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**TENDER NO. BHEL/NR/SCT/BAWANA-PRAGATI/CIVIL/547**

**FOR**

**“COMPLETE CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR  
MAIN PLANT, BALANCE OF PLANT AND VARIOUS BUILDINGS INCLUDING  
INDUCED DRAFT COOLING TOWERS AT 2X750 MW PRAGATI-III COMBINED  
CYCLE POWER PROJECT AT BAWANA, DELHI”**

**PART II – PRICE BID**



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



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

**Bharat Heavy Electricals Limited**  
(A Govt. Of India Undertaking)  
**Power Sector – Northern Region,**  
Plot No. 25 , Sector - 16A ,  
Distt. Gautam Budh Nagar, NOIDA – 201 301(INDIA)  
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**TENDER NO. BHEL/NR/SCT/BAWANA-PRAGATI/CIVIL/547**

**IMPORTANT NOTE**

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

THIS TENDER SPECIFICATION ISSUED TO:

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

**PROCEDURE FOR SUBMISSION OF SEALED TENDERS:**

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

**TECHNICAL BID (COVER-I)**

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

**PRICE BID (COVER-II)**

Tenderers may please note that price bid is to be submitted only in original copy of Tender i.e. Price bid (Part-II) issued by BHEL and no duplicate copy of same is required.

These Two separate covers i.e. cover I & II shall together be enclosed in a third envelope (Cover-III) and this sealed cover shall be superscribed with tender specification No., due date, time and submitted to officer inviting tender as indicated in tender notice on or before due date as indicated.

ST. NO	DESCRIPTION	RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
100	EARTH WORK IN EXCAVATION, BACKFILLING AND DISPOSAL AS PER SPECIFICATION, DRAWINGS AND AS DIRECTED BY ENGINEER FOR THE FOLLOWING:-				
101	Earth work in excavation upto 2m depth below ground level for foundation, trenches, pipe lines, storm water drains etc including setting out, clearing & grubbing, removal of debris, dewatering if required, strutting, shoring/sheet piling if required, dressing the sides, levelling to grade and ramming the bottom, stacking/disposal of surplus excavated material including levelling the earth if required, within a lead of 1.0 KM etc complete for all types of soils including , laterite, morrum etc which can be excavated by means of crow bar, pick axe, etc but does not require chiselling or blasting.	CUM	223879		
102	Earth work in excavation upto 2m depth below ground level for foundation, trenches, pipe lines, storm water drains etc including setting out, clearing & grubbing, removal of debris, dewatering if required, strutting, shoring/sheet piling if required, dressing the sides, levelling to grade and stacking/disposal of surplus excavated material within a lead of 1.0 KM etc complete for hard rock requiring blasting/controlled blasting and/or chiselling, wedging, line drilling, pre shearing or any other means including supply, storage, handling of blasting materials etc without damaging the existing structures and as approved by Engineer.	CUM	10		
103	Earth work in excavation for depth exceeding 2.0m but not exceeding 4.0m below ground level for foundation, trenches, pipe lines, storm water drains etc including dewatering if required, strutting, shoring/sheet piling if required, dressing the sides, levelling to grade and ramming the bottom, stacking/disposal of surplus excavated material including levelling the earth if required within a lead of 1.0 KM etc complete for all types of soils including laterite, morrum , etc which can be excavated by means of crow bar, pick axe, etc but does not require chiselling or blasting.	CUM	168915		
104	Earth work in excavation for depth exceeding 2.0m but not exceeding 4.0m below ground level for foundation, trenches, pipe lines, storm water drains etc including dewatering if required, strutting, shoring/sheet piling if required, dressing the sides, levelling to grade and stacking/disposal of surplus excavated material within a lead of 1.0 KM etc complete for hard rock requiring blasting /controlled blasting and/or chiselling, wedging, line drilling, pre shearing or any other means including supply, storage, handling of blasting materials etc without damaging the existing structures and as approved by Engineer.	CUM	10		
105	Earth work in excavation for depth exceeding 4.0m but not exceeding 6.0m below ground level for foundation, trenches, pipe lines, storm water drains etc including dewatering if required, strutting, shoring/sheet piling if required, dressing the sides, levelling to grade and ramming the bottom, stacking/disposal of surplus excavated material including levelling the earth if required within a lead of 1.0 KM etc complete for all types of soils including laterite, morrum , etc which can be excavated by means of crow bar, pick axe, etc but does not require chiselling or blasting.	CUM	65642		
106	Earth work in excavation for depth exceeding 4.0m but not exceeding 6.0m below ground level for foundation, trenches, pipe lines, storm water drains etc including dewatering if required, strutting, shoring/sheet piling if required, dressing the sides, levelling to grade and stacking/disposal of surplus excavated material within a lead of 1.0 KM etc complete for hard rock requiring blasting /controlled blasting and/or chiselling, wedging, line drilling, pre shearing or any other means including supply, storage, handling of blasting materials etc without damaging the existing structures and as approved by Engineer.	CUM	10		
107	Earth work in excavation for depth exceeding 6.0m but not exceeding 8.0m below ground level for foundation, trenches, pipe lines, storm water drains etc including dewatering if required, strutting, shoring/sheet piling if required, dressing the sides, levelling to grade and ramming the bottom, stacking/disposal of surplus excavated material including levelling the earth if required within a lead of 1.0 KM etc complete for all types of soils including laterite, morrum , etc which can be excavated by means of crow bar, pick axe, etc but does not require chiselling or blasting.	CUM	1350		
108	Earth work in excavation for depth exceeding 6.0m but not exceeding 8.0m below ground level for foundation, trenches, pipe lines, storm water drains etc including dewatering if required, strutting, shoring/sheet piling if required, dressing the sides, levelling to grade and stacking/disposal of surplus excavated material within a lead of 1.0 KM etc complete for hard rock requiring blasting /controlled blasting and/or chiselling, wedging, line drilling, pre shearing or any other means including supply, storage, handling of blasting materials etc without damaging the existing structures and as approved by Engineer.	CUM	30		
109	Earth work in excavation for depth exceeding 8.0m but not exceeding 10.0m below ground level for foundation, trenches, pipe lines, storm water drains etc including dewatering if required, strutting, shoring/sheet piling if required, dressing the sides, levelling to grade and ramming the bottom, stacking/disposal of surplus excavated material including levelling the earth if required within a lead of 1.0 KM etc complete for all types of soils including laterite, morrum , etc which can be excavated by means of crow bar, pick axe, etc but does not require chiselling or blasting.	CUM	30		

1500MW PRAGATI III BAWANA CCPP		RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
110	Earth work in excavation for depth <b>exceeding 8.0m</b> but not exceeding 10.0m below ground level for foundation, trenches, pipe lines, storm water drains etc including dewatering if required, strutting, shoring/sheet piling if required, dressing the sides, levelling to grade and stacking/disposal of surplus excavated material within a lead of 1.0 KM etc complete for <b>hard rock</b> requiring blasting /controlled blasting and/or chiselling, wedging, line drilling, pre shearing or any other means including supply, storage, handling of blasting materials etc without damaging the existing structures and as approved by Engineer.	CUM	50		
116(a)	<b>Disposal</b> of surplus excavated earth beyond an initial lead of <b>1km and upto a lead of 2 Km.</b> dumping and levelling the dumped soil and levelling the area from where the material is transported, complete with all lifts as specified and directed by Engineer.	CUM	58746		
116(b)	<b>Extra disposal over 116(a)</b> of surplus excavated earth/rock beyond an initial lead of <b>2km and upto a lead of 3 Km.</b> dumping and levelling the dumped soil and levelling the area from where the material is transported, complete with all lifts as specified and directed by Engineer.	CUM	53055		
116(c)	<b>Extra disposal over 116(b)</b> of surplus excavated earth/rock beyond an initial lead of <b>3km and upto a lead of 4 Km.</b> dumping and levelling the dumped soil and levelling the area from where the material is transported, complete with all lifts as specified and directed by Engineer.	CUM	55515		
116(d)	<b>Extra disposal over 116(c)</b> of surplus excavated earth/rock beyond an initial lead of <b>4 km and upto a lead of 5 Km.</b> dumping and levelling the dumped soil and levelling the area from where the material is transported, complete with all lifts as specified and directed by Engineer.	CUM	57165		
117	<b>Disposal</b> of surplus excavated earth/rock beyond an initial lead of <b>5 km and upto a lead of 10 Km.</b> dumping, levelling the dumped soil and levelling the area from where the material is transported, complete with all lifts as specified and directed by Engineer.	CUM	108696		
118(a)	Back filling around foundations in plinths etc to proper grade and level with selected soil within a lead <b>beyond 1 Km but not exceeding 5Km from available excavated materials</b> including re-excavating loose thickness, watering and ramming/compacting in layers of 15cm thickness to atleast 90% of its maximum dry density for cohesive soils and to 75% relative density for non-cohesive soils by manual/mechanical means, dressing etc complete including transportation.	CUM	79154		
118(b)	Back filling around foundations and plinths etc to proper grade and level <b>with selected excavated soil directly from excavation area within a lead of 1Km</b> including watering and ramming/compacting in layers of 15cm thickness to atleast 90% of its maximum dry density for cohesive soils and to 75% relative density for non-cohesive soils by manual/mechanical means, dressing etc complete including transportation.		89160		
118(c)	Back filling around foundations in plinths, trenches, drains etc to proper grade and level with <b>selected good soil from compulsorily excavated earth within a lead of 1 Km</b> free from shingle, salts, organic materials, roots, sod or any other foreign substance including re-excavating loose thickness, watering and ramming in layers of 15cm thickness compacted to 75% of relative density for non cohesive soil and 90% of its maximum dry density for cohesive soils by manual/mechanical means, dressing etc complete.		6837		
119	<b>Back filling</b> around/below foundations and plinths to proper grade and level <b>with selected Cohesive Non Swelling (CNS) soil</b> including watering and ramming in layers of 30 cm. thickness to <b>90% Standard procter density</b> by manual/mechanical means in saturated condition, dressing etc. complete including transportation.	CUM	6300		
120	Providing and injecting chemical emulsion (1 part chemicals + 20 parts water = 1% emulsion) for preconstructional anti termite/weed treatment as per IS :6313 with chemicals conforming to IS 8963 and creating a chemical barrier under and around the column pits, wall trenches, basement excavation, backfill, top surface of plinth filling, junction of the wall along external perimeter of building floor together with plinth protection, expansion joints, surrounding of pipes and conduits etc complete as per specification and as directed by Engineer-in-charge. For treating the bottom surface and sides of excavation, emulsion @ 5 liters/sqm of surface area & for treating the backfills around columns, walls etc, emulsion @ 7.5 liters/sqm of the surface shall be used and treatment shall be done in stages following the compaction of earth in layers. (plinth area of building at ground floor only shall be measured).	SQM	113200		
121	Supply and filling sand under floors, in foundation and plinths including cost of sand, transporting for all leads, loading, unloading, spreading in layers in 25 cm loose thickness at all depths, watering, compaction with mechanised compaction machine or manually to minimum 80% of relative density, dressing and levelling etc complete.	CUM	3895		
122	Providing and laying rubble soling with specified sizes of approved quality hard rock rubble or hand broken hard metal of sizes ranging from <b>63mm and down aggregates</b> , at all position and depths below or above finished ground floor level, below foundations, below flooring, and for providing hard standing etc in one layer of approximately 225 mm thickness, hand packing, filling in interestices with sand including watering, thoroughly compacting the layer all complete as per specification and the direction of the Engineer .	CUM	10240		

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		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
200	PROVIDING AND PLACING CONCRETE WORK INCLUDING COST OF LABOUR, MATERIALS AND EQUIPMENT FOR HANDLING, TRANSPORTATION, BATCHING, MIXING, PLACING, VIBRATING AND CURING, (EXCLUDING COST OF CENTERING, SHUTTERING AND REINFORCEMENT) COMPLETE AT ALL ELEVATIONS AS PER DRAWING, SPECIFICATIONS UNLESS SPECIFIED OTHERWISE AND AS DIRECTED BY ENGINEER FOR THE FOLLOWING:				
201	Plain Cement Concrete of grade M7.5 as levelling course for filling, underground structures, foundations, trenches etc all complete.	CUM	1966		
202	Plain Cement Concrete of grade M10 as levelling course for filling, under water retaining structures, equipment foundations etc all complete.	CUM	25518		
203	Plain Cement Concrete of grade 1:2:4 as plinth protection,etc all complete.	CUM	336		
204	Concrete of grade M-30 conforming to IS:456 with coarse sand and graded hard stone aggregate 20mm nominal size for all major equipment foundations at all heights/depths from finished ground floor level including addition of suitable plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete.	CUM	8827		
205	Concrete of grade M-25 conforming to IS:456 with coarse sand and graded hard stone aggregate 20mm nominal size in all foundations, underground works, water retaining structures and outdoor works floors etc at any 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.	CUM	59236		
206	Concrete of grade M-25 conforming to IS:456 with coarse sand and graded hard stone aggregate 20mm nominal size in superstructure at all heights from finished floor level at any level, shape, position or thickness complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete.	CUM	17198		
207	Concrete of grade M-35 conforming to IS:456 with coarse sand and graded hard stone aggregate 20mm nominal size for foundation of Steam turbine and gas turbine at all heights/depths from finished ground floor level including addition of suitable plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve a slump more than 125mm in concrete as per manufacturer's recommendation etc. all complete. The rate shall also include Conducting Non-destructive Ultrasonic pulse velocity test as per specification to find out soundness of concrete including all equipments, tools, plants, scaffolding required for testing, preparation of test report etc. all complete as directed by Engineer. CL15.19.01	CUM	8875		
208	Concrete of grade M-25 conforming to IS:456 with coarse sand and graded hard stone aggregate 20mm nominal size in precast works like trench covers, lintals etc including formwork/moulds for thicknesses varying from 50mm to 250mm including transportation, erection, fixing in position at all elevations and use of plasticizer wherever required all complete excluding the cost of reinforcement .	CUM	107		
209	Concrete of Grade M-20 conforming to IS:456 with coarse sand and graded hard stone aggregate 20mm nominal size in paving, etc complete.	CUM	5771		
210	Breaking existing concrete work at any level including reinforced concrete, removing the rubbish within a lead of 1Km., including transportation, loading, unloading, etc all complete.	CUM	35		
211	Breaking existing concrete work at any level including cutting reinforcements, removing the rubbish within a lead of 1Km., including making good the broken edges/surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/supporting at any level, all complete and as directed by Engineer.	CUM	17		
212	Providing and encasing of structural steel member with concrete (M25) work around flanges, webs etc and filling the gap. Encased member shall be wrapped with chicken wire mesh with 50mm lap etc complete as per specification and as directed by Engineer.	CUM	62		
213	Providing underbed for paving and ground floor of all buildings by preparation and consolidation of subgrade to required level, laying of stone soling of 225mm compacted thickness with 63 mm and down aggregate, filling the interstices with selected sand followed by 75mm thick 1:4:8 PCC (one part cement, 4 parts sand and 8 parts stone aggregate) with 40mm nominal size aggregate for all lifts all complete as per specifications and instructions of engineer-in-charge.	SQM	51469		
214	Providing Bitumen coating to all surfaces of foundations (except piles) and substructures in contact with soil with three coats of hot applied industrial bitumen conforming to IS: 702 (latest) of Grade 85/25 at the rate of 1.7 kg/sq/m/coat with 1% antistripping compound wherever applicable	SQM	65300		
215	Extra over St. No. 207 above, for controlling of temperature of freshly laid 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	8875		
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 etc all complete as per specification, drawing, instructions of engineer in charge but excluding cutting of reinforcement	CUDM	100		

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ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
217	Concrete of grade M-30 conforming to IS:456 with coarse sand and graded hard stone aggregate 20mm nominal size in Cooling Tower superstructure at all heights from finished floor level at any level, shape, position or thickness complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete.	CUM	10920		
300	SUPPLYING, FIXING AND REMOVING FORMWORK AT ANY ELEVATION INCLUDING ALL LABOUR, MATERIAL, SCAFFOLDING COMPLETE INCLUDING POCKETS ETC. AS PER SPECIFICATIONS AND AS DIRECTED BY ENGINEER FOR THE FOLLOWING:				
301	Ordinary form work below finished ground floor level for foundations, footings, bases of columns, walls, columns pilasters, beams, mass concrete, trenches etc.	SQM	118956		
302	Fairface form work below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc for exposed concrete works.	SQM	22153		
303	Ordinary form work above finished ground floor level for columns, beams, suspended floors, roofs, lintels, cantilevers, staircases, landings, balconies, domes, arches etc for all heights.	SQM	18157		
304	Fairface form work above finished ground floor level for columns, beams, suspended floors, roofs, lintels, cantilevers, staircases, landings, balconies, domes, arches etc for all heights.	SQM	126139		
306	Fairface Formwork for TG superstructure. (above raft top level)	SQM	2376		
307	Providing, fixing and removing formwork in block-outs/pockets and openings (below 0.1 sqm contact surface area with concrete) at all elevations including cutting, formation of all shapes and all other operations required for making the required shape and size all complete as per specification, drawing and instruction of engineer in charge.				
i)	Upto 300 mm depth	Nos.	50		
ii)	From 301 mm upto 600 mm depth	Nos.	50		
iii)	From 601 mm upto 1000 mm depth	Nos.	50		
400	<b>REINFORCEMENTS</b>				
401	Providing, straightening, cutting, bending, placing in position at any level, binding in position of mild steel reinforcements confirming to grade-1 of IS:432 (part-I) including cost of binding wire, labour, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer.	MT	95		
402	Providing, straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements shall be TMT HYSD bars of grade Fe-415 and / or Fe-500 conforming to relevant IS codes, including cost of binding wire, labour, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer.	MT	9622		
403	Providing, straightening cutting, bending, placing in position at any level, binding of mild steel reinforcements in brickwork including cost of reinforcement and binding wire, labour etc. complete all as per specifications & drawings.	MT	50		
404	Providing, straightening, cutting, bending, placing at any level, binding in position high yield strength steel reinforcements in brickwork including cost of reinforcement and binding wire, labour etc. complete all as per specifications & drawings.	MT	50		
500	<b>WATER PROOFING AS PER SPECIFICATIONS.</b>				
501	Providing and mixing approved water proofing compound in concrete or cement mortar for works wherever specified or directed as per specification/ manufacturer's instructions, testing of samples for water proofing etc complete.	KG	130453		
502	Providing under bed over roof slab, floors to achieve the specified slope with 1:4 cement mortar plaster (by volume) of minimum 25 mm thickness at all elevations including all labour, material, equipment, handling, preparation of surface, transportation, batching, mixing, placing, leveling, curing, testing etc. complete as per specification, drawing and instruction of engineer.	SQM	16355		
503	Screed concrete 1:2:4 conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5mm/6 mm nominal size on the roof at any level or thickness to maintain the required grade complete.	CUM	909		
504	Screed concrete 1:2:4 conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5mm/6 mm nominal size in manholes.	CUM	31		

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505	Providing and laying protective wearing course of 25 mm thick PCC (1:2:4) with 6 mm down aggregate laid in 1200 square mm panels alternatively cast reinforced with 0.56 mm dia galvanised chicken wire mesh with a gap of 6 mm between two adjacent panels. gaps shall be filled with silicon sealant/ elastomeric water proofing membrane, all complete with labour, material, equipment and as per specification/drawing and to the satisfaction of engineer in charge.	SQM	12455		
506	Providing, laying and fixing water proofing treatment using high solid content liquid applied based elastomeric water proofing membrane minimum 1.5 mm thick with separate wearing course (as per ASTM C898 and 836) including application of polymerised mastik to achieve smooth surface and primer coat at all elevations in vertical and horizontal surface etc. including all labour, material, equipment, handling, scaffolding, transporting, testing etc. complete as per drawing, specification and instructions of the engineer (wearing coat to be paid separately)	SQM	17479		
507	Providing and laying <b>pressed precast chequered concrete tiles</b> over water proofing of minimum size 250 X 250 and minimum thickness 22 mm conforming to IS 13801 including 15 mm thick cement mortar (1:4) bedding inclusive of provision for thermal expansion for each roofing tile filled with polysulfide joint sealant. (water proofing paid else where)	SQM	5795		
508	providing and applying concrete penetrating corrosion inhibitor EPCO-KP 100 or equivalent followed by application of a coat of EPCO-2020TX epoxy or equivalent on foundation, retaining walls, trenches, etc complete as per manufacturer recommendation, drawing/specification and to the satisfaction of engineer in charge.	SQM	26865		
509	Providing acrylic based polymer modified cementitious composite coating system with fine silica/quartz sand of 0.6 mm nominal size with total nominal minimum thickness of 1.5mm for internal/external surfaces of basement type of structures as per specifications and as directed by engineer.	SQM	2045		
511	Anti termite chemical treatment of soil with Chloropyrifos emulsifiable concentrates (1%) conforming to IS :8944	SQM	43230		
600	<b>SUPPLYING &amp; INSTALLATION OF PREMOULDED JOINT FILLER IN BETWEEN EQUIPMENT FOUNDATIONS, MAT FOUNDATIONS, PILE CAPS, WALLS, BASEMENT SLABS ETC. COMPLETE INCLUDING LABOUR, EQUIPMENT AND MATERIALS, SEALING OF JOINTS INCLUDING COST OF SEALING COMPOUND (POLYSULFIDE BASE SEALANT AS PER IS:12118) ETC. COMPLETE AS PER SPECIFICATIONS AND DRAWINGS OR AS DIRECTED BY ENGINEER FOR THE FOLLOWING:</b>				
601	Preformed bitument impregnated fibre board conforming to 1838 as per specifications and as directed by engineer				
601-a	12mm thick joints.	SQM	91		
601-b	20mm thick joints.	SQM	11		
601-c	25mm thick joints.	SQM	81		
601-d	50mm thick joints.	SQM	54		
602	Supplying and filling in position hot applied <b>bitumin sealing compound</b> (Grade A) conforming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints at all levels including application of primer, labour, material, equipments etc. all complete as per specification/drawing, instruction of engineer in charge.	Kg	250		
604	Supplying & installation of bitumin impregnated fibre board conforming to IS 1838 as joint filler at joints in concrete including nailing, coating of both faces with coal tar pitch/bitumin, labour, material, equipments etc all complete at all levels as per specification, drawings and instruction of engineer in charge:				
604-a	12mm thick joints.	SQM	38		
604-b	20mm thick joints.	SQM	60		
604-c	25mm thick joints.	SQM	67		
700	<b>M.S. EMBEDMENTS</b>				
701	<b>Supply</b> , fabricating and fixing of <b>embedments, MS inserts</b> , pipe sleeves, guide rails, angle pieces, rungs of various diameters, plates of dimensions as required including cost of all labour, materials and equipment, transportation, loading, unloading, handling, welding, cutting, drilling, scaffolding and setting complete as per specifications, drawings and as directed by Engineer.	MT	139		
702	<b>Supply</b> , fabrication, transportation, delivery at site and erection, installation and alignment of <b>MS Foundation bolts</b> (Grade- 1 of IS: 432 & IS: 2062) assembly in concrete along with nuts, locknuts ( IS: 1363, IS: 1364 & IS: 3138), washers, anchor plates, stiffener plates, protective tapes etc. upto & inclusive of 63 mm diameter and upto 2000mm long, for columns templates including furnishing of labour, materials, equipments, welding, cutting, grinding, threading, drilling, pipe sleeves wherever necessary etc. all complete as per specifications and as directed by the Engineer.	MT	50		

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703	<b>Transportation from stores</b> , delivery at work spot and erection, installation and alignment of <b>embedments, MS inserts, pipe sleeves</b> , rails, guide rails, angle pieces, anchor bolts, <b>foundation bolts</b> of various diameters, plates of dimensions as required including cost of all labour, equipment, material, loading, unloading etc. all complete as per specifications, drawings and as directed by Engineer.	MT	50		
704	Providing, fabricating, transporting, erecting and installing at all elevations miscellaneous <b>steel/PVC pipes, expansion fasteners</b> in concrete/brickwall, for all kind of works, including the cost of labour, material and equipment, setting material in concrete, layout, scaffolding, handling at site, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc. all complete as per drawings and specifications and instructions of engineer.				
(i)	MS pipes of all diameters	Quintal	40		
(ii)	PVC conduits of all sizes	Quintal	40		
	Expansion fasteners (galvanised) of HILTI make or equivalent of safe tension capacity as specified below:				
(iii)	250 kg	Each	38		
(iv)	500 kg	Each	54		
(v)	750 kg	Each	40		
<b>800</b>	<b>GROUTING AS PER SPECIFICATION FOR THE FOLLOWING:</b>				
801	<b>Providing &amp; grouting cement slurry mix</b> at any elevation/depth with pressure pump for <b>water retaining concrete structures</b> , including fixing nozzles, cost of approved cement, admixture, curing, etc all complete as per specification and as directed by the Engineer.	SQM	508		
802	Providing and <b>grouting of pocket holes</b> , pipe sleeves of any shape and size under base plates after erection of necessary structural steel work, machinery with minimum M30 nonshrink flowable grout at any elevation including roughening surface, cleaning, ramming, curing etc complete (non-shrink flowable grout as per specification using approved admixture) as per specification and as directed by the Engineer.	CUM	57		
804	Providing & <b>grouting</b> of pocket holes, pipe sleeves of any shape and size under base plate after erection, and alignment if necessary, of <b>main structural steel work</b> at any elevations including roughening surface, cleaning, ramming, curing, etc with <b>ConbextraGP-1 or equivalent</b> all complete as per specifications. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	20		
805	Providing & <b>grouting</b> of pocket holes, pipe sleeves of any shape and size under base plate after erection and alignment if necessary, of <b>secondary structures, machinery and pipe supporting structures</b> at any elevations including roughening surface, cleaning, ramming, curing, etc with <b>1:1:2 cement - sand - 6 mm down stonechips</b> all complete as per specifications. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	20		
<b>900</b>	<b>DOORS, WINDOWS, VENTILATORS, LOUVERS, ROOF VENTILATORS, ROLLING SHUTTERS, PARTITIONS ETC. COMPLETE INCLUDING FRAMING, KICK PLATES, STOPPERS AS PER SPECIFICATION, DRAWINGS AND AS DIRECTED BY ENGINEER FOR THE FOLLOWING:-</b>				
901	<b>Providing and fixing 40mm thick solid core flush door shutters (single or double)</b> with commercial faces and hard board edges. Core of solid core doors shall be of block board or wood particle board of approved make with glazed vision panel including all fixtures, Godrej make Mortice lock with handle on both sides, shop painting/polishing as per specification all complete including test certificates.	SQM	643		
902	<b>Providing and fixing steel windows of fixed type</b> with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision. <b>Glazing shall be of 6.0mm thk.</b> multiwall polycarbonate plain/tinted sheets including all fittings, metal beadings, hold fasts, primer painting as per specification all complete.	SQM	515		
903	<b>Providing and fixing steel openable windows/ventilators with steel sections</b> as per IS:1038, IS:1361 & IS:7452 latest revision. <b>Glazing shall be of 4.0mm thick float glass (plain)</b> panes including all fittings, metal beadings, hold fasts, primer painting as per specification all complete.	SQM	913		
904	<b>Providing and fixing steel openable windows/ventilators with steel sections</b> as per IS:1038, IS:1361 & IS:7452 latest revision. <b>Glazing shall be of 4.0mm thick float glass (tinted)</b> panes including all fittings, metal beadings, hold fasts, primer painting as per specification all complete.		1922		

ST. NO	DESCRIPTION	RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
905	<b>Providing and fixing anodized extruded aluminium windows (single or double shutter)</b> including aluminium frame conforming to IS:1948, IS:1949 fabricated from extruded sections of INDAL or approved equivalent having minimum 1.5mm wall thickness as per IS:1285, IS:733 and electro color coating of minimum 15 microns thickness. <b>Glazing shall be clear float glass of 4.0 mm thickness</b> including snap fit type beading, concealed screws, fixtures, Approved make Mortice lock with handle on both sides etc complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required.	SQM	950		
906	<b>Providing and fixing anodized extruded aluminium windows (single or double shutter)</b> including aluminium frame conforming to IS:1948, IS:1949 fabricated from extruded sections of approved make having minimum 1.5mm wall thickness as per IS:1285, IS:733 and electro color coating of minimum 15 microns thickness. <b>Glazing shall be tinted float glass of 4.0 mm thickness</b> including snap fit type beading, concealed screws, fixtures, Approved make Mortice lock with handle on both sides etc complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required.	SQM	890		
907	<b>Providing and fixing anodized extruded aluminium windows (single or double shutter)</b> including aluminium frame conforming to IS:1948, IS:1949 fabricated from extruded sections of approved make having minimum 1.5mm wall thickness as per IS:1285, IS:733 and electro color coating of minimum 15 microns thickness. <b>Glazing shall be wired glass of 6.0 mm thickness</b> including snap fit type beading, concealed screws, fixtures, Approved make Mortice lock with handle on both sides etc complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required.	SQM	485		
908	<b>Providing and fixing anodized extruded aluminium ventilators</b> conforming to IS:1948, IS:1949 fabricated from extruded sections of approved make having minimum 1.5mm wall thickness as per IS:1285, IS:733 and electro color coating of minimum 15 microns thickness. Glazing shall be clear float glass of 4.0 mm thickness including snap fit type beading, concealed screws, fixtures, etc complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required.	SQM	433		
909	<b>Providing and fixing anodized extruded aluminium ventilators</b> conforming to IS:1948, IS:1949 fabricated from extruded sections of approved make having minimum 1.5mm wall thickness as per IS:1285, IS:733 and electro color coating of minimum 15 microns thickness. Glazing shall be tinted float glass of 4.0 mm thickness including snap fit type beading, concealed screws, fixtures, etc complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required.	SQM	320		
910	<b>Providing and fixing anodized extruded aluminium ventilators</b> conforming to IS:1948, IS:1949 fabricated from extruded sections of approved make having minimum 1.5mm wall thickness as per IS:1285, IS:733 and electro color coating of minimum 15 microns thickness. Glazing shall be wired glass of 6.0 mmmm thickness including snap fit type beading, concealed screws, fixtures, etc complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required.	SQM	200		
911	<b>Providing and fixing steel single or double door shutters.</b> Shutters shall be <b>35mm thk flush design</b> comprising of two outer sheets of 1.2mm thickness rigidly connected and reinforced inside with continuous vertical 1 mm stiffeners, shall be reinforced by continuous pressed steel channel with minimum 1.2mm, the door shall be sound deadened by filling the inside void with mineral wool , spot welded in position at not more than 150mm on centres including all fittings, Approved make Mortice lock with handle on both sides, primer painting complete as per specification.	SQM	519		
912	<b>Providing and fixing fire proof steel door shutters</b> (single or double shutter) conforming to IS:3614(part-1 & part-2). Shutters shall be minimum 60mm thick 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 with mineral wool insulation, primer and epoxy based painting including door frame, all fittings complete as per specification. and shall be TAC approved with minimum 2 hrs. fire rating.	SQM	155		
913	<b>Providing and fixing anodized extruded aluminium doors</b> (single or double shutter) conforming to IS:1948, IS:1949 fabricated from extruded sections of approved make having minimum 3mm wall thickness as per IS:1285, IS:733 and electro color coating of minimum 15 microns thickness. <b>Glazing shall be clear float glass of 6.0mm thickness</b> including snap fit type beading, concealed screws, fixtures, Approved make Mortice lock with handle on both sides etc complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required. (Frames shall be measured and paid under separate item).	SQM	215		
914	<b>Providing and fixing in position anodised aluminium frame</b> for doors, windows, ventilators having minimum 3mm wall thickness as per IS:1285 and elctro colour coating of minimum 15 micron thickness including holdfast, fillingup of gapes at junctions, at top, bottom and sides etc all complete as per specification.	Kg	750		

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		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
915	Providing and fixing anodized aluminium work in doors, windows, ventilators and partitions etc with extruded standard tubular and other sections including all fittings and fixtures and accessories of approved make conforming to IS 733 and IS 1285, anodised and electrocoloyr dyed to required shape according to IS 1868 (min. anodic coating of grade AC15), fixed with roll plucks, expansion fasteners, screws or with fixing clips including necessary filling up of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt for bimetallic protection etc. including preparation of working drawings, aluminium cleat angle, aluminium snap-on-beading for glazing/paneling with all fittings and fixtures (like tower bolts, handles, door stoppers with rubber shoes, "L" drops, stays, floor springs, hydrolic door closers etc), C.P. brass/ stainless steel screws, providing and fixing hinges/pivots, and making provisions for fixing of fittings where ever required including the cost of PVC/neoprene gas fits all complete as per drawings, specifications and instruction of engineer (glazing and paneling to be measured else where)	Kg	1000		
916	Providing and fixing aluminium glazed partition. Aluminium sections shall be of extruded sections of approved make having minimum 3mm wall thickness as per IS:1285, IS:733 and electro color coating of minimum 15 microns thickness. <b>Glazing shall be clear float glass of 5.5mm thickness including snap fit type beading, concealed screws, hold fast, fixtures, Godrej make Mortice lock with handle on both sides, necessary fillingup of gaps at the junctions, at top, bottom and sides, etc complete. Aluminium section shall be smooth, rust free, straight, mitred &amp; jointed mechanically wherever required.</b>	SQM	718		
917	Providing and fixing aluminium glazed partition with double glazing. Aluminium sections shall be of extruded sections of approved make having minimum 3mm wall thickness as per IS:1285, IS:733 and electro color coating of minimum 15 microns thickness. Double glazing shall be of two clear float glass of 6 mm thickness sealed and separated by 12mm air-gap including colour anodised aluminium beading, concealed screws, hold fast, fixtures, PVC/neoprene gasket, necessary fillingup of gaps at the junctions, at top, bottom and sides, etc complete. Aluminium section shall be smooth, rust free, straight, mitred & jointed mechanically wherever required. Minimum anodising thickness shall be 15micron.	SQM	460		
918	Providing auminium grill for windows and ventilators of approved quality and design as directed by engineer	SQM	75		
919	Providing steel grill for windows and ventilators of approved quality and design as directed by engineer	SQM	70		
920	Electrically operated, self operable/closing aluminium framed hollow extruded section of minimum 3mm thickness as per IS:1285 and with 12 mm thick tinted glass sliding doors of approved quality as per specifications and as directed by engineer	SQM	40		
921	Providing and fixing of over head hydraulic door closers of approved make & quality as directed by Engineer.	NOS	88		
921a	Providing and fixing floor mounted Hydraulic door closer of approved make & quality as directed by engineer	NOS	43		
922	Providing and fixing pressed steel frames fabricated from 1.6 mm M.S sheet mortised, reinforced drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, floor tiles/weather bars etc complete as per specifications.	KG	2000		
923	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 specification and of approved make - <b>Mechanically operated conforming to IS:6248</b> . The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.	SQM	282		
924	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 specification and of approved make - <b>Hand operated conforming to IS:6248</b> . The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.	SQM	105		

1500MW PRAGATI III BAWANA CCPP		RATE SCHEDULE CUM BILL OF QUANTITIES			
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ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
925	Providing and fixing in position <b>rolling shutter</b> 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 specification and of approved make - <b>Electrically operated conforming to IS:6248</b> . The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.	SQM	210		
1000	<b>BRICKWORK MASONRY INCLUDING SUPPLY OF MATERIAL, COST OF LABOUR ETC. COMPLETE, AS PER SPECIFICATIONS.</b>				
1001	Providing <b>brick work</b> 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 <b>below plinth</b> including raking out joints, curing, scaffolding etc. complete excluding plastering and painting.				
i)	Using <b>fly ash lime bricks</b> conforming to IS 12894 with crushing strength of 75 kg/cm2	CUM	585		
ii)	Using <b>clay ash bricks</b> shall be as per IS 13757 with crushing strength of 75 kg/cm2 and minimum percentage of fly ash shall be 25%	CUM	440		
iii)	Using <b>ordinary bricks</b> of class designation 7.5 of nominal dimension	CUM	350		
iv)	Using locally available <b>first class bricks</b> of required crushing strength of nominal dimension approved by engineer in charge/customer.	SQM	50		
1002	Providing <b>brick work</b> in cement mortar 1:6 (1 cement 6 coarse sand) in walls, chambers etc. in thickness 230mm at all heights, places and position <b>above plinth</b> including raking out joints, curing, scaffolding etc complete excluding plastering and painting.				
i)	Using <b>fly ash lime bricks</b> conforming to IS 12894 with crushing strength of 75 kg/cm2	CUM	4734		
ii)	Using <b>clay ash bricks</b> shall be as per IS 13757 with crushing strength of 75 kg/cm2 and minimum percentage of fly ash shall be 25%	CUM	2506		
iii)	Using <b>ordinary bricks</b> of class designation 7.5 of nominal dimension	CUM	1243		
iv)	Using locally available <b>first class bricks</b> of required crushing strength of nominal dimension approved by engineer in charge/customer.	SQM	50		
1003	<b>Ruled pointing</b> in masonry in CM 1:3 (1 cement and 3 fine sand) including raking out joints, curing etc. complete.	SQM	3656		
1004	Providing <b>brick work</b> in cement mortar 1:4 (1 cement 4 coarse sand) in <b>partition walls</b> , chambers etc. in thickness 115mm at all heights, places and position above or below plinth/graded level including providing H.B. wetting at every third layer, raking out joints, curing, scaffolding etc complete using fly ash lime bricks conforming to IS 12894 with crushing strength of 75 kg/cm2 and clay ash bricks shall be as per IS 13757, minimum percentage of fly ash shall be 25%, excluding plastering and painting as per specification.				
i)	Using <b>fly ash lime bricks</b> conforming to IS 12894 with crushing strength of 75 kg/cm2	SQM	673		
ii)	Using <b>clay ash bricks</b> shall be as per IS 13757 with crushing strength of 75 kg/cm2 and minimum percentage of fly ash shall be 25%	SQM	500		
iii)	Using <b>ordinary bricks</b> of class designation 7.5 of nominal dimension	SQM	500		
iv)	Using locally available <b>first class bricks</b> of required crushing strength of nominal dimension approved by engineer in charge/customer.	SQM	50		
1005	Providing <b>brick soling</b> spreading of earth, ramming, watering including 12mm thick cushion of sand complete but excluding excavation and disposal of surplus earth (excavation and disposal of surplus earth shall be measured under applicable item). <b>Using brick on edge.</b>				
i)	Using <b>fly ash lime bricks</b> conforming to IS 12894 with crushing strength of 75 kg/cm2	SQM	50		
ii)	Using <b>clay ash bricks</b> shall be as per IS 13757 with crushing strength of 75 kg/cm2 and minimum percentage of fly ash shall be 25%	SQM	90		
iii)	Using <b>ordinary bricks</b> of class designation 7.5 of nominal dimension	SQM	50		
iv)	Using locally available <b>first class bricks</b> of required crushing strength of nominal dimension approved by engineer in charge/customer.	SQM	50		
1006	Providing <b>brick soling</b> including spreading of earth, ramming, watering including 12mm thick cushion of sand complete but excluding excavation and disposal of surplus earth (excavation and disposal of surplus earth shall be measured under applicable item).- <b>Using flat bricks.</b>				
i)	Using <b>fly ash lime bricks</b> conforming to IS 12894 with crushing strength of 75 kg/cm2	SQM	50		

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ii)	Using <b>clay ash bricks</b> shall be as per IS 13757 with crushing strength of 75 kg/cm2 and minimum percentage of fly ash shall be 25%	SQM	90		
iii)	Using <b>ordinary bricks</b> of class designation 7.5 of nominal dimension	SQM	50		
iv)	Using locally available <b>first class bricks</b> of required crushing strength of nominal dimension approved by engineer in charge/customer.	SQM	50		
1007	Providing <b>brick soling</b> including 12mm thick <b>cushion of sand</b> excavation, disposal of surplus earth spreading of earth, ramming, watering etc. complete in all respects.- <b>Using bricks on edge.</b>				
i)	Using <b>fly ash lime bricks</b> confirming to IS 12894 with crushing strength of 75 kg/cm2	SQM	50		
ii)	Using <b>clay ash bricks</b> shall be as per IS 13757 with crushing strength of 75 kg/cm2 and minimum percentage of fly ash shall be 25%	SQM	90		
iii)	Using <b>ordinary bricks</b> of class designation 7.5 of nominal dimension	SQM	50		
iv)	Using locally available <b>first class bricks</b> of required crushing strength of nominal dimension approved by engineer in charge/customer.	SQM	50		
1008	<b>Breaking</b> of existing brick <b>work</b> 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	50		
1009	<b>Breaking</b> of existing brick <b>partition wall</b> at all levels including plastering, cutting of reinforcement, removing the rubbish up to a distance of 500 m including transportation, loading, unloading etc. all complete as directed by the engineer.	CUM	40		
1010	Providing and <b>encasing</b> of structural steel member with <b>masonry work</b> around flanges, webs etc. and filling the gap between steel and masonry by minimum 12mm thick mortar. Encased member shall be wrapped with checken wire mesh with 50mm lap etc. complete as per specification.	CUM	90		
1011	Providing and laying 75 mm thick bed of <b>dry brick aggregate</b> including of excavation, disposal of surplus earth spreading of earth, ramming, watering etc. complete in all respects as directed by the engineer.	SQM	682		
1012	<b>Making openings</b> in existing brick wall or partition wall including making good the broken edges/surface with cement mortar etc. complete.	CUM	35		
1013	Supply and placing in position <b>mild steel wire fabric</b> 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	60		
1015	Providing <b>brick work as permanent finish with fire clay bricks in cement mortar 1:4</b> (1 cement : 4 coarse sand) in walls, finished with recessed pointing at all heights, places and position <b>above plinth</b> including raking out joints, curing, scaffolding, complete as per specifications	SQM	6189		
1100	<b>DAMP PROOF COURSE INCLUDING ALL MATERIALS, LABOUR, SHUTTERING, CENTERING, CURING ETC., COMPLETE WITH THICKNESS AS SPECIFIED/SHOWN ON DRAWINGS OR AS DIRECTED BY ENGINEER FOR THE FOLLOWING:-</b>				
1101	<b>Damp Proof Course 50mm thick</b> 1:1.5:3 concrete (10mm and down graded aggregate) with 2% of approved admixture of water proofing compound. Two layers of hot bitumen coating 85/25 grade as per IS:702 @ 1.7Kg./sqm shall be applied before & after the DPC as per specification.	SQM	1,527		
1200	<b>CEMENT MORTAR PLASTER INCLUDING MAKING GROOVES WHEREVER REQUIRED, ALL MATERIALS, SCAFFOLDING, CURING ETC. COMPLETE AS PER SPECIFICATION, DRAWING AND AS DIRECTED BY ENGINEER FOR THE FOLLOWING:-</b>				
1201	Providing <b>18mm thick plaster</b> in two layers <b>outside</b> the building wall in cement <b>mortar 1:6</b> on walls, finished to a smooth finish as per specification including providing 3mmx3mm size grooves at junctions of two dissimilar materials.	SQM	31975		
1202	Providing <b>12mm thick plaster</b> in two layers <b>inside</b> the building in cement <b>mortar 1:6</b> on walls finished to a smooth finish as per specification.	SQM	38212		
1203	Providing <b>12mm thick plaster</b> in cement <b>mortar 1:6</b> on walls with rough finish as per specification.	SQM	2500		
1204	Providing <b>6mm thick plaster on ceiling</b> in cement <b>mortar 1:4</b> finished to a smooth as per specification.	SQM	55808		
1205	Providing and making <b>decorative plaster</b> of all types and design on walls, ceilings, arcs, columns with various thickness upto 18 mm including finishing all complete.	SQM	4050		

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1206	<b>Forming groove</b> 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	200		
1207	Providing <b>drip course</b> on plastered surface at all elevations for all type of work such as chajjas, parapet, projections etc. including scaffolding, finishing etc. complete with all labour, tools and plants as per specification, drawing and instructions of engineer in charge.	RM	943		
1208	Providing <b>drip course</b> on plastered surface at all elevations for all type of work such as chajjas, parapet, projections etc. including scaffolding, finishing etc. complete with all labour, tools and plants as per specification, drawing and instructions of engineer in charge.	RM	943		
1209	Providing <b>Plaster of Paris/white putty (birla white)</b> 2 mm thick punning over finished plaster surface and finished with smooth surface as per specification.	SQM	25,975		
1210	Providing <b>screed/grading plaster</b> of average 20 mm thickness in ratio 1:6 nominal by volume including finishing smooth and even etc. all complete at all levels above or below grade level.	SQM	19,965		
<b>1300</b>	<b>FINISHES, PAINTING TO CONCRETE, PLASTERED SURFACES, SURFACE PREPARATION INCLUDING ALL MATERIALS, LABOUR, SCAFFOLDING ETC. ALL COMPLETE AS PER SPECIFICATION, DRAWING AND AS DIRECTED BY ENGINEER FOR THE FOLLOWING:-</b>				
1301	Two or more coats of <b>white wash/ colour wash</b> as per IS 627 of approved brand and manufacture to give an even shade including a priming coat as per specifications.	SQM	63371		
1302	Two or more coats of <b>exterior masonry paint</b> (water or solvent base) of special resins, adhesives and additives mixed with fine, hard stone aggregate and finest available pigment. The paint shall be applied on a coat of primer over dried, prepared plaster surface as manufacturers guidelines. The final finished coating shall be fungus resistant, UV resistant, water repellent, alkali resistant and extremely durable with color fastness as per specification.	SQM	4817		
1303	Providing and applying two or more coats of <b>oil bound distemper</b> as per IS 428 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 including plaster of paris punning minimum 2 mm.	SQM	23880		
1304	Two or more coats of <b>dry distemping</b> of approved brand and manufacture to give an even shade including a priming coat with distemper primer complete.	SQM	3860		
1305	Providing and applying two or more coats of <b>acrylic emulsion paint</b> 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 including plaster of paris punning minimum 2 mm.	SQM	6000		
1306	Providing and applying 2 or more coats of <b>acid/alkali paint</b> 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	1700		
1307	Two or more coats of <b>fire resistant transparent paint</b> as per IS 162 on all woodwork over french polish as per IS 348 or flat oil paint as per IS 137 of approved grade and manufacture to give an even shade as per specifications.	SQM	450		
1308	Two or more coats of black <b>anti-corrosive bitumastic</b> painting of approved brand and manufacture to give an even shade complete.	SQM	65000		
1309	Two or more coats of <b>synthetic enamel paint</b> of approved make made from synthetic resins and drying oil with rutile titanium dioxide and other selected pigments to give smooth, hard, durable & glossy finish to all interior and exterior surfaces complete.	SQM	2725		
1310	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	64500		

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1314	Providing and applying <b>resin bonded granular textured finish, for external applications</b> shall consist of crushed stone/quartz chips of .5 mm to 2.5 mm size and of approved natural color/shade and bonded with synthetic resins, adhesives and additives altogether in a single pack mix, applied on cured and dried plaster surface with a dry film thickness of minimum 2 mm. The final finish shall have UV resistance, fungus, bacterial resistance properties all complete with grooves filled with poly sulfide sealant of matching color and shade as per specification/drawing/approval of engineer in charge.	SQM	9250		
1315	Providing and applying 2 mm thick <b>plaster of paris punning on walls</b> including preparation of surface, staging, etc. to achieve a smooth even surface all complete as per specification and as directed by Engineer.	SQM	10574		
1316	Providing and applying ready made <b>Epoxy Paint</b> over areas other than steel structure 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, splash, spillage & acidic environment. The epoxy paint coating shall be of 150micron thickness over epoxy primer.	SQM	2150		
1317	Providing and applying <b>resin bonded granular textured finish, for external applications</b> shall consist of granular textured paint/ Synthetic plaster composed of synthetic fibre and petroleum based chemical similar to RENOVO or equivalent and of approved natural color/shade applied on cured and dried plaster surface. The final finish shall have UV resistance, fungus, bacterial resistance properties all complete with grooves filled with poly sulfide sealant of matching color and shade as per specification/drawing/approval of engineer in charge.	SQM	200		
<b>1400</b>	<b>FLOORING AND SKIRTING INCLUDING BASE LAYER AND ALL MATERIALS, LABOUR, CURING, POLISHING ETC. COMPLETE IN ALL RESPECTS AS SHOWN ON DRAWINGS, DESCRIBED IN SPECIFICATIONS AND AS DIRECTED BY ENGINEER FOR THE FOLLOWING:-</b>				
1401	Providing and laying 50 mm thick <b>heavy duty cement concrete flooring</b> with <b>metallic hardener pigmented topping</b> of 12 mm thick uniform graded treated iron particles <b>in flooring</b> . Under layer of 38mm thick cement concrete mix 1:2:4 ( 1 part cement, 2 parts sand and 4 parts stone chips 12.5 mm well graded ).	SQM	64238		
1402	Providing and laying 50 mm thick heavy duty cement concrete flooring with metallic hardener pigmented topping of 12 mm thick uniform graded treated iron particles <b>in skirting</b> Under layer of 38mm thick cement concrete mix 1:2:4 ( 1 part cement, 2 parts sand and 4 parts stone chips 12.5 mm well graded ) and top layer of 12mm thick metallic concrete complete.	SQM	1276		
1403	Providing and laying precast <b>polished heavy duty cement concrete tiles (Carborundum )</b> of size 300X300X25 thick of approved shade as per IS 1237, <b>laid in floors and landings</b> , jointed with neat cement slurry with pigment to match the shade of the tiles including , minimum 25 mm thick underbed of 1 part cement,2 part sand : 4 parts stonechip by volume mixed with sufficient water to form a stiff workable mass and brought to proper level.. The tiles laid over under-bed,with cement mortar pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including pigments, curing, grinding, polishing etc. complete with laying as per IS 1443.	SQM	2200		
1404	Providing and laying precast <b>polished heavy duty cement concrete tiles (Carborundum )</b> of size 300X300X25 thick of approved shade as per IS 1237, <b>laid in skirting</b> , jointed with neat cement slurry with pigment to match the shade of the tiles including rubbing and polishing complete with laying as per IS 1443.	SQM	275		
1405	Providing and laying interlocking <b>M30 concrete blocks</b> of thickness 60 mm as paving of approved colour and pattern and should be laid on the subbase and bedding as per specifications and recommendations of manufacturer.	SQM	1000		
1406	Providing and laying <b>polished Kota stone</b> 20 mm thk <b>in flooring</b> jointed with neat cement slurry with pigment to match the shade of the tiles including , minimum 30 mm thick underbed of 1 part cement,2 part sand : 4 parts stonechip by volume mixed with sufficient water to form a stiff workable mass and brought to proper level. The Kota stone laid over under-bed,with cement mortar pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including pigments, curing, grinding, polishing etc. complete as per specification.	SQM	4300		
1407	Providing <b>polished Kota stone</b> 20 mm thk <b>in skirting</b> projecting 6mm from adjacent plaster all complete .	SQM	333		
1408	Providing and laying <b>polished Granite stone</b> of approved color and texture <b>20 mm thk</b> in flooring. Under bed shall average 30mm thk of 1 part cement,2 part sand : 4 parts stonechip by volume and brought to proper level. The granite stone slabs/tiles laid over under bed with cement mortar, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including pigments, curing, grinding, granite polishing etc. complete .	SQM	3840		

1500MW PRAGATI III BAWANA CCPP		RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
1409	Providing and laying <b>polished Granite stone 20 thk in skirting and dado</b> including pigments, curing, grinding, granite polishing etc. complete.	SQM	165		
1410	Providing and laying <b>7 mm thk vitrified ceramic tiles (Mat or Mirror)</b> of size 400x400 from reputed manufacturer, complete as per specification.	SQM	1520		
1411	Providing and laying <b>7 mm thk vitrified ceramic tiles (Mat or Mirror)</b> of size 600x600 from reputed manufacturer, complete as per specification.	SQM	5935		
1412	Providing and laying <b>7 mm thk vitrified ceramic tiles (mat or mirror)</b> of size 400x400 from reputed manufacturer, <b>for skirting</b> up to specified height complete as per specification.	SQM	70		
1413	Providing and laying <b>7 mm thk vitrified ceramic tiles (Mat or Mirror)</b> of size 600x600 from reputed manufacturer, <b>for skirting</b> up to specified height complete as per specification.	SQM	605		
1414	Providing and laying <b>Heavy Duty dust pressed Ceramic Tiles</b> of size 300x300x7mm thick, Group-V conforming to IS:13755, of reputed manufacturer of approved finish shade and colour.	SQM	900		
1415	Providing and laying <b>non-woven type carpet</b> (unitex or equivalent) which shall be laid as manufacturers recommendations in matching grains including anti fungus and anti termite treatment complete.	SQM	750		
1416	Providing & fixing <b>chemical resistant (Acid &amp; Alkali) Tiles</b> as per IS 4457 of minimum thickness <b>20 mm thick in flooring/Dado</b> of battery room. The tiles shall be abrasion resistant and durable. The potassium silicate as per IS 4832, 6 mm thick mortar used for setting or for under bed shall be durable strong and chemical resistant epoxy mortar including pointing etc. after laying bitumen primer as per IS 158 and 12 mm thick bitumastic complete as per IS 9510 and IS 412 and as per specification.	SQM	485		
1417	Providing & fixing <b>chemical resistant (Acid &amp; Alkali) Tiles</b> as per IS 4860 of minimum thickness <b>38 mm thick in flooring/Dado</b> . The tiles shall be abrasion resistant and durable. The potassium silicate 6 mm thick mortar as per IS 4832 used for setting or for under bed shall be durable strong and chemical resistant epoxy mortar including pointing etc. after laying bitumen primer as per IS 158 and 12 mm thick bitumastic as per IS 9510 and IS 412 complete as per specification.	SQM	531		
1418	Providing & fixing <b>chemical resistant (Acid &amp; Alkali) bricks</b> (75 mm thk) as per IS 4860 in the <b>floor</b> of neutralization pit. Surface on which lining has to be applied shall be prepared in accordance with IS 2395. Bitumen primer as per IS 158 followed by 18 mm thk Bituminastic followed by 6 mm thk 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 ceiling shall be done with bitumastic. A.R. bricks shall be laid with 6 mm wide and 20 mm deep pointing ( epoxy/furane/CNSL ) and acid curing shall be done complete as per specification.	SQM	500		
1419	Providing & fixing <b>chemical resistant (Acid &amp; Alkali) bricks</b> (115 mm thk) as per IS 4860 in the <b>walls</b> of neutralization pit. Surface on which lining has to be applied shall be prepared in accordance with IS 2395. Bitumen primer as per IS 158 followed by 18 mm thk Bituminastic followed by 6 mm thk 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 ceiling shall be done with bitumastic. A.R. bricks shall be laid with 6 mm wide and 20 mm deep pointing ( epoxy/furane/CNSL ) and acid curing shall be done complete as per specification.	SQM	500		
1420	Providing and laying <b>marble flooring/dado of minimum 20mm thickness</b> projecting 6mm from adjacent plaster all complete including underbed mortar, labour, material, scaffolding, etc as per specification.	SQM	620		
1421	Providing and laying <b>2mm thick antistatic PVC floor as per IS:3462 (laying of flooring shall be as per IS:5318)</b> of approved shade including all labour, material etc all complete as per drawing and as directed by Engineer.	SQM	500		
1422	Providing and laying <b>granite stone slab</b> of 12mm thickness single piece for wash basin slab of black or approved colour with cutting and opening complete.	SQM	400		
1423	Providing and laying <b>granite stone slab</b> of 20mm thickness for platforms in pantry slab of black or approved colour with cutting and opening complete.	SQM	250		
1424	Providing and laying <b>glazed ceramic tiles of approved color and design in dado</b> of approved size of reputed manufacturer topped with 50 mm wide matching ceramic trims, complete as per specification including all material, labour etc.		0		
i)	5 mm thick	SQM	732		

1500MW PRAGATI III BAWANA CCPP		RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
	ii) 7 mm thick	SQM	122		
1425	Providing and fixing <b>dividing strips</b> 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		
	i) Glass strips 40 mm wide and minimum 6 mm thick.	RM	2,700		
	ii) Aluminium strips 40 mm wide and minimum 3 mm thick	RM	2,700		
	iii) Brass strips 20 mm wide and minimum 4 mm thick.	RM	0		
1426	Providing and laying wooden panel flooring and wall PERGO or equivalent all complete as per specification.	SQM	200		
1500	<b>PROVIDING AND ERECTING ROOFING/SIDE CLADDING INCLUDING LAPS, SCAFFOLDING HOOKS, WASHERS, CORNER PIECES, ETC. COST OF ALL MATERIAL, LABOUR, EQUIPMENT, CLEATS, SHEETING RUNNER, RAILS MILD STEEL WIND TIES (HORIZONTAL/VERTICAL) AND ANY OTHER STEEL WORKS ETC. AT ALL ELEVATIONS COMPLETE AS PER SPECIFICATION, DRAWING AND AS DIRECTED BY THE ENGINEER FOR THE FOLLOWING:</b>				
1501	Designing, providing and fixing permanently color coated (on exposed face) <b>galvanized M.S. trough metal sheet decking plate</b> of approved color over roof purlins for In-situ roof slab as per IS 14246. Thickness of deck plate shall be minimum <b>0.8mm</b> and minimum trough depth of 38 mm with minimum yield strength of 250 Mpa. Silicon modified polyester paint shall be used for permanent coating over galvanized surface with minimum rate of galvanization 275 gm/sqm. DFT of permanent color coating shall be 20 microns. It shall serve as permanent shuttering for roof slab 50 mm thk measured over crest of metal decking and 25 mm thick layer of screed concrete and a layer of 25mm thick wearing course mortar over it. It should have adequate strength to support weight of green concrete and imposed load during concreting as well as in service condition of 150 Kg/sqm with purlin spacing of around 1400 mm.	SQM	13196		
1502	Designing, providing and fixing permanently color coated galvanized <b>M.S. trough metal sheet roofing</b> of approved profile and color over roof purlins for In-situ roof slab as per IS 14246. Thickness of deck plate shall be minimum <b>0.6 mm</b> and minimum trough depth of 38 mm and minimum yield strength of 250 Mpa. Silicon modified polyester paint shall be used for coating over galvanized surface with minimum rate of galvanization 275 gm/sqm. Outer side should have permanent color coating of minimum DFT 20 microns over primer and inner side shall be coated with silicon polyester paint of minimum DFT 12 microns.	SQM	2000		
1503	Design supply & erection of permanent colour coated <b>thermally insulated sandwiched metal cladding</b> for external walls with troughed galvanised MS sheeting of 0.6mm thickness and 275 g/sqm of galvanisation or Hi tensile steel (350 Mpa) 0.5 mm thick, coated with zinc aluminium alloy @ 150 g/sqm. Outer exposed face shall have silicon modified polyester coating of DFT 20 microns over primer having life span sustenance against weathering action, inner sheeting shall have 7 micron of precoating. sandwiched Insulation of minimum 50mm thick bonded mineral wool blanket conforming to IS 8183 (minimum density of 32 kg/cum for glass wool and 48 kg/cum for rock wool or 40-45 Kg/cum for polyurethane foam (fire retardants and non-toxic) confirming to IS 12436 , cladding shall be fixed to supports/rails by concealed fixing system with corrosion resistant self tapping/self drilling type fasteners provided with suitable cap. Flashing shall have the same material and minimum overlap of 100 mm. Flashing shall not be paid separately.	SQM	26660		
1504	Design supply & erection of permanent colour coated <b>non insulated metal cladding</b> for external walls with troughed galvanized MS sheeting of 0.6mm thickness and 275 g/sqm of galvanization or Hi tensile steel (350 Mpa) 0.5 mm thick, coated with zinc aluminium alloy @ 150 g/sqm. Outer exposed face shall have silicon modified polyester coating of DFT 20 microns over primer having life span sustenance against weathering action, inner side shall be coated with same paint of minimum DFT 20 microns over primer. Cladding shall be fixed to supports/rails by concealed fixing system with corrosion resistant self tapping/self drilling type fasteners provided with suitable cap. Flashing shall have the same material and minimum overlap of 100 mm. Flashing shall not be paid separately.		1500		
1600	<b>PROVIDING AND FIXING FALSE CEILING INCLUDING SUPPLY OF CEILING MATERIAL, SUSPENSION SYSTEM AND ALL OTHER MATERIALS REQUIRED FOR THE WORK INCLUDING POLISHING/ PAINTINGS, LABOUR ETC., ALL COMPLETE AS PER SPECIFICATION, DRAWING AND AS DIRECTED BY ENGINEER FOR THE FOLLOWING:-</b>				
1601	Providing <b>50 mm thick fibre glass under deck insulation</b> having min. density 24kg/cum with 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. all complete as per specifications and drawings.	SQM	2013		

1500MW PRAGATI III BAWANA CCPP		RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
1602	Providing, fixing and laying <b>permanently colour coated aluminium false ceiling</b> of approved colour and <b>Luxalon</b> make or approved equivalent (Type-84C, Interior) with corrosion resistant aluminium alloy panels of minimum thickness 0.5mm including 50mm thick mineral wool insulation (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) grid shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc.	SQM	1700		
1603	Providing, fixing and laying light weight <b>mineral fiber tile false ceiling</b> 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 (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.		1100		
1604	Providing and Fixing <b>12mm thick Gypsum plaster board for false ceiling conforming to IS:2095 approved</b> make in plan or elevation with aluminium grid, metal suspension system, anchor fastener adjustable hangers, etc. all complete with smooth finish as per specifications, drawings and as directed by Engineer.	SQM	5521		
1700	<b>PROVIDING AND FIXING RAIN WATER DOWN TAKE PIPES INCLUDING 2 COATS OF APPROVED PAINT OVER A PRIMARY COAT, ALL SPECIALS AND ACCESSORIES ETC. COMPLETE AS PER SPECIFICATION.</b>				
1701	<b>HCI down take pipes of 75 mm dia</b> as per specifications	RM	90		
1702	<b>HCI down take pipes of 100 mm dia</b> as per specifications	RM	235		
1703	<b>HCI down take pipes of 150mm dia</b> as per specifications	RM	1185		
1704	<b>Galvanised MS down take pipes of 75 mm dia- Medium quality</b> as per IS:1239(part-I)/IS:3589 with welded joints	RM	325		
1705	<b>Galvanised MS down take pipes of 100 mm dia- Medium quality</b> as per IS:1239(part-I)/IS:3589 with welded joints	RM	1180		
1706	<b>Galvanised MS down take pipes of 150 mm dia- Medium quality</b> as per IS:1239(part-I)/IS:3589 with welded joints	RM	2005		
1800	<b>MISCELLANEOUS</b>				
1801	Providing and fixing <b>PVC water stops - 225mm wide</b>	RM	2880		
1802	Providing and fixing in position <b>25mm wide and 25mm thick blown bitumen in expansion joints</b> as per specification.	RM	40		
1803	Supplying and installation of <b>25mm thick vibration damping resistoflex</b> or approved equivalent pads around foundation of vibrating equipment and other locations as directed by the Engineer including cost of all materials labour equipment etc complete as per drawing and specifications.	SQM	51		
1804	Providing and fixing <b>bitumen impregnated fibre joint filling board of 25 mm thickness</b> , fillers along with PVC water bar etc for expansion joint in water retaining structures all complete as per specifications, drawing and as directed by Engineer.	RM	41		
1805	Supplying and laying of rounded gravels <b>40mm thick in transformer yards</b> etc, as directed by Engineer.	CUM	30		
1806	Providing and laying <b>anticorrosive insulating bituminastic layer</b> laid to slope using special grade Bitumen and filter materials like compacted crushed stone chips, screenings, fine gravel, clean sand or similar material and rolled or compacted with second layer of minimum 25 thick premix carpet with 12 mm and down broken stone chips and 80/100 grade hot bitumen complete as per drawings below fuel oil tanks and at such other places as directed by the Engineer and as per specifications.	SQM.	20		
1808	Providing and fixing <b>G.I strips minimum 1.5mm thk and 150mm wide</b> unless specified otherwise in water retaining structure. Galvanising as per relevant I.S. codes and as per specifications.	RM	200		
1809	Providing and fixing <b>aluminium strips minimum 18 SWG thk and 300mm wide</b> unless specified otherwise with minimum lap of 50mm length all complete as per specification.	RM	140		
1810	Providing, laying and fixing <b>transformer rails</b> including guide rails in concrete including joining of rails, anchoring lugs etc complete as per specification and as directed by Engineer.	MT	60		
1811	Laying of <b>earthing mats/rods</b> including transportation from yard stores, loading, unloading, cutting to length, welding etc complete as per specification and as directed by Engineer.	MT	620		

1500MW PRAGATI III BAWANA CCPP		RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
1812	Providing removable metallic false flooring system with nominal height of the false flooring 600 mm. The same shall comprise of special grade steel panels (of size 600x600mm). without any dimensional tolerance 1.2mm thick die cast to shape having 1mm thick top MS sheet spot welded together to form a composite steel panel, sitting on aluminum diecasted heads & mounted on steel pedestals of 25mm dia rod of adjustable height and supporting 1.2mm thick channel frame work at-top and 2mm thick 150x150mm base plate. The top finish shall be 2mm thick antistatic PVC sheet or High pressures laminate. Cavity area below the false flooring shall be made dust proof by using Polyurethane paint.	SQM	500		
1813	Designing, providing and fixing of <b>Heavy duty galvanised friction anchor fasteners of Hilti/Equivalent make of dia. 16mm</b> and appropriate length in concrete (minimum grade M30) to take direct tension of minimum 1.8Mton including anchor fastener, materials, equipment, labour, scaffolding complete as per direction of Engineer.	Nos	40		
1814	Designing, providing and fixing of <b>Heavy duty galvanised friction anchor fasteners of Hilti/Equivalent make of dia. 20mm</b> and appropriate length in concrete (minimum grade M30) to take direct tension of minimum 2.5Mton including anchor fastener, materials, equipment, labour, scaffolding complete as per direction of Engineer.	Nos	40		
1815	Designing, providing and fixing of <b>Heavy duty galvanised chemical anchor fasteners of Hilti/Equivalent make of dia. 12mm</b> and appropriate length in concrete (minimum grade M30) to take direct tension of minimum 1.0Mton including anchor fastener, materials, equipment, labour, scaffolding complete as per direction of Engineer.	Nos	40		
1816	Designing, providing and fixing of <b>Heavy duty galvanised chemical anchor fasteners of Hilti/Equivalent make of dia. 16mm</b> and appropriate length in concrete (minimum grade M30) to take direct tension of minimum 1.6Mton including anchor fastener, materials, equipment, labour, scaffolding complete as per direction of Engineer.	Nos	40		
1817	Providing and fixing <b>weep holes</b> in Drains consisting of 100 mm dia LDPE pipe sleeves along with single side covering for the pipe mouth with galvanised welded wire fabric of 20 mm sq. opening along with 300 X 300 mm sq., 300 mm deep, 40 mm aggregates to cover fabric mesh mouth complete as directed by engineer in charge.	Nos.	1000		
1818	Providing bitumen craft paper over screed concrete in water retaining structures all complete as per specification and as directed by the Engineer.	SQM	100		
1819	Providing and fixing <b>GI rungs</b> in concrete/brick walls at all elevations including @ zinc coating shall not be less than 900 g/sqm all complete.	KG	100		
1820	Design, supply, fabrication, erection of <b>stoplog gates in CW Pumps</b> as per specification with embedments required, lifting beams, special tools & plants, spare parts for three years, machining, casting, all materials such as structural steel, cast steel, stainless steel, brass used for seals, rubber seals, gears, ball and roller bearing, branch bushings, greasing, bolts, nuts, lugs, threaded fastners etc., cleaning, sand blasting, hot double dip galvanised with minimum coating of zinc 750 gms/sqm., following by an application of etching primer and dipping in black bitumen as per B.S. 3416, erection along with a second stage concreting to true plumb and levels, submission of drawings / fabrication drawings for engineers approval etc., all complete as per specifications and approved drawings. The leakage through rubber seal shall not be more than 5 lit/min/metre length of seal under maximum head.(only weight of structural steel including embedments shall be considered for payment purpose)	MT	145		
1821	Supplying, fabricating, erecting in position and testing / examining bolted and / or welded structural steel work at all levels for <b>stationary screens</b> made out of rolled sections and / or plates including cutting, straightening if required, edge preparation, bolting / welding of joints, cleaning, sand blasting, hot double dip galvanised with minimum coating of zinc as 750 gms./sqm. followed by application of an etching primer and dipping in black bitumen as per BS 3416, complete as per drawing and directed.	MT	160		
1822	Providing and laying dry <b>stone pitching</b> of minimum thickness of 230 mm for slope protection in cement mortar 1:6 with hammer dressed 230 mm size stones including racking of joints, pointing, preparing the bedding surface and voids filling with stone aggregate etc. complete.	CUM	400		
1823	Providing and fixing PVC <b>pressure release valve</b> of minimum dia 90mm in water retaining structure including 160 mm dia housing pipe of minimum length 3.75 m with perforation as per IS4558, nylon jali, perforated end plug, collar, graded filter, excavation, fixing in concrete slab/wall all complete as per specification, drawing and instruction of engineer in charge.	Nos	140		
2000	<b>FENCING AND GATES.</b>				
2001	Supplying and fixing <b>G.I. barbed wire in fencing</b> including G.I clips etc. complete as per specification	MT	26		

ST. NO	DESCRIPTION	RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
	<b>1500MW PRAGATI III BAWANA CCPP</b>				
2002	Supply, fabrication and installing in position and testing galvanised <b>MS Gates</b> out of channels, joists, angles, flats, plates, pipes & sheets including stiffeners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, ball bearing arrangements, castor wheels, etc. all complete as per drawing, specification and as directed by Engineer-in-charge with 600mm high GI barbed wire fencing at top all complete.	MT	34		
2003	Supplying and erecting in position fencing, with gate, shall comprise of PVC coated G.I. welded wire mesh fencing of minimum 4 mm diameter (including PVC coating) of mesh size 75mmX75mm of height 2.4m above the toe wall with a 600mm high galvanised concertina at the top, total fence height of 3.0m above the toe wall. The diameter of the steel wire for chain link fence (excluding PVC coating) shall not be less than 2.5 mm. The tensile serrated galvanised wire (HTSSW) concertina made with wire diameter of 2.5mm will be stretched to 6m and attached to two strands of galvanised HTSSW (high tensile spring steel wire) of 2.5 mm diameter by means of clips at 1m intervals. These two HTSSW strands will be attached to the fence posts with 12 mm security fasteners. All nuts, bolts, fasteners, clamping strips, clamps, clips, etc., shall be galvanised. The toe walls of brick masonry with plastering, painting, fence posts with 75X75X6 MS angles spaced at 2.5 m c/c with suitable RCC foundations, complete as per specification. etc	SQM	2300		
<b>2100</b>	<b>WATER SUPPLY</b>				
2101	Providing and fixing in position tested heavy duty type <b>chromium</b> plated brass long neck <b>bib cocks</b> including sockets, union, nut etc complete - <b>15mm</b> nominal bore.	NOS	106		
2102	Providing and fixing in position heavy duty <b>brass stop cock</b> of approved quality including all specials etc complete as directed by Engineer - <b>15mm</b> nominal bore.	NOS	83		
2103	Providing and fixing in position heavy duty <b>brass full way valve</b> with wheel of approved quality <b>25mm</b> nominal bore.	NOS	71		
2104	Providing and fixing in position heavy duty <b>brass full way valve</b> with wheel of approved quality <b>50mm</b> nominal bore.	NOS	28		
2105	Providing and fixing <b>GI pipes Class B medium class conforming to IS:1239 pipes shall be concealed and painted with anti-corrosive paint, complete</b> with GI sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc complete - <b>15 mm</b> nominal bore.	RM	1398		
2106	Providing and fixing <b>GI pipes Class B medium class conforming to IS:1239 pipes shall be concealed and painted with anti-corrosive paint, complete</b> with GI sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc complete - <b>20 mm</b> nominal bore.	RM	938		
2107	Providing and fixing <b>GI pipes Class B medium class conforming to IS:1239 pipes shall be concealed and painted with anti-corrosive paint, complete</b> with GI sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc complete - <b>25 mm</b> nominal bore.	RM	615		
2108	Providing and fixing <b>GI pipes Class B complete</b> with GI sockets, unions, elbows, tees, nipples etc including trenching & refilling, anti-corrosive paint etc all complete ( <b>for external work</b> ) - <b>15mm</b> nominal bore (N.B).	RM	580		
2109	Providing and fixing <b>GI pipes Class B complete</b> with GI sockets, unions, elbows, tees, nipples etc including trenching & refilling, anti-corrosive paint etc all complete ( <b>for external work</b> ) - <b>20mm</b> nominal bore (N.B).	RM	1008		
2110	Providing and fixing <b>GI pipes Class B complete</b> with GI sockets, unions, elbows, tees, nipples etc including trenching & refilling, anti-corrosive paint etc all complete ( <b>for external work</b> ) - <b>25mm</b> nominal bore (N.B).	RM	603		
2111	Providing and fixing <b>GI pipes Class B complete</b> with GI sockets, unions, elbows, tees, nipples etc including trenching & refilling, anti-corrosive paint etc all complete ( <b>for external work</b> ) - <b>50mm</b> nominal bore (N.B).	RM	450		
2112	Providing and fixing <b>600mmx450mmx5.5mm thk float glass mirror</b> with bevelled edges from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets etc complete with CP screws as per specification.	NO.	44		
2112a	Providing and fixing <b>5.5 mm thick wall to wall float glass mirror</b> with minimum height of 900 mm from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable CP brackets etc complete with CP screws as per specification.	NO.	23		
2113	Providing and fixing <b>610mmx127mmx6mm thk clear glass shelf with C.P Guard rails</b> and mounted on C.P. brackets etc complete as per specification.	NO.	52		
2114	Providing and fixing <b>25 mm dia stainless steel towel rails (600mm X 20mm)</b> complete as per specification.	NO.	52		
2115	Providing and fixing stainless steel <b>soap holder cum dispenser</b> complete as per specification.	NO.	97		
2116	Providing and fixing <b>C.P. liquid soap dispenser</b> . Dispenser shall be round and easily revolving with removable threaded nozzle and mounted on C.P. brackets etc complete as per specification.	NO.	109		

1500MW PRAGATI III BAWANA CCPP		RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
2117	Providing & fixing <b>P.V.C. water tank of 1000 litres</b> capacity (Syntex or approved equivalent make) in position. The work to include making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc all complete as per specification and at all heights and levels.	NO.	61		
2118	Providing & fixing <b>P.V.C. water tank of 2000 litres</b> capacity (Syntex or approved equivalent make) in position. The work to include making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc all complete as per specification at all heights and levels.	NO.	65		
2118A	Providing & fixing <b>P.V.C. water tank of 5000 litres</b> capacity (Syntex or approved equivalent make) in position. The work to include making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc all complete as per specification at all heights and levels.	NO.	55		
2119	Providing and fixing glazed vitreous wall mounted <b>paper holder</b> with suitable cover cum cutter fitted with CP screws etc. complete as per specification.	NO.	89		
2120	Providing and fixing <b>chromium plated brass shower</b> rose with 15 or 20 mm inlet all complete.	NO.	30		
2121	Providing and fixing approved <b>stainless steel sink with integrated drainboard</b> complete including painting the fittings, cutting and making good the wall where required as per specification. The work to be complete as per specifications, drawings and direction of engineer.	NO	6		
<b>2200</b>	<b>SANITARY WORKS</b>				
2201	Supplying and fixing Wash basin (oval shape) with photo-voltaic control fittings as per IS : 2556 to be fixed on concrete platform finished and under fixed with 20mm thick polished granite stone as per specifications and as directed by engineer.	NO.	74		
2202	Providing and fixing approved vitreous china <b>acid/alkali resistant laboratory sink of size 600x400x200mm conforming to IS: 2556 (Part-5)</b> complete including painting the fittings, cutting and making good the wall where required as per specification.	NO.	7		
2202a	Providing and fixing stainless steel kitchen sink of size 610X510X200 as per IS:13983 and specifications.	NO.	21		
2203	Providing and fixing European WC as per IS : 2556 with all fittings including photo-voltaic sensor operated flushing system of appropriate capacity and type, complete as per specification and directed by Engineer.	NO.	40		
2204	Providing and fixing WC (Indian type, Orissa pan (580 x 440mm) as per IS : 2556 with all fittings including photo-voltaic sensor operated flushing system of appropriate capacity and type, complete as per specification and directed by Engineer.	NO.	40		
2205	Providing and fixing <b>wall type glazed vitreous china urinals</b> with photo voltaic control flushing system as per IS:2556 with flush pipes, lead pipes, gratings, traps and necessary C.P. brass fittings all complete as per specifications.	NO.	87		
2206	Supply, laying and jointing <b>75mm dia heavy duty cast iron pipes</b> including bends, branches and all other necessary fittings, lead caulking, a coat of bituminous paint, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete and as per specifications.	RM	895		
2207	Supply, laying and jointing <b>100mm dia heavy duty cast iron pipes</b> including bends, branches and all other necessary fittings, lead caulking, a coat of bituminous paint, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete and as per specifications.	RM	430		
2208	Supply, laying and jointing <b>150mm dia heavy duty cast iron pipes</b> including bends, branches and all other necessary fittings, lead caulking, a coat of bituminous paint, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete and as per specifications.	RM	320		
2209	Providing, laying light duty non pressure <b>NP3 class RCC pipes</b> with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete - <b>200mm dia</b> , as per specification.	RM	1340		
2210	Providing, laying light duty non pressure <b>NP3 class RCC pipes</b> with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete - <b>300mm dia</b> , as per specification.	RM	925		
2211	Providing, laying light duty non pressure <b>NP3 class RCC pipes</b> with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete - <b>450mm dia</b> , as per specification.	RM	575		
2212	Providing, laying light duty non pressure <b>NP3 class RCC pipes</b> with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete - <b>600mm dia</b> , as per specification.	RM	510		
2213	Providing, laying light duty non pressure <b>NP3 class RCC pipes</b> with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete - <b>800mm dia</b> , as per specification.	RM	500		
2214	Providing, laying light duty non pressure <b>NP2 class RCC pipes</b> with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete - <b>200mm dia</b> , as per specification.	RM	500		
2215	Providing, laying light duty non pressure <b>NP2 class RCC pipes</b> with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete - <b>300mm dia</b> , as per specification.	RM	500		

1500MW PRAGATI III BAWANA CCPP		RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
2216	Providing, laying light duty non pressure NP4 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete - 450mm dia, as per specification.	RM	500		
2217	Providing, laying light duty non pressure NP4 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete - 600mm dia, as per specification.	RM	500		
2218	Providing, laying light duty non pressure NP4 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete - 800mm dia, as per specification.	RM	500		
2219	Providing and fixing <b>C.I Manhole cover of size 600mmx450mm</b> including frame from reputed manufacture all complete as per specifications.	NOS.	18		
2220	Providing and fixing <b>circulare heavy duty C.I. manhole cover of 600 mm dia</b> with frame all complete as per specification.	NOS.	89		
2221	Providing and fixing <b>square mouth S.W Gully trap</b> grade 'A' complete with CI grating, brick masonry chamber 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 as per drawing and specifications etc all complete size - <b>100x100mm P or S Type.</b>	NOS	79		
2222	Providing and fixing <b>square mouth S.W Gully trap</b> grade 'A' complete with CI grating, brick masonry chamber 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 as per drawing and specifications etc all complete size - <b>150x100mm P or S Type.</b>	NOS	28		
2223	Providing and fixing <b>square mouth S.W Gully trap</b> grade 'A' complete with CI grating, brick masonry chamber 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 as per drawing and specifications etc all complete size - <b>150x150mm P or S Type.</b>	NOS	26		
2224	Construction of <b>road /yard gullies in 250TH brickwork - 750mm deep</b> with cement concrete M-20 grade foundation, including reinforcement, 12mm cement mortar (1:3) plastering both inside and outside, M.S. rungs @ 250 c/c, C.I. Grating along with frames as per IS standards including necessary earthwork in excavation, backfilling etc complete as per drawings/specifications.	NOS.	8		
2225	Providing and fixing <b>C.I. floor traps with C.P jalli</b> complete as per specification.	NOS.	87		
2226	Providing and laying <b>cinder filling</b> in the toilets complete as directed by engineer in charge.	CUM	151		
2227	Construction of RCC manholes with cement concrete M-20 grade circular upto dia 1200 mm or square of size upto 1000mm X 1000mm and upto 3000 mm deep including necessary earthwork in excavation, backfilling, lean concrete M7.5 ( excluding manhole covers which are to be paid seprately under seprate item), with M.S. rungs @ 250 c/c all complete as per drawings and specifications	NOS.	83		
2228	Providing and installing approved brand single tap <b>water cooler of 80 L</b> cooling capacity complete in all respect.	NO.	19		
2229	Providing and installing approved brand single tap <b>water cooler of 150 L</b> cooling capacity complete in all respect.	NO.	8		
2230	Providing and installing hand dryers .	NO.	8		
2231	Providing and fixing viterous <b>urinal partitions</b> all complete as per specification.	NO.	68		
2300	<b>STRUCTURAL STEEL WORKS</b> All items for fabrication should include supply, fabrication, erection, preparation of fabrication drawings, as per specifications including painting with a coat of primer and also inclusive of all necessary quality test to the satisfaction of engineer/customer for the following.				
2301	<b>Supply ,Fabrication, erection, alignment, welding, primer painting (primer coat consisting of 3 coats of redoxide zinc-chromate (total DFT 75 Microns) as per IS:2074 &amp; IS:1477 (Parts I &amp; II). One coat to be applied at shop and other two after erection ) of structural steel</b> made from Mild Steel (Rolled Sections and Plates) shall conform to Grade 'A' of IS:2062 for thickness upto and including 20mm and shall conform to Grade 'B' of IS:2062 for thickness beyond 20mm thickness. Medium and High Strength steel shall conform to grade 'Fe-490B' of IS: 8500 or equivalent. Rolled Sections and Plates up to and including 20mm thickness shall be semi-killed condition. Plates beyond 20mm thickness shall be killed condition. All steel upto and including 40mm thickness shall be in as Rolled condition. Plates beyond 40mm thickness shall be Normalised and Ultrasonically tested. Pipes shall conform to IS:1161 Hollow(square and rectangular) Steel Sections shall be Hot Formed conforming to IS:4923 and shall be of Minimum grade Yst 240. Chequered Plate shall conform to IS:3502 and shall be minimum 6mm thick excluding projection, Steel for chequered Plates shall conform to Grade 'A' of IS:2062, at all elevations involving rolled sections (including mild steel rounds), built up sections fabricated out of plates, rolled sections and combination of plates and rolled sections, in columns, beams, gantry girders, silos, roof trusses, portals, laced purlins, space frames, shear connectors, 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, diaphragm, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings,	MT	15512		

ST. NO	DESCRIPTION	RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
	toeplates, MS Rungs, insert plates, edge angles, embedments, lugs, posts, stays, louvers, lacings, gusset plates, safety chains for walkways adjacent to crane girders etc, collection of steel from stores, transportation, straightening, making cutting plan, cutting, bending, rolling, grinding, drilling, bolting, erection bolts & nuts (weight erection bolts & nuts not payable, Supply of permanent bolt of grade C mild steel bolts & nuts to be paid separately under ST NO. 2309 (j)), assembly, edge preparation, preheating(minimum preheat and interpass temperature of 20 degrees for welding over 20 mm and upto 40 mm & 66 degrees centigrade for welding over 40 mm and upto 63 mm & 110 degrees centigrade for thickness over 63 mm)& use of low hydrogen/ radiogenic electrodes as per specification, 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 (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, dismantling and removal of all temporary structures (weight of temporary structures not payable) complete with all labour, material, electrodes and other consumables, equipment, testing (mechanical and non- destructive), preparation of fabrication drawings, joint design calculations and all other general and special requirements including appointment of a seperate agency, approved by BHEL, for review and approval of fabrication drawings, in consultation with BHEL,  prepared by the bidder and all other activities required for completion of the work including return of surplus/ waste steel materials to store etc. as per specification, drawings and instructions of the Engineer. Approval of fabrication drawings does not relieve the bidder from the responsibility of its correctness and accuracy.				
2301a	Extra over ST NO. 2301 for <b>blast cleaning of steel structures</b> to near white metal surface(Sa 2 1/2 ) and applying epoxy based zinc phosphate primer in coats of minimum 25 micron (DFT) at shop and 50 micron (DFT) after erection, instead of primer coat of red oxide zinc-chromate, including touch-up painting etc complete as per specification.	MT	450		
2301b	<b>Extra over ST NO. 2301 for providing and application of two coats of primer consisting of chemical resistant epoxy resin</b> and hardener (Minimum 1 Kg of primer mix shall be consumed for priming of 4 to 5 m2 area of surface) instead of primer coat of red oxide zinc-chromate, including touch up painting as per specification and instruction of the Engineer.	MT	450		
2301c	<b>Providing &amp; application of anti corrosive synthetic enamel paint of Berger</b> or approved equivalent make and colour in three coats of 25 micron thickness (DFT) per coat already having primer coats (as per ST NO. 2301) at all elevations to achieve an even shade with all materials, labour, equipment, handling, including protection and cleaning, scaffolding etc. complete as per specification, drawings and instructions of the Engineer.(Total thickness (DFT) including primer shall not be less than 100 micron.)	MT	14611		
2302	Providing & application of one coat of epoxy paint of approved shade and colour with glossy finish in one coat of minimum (DFT) 75 microns over steel sections already having primer and intermediate coats (as per ST NO. 2301) with an additional finishing coat of polyurethane of minimum DFT of 25 microns in one coat if high built paint is used otherwise two coats shall be applied, at all elevations to achieve an even shade with all materials, labour, equipment, handling, including protection and cleaning, scaffolding etc. complete as per specification, drawings and instructions of the Engineer.	MT	917		
2303	Supplying, fabrication , transportation, erection and alignment of factory made <b>electroforged gratings</b> 40 mm thick with steel conforming to IS:2062 at all elevations including preparation of design drawings and fabrication drawings in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads, fixing clamps etc. complete with other fittings and fixtures including all taxes, duties, transportation, packing, grinding, drilling, bolting (supply of permanent grade 'C' mild steel bolts and nuts to be paid separately under ST NO. 2309(i)), all welding, edge preparation, blast cleaning of steel surfaces to near white metal surface (Sa 2 1/2) and shall be hot dip galvanised at the rate of 610 gm/sqm, complete as per specifications, drawings and instructions of the Engineer.	MT	296		
2304	Supply, fabrication and delivery at site, transportation, loading/unloading of various sizes, <b>GI pipe hand railing</b> (1000 mm high) of 50 mm dia (Medium Grade) including painting and fixing , conforming to IS:1161 as per specification, labour and material complete for heavy duty class.	MT	10		
2305	Supply, fabrication and delivery at site, transportation, loading/unloading of <b>hand railing with 20 mm square MS bar balustrades</b> with suitable MS flats and aluminium hand rail.	MT	6		
2306	Supply, fabrication and delivery at site, transportation, loading/unloading of various sizes, polished stainless 32NB steel <b>pipe hand railing</b> 1000 mm high including fixing .as per specification, labour and material complete .	MT	9		

1500MW PRAGATI III BAWANA CCPP		RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
2309	i) Supplying and fixing in position of permanent <b>mild steel bolts (class 4.6 as per IS : 1367 and grade 'C' as per IS: 1363)</b> and nuts, washers etc. up to and inclusive of 39 mm diameter and upto 300mm long for structural steel work complete as per specification, drawings and instructions of the Engineer.	Quintal	62		
	ii) Supply and fixing in positing of <b>high strength structural bolts</b> (of property class 8.8 and product grade 'C' as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class 'B' 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 complete as per specification, drawings and instructions of the Engineer.	Quintal	62		
2310	<b>Dismantling of steel structure</b> at any elevation, lowering of material and carriage of the dismantled material up to field fabrication shop, or, return to 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) including scaffolding, staging, tools & tackles, gas cutting, welding, consumables, etc complete as per specification, drawings and instructions of the Engineer.	MT	30		
2310A	<b>Dismantling of G.I. sheet in cladding</b> at any elevation, lowering of material and carriage of the dismantled material up to field fabrication shop, or, return to projects storage including scaffolding, staging, tools & tackles, gas cutting, welding, consumables, etc complete as per specifications of the Engineer.	SQM	0		
2311	Addition to, alterations in and/or modification of " <b>Erection Marks</b> " either in erected position or in the shop including cutting of parts, gouging 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), complete as per specifications, drawings and instructions of the Engineer.				
	i) In erected position	MT	10		
	ii) In fabrication yard	MT	10		
2312	<b>Re-erection of dismantled fabricatied structural steel members</b> requiring additions, modification, (dismantling and additions to, alterations in and/or modification to be paid separately under ST NO. 2310 and 2310a respectively) including carriage of modified "Erection Marks" from the field fabrication shop to erection site, lifting to required posioin, 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 dismnatled members, re-alignment of adjacent connected members, (weight of such temporarily dismantled members and adjacent membersnot payable) including scaffolding, staging, tools & tackles, gas cutting, welding, consumables, etc complete as per the specifications, drawings and instructions of the Engineer.	MT	30		
2317	Supply, fixing and placing of <b>poly tetra floro ethylene bearings</b> of reputed manufacturer for loading as specified below and dispacement of (+)50mm, complete with fixtures as per specification.		0		
	i) Vertical Load of 20 Tons	NOS	20		
	ii) Vertical Load of 30 Tons	NOS	5		
	iii) Vertical Load of 50 Tons	NOS	2		
2319	Conducting <b>radiography test</b> on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	325		
2320	Conducting <b>ultasonic test on welds</b> wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	175		
2321	Conducting <b>magnetic particle test on welds</b> wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	175		
2322	Conducting <b>dye penetration test on welds</b> wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	175		

ST. NO	DESCRIPTION	RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
<b>2400</b>	<b>ROAD WORK</b>				
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 plant boundary in accordance with IS:2720 all complete as per specification.	CUM.	40000		
2402	Supplying and filling with selected good earth of approved quality under pavement and shoulders etc. in compacted layers of maximum depth 200 mm including watering, rolling/consolidating and dressing etc. to required camber including transportation, royalties complete.	CUM.	6569		
2403	Providing and laying interlocking M30 concrete blocks of thickness 75 mm as paving for shoulders of approved colour and pattern and should be laid on the subbase and bedding as per specifications and recommendations of manufacturer.	CUM.	1535		
2404	Providing and Laying water bound macadam base/sub base course in layers of required thickness with stone aggregate 90mm to 40mm down size stone screening and binding material including screening, sorting, spreading to template and consolidation with road roller including carriage spreading and consolidation of blinding material moorum etc Including cost of material.labour.all complete.	CUM.	8768		
2405	Providing &Laying water bound macadam base / sub base course in layers of required thickness with stone aggregate 63mm to 40mm down 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 Including cost of material labour etc. all complete as per specification.	CUM.	6305		
2406	Laying water bound macadam wearing course with stone aggregate 50mm to 20mm size stone screening and binding material including screening, sorting, spreading to template and consolidation with road roller including carriage spreading and consolidation of blinding material moorum etc Including cost of material labour etc. all complete as per specification.	CUM.	3020		
2407	Providing and applying Tack coat of low viscosity liquid bitumen of a suitable approved grade conforming to IS 73, 217 or 454 as applicable @ 10 kg/10sqm for an untreated WBM surface including scraping, cleaning with compressed air etc. complete.	SQM	31147		
2408	Providing, mixing and laying of compacted 75 thk. Bituminous Macadam Course. Bitumen shall be of a suitable grade complying with IS 73 and aggregates, binder material as specified in specification including hot mixing, hot laying, rolling all complete.	SQM	31147		
2409	Providing, mixing and laying premix carpet ( as per IRC-14 ) of compacted 50mm thickness in a 2 layers of 25 each (first layer shall be provided during construction and second layer after commissioning of plant) composed of suitable small size aggregate premixed with a bituminous binder on a prepared base. Mixing applying rolling as per IRC specification.	SQM.	31147		
2410	Providing and applying liquid seal coat comprising of an application of a layer of bituminous binder at the rate of 9.8kg/10sqm followed by a cover of stone chips at the rate of 0.09 cum/10sqm including rolling as per specification all complete.	SQM.	31147		
2411	Providing & laying edge protection on both edges of black topping using brick on edge (bricks with crushing strength of 75 kg/cm2) with full brick width (230 mm) etc including fixing in 13mm thk. cement mortar 1:6 complete.	RM	1000		
2412	Supply and laying edge protection on both edges of black topping using(400mm x 150mm X 350mm deep) precast concrete blocks / kerb stone of grade M25 with 20 mm aggregate and of shape as per detailed drawing including fixing in 13mm thk. cement mortar 1:2 in joints, finishing of joints with neat cement paste, making drainage opening where required etc. complete as per spec.	RM	5666		
2414	Dismantling of existing road consisting of premix carpet, curb stone/ brick on edge, bitumen macadem course, WBM, preparing subgrade to receive new WBM including camber consolidation including disposal of debris within a lead of 1 Km etc. complete and as directed by Engineer.	SQM	6375		
2415	Providing 25mm thick premix carpet on existing/damaged road surfaces ( as per IRC-14 ) of compacted 25mm thickness in a single course composed of suitable small size aggregate premixed with a bituminous binder on the existing base including tack coat, cleaning of existing surface, mixing applying rolling as per IRC specification.	SQM	22500		
2416	Concrete of grade M-30 in roads etc complete with 20 mm nominal size graded aggregate complete as per specification.	CUM	150		
2417	Providing and laying 75 mm thick precast interlocking PCC Blocks of approved shape as per the approval of engineer in charge and specifications complete.	CUM.	1535		
2418	providing and laying concrete of grade M10 as lean concrete with 40 mm nominal size graded aggregate in shoulders complete as per specification	CUM	25		

ST. NO	DESCRIPTION	RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
<b>2500</b>	<b>PILING WORK</b>				
2501	Installation of <b>bored RCC cast in situ vertical pile</b> as per IS 2911 (Part 1, Section 2) with diameter and length as specified below (length to be measured from pile cut-off level to the bottom of pile) using cement concrete M25 grade conforming to IS 456 with 20 mm nominal size stone aggregates with a minimum cement content of 400 Kg per cum of concrete including materials, boring/drilling in all types of soil from ground level to termination depth of pile including providing bentonite slurry and/or casing for stabilization of pile bore, flushing of pile bore, cleaning, providing plasticizer wherever required, breaking pile head to cut off level and exposing pile reinforcement for embedment in pile cap etc all complete as per specification, drawings and as directed by the engineer-in-charge.				
a	600 mm dia and 25 m deep (from cut off level) pile - 110 metric tonne safe capacity	each	5067		
2502	Extra over following item for pile length more than specified length of 25m				
a	item no. 2501 a	m	250		
2503	Rebate to rate for following item for pile length less than the specified length of 25m				
a	item no. 2501 a	m	1050		
2504	Conducting initial load test upto three times the safe load carrying capacity on single pile in accordance with IS 2911 Part-4 including installation of bored RCC cast in situ vertical pile as per IS 2911 (Part-1, Section-2) to required depth using cement concrete M25 grade conforming to IS 456 with 20 mm nominal size stone aggregates with a minimum cement content of 400 Kg per cum of concrete including materials, boring/drilling in all types of soil from ground level to termination depth of pile including providing bentonite slurry and/or casing for stabilization of pile bore, flushing of pile bore, cleaning, providing plasticizer wherever required, breaking pile head to cut off level and exposing pile reinforcement for embedment in pile cap, constructing test pile cap including materials, excavation, all arrangements of loading, unloading, equipments, jacks, recording of results, labour, dismantling the pile cap after test, submission of test report etc complete for the following as per specification, drawing and as directed by engineer-in-charge.				
a	for lateral load: 600 mm dia piles-5.5 MT safe load capacity	Each	9		
b	for vertical (compression) load: (Cyclic load test) 600 mm dia piles-110 MT safe load capacity	Each	9		
c	for uplift: 600 mm dia piles-22 MT safe load capacity	Each	9		
2505	Conducting routine load test on job pile in accordance with IS 2911 (Part-4) including necessary excavation, all arrangements of loading, unloading, test equipments and accessories, jacks, recording of results, all materials, labour, submission of test report etc but <b>excluding the cost of installation of job pile</b> complete as per specification, drawing and as directed by the engineer-in-charge for the following.				
a	<b>for lateral load:</b> 600 mm dia piles-5.5 MT safe load capacity	Each	25		
b	<b>for vertical (compression) load:</b> 600 mm dia piles-110 MT safe load capacity	Each	25		
2506	Carrying out low strain pile integrity test on job pile/test pile of 600mm diameter including all arrangements for test, equipments and accessories, materials, labour, submission of test report etc <b>but excluding the cost of installation of job pile/test pile</b> complete as per specification and as directed by the engineer-in-charge.	Each	5094		
2508	Boring 100mm diameter and 30 m deep (maximum depth) from ground level boreholes in all type of soil with approved method of boring including conducting standard penetration test as per IS- 2131 at every 1m interval down to the drilled depth etc complete as per specification, drawings and as directed by the engineer-in-charge.	Each	10		
<b>2600</b>	<b>GRADING &amp; LEVELLING</b>				

1500MW PRAGATI III BAWANA CCPP		RATE SCHEDULE CUM BILL OF QUANTITIES			
		CIVIL, STRUCTURAL & ARCHITECTURAL WORKS FOR COMPLETE PLANT AREA			
ST. NO	DESCRIPTION	UNIT	QUANTITY	UNIT RATE (IN RS)	AMOUNT( IN RS)
2601	Earth work in <b>stripping</b> of top soil upto a minimum depth of 0.50 m below ground level so as to exclude all debris, grass, vegetation, bushes, trees including roots and organic materials etc for leveling and grading including dressing to specified levels & grades and compacting the graded/stripped surface by manual or mechanical means, disposal of stripped materials within a lead of 1km etc as per specification, drawing and as directed by the engineer.	SQM	398750		
2602	<b>Earth work in excavation</b> upto any depth in all types of <b>soil and soft rock</b> including ash, laterite, moorum, weathered rock, decomposed rock etc which can be excavated by means of crow bar, pick axe etc but does not require chiselling or blasting, for levelling and grading including dressing the sides, leveling to grade, ramming/compacting the graded surface, stacking/disposal of surplus excavated material within a lead of 1 km etc complete as per specification, drawings and as directed by the engineer.	CUM	100		
2603	<b>Earth work in excavation</b> upto any depth in <b>hard rock</b> requiring blasting/controlled blasting and/or chiselling, wedging, line drilling, pre shearing or any other means without damaging the existing structures including supply, storage & handling of blasting materials etc, for levelling and grading including dressing the sides, leveling to grade, ramming/compacting the graded surface, stacking/disposal of surplus excavated material within a lead of 1 km etc complete as per specification, drawings and as directed by the engineer.	CUM	25		
2604	<b>Disposal</b> of surplus excavated earth within a <b>lead of 1km</b> including leveling the dumped soil, compaction etc all complete as per specification and as directed by the engineer.	CUM	100		
5a)	<b>Disposal</b> of surplus excavated earth (including soft rock) beyond an <b>initial lead of 1km and upto a lead of 2km</b> .	CUM	60000		
b)	<b>Extra disposal over 5a)</b> of surplus excavated earth (including soft rock) beyond an <b>initial lead of 2km and upto a lead of 3km</b> .	CUM	60000		
c)	<b>Extra disposal over 5b)</b> of surplus excavated earth (including soft rock) beyond an <b>initial lead of 3km and upto a lead of 4km</b> .	CUM	40000		
d)	<b>Extra disposal over 5c)</b> of surplus excavated earth (including soft rock) beyond an <b>initial lead of 4km and upto a lead of 5km</b> .	CUM	24375		
6	<b>Earth work in filling</b> for levelling and grading using <b>selected excavated earth (obtained from compulsory excavation inside the project site)</b> on prepared surface obtained by compacting with mechanical means including setting out, filling in horizontal layers not exceeding 250mm compacted thickness, spreading, sorting, breaking clods, watering, compaction with proper moisture content to achieve a minimum 95% of maximum dry density (standard Proctor density), dewatering (if required), testing, approaches, finishing to required lines, grades and slopes, levelling etc complete as per specification, drawing and as directed by the engineer.	CUM	75		
7	<b>Earth work in filling</b> for levelling and grading using <b>borrowed medium grained sand with fines having size less than 75 micron not exceeding 20% (borrowed sand to be arranged by the contractor at his own cost)</b> on prepared surface obtained by compacting with mechanical means including setting out, filling in horizontal layers not exceeding 250mm compacted thickness, spreading, sorting, breaking clods, watering, compaction with proper moisture content to achieve a minimum 95% of maximum dry density (standard Proctor density), dewatering (if required), testing, approaches, finishing to required lines, grades and slopes, levelling etc complete as per specification, drawing and as directed by the engineer.	CUM	638235		
<b>NOTES:</b>					
1	In case of omission in quoting any rate, the evaluation will be done considering the highest quoted rate obtained against that item but the work, if awarded, will be on the lowest quoted rate obtained against that item.				
2	The rate shall be entered in figures as well as in words. In case of difference in rates between words and figures, the lesser of the two will be treated as valid rate.				
3	The bidders shall enter both 'Unit Rate' & 'Amount'. In case of any mismatch between 'Total Amount based on Unit Rate' & 'Total Amount as quoted', the higher of the two shall be considered for evaluation and the lower of the two shall be considered for award.				
4	The quantities indicated against each item above are tentative and are liable to vary depending upon the site requirement. The contractor has to supply / install actual quantities as per advice of BHEL Engineer and accordingly the final contract price shall be worked out.				
5	Evaluation of the bids shall be done based on total price against this BOQ.				