type 4 of AS/NZS 2728. The structural design of sheets along with deflection check shall be as per specifications. The prefabricated insulated Metal sandwich panels shall be fixed with structural members below using special coated fastener conforming to corrosion resistant class 3 of AS3566 and tested for 1000 hours salt spray test, including flashings complete as per specification. The insulation shall be of bonded mineral wool of minimum thickness 50mm conforming to IS:8183, having a density of 48 Kg/cu.m. for rock wool and is included in this item. (payment shall be made on surface area of the cladding including flashings)	SQM	368	0.215567		
B1505	Design, supply & erection of prefabricated permanent colour coated sandwiched insulated metal cladding of approved color comprising of top sheet as troughed permanently colour coated sheet & bottom sheet as plain permanently colour coated for covering of exposed metal with 50mm thick fire retardant rock wool insulation sandwiched between the two sheets, each sheet shall be of steel with zinc coated to class 275 with minimum bare metal thickness (i.e. excluding the thickness of galvanizing/aluminium-zinc coating and painting) of 0.5mm of grade G350 as per AS1397 / grade SS340 class 4 as per ASTM A792M / grade S350GD as per EN 10326 with zinc coating to class Z275 / aluminium-zinc alloy coating to class AZ150. The exposed face of the sheet to be permanently color coated with at least 40 micron DFT silicon modified polyester paint (SMP with silicon content of 30% to 50%) or polyester paint of minimum 20 microns (nominal) SMP or polyester paint on one side (exposed face) , over 5 micron (nominal) primer coat and minimum 10 micron (nominal) SMP or polyester paint over 5 micron (nominal) primer coat on other side. SMP and polyester paint shall conform to product type 4 of AS/NZS 2728. The structural design of sheets along with deflection check shall be as per specifications. The prefabricated insulated Metal sandwich panels shall be fixed with structural members below using special coated fastener conforming to corrosion resistant class 3 of AS3566 and tested for 1000 hours salt spray test, including flashings complete as per specification. The insulation shall be of bonded mineral wool of minimum thickness 50mm conforming to IS:8183, having a density of 48 Kg/cu.m. for rock wool and is included in this item. (payment shall be made on surface area of the cladding including flashings)	SQM	140	0.215567		
1512	Providing and fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS 8183 having a density of 32 kg/cum glass wool or 48 kg/cum for rock wool, for cladding/under deck insulation including wrapping in black polythene black supported over weld mesh 75X75X1.6 MM dia to hold in position and application of glue & tying with lacing wire, for glass/rock wool as per manufacturer's recommendation.			0.000000		
a	For insulation in Sandwich Cladding	SQM	200	0.051041		
b	For underdeck insulation below RCC slabs	SQM	100	0.073667		
1514	Providing and installing under deck insulation with resin bonded rock wool 50 mm nominal thickness conforming to IS 8183 having a density of 48kg/cum using minimum 0.05 mm thick aluminium foil & 0.6 mm x 25mm mesh wire netting and shall be fixed to the ceiling with 2 mm wire ties.	SQM	3305	0.069391		

ANNEXURE I (Revised)						
BOQ-CUM-RATE SCHEDULE						
SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)						
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A1514	Providing and laying over deck roof insulation with 40 mm thick impervious sprayed, closed cell free Rigid Polyurethane foam conforming to IS - 12432 Pt. III (density of foam being 40-45 kg/ cum), over a coat of polyurethane primer applied @ 6-8 sqm per litre, laying min.0.5mm PU coating as per IS standard and 400 G polythene sheet over PUF spray and providing a wearing course of 40 mm thick cement screed 1: 2 : 4 (1 cement : 2 coarse sand : 4 stone aggregate 20 mm nominal size) in chequered rough finish, in panels of 2.5 m x 2.5 m and embedding with 24 G wire netting and sealing the joints with polymerized mastic, all complete as per direction of Engineer-in-Charge	SQM	1000	0.155885		
B1514	Providing and laying Heat Resistant Terrace light coloured Vitrified tiles of MIN. 300X300X22MM from reputed / approved manufacturer with High 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) and grouting the joints with mix of white cement & marble powder in ratio of 1:1.including rubbing and polishing of the surface all complete, NOTE: All tiles to be used should be with appropriate % of recycled content.The contractor should provide the material cutsheet/ declaration from manufacturer mentioning the recycled content used in manufacturing of ceramic tiles to be used).	SQM	1000	0.191516		
1600	FALSE CEILING: False ceiling including all labour, material (unless otherwise specified in BOQ/contract specification), equipment, transportation, handling, suspension system etc at all level as per specification, drawings and as directed by engineer - in - charge.			0.000000		
A1601	Providing and fixing of false ceiling of 12.5 mm thick tapered/square edge glass fibre reinforced gypsum board conforming to IS : 2095 having fine texture finish, including providing and fixing of frame work at all levels, for all kind of work, consisting of light weight galvanised steel member (minimum 0.8 mm thick and galvanised as per IS: 277) having maximum grid size of 1200 mm x 600 mm for supporting panels of specified size, suspended from RCC /structural steel , with 4 mm (minimum) galvanised wires (rods), with special height adjustment clips, providing angle section of minimum 25 mm width along the perimeter of ceiling, supporting grid system (minimum 0.8 mm thick and galvanised as per IS: 277), expansion fasteners for suspension arrangement from RCC, providing openings for AC ducts, return air grills, light fixtures, etc., all complete. (concealed grid and finished flat seamless and curve shape (dome etc.), finished smooth(seamless) along with the galvanised light gauge steel supporting system laid in profile to suit the profile of dome).All GRG board to be used should be with appropriate % of recycled content. The contractor should provide the material cutsheet/ declaration from manufacturer mentioning the recycled content used in manufacturing of board to be used)	SQM	200	0.072687		
1602	Providing, fixing and laying light weight mineral fiber tile false ceiling of minimum thickness 15 mm and exposed surface semi-perforated with depth of perforation as 4 mm and humid resistance of 95% RH and fire performance of class 0/1 as per BS 476 with metal suspension grid system with galvanized Tees of section 24 X 38 mm for main runners of approved colour and make as per specification including 50mm thick mineral wool insulation (density48kg/cum) as per IS:8183 bound in polythene bags on top of panels. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures. A.C. ducts etc. suitable M.S. channel (minimum MC 75 @ 1.2m) grid shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. complete with cut-outs etc.The size of tiles shall be 600 X 600 mm or 600 X 1200 mm. Required MS channel shall be measured & paid extra under respective item unit rate.(All mineral fiber board to be used should be with appropriate % of recycled content. The contractor to provide the material cutsheet/ declaration from manufacturer mentioning the recycled content used in manufacturing of board to be used)	SQM	710	0.146354		
A1604	Providing, fixing and laying permanently colour coated aluminium false ceiling of Hunter Douglas Luxalon or equivalent of approved colour with stove enamel finish of approved make in LINEAR and SQUARE type with corrosion resistance aluminium alloys panels in 600mm X 600mm of minimum thickness 0.6mm with perforation of 2.5mm dia in combination with built in nonwoven tissue for providing good acoustic properties having coil coating of thickness min.25 micron and install withT-grid (of profile 24 mm) in the same of contrasting colours or with 6mm recess joints and suitable torsional spring arrangement for installation. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures etc. Suitable M.S. channel (minimum MC 75) grid 1200 mm C/C maximum shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. The work to be complete as per specifications, drawings and direction of engineer. (Structural steel works for platform for movement is separately payable under relevant items of BOQ)	SQM	3066	0.195881		

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A1607	Providing and Fixing 12mm thick Calcium silicate board of HILUX or equivalent in plan or elevation with aluminium grid, metal suspension system, anchor fastener adjustable hangers etc. including two or more coats of acrylic emulsion paint of approved colour to give an even shade with smooth finish all complete as per architectural design and detail. Metal suspension system as per ASTM C-635 shall be hot dipped M.S.galvanized (grade 180 as per is :277) and nominal size of T-section shall be 24 x 38 mm or 24 x 25 mm cross runners. 24mm wide exposed flange surface shall be permanently color coated. Suspension system shall be as per manufacturer's specification. The size of tiles shall be 600 X 600 mm or seamless as per detail design and drawing. Movement platform of structural steel shall be provided if required for the movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. (Structural steel works for platform for movement is separately payable under relevant items of BOQ).	SQM	106	0.144661		
A1609	Providing and fixing Metal False Ceiling System of 600x600 mm square module of Hunter Douglas or equivalent make which includes providing and fixing 'C' wall angle of size 20x30x20mm made of 0.5mm thick pre painted steel along the perimeter of the room with help of nylon sleeves and wooden screws at 300mm centre to centre, suspending the main 'C' carrier of size 10x38x10mm made of G. I. steel 0.7mm thick from the soffit of RCC slab / structural steel or catwalk steel channel grid above with help of soffit cleat 37x27x25x1.6 mm, rawl plugs of size 38x12 mm and C carrier suspension clip and main carrier bracket at 1000mm c/c. Inverted triangle shaped Spring Tee having height of 24 mm and width of 34mm made of GI steel 0.45 mm thick is then fixed to the main C carrier and in direction perpendicular to it at 600mm centres with help of suspension brackets with special height adjustment clips and suitable torsional spring arrangement for installation. Wherever the main C carrier and spring T have to join, C carrier and spring T connectors have to be used. All sections to be galvanized @ 120 g/m2 (both side inclusive) Fixing with clip in tiles into spring 'T' with GI Metal Ceiling Clip in plain Beveled edge global white colour tiles of size 600x600 and 0.5mm thick with 25mm height, made of G I sheet having galvanizing of 100 g/m2 (both sides inclusive) as per IS 277 and 20% perforation area with 1.8mm diameter holes and having NRC of 0.5, electrostatically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending and perforation and backed with a black Glass fibre acoustical fleece, providing anchor fasteners for making suspension arrangement from RCC slab, steel structure, openings for AC ducts, return air grills, insulation, cut out for light fixtures, etc., all complete as per specification and approved by engineer incharge. (Materials for structural platform grid for movement and maintenance made up of MS Channels/ Beams / Angles shall be paid separately under ST No 2301).	SQM	998	0.145140		
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			0.000000		
1703	Providing and fixing galvanised MS down take pipes of 100 mm dia- Medium quality as per IS:1239(part-I) / IS:3589 all complete.	RM	59	0.135130		
1704	Providing and fixing galvanised MS down take pipes of 150 mm dia- Medium quality as per IS:1239(part-I) / IS:3589 all complete.	RM	5169	0.174235		
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.			0.000000		
1801	Providing and Filling in trenches, plinths, area paving and other underground structures with graded stone aggregate of size range 63 mm to 45 mm in layers not exceeding 200 mm in thickness including breaking of stone boulders to required sizes, filling the interstices with selected sand/ moorum/ non-expansive soil and compacting to 85 % of original volume of stone stack for all lifts etc. all complete. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	9630	0.180470		
1802	Supply and laying approved quality Stone aggregate 40mm size in transformer yards.	CUM	2200	0.241488		
1803	Supply and laying approved quality rounded pebbles / gravels of 40mm size in transformer yards.	CUM	88	0.252534		
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	304	0.016390		
1807	Anti termite chemical treatment of soil with Chlorpyrifos/Lindane E.C. 20% with 1% concentration conforming to IS:8944 and as per IS 6313 all complete. (Plinth area of building at ground floor only shall be measured for payment).	SQM	11275	0.012649		
1808	Laying of earthing mats/rods including risers, transportation from yard stores, loading, unloading, cutting to length, welding, protective painting of joints etc. all complete. (Excavation & Back filling shall be paid separately under respective item of earth work. Earthing mats/rods shall be supplied by BHEL free of cost)	MT	200	0.798754		
1809	Construction of below ground earthing system test pits as per drawing / sketches including concreting, reinforcement, formwork, providing & fixing GI strip etc as per drawing and specification (excavation & backfilling only will be paid under applicable BOQ items).	EACH	40	0.769893		
1813	Providing Earthing pit as per drawing with charcoal & salt, GI pipes, GI earth electrodes, GI wire, GI strips, brick chamber with covers including associated earthwork etc. all complete.	EACH	65	1.975908		
A1815	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 610 g/sqm etc. all complete.	Kg	1179	0.006859		

BOQ-CUM-RATE SCHEDULE

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1819	Supply & fixing expanded metal steel sheet conforming to IS:412. Size of mesh shall be 10mmX40mm with strands of 2.5mm width and 1mm thickness to the structural steel for facilitating fireproofing works.	SQM	20	0.042579		
A1823	Providing and laying cinder filling or foam concrete blocks filling in sunken slabs of toilets or where ever light weighted filling material required ,etc complete as directed by engineer in charge.	CUM	300	0.160339		
1825	Providing & Laying 20 micron thick polythene sheet below the concrete base including materials, labour etc. complete as per drawing / direction of engineer.	SQM	67	0.002049		
1827	Anti weed chemical treatment of soil with suitable chemical pertaining to the types of weeds found in the vicinity including providing anti-weed/ soil sterilization test certificate, performance guarantee of three years etc. all complete.	SQM	1000	0.000356		
A1837	Providing 50mm thick premix carpet surfacing laid to slope in two layers:30mm and 20mm respectively with 12mm downgraded stone chips mixed with 80/100 grade bitumen @ 52 Kg/Cu.M including compaction etc. all complete.	SQM	315	0.020399		
A1838	Providing 75mm thick anti corrosive layer laid to required slope consisting of clean & well graded coarse sand mixed with A90 grade bitumen for softening point upto 45 degree Celcius or A65 grade bitumen for softening point above 45 degree celcius as per IS: 73 or its equivalent quality 8 to 10% by volume and rolled or compacted all complete.	SQM	315	0.354081		
A1843	Providing and Installtion of Civil Lab equipments in FQA lab as per specification.	LS	1	0.000000		
A1844	Providing consultancy service for prepration of Perspective views of main power house, Service Building and Control Room interiors and submitting Hard Copy in Laminated A 1 Size (Two Numbers) and Soft copy of Autocad /Revit drafted views. Further, a panoramic bird's eye view of overall plant shall be submitted in laminated A1 Size hardcopy (Two Numbers) and soft copy in AutoCAD.	LS	1	64.580882		
A1845	Providing engineering services for Rain water harvesting including preparation of Rain water harvesting scheme, collection of required data, submitting to ground water board and getting approval from Customer and Ground water board at start & completion of work etc. complete as per statutory norms. The Engineering firm/person should be approved/accepted by ground water board and shall have similar experience of rain water harvesting for complete power plant. The scope shall include rain water harvesting for buildings/systems under package. The scope shall include preparation of rain water calculations, calculations for ground recharge/collection, economical design of rain water harvesting with diferent options under discussion with BHEL and submit design, drawings, report to Ground water board, obtain approval from Ground water board & Customer and on completion of work get the completion approval for rain water harvesting from Ground water board. This includes visits to site with/without ground water board officials and rate of this item shall include all expenses of consultancy, site visits etc. required from start of work till final obtaining of compeltion approval from ground water board. Payment for execution of rain water harvesting ponds shall be paid separately.Payment for execution of ground water recharge scheme shall be paid separately as per BOQ item 2701 to 2708.	LS	1	147.566860		
1846	Providing and laying in position 300 x40 mm GI Race way with standard length 2500 mm single compartment trunking raceways made from 14 gauge(minimum) pre-galvanised sheet including fasteners, floor support, connectors, bends cross-way, earthing stud for fixing, 350x350x50 mm junction boxes of pre-galvanised sheet with cover plate etc. and embedded in the PCC and floor finish, all complete as per requirement, detail drawing,specifications and instruction of Engineer in-charge.(PCC and floor finish will be paid separately unde respective BOQ items).	RM	500	0.127763		
1847	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	1269	0.007349		
1848	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).			0.000000		
a)	Fixed to steel windows by welding	kg	500	0.048547		
b)	Fixed to openings /wooden frames with rawl plugs screws etc.	kg	250	0.035631		

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ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
1849	Providing engineering consultancy services for Architectural design & drawings of GRIHA compliant building in harmony with the overall plant and presented in the form of presentation drawings, including 3-D perspective rendered views, panoramic views, walkthrough, with color schemes, energy simulation, solar analysis, Daylight Modelling, lighting design, as per ECBC compliance, GRIHA norms and specification including preparation of integrated services drawings in co-ordination with electrical, HVAC & fire systems and taking approval on drawings from BHEL/customer. All activities required for obtaining minimum 3-star rating as per specification for GRIHA compliant buildings etc. all complete. perspective coloured views shall be submitted in Hard Copy in Laminated A-1 Size (Two Numbers) as required in the desired format. The bidder should have experience in design of green building and completed similar kind of buildings with green building rating. Structural design & drawing, of buildings & foundations are in scope of BHEL and not included in scope of bidder. Bidder should have design experience in power sectors and have completed some projects in the same. The scope of bidder shall include coordination with respect to HVAC, electrical & fire fighting systems & space requirements for electrical facilities in consultation with BHEL/customer HVAC design parameters & space requirement as per GRIHA norms shall be provided by bidder for further detail engineering by BHEL. Engineering services of interior architecture, PA system, planning for firefighting system as per inputs provided by BHEL, external & internal finishes, landscaping, plumbing & sanitation, water supply system, false ceiling, internal partitions, reception, glazing, planning for parking etc. are also included in this item. Approximate sizes of buildings are mentioned below, however, for any variation during detailed engineering stage, no extra payment is admissible. The 3-D model shall be PDS/PDMS compliant for transfer to complete plant PDS/ PDMS model. Bidder shall also provide BOQ & specification of finishing items in a generalized fashion in consultation with BHEL Civil design wing, during detailed engineering stage for further sub-contracting of finishing works. The above scope shall also include the landscape design and BOQ along the buildings as per specification.			0.000000		
a	Service building of Approx. 4500 Sq.M. floor area in Ground+ 4 storeys (Each Floor 900 Sqm approx)	LS	1	332.025563		
1850	Registration of Green Building Project with ADaRSH and obtaining GRIHA rating (Minimum 3 star) for Service building. This shall include all expenses and services for obtaining GRIHA rating including complete documentation, replying to queries from ADaRSH/GRIHA, incorporating comments & resubmission, obtaining approval from BHEL/Customer, engagement of specialists as per specification & GRIHA norms, cost of visits of ADaRSH/GRIHA team at site, Preliminary audit of the buildings and site and all incidental cost involved upto completion of obtaining final GRIHA rating certification with final audit. The items 1849 & 1850 shall completely cover all expenses & services, audit required for registration to obtain final GRIHA certification as per contract /customer requirements.	LS	1	147.566863		
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.			0.000000		
A2003	Supplying and erecting in position 2.4 m high PVC coated gavanised wire mesh fencing of minimum 4 mm diameter (including PVC coating) of mesh size 75mm x 75mm of height 2.4m above the toe wall with a 600mm high galvanised concertina at the top, such that total fence height of 3.0m above the toe wall is achieved. The diameter of the hot dip galvanised steel wire for chain link fencing (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 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. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts etc. all complete as per specifications. (Structural post shall be paid separately under ST No. A2008)	RM	532	0.157666		
A2008	Supply, fabrication and fixing of mild steel posts for fencing including painting (chlorinated rubber paint) etc all complete (Excludes RCC Foundations for supporting the posts)	MT	10	6.484366		
A2009	Supply, fabrication and installing in position and testing galvanised MS Gates (alongwith provision of wicket gate) out of channels, joists, angles, flats, plates, MS 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	7.650919		
2100	WATER SUPPLY: Water supply work including men, material (unless otherwise specified in BOQ/contract specification), equipment etc. at all level as per specification, drawings and as directed by engineer - in - charge.			0.000000		



BOQ-CUM-RATE SCHEDULE

SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)

ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
2101	Providing and fixing in position tested heavy duty type chromium plated (CP) brass long neck bib cocks including sockets, union, nuts etc all complete - 15mm nominal bore.	EACH	185	0.076517		
2102	Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15mm nominal bore.	EACH	111	0.024496		
2103	Providing and fixing in position heavy duty brass full way valve with wheel of approved quality including all specials etc all complete for following sizes:			0.000000		
a	25mm nominal bore.	EACH	37	0.040797		
b	50mm nominal bore.	EACH	37	0.072242		
A2104	Providing and fixing Galvanised MS pipe of medium class conforming to IS:1239 with pipes being concealed and painted with anticorrosive paint, complete for internal works with GI sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc all complete for following sizes:			0.000000		
a	15 mm nominal bore.	RM	148	0.030197		
b	20 mm nominal bore.	RM	296	0.034473		
c	25 mm nominal bore.	RM	296	0.042401		
d	50 mm nominal bore.	RM	148	0.069302		
A2105	Providing and fixing GI pipes class B complete for external work with GI sockets, unions, elbows, tees, nipples etc including trenching & refilling, anti-corrosive paint etc all complete for following sizes:			0.000000		
a	15 mm nominal bore.	RM	148	0.024318		
b	20 mm nominal bore.	RM	296	0.028594		
c	25 mm nominal bore.	RM	296	0.036522		
d	50 mm nominal bore.	RM	148	0.063423		
A2106	Providing and fixing 600mmx900mmx6mm thk mirror with edge mounted with teak beading and minimum 12 mm thick plywood backing from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws etc all complete.	EACH	37	0.072242		
A2108	Providing and fixing 20 mm diameter stainless steel towel rails (600mm X 20mm) with C.P. mounting brackets all complete.	EACH	37	0.057366		
2110	Providing and fixing C.P. Soap holder mounted with C.P. screws etc all complete.	EACH	74	0.036878		
2111	Providing and fixing stainless steel / C.P. liquid soap dispenser. Dispenser shall be round and easily revolving with removable threaded nozzle and mounted on C.P. brackets etc all complete.	EACH	74	0.061909		
2112	Providing and fixing glazed vitreous wall mounted paper holder with suitable cover cum cutter fitted with CP screws etc. sll complete.	EACH	111	0.030019		
2114	Providing & fixing in position P.V.C. water tank of Syntex or approved equivalent including making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc all complete for following capacities. GI pipes shall be paid separately under ST No. 2105.			0.000000		
a	500 litres capacity	EACH	4	0.299566		
b	1000 litres capacity	EACH	4	0.599132		
c	2000 litres capacity	EACH	3	1.198354		
d	5000 litres capacity	EACH	1	2.995840		
A2115	Providing and fixing electric operated hand dryer with photo voltaic control etc all complete.	EACH	37	0.296179		
A2116	Providing and fixing SS (stainless steel) Grab bar as per specification fo disabled person as per specification and instruction by engineer incharge.	RM	50	0.108006		
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.			0.000000		
A2201	Supply and fixing coloured glazed vitreous oval shape china wash basin 450x550mm conforming to IS: 2556 mounted over 18 mm thk granite beveled edge counter .The Basin shall be fitted with approved shape bib cock, photo-voltic control system for water control with flow rate less than 5 LPM (litres per minute) at 45 psi,CP brass chain with rubber plug, 40mm CP brass waste and bottle trap with necessary union including cutting of notch in granite counter slab etc complete as per specification	EACH	74	0.891787		
2202	Providing and fixing approved vitreous china laboratory sink of size 600x400x200mm conforming to IS:2556 (part-5) with R.S. or C.I. brackets, chromium plated brass chain with rubber plug 40mm, 40mm CP brass waste and 40mm CP brass trap with necessaary union complete including painting the fittings, cutting and making good the wall where required etc. all complete.	EACH	8	0.231333		
2203	Providing and fixing stainless steel kitchen sink of size 610x510x200mm conforming to IS: 13983 including all fittings etc. all complete.	EACH	10	0.424809		
A2204	Providing and fixing colour glazed vitreous china European type water closet conforming to IS:2556 with siphon, open front solid plastic seat and plastic cover, low level 12.5 litre PVC flushing cistern (same colour as WC) with valveless fittings, necessary C.P connections,water faucet, toilet paper holder as per IS:2556 etc all complete.			0.000000		
b	Wall mounted	EACH	37	0.828595		
A2205	Providing and fixing white/coloured glazed vitreous china Orissa pattern (580x440mm) water closet conforming to IS:2556 part 3 with all fittings including foot rests, low level 12.5 litre PVC flushing cistern with valveless fittings, necessary C.P connections etc all complete having flow rate of 6/3 LPF (litres per flush) or less at 45 psi.	EACH	20	0.417861		
2206	Providing and fixing white flat back glazed vitreous china urinals of size 440x265x355 mm with photo voltaic control flushing system as per IS:2556 (part 6, section 1) with flush pipes, lead pipes, gratings, traps and necessary C.P. fittings etc. all complete.	EACH	34	0.503286		



BOQ-CUM-RATE SCHEDULE

SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)

ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
A2206	Providing and fixing white/coloured water efficient flat black glazed vitreous china urinals of size 440x265x355mm with photo voltaic control flushing system as per IS: 2556(pt-6 sec-1) with flush pipes, lead pipes, gratings, traps and necessary C.P fitting etc. all complete as per specification having flow rate of 2 LPF (litres per flush) or less at 45 psi.	EACH	40	0.503286		
2207	Supply, laying and jointing UPVC pipes of class 3 as per IS:4985 including bends, branches and all other necessary fittings, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete for following.			0.000000		
a	75mm dia pipes	RM	50	0.021735		
b	110mm dia pipes	RM	50	0.031355		
c	160mm dia pipes	RM	50	0.041243		
d	200mm dia pipes	RM	50	0.050150		
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.			0.000000		
a	200mm dia	RM	225	0.047033		
b	300mm dia	RM	280	0.059504		
c	450mm dia	RM	120	0.182875		
d	600mm dia	RM	75	0.237658		
2211	Providing and fixing C.I Manhole heavy duty cover of size 600mmx450mm including frame from reputed manufacture etc. all complete.	EACH	74	0.252712		
2212	Providing and fixing circular heavy duty C.I. manhole cover of 600 mm dia with frame etc. all complete.	EACH	27	0.219397		
2213	Providing and fixing square mouth S.W Gully trap grade 'A' complete with CI grating, brick masonry chamber(Clay Brickwork in 1:6 mortar, 12mm plaster in 1:6 mortar & 1:2:4 Cement Concrete) and water tight CI cover with 300x300mm (inside). The weight of cover to be not less than 4.53 Kg and frame to be not less than 2.72 Kg etc all complete for following sizes:			0.000000		
a	100x100mm P or S Type.	EACH	74	0.118473		
b	150x100mm P or S Type.	EACH	74	0.124352		
c	150x150mm P or S Type.	EACH	74	0.134863		
A2215	Providing and fixing C.I. floor traps with stainless steel grating etc all complete.	EACH	222	0.084801		
2216	Providing and installing approved brand single tap water cooler of 80 L cooling capacity all complete.	EACH	37	3.032095		
2217	Providing and installing approved brand single tap water cooler of 150 L cooling capacity all complete.	EACH	37	3.782124		
2218	Providing and fixing white vitreous urinal partitions of size 675x325x85mm all complete.	EACH	74	0.111881		
2221	Providing, laying spun CI pipes with conforming to IS 1536 complete for following.(Excavation,backfilling,concrete to be paid seperately)			0.000000		
c	150mm dia	RM	200	0.304376		
d	200mm dia	RM	200	0.467922		
e	250mm dia	RM	200	0.561275		
f	300mm dia	RM	200	0.710746		
A2225	Providing and fixing geyser of 25 liters capacity including fittings etc all complete.	EACH	8	0.754000		
A2226	Providing and fixing one number HDPE loft type / over head water storage tank, as per IS 12701 and of 500 liters capacity, complete with float valve, overflow drainage pipe arrangement etc all complete.	EACH	8	0.343656		
A2227	Providing and fixing suitable water meter (Maximum Working Pressure 16 bar; Maximum Liquid Temperature 60°C; Connection Flanges according to ISO, BS 10, American Water works Association (AWWA) or others; Register water consumption in cum) on 50 mm domestic water inlet pipe	EACH	2	0.590246		
A2228	Providing and fixing suitable water meter (Maximum Working Pressure 16 bar; Maximum Liquid Temperature 60°C; Connection Flanges according to ISO, BS 10, American Water works Association (AWWA) or others; Register water consumption in cum) on 150 mm sewer water outlet pipe	EACH	2	1.180493		
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. (STRUCTURAL STEEL will be issued by BHEL as Free of Cost (FOC) Item)			0.000000		

ANNEXURE I (Revised)						
BOQ-CUM-RATE SCHEDULE						
SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)						
ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
A2301	Supply, Fabrication,erection and alignment of structural steel with mild steel (E250) rolled section / built up section / combination of both conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc, connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable. However, permanent bolts are payable separately), 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, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drgs, in	MT	63	2.409090		
B2301	Collection & transportation of factory fabricated structure from BHEL store, Erection and alignment of structural steel with mild steel (E250) (shop connections (factory fabricated) will be welded type and field connections will generally be bolted type unless otherwise specified) conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, packer plate, 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 factory fabricated structure from stores, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable. However, permanent bolts are payable separately), assembly, erection scheme, stability of structures, installation of temporary structures, setting column bases, 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. (Factory fabricated structure will be issued by BHEL as Free of Cost (FOC) Item)					
a	For rolled sections	MT	1645	1.443986		
b	For Built up sections composed of Structural plates only including stifeners e.g. plated columns, girders, etc	MT	145	1.443986		
c	For built up section composed of "rolled sections" including stiffeners	MT	4362	1.443986		
d	For built up section composed of "rolled sections and plates" including stiffeners	MT	4267	1.443986		
C2301	Collection & transportation of factory fabricated structure from BHEL store, Erection and alignment of structural steel with high strength steel (E350) built up section (shop connections (factory fabricated) will be welded type and field connections will generally be bolted type unless otherwise specified) conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, packer plate, 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 factory fabricated structure from stores, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable. However, permanent bolts are payable separately), assembly, erection scheme, stability of structures, installation of temporary structures, setting column bases, 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. (Factory fabricated structure will be issued by BHEL as Free of Cost (FOC) Item)	MT	6803	1.443986		
A2303	Extra over ST NO. A2301,B2301 & C2301 for blast cleaning of steel structures to near white metal surface(Sa 2 1/2) and applying coat of two component moisture curing zinc (ethyl) Silicate primer (solid by volume Minimum 60+/-2% & zinc dust % on dry film minimum 80 %). Zinc dust composition and properties shall be Type-II as perASTM D520-00. Primer of minimum 70 micron DFT shall be applied over shot blast cleaned surface including touch-up painting etc all complete. Primer coat shall be applied in Shop immediately after blast cleaning by airless spray technique.	MT	63	0.437086		



BOQ-CUM-RATE SCHEDULE

SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)

ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
A2305	Providing and applying (with airless spray technique) 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 to be applied after an interval of minimum 24 hours (from the application of primer coat by airless spray technique.) and of approved make including protection and cleaning, scaffolding etc. all complete as per specification for all structures .	MT	63	0.122297		
B2305	Providing and applying Finish 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 shall be applied after an interval of minimum 24 hours (from the application of sealer coat), Colour and shade of the coat shall be as approved by the Employer) over steel sections already having intermediate coats including protection and cleaning, scaffolding etc. all complete as per specification for all structures .	MT	1729	0.186360		
2306	Providing, laying and clamping of crane rails over the crane girder at all elevations as per IS 3443 including all fixtures, clamps, testings etc. all complete as per drawing and specification.	MT	5	9.170129		
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.					
a	Minimum galvanisation of 610 g/sqm	MT	343	9.233106		
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	8643	0.006681		
2312	Providing and fixing in positing 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	25928	0.007215		
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	100	0.793053		
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:			0.000000		
a	In erected position	MT	50	1.752146		
b	In fabrication yard	MT	75	1.358425		
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 position, 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	71	1.193277		
2318	Providing and fixing in position PTFE type sliding bearings of reputed manufacturer, individual bearing suitable for required vertical loads as per the construction drawings and for maximum displacement of ±50 mm including all taxes, duties, transportation, installation, drilling, bolting, erecting, aligning etc all complete for following vertical loads.			0.000000		
a	20 Tons	EACH	10	1.301683		
b	25 Tons	EACH	7	1.476453		
c	40 Tons	EACH	7	1.592965		
d	50 Tons	EACH	8	1.709389		
e	60 Tons	EACH	9	1.825902		
f	100 Tons	EACH	1	2.058928		
A2320	Supply, fabrication and fixing of stainless steel pipe hand railing (Polished) conforming to SS 304 of 32 mm/50 mm dia fixed on 50 mm SS round baluster placed at maximum 1000 c/c along with five numbers 19 mm diameter midrail connected at side of baluster by special brackets including transportation, loading/unloading etc. all complete as per specification.	MT	6	30.490460		

BOQ-CUM-RATE SCHEDULE

SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)

ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
B2320	Supply, fabrication and fixing of stainless steel-top mounted-Glass railing with all necessary bend & termination conforming to SS304 grade satin finish with support at a c/c distance of 1000 mm and exposed height of 1000 mm consisting of Hand rail 50 mm dia,2mm thick pipe, balusters of 42mm dia,2.0mm thick,neck pipe 19mm dia,2mm thick glass clamps 3mm thick cover caps 12. mm thick,base plate 6mm thick with fastners with 6mm heat strengthened glass + 1.52 mm pvb layer + 6mm heat strengthened glass as per specification.	RM	160	0.342947		
A2321	Supply, fabrication and fixing of hot dipped galvanized (as per IS 4736) MS pipe hand railing (minimum galvanization of 610 g/Sqm) of 32/40/50 mm dia including transportation, loading/unloading,surface preparation,painting etc. all complete as per specifications. Payments terms - a)on receipt of materials at site - 65%; b) Erection & fixing - 35%;	MT	16	8.937192		
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..	MT	2	10.102231		
2323	Conducting radiography test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	200	0.090948		
2324	Conducting ultrasonic test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	200	0.064225		
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	200	0.030375		
2326	Conducting magnetic particle test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	200	0.050329		
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	250	0.041777		
2328	Supply, fixing lightning arrester and air terminal over roof of power house building, pump house and other structures including all materials, labour, electrodes etc complete (all materials to be supplied by the contractor).	NO	2	0.323706		
2400	ROAD WORKS :Providing Road Work including necessary material, labour, machinery, transportation etc as per specification, drawing, relevant IRC & IS codes and as directed by the Engineer-in-charge for the following.			0.000000		
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	63	0.003652		
A2405	Providing & laying Granular sub-base course in layers of required thickness with stone aggregate 63mm to 40mm size, stone screening and blinding material including screening sorting, spreading to template and consolidation with road roller including carriage, spreading and consolidation of blinding material moorum etc all complete.	CUM	402	0.249060		
A2412	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. (Cement will be issued by BHEL as Free of Cost (FOC) Item)	RM	210	0.031209		
B2412	Supplying and laying 300mmx250mmx150mm 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. (Cement will be issued by BHEL as Free of Cost (FOC) Item)	RM	105	0.031209		
2414	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. (Cement will be issued by BHEL as Free of Cost (FOC) Item)	RM	53	0.140586		
	Providing and placing concrete work including cost of labour, materials and equipment for handling, transportation, batching, mixing, placing, vibrating, shuttering, formwork and curing (excluding cost of reinforcement), with mechanised equipments like batching plant, transit mixer, concrete pump etc. complete as per drawing, specification and as per direction of engineer in charge for the following.			0.000000		
2417	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. (Cement will be issued by BHEL as Free of Cost (FOC) Item)	CUM	2	0.294222		
A2417	Providing and laying of plain cement concrete of grade M20 using 40 mm graded stone aggregate including providing and fixing formwork, compaction etc. all complete. (Cement will be issued by BHEL as Free of Cost (FOC) Item)	CUM	5	0.294222		




BOQ-CUM-RATE SCHEDULE

SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)

ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
2418	Providing and laying cement 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) (Cement will be issued by BHEL as Free of Cost (FOC) Item)	CUM	197	0.338760		
2419	Providing & laying dry lean cement concrete of grade M10 with 20 mm nominal size graded stone aggregate over a prepared sub-grade including compaction, finishing, curing etc all complete. (Cement will be issued by BHEL as Free of Cost (FOC) Item)	CUM	119	0.295558		
2420	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.	MT	2	6.295672		
2422	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.	MT	1	6.295624		
2423	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	26	0.012769		
2424	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	302	0.001441		
2425	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	302	0.007768		
A2425	Providing & laying polythene sheet of specified thickness (min. 125 micron), above dry lean concrete sub base, before laying of concrete slab pavement.	SQM	394	0.008562		
A2426	Providing & laying 75 mm thick precast interlocking concrete pavers (M35 grade) of approved colour and pattern as per specification and recommendation of manufacturer.	SQM	473	0.088485		
2427	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	473	0.005273		
A2428	Supplying, fixing and removing formwork for concrete road pavement complete as per specification and as directed by the engineer-in-charge.	SQM	53	0.049260		
A2429	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	105	0.040029		
				0.000000		
2700	RAIN WATER HARVESTING			0.000000		
2701	Making 250mm dia bore hole up to a maximum depth of 20 m below ground level in all types of rocks including all equipments, tools & plants, lowering casing pipes, bentonite slurry, removal of casing pipes etc. complete in all types of soil.	RM	150	0.039465		
2702	Supply & fixing 150mm dia perforated PVC pipe ISI mark 6 Kg/ cm2 with air vent at top as per the drawing & specification complete.	RM	60	0.103316		
2703	Providing & fixing 150 dia PVC pipe ISI mark 6 Kg/cm2 as per specification.	RM	75	0.088575		
2704	Supply & packing uniformly 6mm to 3mm size gravel in the bore hole surrounding the perforated PVC pipe.	CUM	2	0.171943		
2705	Supply & packing uniformly downgraded 40mm size gravel at all depth in the well dug for rain water harvesting.	CUM	34	0.171943		
2706	Supply & packing uniformly downgraded 40mm size pebbles at all depth in the well dug for rain water harvesting.	CUM	34	0.171915		
2707	Supply & laying 300mm thick coarse sand layer at all depth in the well dug for rain water harvesting.	CUM	34	0.160550		
2708	Supply & fixing Netlon jali/ PVT net in the well dug for rain water.	SQM	42	0.022143		
	Total Cost in Rs.					

NOTE:

1	Bidder's quoted price above shall be complete in all respect for the full scope defined in specification and in accordance with all terms & conditions of tender.
2	Contractor shall fully understand description and Specifications of items mentioned in BOQ.
3	Conditional price bids with any deviation / clarification etc. are liable to be rejected. No cutting / erasing / over writing shall be done.
4	Quantities mentioned in rate schedules are approximate only and liable for variation on either side depending upon site / design requirement. The tentative contract value (CV) of entire scope of work shall be calculated as per finally quoted / accepted rates & the Quantities indicated in BOQ cum Rate Schedule .

		ANNEXURE I (Revised)				
BOQ-CUM-RATE SCHEDULE						
SCOPE OF WORKS :ALL CIVIL ARCHITECTURAL AND STRUCTURAL WORKS OF MAIN PLANT FOR 2 X 660 MW KHURJA STPP (TURBINE GENERATOR AND ASSOCIATED PACKAGES)						
ST NO	Item Description	Unit	Quantity	FACTOR	RATE= FACTOR (F) *AMOUNT(A)/100000 (ROUNDED OFF UPTO TWO PLACE OF DECIMAL)	AMOUNT (RS.) = RATE * QUANTITY
5	Contractor's total quoted price as per rate schedule will be taken as tentative only. The contractor undertakes to execute actual quantities as per advice of BHEL Engineer and accordingly the final contract price shall be worked out on the basis of quantities actually executed at site and payments will also be regulated for the same.					
6	In case of any mis-match in rate and amount on price discrepancy, the same will be dealt as per clause no. 1.4 of GCC.					
7	Taxes (GST) shall be payable extra as per relevant clause in Technical Conditions of Contract.					