

TENDER SPECIFICATION

BHEL: PSSR: SCT: 1575

FOR

**CONSTRUCTION OF CIVIL WORKS FOR
2x660MW SETS AT ENNORE SEZ THERMAL
POWER PROJECT AT ASH DYKE OF NORTH
CHENNAI TPS, CHENNAI, TAMIL NADU**

**VOLUME-2 PRICE BID
Revision -02**



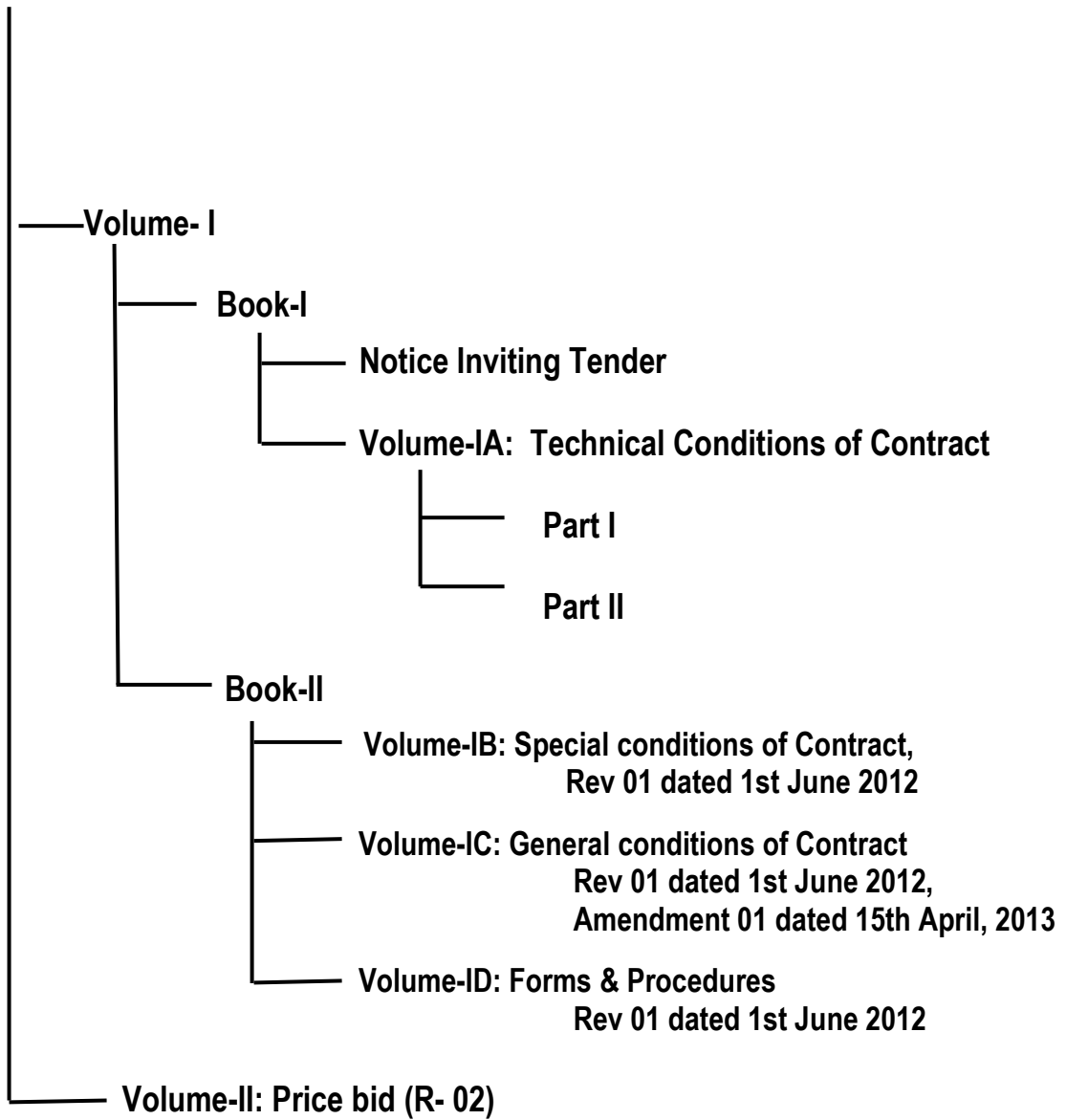
BHARAT HEAVY ELECTRICALS LIMITED

(A Government of India Undertaking)

Power Sector – Southern Region

690, Anna Salai, Nandanam, Chennai – 600 035.

Tender Specification



BHARAT HEAVY ELECTRICALS LIMITED
(A Government of India Undertaking)
Power Sector, Southern Region
690, Anna Salai, Nandanam, Chennai – 35

Tender Specification No. BHEL: PSSR: SCT: 1575

For

Construction of Civil, Structural and Architectural works including Piling, Ground improvement etc. in entire area, construction of RCC Chimney (twin flue 275M) & Natural Draft Cooling Tower (NDCT) for Unit-1&2 of 2 X 660 MW sets at Ennore SEZ Super Thermal Power Project at Ash dyke of North Chennai TPS, Chennai, TamilNadu

One set of Tender documents consisting of

- | | |
|---------------------------------------|------------|
| 1) Techno Commercial Bid | - 2 copies |
| 2) PRICE BID (RATE SCHEDULE)-Volume-2 | - 2 copies |

Book Sl no

Issued to
M/s

Refer NIT for Last date of submission

Please note this tender document is not transferable

For and on behalf of
BHARAT HEAVY ELECTRICALS LIMITED

GENERAL MANAGER / HR&CONTRACTS

Place: Chennai -35
Date:

PREAMBLE TO THE SCHEDULE OF QTS. (SOQ)

- 1) Details of the items in this Schedule shall be read in conjunction with the corresponding BHEL's Customer specifications and other documents and shall have precedence over any contrary statement mentioned anywhere in this document.
- 2) The work shall be carried out as per construction drawings (which will be issued progressively during the execution), specifications, the description of the items in this schedule and/or Engineer's instructions. The layout, sizes and details of the building, structures and foundations may vary at a large extent during actual construction.
- 3) Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer.
- 4) Unless specifically mentioned otherwise in the contract, the bidder shall quote his rates for the finished items and shall provide for the complete cost towards fuel, tools, tackle, equipment, constructional plant, temporary works, labour, materials, levies, taxes, transport, layout, repairs, rectification, maintenance till handing over, supervision, shops, establishments, services, temporary roads, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.
- 5) The rate quoted shall be inclusive of cleaning the site of any vegetations, dressing and leveling etc., required for commencement of site activities. No separate payment will be made towards the same.
- 6) The rate shall also be inclusive of carrying out survey of site to establish levels and coordinates at suitable intervals, from existing grid levels and coordinates furnished by the owner, establish bench marks, setting out the location and levels of the proposed structures, constructions and making references, pillars and other identification marks etc. No separate payment will be made towards the same.
- 7) Engineer's decision shall be final and binding on the contractors regarding clarification of items in this schedule with respect to the other section of the contract.
- 8) In case of any discrepancy between item description, relevant drawing and/or specification clarification shall be sought at tender stage itself. Otherwise it shall be assumed that the bidder has quoted for the more stringent requirement.
- 9) Refer Relevant Clause in NIT for order of precedence.
- 10) **Refer clause 1.4 in GCC for price discrepancy.**

PRICE BID FOR Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

		SUMMARY	Revision 02
Package	Package Description	Amount (Rs)	
		In Fig	In Words
1	Ground Improvement		
2	Main Plant Civil, Structural and Architectural Work, Piling and Levelling and Grading		
3	275m Tall RCC Twin Flue Steel Chimney		
4	Construction of 2 No's of cooling Tower (NDCT) on EPC basis		
	TOTAL		
Note			
Refer clause 1.4 in the GCC for price discrepancy			

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package-1 - Ground Improvement work

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
3000	Ground Improvement						
3001	Mobilisation of ground improvement rigs and accessories capable of installing driven cast-in-situ compaction piles (applicable for ST No.3002) in all types of strata/ash etc. to the project site and demobilisation of the same after completion of works etc all complete.	Each	10				
3002	Providing and installing 550 mm diameter and 14 m deep driven cast-in-situ compaction pile by driving a suitable MS casing pipe (removable) with detachable M.S.shoe (flat/conical) at the bottom and filling inside the casing pipe in layers of 800mm using 1 sand: 2 stone aggregates and each layer be well compacted by dynamic compaction method including all materials, equipments etc all complete as per specification, drawing and as directed by the engineer-in-charge. Prior to compaction of fill at each layer, lift the casing for about 800mm from bottom and then the backfill shall be thoroughly compacted. This procedure shall be repeated for every layer till the ground level is reached for ground improvement of pond ash/soil deposit at desired location.	Each	44093				
3003	Mobilisation of ground improvement rigs and accessories capable of installing stone columns by vibro-displacement method (dry method) using vibro float/vibro cat/any other suitable means (applicable for ST No.3004) in all types of strata/ash etc to the project site and demobilisation of the same after completion of works etc all complete.	Each	10				
3004	Providing and installing 550 mm diameter and 14 m deep stone column by vibro-displacement method (dry method) using vibro float/vibro cat/any other suitable means and filling in layers of 800 mm using 1 sand : 2 stone aggregates and each layer be well compacted by vibro compaction method including all materials, equipments etc complete as per specification, drawing and as directed by the engineer-in-charge. This procedure shall be repeated for each layer of fill till the ground level is reached for ground improvement of pond ash/soil deposit at desired location.	Each	36988				
3005	Rebate on ST No 3002 for not providing 1 sand : 2 stone aggregates to a depth of 2m below ground level.	Cum	20720				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package-1 - Ground Improvement work

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
3006	Rebate on ST No 3004 for not providing 1 sand : 2 stone aggregates to a depth of 2m below ground level.	Cum	17725				
3007	Extra over ST. No. 3002 for driven cast-in-situ compaction pile of length beyond the specified depth of 14m.	RM	42077				
3008	Extra over ST. No. 3004 for stone column with vibro-displacement method (dry method) of length beyond the specified depth of 14m.	RM	35788				
3009	Rebate on ST.No.3002 for driven cast-in-situ compaction pile of length less than the specified depth of 14m.	RM	42077				
3010	Rebate on ST No.3004 for stone column with vibro-displacement method (dry method) of length less than the specified depth of 14m.	RM	35788				
	TOTAL						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
	100 EARTH WORK						
	Earth work In excavation, backfilling and disposal including necessary men/women, materials, equipment, loading, transportation, unloading, dewatering etc as per specification, drawing and as directed by engineer- in-charge for the following.						
101	Earth work in excavation in all types of soil/ash which can be excavated by any means including setting out, levelling, dewatering (but excluding special type of dewatering viz. well point method), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 500 m, spreading/levelling of disposed materials etc all complete for following depths below ground level.						
a	Depth from ground level but not exceeding 2 m	CUM	396322				
b	Depth exceeding 2 m but not exceeding 4 m	CUM	243517				
c	Depth exceeding 4 m but not exceeding 6 m	CUM	58210				
d	Depth exceeding 6 m but not exceeding 8 m	CUM	11750				
e	Depth exceeding 8 m but not exceeding 10 m	CUM	5425				
f	Depth exceeding 10 m but not exceeding 15 m	CUM	848				
102	Extra over ST No. 101 for dewatering of ground water by well point method as per IS 9759.	CUM	35628				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
107	Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with selected materials from compulsorily excavated soil/ash available within a lead upto 500m and compacted as specified including re-excavation of stacked earth, watering, ramming/compaction by manual/mechanical means, dressing etc all complete.for the following.						
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	CUM	291466				
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	98886				
108	Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with soil/ash directly from excavation and compacted as specified including watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following.						
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	CUM	59273				
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	18336				
109	Extra over ST No. 101,107 & 108 for carriage of excavated earth/selected materials for every 1 km or part thereof beyond an initial lead of 500m.	CUM	318774				
110	Back filling upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with approved borrowed soil (borrowed soil to be arranged by the bidder) and compacted as specified including supplying borrowed soil, royalty (if any), watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following.						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	CUM	42218				
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	CUM	12587				
111	Supplying and filling sand upto any depth under floors, around foundations, plinths etc. in layers not exceeding 250 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete.	CUM	7234				
A112	Earthwork in excavation using Horizontal directional drilling (HDD) technique including equipments, machinery etc. all complete.	CUM	510				
A113	Providing and laying rubble soling with specified sizes of approved quality hard rock rubble or hand broken hard metal of sizes ranging from 100mm to 230mm, at all position and depths below or above finished ground floor level, below foundations, below flooring, and for providing hard standing etc in one or more layers each of approximately 230mm thickness, hand packing, filling in interstices with quarry spalls, grits and providing a layer of 50mm. thickness (consolidated) of moorum/equivalent locally available approved material over each layer of soling including watering, thoroughly compacting each layer with 10 tonne power roller with minimum 6 passes (or with vibrating plate of approved capacity at places not approachable by power roller) all as per the direction of the Engineer and as per specification.	CUM	950				
200 CONCRETE WORKS							
	Providing and placing concrete work including cost of labour, materials and equipment for handling, transportation, batching, mixing, placing, vibrating and curing, (excluding cost of centering, shuttering and reinforcement) with mechanised equipments like batching plant, transit mixer, concrete pump etc. complete as per drawing, specifications and as per direction of engineer in charge for the following.						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
201	Concrete of grade M7.5 (1 part cement, 4 part sand, 8 parts of 40 mm graded aggregate by volume) as filling course at any depth below finished floor level, under and around foundations/floors, mass fill etc.	CUM	543				
A201	Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 40 mm graded aggregate by volume) as filling course at any depth below finished floor level, under and around foundations/floors, mass fill etc.	CUM	1619				
202	Concrete of grade M10 (1 part cement, 3 part sand, 6 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc.	CUM	21980				
203	Concrete of grade M15 (1 part cement, 2 part sand, 4 parts of 40 mm graded aggregate by volume) as lean concrete, levelling course, mud mat under and around foundations/floors at any depth below finished floor level etc.	CUM	1264				
204	Concrete under floors, paving, plinth protection, pipe encasing etc complete with 20 mm nominal size graded aggregate at any depth below finished floor level for the following grades.						
a	M15Grade	CUM	8012				
b	M20 Grade	CUM	2878				
A205	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in foundations/substructure, grade slab, paving, drains, under 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 as per specification & drawing for the following.						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	M25 Grade	CUM	21526				
b	M30 Grade	CUM	98716				
c	M35 Grade	CUM	1800				
206	Providing and laying Design Mix cement concrete conforming to IS:456 & IS 10262-2009 for reinforced concrete works with coarse sand and graded hard stone aggregate of 20mm nominal size in superstructure at any level above finished floor level, any shape, position or thickness etc complete including use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete as per specification & drawing for the following.						
a	M25 Grade	CUM	1715				
b	M30 Grade	CUM	22469				
207	Providing and laying Design Mix cement concrete confirming to IS:456 & IS 10262-2009 for reinforced concrete works of grade M-30 Grade in machine foundations for TG, Gas Turbine, ID/FD/PA fans, BFP, Coal mills at all elevations below/above finished floor level except TG deck and top decks supported over vibration isolation system including addition of suitable plasticizer conforming to IS 9103(latest) to achieve a slump more than 125mm in concrete as per manufacturer's recommendation with 20 mm nominal size graded aggregate in concrete all complete as per specification & drawing.	CUM	6407				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A207	Providing and laying Design Mix cement concrete confirming to IS:456 & IS 10262-2009 for reinforced concrete works of grade M-35 Grade in machine foundations for TG, Gas Turbine, ID/FD/PA fans, BFP, Coal mills at all elevations below/above finished floor level except TG deck and top decks supported over vibration isolation system including addition of suitable plasticizer conforming to IS 9103(latest) to achieve a slump more than 125mm in concrete as per manufacturer's recommendation with 20 mm nominal size graded aggregate in concrete all complete as per specification & drawing.	CUM	4694				
208	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 of grades mentioned below for reinforced concrete works using graded aggregate in top decks of all machine foundations supported on vibration isolation system (excluding supply and installation of vibration system) at all levels including addition of suitable plasticizers conforming to IS9103 to achieve a slump more than 125 mm in concrete as per manufacturers recommendation, preparation of scheme for concreting, getting it approved by engineer, labour, materials, equipment, handling, batching, transporting, mixing, pumping, placing, leveling, vibrating, compacting, curing, testing, cleaning and rendering the exposed surface with cement sand mortar to give a smooth and even surface, maintaining and submitting records of concreting, petrographic examination and potential reactivity of aggregate etc. all complete as per specification, drawing and instructions of engineer, including UPV testing as directed by engineer in charge, rectification of the defects in concreting observed by ultra-sonic pulse velocity (UPV) testing by cement/epoxy grout etc, but excluding formwork, staging, reinforcement, embeddments and temperature control of concrete. Payment terms - a) After casting 75% ; b) After receipt of ultrasonic test report - 25%.						
a	M30 grade (with 20mm nominal size graded stone aggregate)	CUM	2487				
b	M35 grade (with 20mm nominal size graded stone aggregate)	CUM	248				
A208	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 of grades mentioned below for reinforced concrete works using graded aggregate in top decks of all machine foundations and top deck of TG foundation at all levels including addition of suitable plasticizers conforming to IS9103 to achieve a slump more than 125 mm in concrete as per manufacturers recommendation, preparation of scheme for concreting, getting it approved by engineer, labour, materials, equipment, handling, batching, transporting, mixing, pumping, placing, leveling, vibrating, compacting, curing, testing, cleaning and rendering the exposed surface with cement sand mortar to give a smooth and even surface, maintaining and submitting records of concreting, petrographic examination and potential reactivity of aggregate etc. all complete as per specification, drawing and instructions of engineer, including UPV testing as directed by engineer in charge, rectification of the defects in concreting observed by ultra-sonic pulse velocity (UPV) testing by cement/epoxy grout etc, but excluding formwork, staging, reinforcement, embeddments and temperature control of concrete. Payment terms - a) After casting 75% ; b) After receipt of ultrasonic test report - 25%.						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	M30 grade (with 20mm nominal size graded stone aggregate)	CUM	362				
b	M35 grade (with 20mm nominal size graded stone aggregate)	CUM	3861				
A209	Extra over St. No. 205 to 208 for controlling of temperature of fresh concrete to less than 25 degree centigrade using ice, including all related arrangements for providing, storing and mixing of ice with water, cooling of aggregates etc. All complete as per specification, drawing and instruction of engineer in charge.	CUM	7969				
210	Extra over ST Nos. 205 to 207 for conducting UPV test for concrete at all levels including all equipments, making necessary arrangements, staging, submission of report etc. all complete as directed by engineer in charge and as per specification.	CUM	13370				
A211	Providing and encasing of structural steel member with concrete using nominal aggregate size of 12.5mm down. Encased member shall be wrapped with chicken wire mesh with proper lap etc. complete as per specification for the following grades.						
a	M20 Grade	CUM	877				
b	M25 Grade	CUM	421				
c	M30 grade	CUM	1227				
212	Screed concrete conforming to IS 456 with coarse sand and graded hard stone aggregate 12.5mm/6 mm nominal size on the roof at any level or thickness, drains etc complete as per following.						
a	1:2:4 (1 part cement, 2 part sand, 4 parts of aggregate by volume)	CUM	50				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
b	1:1.5:3 (1 part cement, 1.5 part sand, 3 parts of aggregate by volume)	CUM	50				
A212	Screed concrete 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, drains etc complete as per following.						
a	M 20 grade	CUM	1530				
A213	Providing and laying Design Mix cement concrete as per IS:456 & IS 10262-2009 for reinforced concrete works using graded aggregate for Concrete in precast works like roof slabs/trench covers, fins, lintels, chajas, beams, columns, wall panels, facias etc.at all levels in all kinds of work including formwork/moulds, curing, making of grooves/notches, rendering the top exposed surface with cement sand mortar (1:3), handling, storing, transporting, all leads, erection without damage, setting in position / pockets with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips) using non shrink admixture, filling the gaps between adjacent precast units with M30 grade concrete or cement sand mortar (1:3) and including making of holes for bolts for fixing, welding etc.complete with graded aggregate (20/12.5/10 mm) and as per specification and drawing for following grades.(Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor). Payment shall be made for the measurement of the volume of the precast works.						
a	M 25 grade	CUM	1826				
b	M 30 grade	CUM	6426				
A214	Providing and laying Design Mix cement concrete as per IS:456, IS 3370 & IS 10262-2009 for reinforced concrete works graded aggregate for Concrete in water retaining/conveying structures including addition of suitable plastisizer cum waterproofing cement additives conforming to IS 9103 latest to achieve a slump more than 125 mm in concrete as per manufacturers recommendation and conforming to limits of permeability as per IS 2545 and specification with 20 mm nominal size graded aggregate for following grades.						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
b	M 30 grade	CUM	6395				
c	M 35 grade	CUM	27720				
215	Dismantling concrete work for all types of structures at all levels including stacking of servicable material to a lead of 500 m and disposal of unservicable material upto a lead of 2 km, cutting of reinforcement, labour, equipment, safety precautions etc all complete as per drawings, specification and instructions of engineer in charge.						
a	Plain cement concrete of all grades	CUM	727				
b	Reinforced cement concrete of all grades	CUM	1254				
216	Chipping of concrete in reinforced concrete work, cutting pockets, making openings at all levels and according to shapes, disposal of waste materials upto a lead of 2 km as directed by engineer including equipment, safety precautions, making good the broken surface etc all complete as per specification, drawing, instructions of engineer in charge but excluding cutting of reinforcement .	CUDM	3106				
217	Extra over and above St No 216 for cutting of reinforcement, all sizes and types including labour, equipment, return of cut reinforcement to store etc all complete as per specification, drawings and instructions of engineer in charge. Measurement shall be on the cross sectional area of reinforcement cut.	SQCM	176				
218	Cutting Reinforced concrete with mechanised tools like Core drilling machine etc. for cutting pockets, holes, cores in slab, beam, column or foundation as per direction of engineer in charge.	CUDM	226				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
219	Providing and applying curing compound of approved make where ever required as per manufacturer's specification.	SQM	19100				
220	Providing & laying Plum cement concrete 1:3:6 with 75% graded metal of maximum size 40 mm and 25% plums of maximum size 150 mm.	CUM	4177				
300 FORM WORKS							
	Providing, fixing and removing formwork at any elevations for all structures, as per specifications and including all labour, material, scaffoldings and centering complete including pockets etc. complete as per drawing, specifications and as per direction of engineer in charge for the following.						
301	Fairface form work with good quality water proof ply wood of required thickness and smooth surface below finished ground floor level for foundations, footings, base of columns, walls, columns, pilasters, beams, mass concrete, trenches etc.	SQM	361121				
302	Fairface form work with good quality water proof ply wood of required thickness and smooth surface above finished ground floor level for columns, beams, suspended floors, roofs, lintels, cantilevers, staircases, landings, balconies, domes, arches, circular overhead tanks etc. for all heights.	SQM	114830				
303	Fairface Formwork with good quality water proof ply wood of required thickness and smooth surface for TG superstructure (above base raft level) including preparation of scheme, designing, submission and approval of staging drawing with sufficient props, braces and ties at every tier of height of approx. 4m for all heights.	SQM	4830				
304	Providing, fixing and removing formwork in block-outs/pockets and openings (below 0.1 sqm plan area) at all elevations including cutting, formation of all shapes and all other operations required for making the required shape and size all complete as per specification, drawing and instruction of engineer in charge.						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	Upto 150 mm depth	Each	1580				
b	Pockets of depths more than 150mm and upto 300 mm depth	Each	510				
c	Pockets of depths more than 300mm and upto 600 mm depth	Each	381				
d	Pockets of depths more than 600mm and upto 1000 mm depth	Each	390				
e	Pockets of depths more than 1000mm and upto 1500 mm depth	Each	150				
400 REINFORCEMENT							
401	Providing, straightening, cutting, bending, placing in position at any level, binding of mild steel reinforcements conforming to grade 1 of IS:432 part 1 in concrete including cost of reinforcement and binding wire, labour, scaffolding, transportation to & from stores etc. all complete as per specifications & drawings.	MT	163				
402	Providing, straightening, cutting, bending, placing in position at any level, binding in position of steel reinforcements of TMT steel of grade Fe-500 confirming to IS:1786 including cost of binding wire, labour, scaffolding, transportation to & from stores etc complete all as per specifications, drawings and as directed by Engineer.	MT	29454				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
404	Extra over ST No. 401, 402 & 403 for providing fusion bonded epoxy coating by mechanised & qualified process including blast cleaning to white metal as per Swedish code, heating in induction heater, electrostatically spraying the epoxy powder, complete fusion to give minimum coating thickness of 200-300 microns, gradual cooling without affecting the properties of steel, testing as per ASTM 775 and IS:13620, flexibility & holiday test, proper packing, safe transportation, touchup at site, etc. complete to ensure proper resistance of FBE against corrosive environment including transport of the steel from BHEL site store to vendor plant and bringing back to site and special handling during straightening, cutting, bending, placing and providing PVC coated binding wire.	MT	29179				
A404	Extra over ST No. 401, 402 & 403 for providing High Strength Deformed Bars confirming to IS 1786 Fe 500/500 D; Corrosion resistant Grade (HCRM) suitable for marine construction with micro alloying combination Cr+Cu>0.4% instead of TMT steel of grade 500 confirming to IS 1786. Bidder to quote for differential cost only.	MT	19179				
406	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, scaffolding etc. complete all as per specifications & drawings.	MT	25				
407	Providing, straightening, cutting, bending, placing in position at any level, binding in position high yield strength steel reinforcements in brickwork including cost of reinforcement and binding wire, labour, scaffolding etc. complete all as per specifications & drawings.	MT	11				
500 WATER PROOFING WORKS							
Water proofing works including all labour, material, equipment, transportation, handling, curing, sampling, testing etc at any level as per specification, drawings and as directed by engineer - in - charge.							
501	Providing and laying underbed grading plaster with cement mortar 1:4 (1 cement : 4 sand) and average thickness of 15 mm including preparation of surface, batching, mixing, leveling etc. all complete.	SQM	3255				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
502	Providing and laying in-situ light weight foam concrete insulation as per relevant IS Code in suitable panels over roofs followed by a layer of 15 mm thick cement sand plaster 1:4 (1 cement: 4 coarse sand) after the curing period of laid foam concrete and providing of expansion joint at intervals as per the recommendation of manufacturer. The insulating properties shall be such that the thermal conductivity shall not exceed 0.125 Kcal/sqm-hr deg C. Cost shall include making of fillets, cleaning & preparation of surface, expansion joints at suitable intervals etc all complete for following.						
a	Average 50 mm thickness of foam concrete	SQM	31193				
A504	Providing and applying bitumen felt water proofing for heavy treatment having bonding materials consisting of blown type conforming to IS: 702 or residual bitumen conforming to IS: 73 or a mixture of the two with seven courses as per IS 1346 using layer of type 2 grade 1 as per IS 7193 and with a minimum overlap of 75 to 100 mm of felt including preparation of surfaces etc all complete for following base felts (For description of layers refer specification):						
a	With hessian base felt	SQM	615				
b	With glass fiber base felt	SQM	12978				
c	With fiber base felt	SQM	50				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
506	Providing and applying PU based water proofing treatment with one coat of polyurethane or any other equivalent material based primer with an application rate of minimum 6 sq.m per litre and two successive liquid coatings of high solids content urethane pre-polymers or equivalent material based finish coats as per relevant IS/ASTM standards to form an elastomeric membrane with overall dry film thickness 1.5 mm subject to minimum 500 gm/sqm/coat application rate. Item includes surface preparation by applying polymerized mortar, polyscrim cloth /fabric for edges, joints & vulnerable points etc all complete as per specifications and directions of engineer in charge.	SQM	21505				
A507	Providing and laying wearing course consisting of 40mm thick plain cement concrete of grade M15 (1:2:4) with graded aggregate of 12.5mm size cast in panels of maximum size 1.2mx1.2m and reinforced with 0.56 mm dia. galvanised chicken wire mesh and sealing of joints (in grooves of 6mm X 6mm) using silicon /elastomeric compound etc all complete.	SQM	25255				
508	Providing and laying cement concrete chequered flooring tiles of 22 mm thickness and size 250x250 mm / 300x300 mm conforming to IS 13801 with 8 mm thick 1:4 cement mortar over the top most layer of roofing treatment in pathway and entire equipment area with fine joints including sealing of joints (silicon/elastomeric sealant) etc all complete. (Water proofing paid elsewhere)	SQM	11735				
509	Providing and applying two coats of bitumen grade 85/25 as per IS 702 (@ 1.7kg/sqm)with 1% antistripping compound conforming to IS 6241 in foundation, wall, column etc on concrete surfaces exposed to soil / ash including surface preparation etc. all complete.	SQM	208885				
511	Providing and mixing water proofing compound conforming to IS:2645 in concrete or cement mortar all complete.	KG	6994				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
512	Anti termite chemical treatment of soil with Chloropyrifos emulsifiable concentrates (1%) conforming to IS :8944 all complete.	SQM	9500				
513	Providing and applying concrete structures two coats of ERPB (Epoxy resin based anticorrosive and chemical resistant paint) over a coat of CPCI (concrete penetrating bipolar corrosion inhibitor) with 300 to 325 micron DFT for protection of concrete against carbonation and chloride penetration in saline/marine environment all complete of approved make and as per manufacturer's recommendation	SQM	150				
A515	Providing and applying waterproofing treatment for the concrete surfaces of underground structure in contact with soil/ash including surface preparation etc. all complete with following layers:-						
a	For base slab, a 75 mm thick layer of PCC 1:4:8 followed by 25mm thk Cement Mortar 1:3 mixed with approved water proofing compound at the rate specified by the manufacturer. Over this two coats of acrylic polymer modified cement based flexible water proofing membrane of approved make laid as per manufacture's and instruction. Over water proofing membrane, 25mm thk Cement mortar 1:3 mixed with approved water proofing compound at the rate specified by the manufacturer provided, over which protective layer of 15mm thk kota / cuddapa or equivalent stone with joints sealed with cement mortar 1:3 shall be laid. Over this stone layer, 25mm thk Cement mortar 1:3 mixed with approved water proofing compound at the rate specified by the manufacturer shall be applied.	SQM	19891				
b	For side walls, two coats of acrylic polymer modified cement based flexible water proofing membrane of approved make laid as per manufacture's specification and instruction followed by 25mm thk Cement Mortar 1:3 mixed with approved water proofing compound at the rate specified by the manufacturer. Protective layer of 15mm thk kota / ciddapa or equivalent stone with joints sealed with Cement Mortar 1:3 shall be laid. Finally 25mm thk Cement Mortar 1:3 mixed with approved water proofing compound at the rate specified by the manufacturer shall be applied.	SQM	21292				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
c	Providing and painting with 1.5 mm thick polyurea coating meeting ASTM D-16, Type V to concrete surface etc complete as per specification.	SQM	43983				
600 JOINTS AND FILLERS							
Joints & fillers including all labour, material, equipment, transportation, handling etc at any level as per specification, drawings and as directed by engineer - in - charge.							
A601	Supplying and installation of Dura board HD100 or its equivalent as approved by the Engineer, as filler material in joints including nailing, installation as per manufacturer's recommendation etc. all complete.						
a	12 mm wide joints	SQM	300				
b	20 mm wide joints	SQM	221				
c	25 mm wide joints	SQM	1254				
d	50 mm wide joints	SQM	796				
AA601	Supplying and installation of commercial quality of expanded polystyrene products from reliable manufacturers as approved by the Engineer, as filler material in joints including nailing, installation as per manufacturer's recommendation etc. all complete.						
a	12 mm wide joints	SQM	125				
b	20 mm wide joints	SQM	158				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
c	25 mm wide joints	SQM	354				
d	50 mm wide joints	SQM	100				
602	Providing and applying polysulphide based sealant conforming to IS:12118 in expansion joints in concrete including cleaning of joints, raking out groove, application of primer, scaffolding etc. all complete for following size grooves:						
a	12mm X 25mm	RM	688				
b	20mmX25mm	RM	884				
c	25mmX25mm	RM	2300				
d	50mmX25mm	RM	768				
603	Supplying and filling in position hot applied bitumin sealing compund (Grade A) confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc. all complete.						
a	10mm X 40mm	RM	500				
b	12mm X 25mm	RM	600				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
c	20mmX25mm	RM	200				
604	Supplying and filling in position hot applied bitumin sealing compund (Grade B) confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints including application of primer etc. all complete.						
a	10mm X 40mm	RM	100				
b	12mm X 25mm	RM	110				
c	20mmX25mm	RM	100				
605	Providing and sealing of joints with premium grade silicon sealant (Silpruf of GE silicon or approved equivalent) including cleaning of joints, raking out groove, joint filler tapes, application of primer, curing, scaffolding etc. all complete as per manufacturer's recommendation for following size groove:						
a	25mmX25mm	RM	150				
b	50mmX25mm	RM	50				
606	Providing and fixing PVC water stops in joints conforming to IS 12200 & IS 15058 all complete for the following:						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	150 mm wide and 8 mm thick	RM	100				
b	230 mm wide and 8 mm thick	RM	100				
c	150 mm wide and 6 mm thick	RM	1259				
d	230 mm wide and 6 mm thick	RM	4185				
A608	Providing and installing PVC joint sealing strips of minimum 3mm thickness and minimum width 100 mm at the construction, expansion and isolation joints from reputed manufacturers as a continuous diaphragm to contain the filler material and/ or to exclude passage of water or any other material into or out of the structure, without any longitudinal joint; and shall be procured and installed in largest practicable lengths having a minimum number of transverse joints with jointing procedure as per the manufacturer's recommendations including the material and tools required for jointing, testing, protection, etc all complete. The joints in rubber seals shall be vulcanished as needed.	SQM	320				
A609	Providing and installing strong and tough alkathene sheet or equivalent of about 1 mm in thickness in isolation joints and shall be fixed by an approved adhesive compound on the cleaned surface of the already set concrete as per the manufacturer's recommendations, to cover it fully including the material and tools required for jointing, testing, protection, etc all complete.	SQM	158				
A610	Providing and applying approved fire retardant sealant in joints/openings including cleaning of joints/openings, raking out groove, application of primer, scaffolding etc. all complete.	SQM	200				
	700 MS EMBEDMENTS						
	Embedments including all labour, material, equipment, transportation, handling etc. at any level as per specification, drawings and as directed by engineer - in - charge.						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
701	Supply, fabricating and fixing of mild steel embedments, inserts, pipe sleeves, angle pieces, rungs of various diameters, plates of dimensions as required etc. including welding, bolting, cutting, drilling, scaffolding, setting etc. all complete.	MT	380				
702	Same as above with BHEL supplied material free of cost including loading, transportation, unloading etc. all complete from BHEL store to plant site.	MT	247				
703	Fixing of embedments, inserts, pipe sleeves, angle pieces, anchor bolts of various diameters, plates of dimensions as required etc. including scaffolding, setting in position, transportation from BHEL site stores to work spot etc. all complete.	MT	52				
704	Supply, Fabrication, transportation, delivery at site and erection, installation and alignment of mild steel foundation bolt assembly conforming to IS:2062 and grade 1 of IS:432 in concrete along with nuts, lock nuts (as per IS:1363, 1364 and IS:3138), washers, anchor plates, stiffner plates, protective tape, pipe sleeves, templates etc. including welding, cutting, grinding, threading, drilling etc. all complete.	MT	200				
705	Supplying, fabricating, erecting and installing following items in concrete/brickwall for all kind of works, including setting material in concrete, layout, scaffolding, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc. all complete.						
a	MS pipes of all diameters	Quintal	72				
b	PVC pipes / conduits of all diameters	Quintal	300				
c	UPVC pipes / conduits of all diameters	Quintal	181				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
d	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for brick work with expansion sleeve of A6 polyamide:						
i	Upto 250 kg	Each	100				
ii	Beyond 250 Kg and upto 500 kg	Each	100				
iii	Beyond 500 Kg and upto 750 kg	Each	100				
e	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for concrete work with expansion sleeve of stainless steel:						
i	Upto 250 kg	Each	100				
ii	Beyond 250 Kg and upto 500 kg	Each	100				
iii	Beyond 500 Kg and upto 750 kg	Each	100				
706	Placing, locking and releasing of Vibration Isolation spring modules over the foundation at all elevations including providing all assistance under the supervision of the supplier, transportation from BHEL store, necessary staging, platforms, leveling, alignment etc. all complete.	Each	512				
	800 GROUTING						
	Grouting including all labour, material, equipment, roughening surface, cleaning, ramming, curing etc. at any level unless otherwise specified as per specification, drawings and as directed by engineer - in - charge.						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A801	Providing & grouting with cement slurry mix of approved ratio using pressure pump for water retaining concrete structures as per approved procedure including cost of nipples/ nozzles, cement, admixture, curing, pressure pumps, slurry agitator etc. all complete. Cost shall include fixing of nipples at minimum 500 mm centre to centre spacing, cutting of nipples after completing of grouting, making good of the nipple hole with appropriate non-shrink cement paste, water tightness test etc. all complete wherever specified in the drawing. (Measurement is to be done in Kg of dry grout consumed.)	KG	350				
802	Providing & grouting of pocket holes, pipe sleeves under base plates, machinery, pipe supporting structures etc. with mix 1:1 (1 cement :1 sand) using non shrink admixture etc. all Complete.	CUM	32				
803	Providing & grouting of pocket holes, pipe sleeves and under base plate of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips) using non shrink admixture. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	131				
804	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with ConbextraGP-1 or equivalent. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	158				
805	Providing & grouting of pocket holes, pipe sleeves and under base plates of structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing, etc. all complete with Conbextra GP-2 or equivalent. (Cost of all material and cleaning of the pockets by compressed air shall be in the scope of the contractor).	CUM	11				
	900 DOORS, WINDOWS, VENTILATORS, LOUVERS						
	Doors, windows, ventilators, louvers, roof ventilators, rolling shutters, partitions including all labour, material, equipments, master key system, transportation, handling, preparation of working drawings etc. at any level as per specification, drawings and as directed by engineer - in - charge.						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
901	Providing and fixing wooden frame conforming to IS 4021 made of best quality seasoned CP teakwood free from large or loose knots, cracks or other defects including sand paper smoothening, hold fasts, beading, primer and finish painting / polishing etc. all complete with proper wood joinery, accurately set to required lines or levels and rigidly secured in place. (Finish painting / polishing paid separately)	CUM	20				
903	Providing, fitting and fixing solid core flush door shutter as per IS 2202 part II, 35mm thick homogenous particle board bonded with BWP type phenolformaldehyde synthetic resin, partical board core conforming to IS 3087 type I, 35x12 mm thick teakwood beading all around including preparation of working drawings. godrej or equivalent make mortice lock with handels on both sides,approved ISI mark anodised fittings like door stopper,300mm long tower bolts,16x300mm long aldrops ,125mm long handles on both sides etc. butt hinges, sliding bolt, knobs, (all fittings shall be anodised aluminium color dyed), finish synthetic paint over primer, screws etc. all complete as per drawing, specification and instruction of engineer in charge. with commercial faces and teak wood edges. (Finish painting paid separately)	SQM	50				
A903	Providing, fitting and fixing teak veneered solid core flush door shutter (MDF exterior grade) as per IS 2202 part II, 35mm thick homogenous particle board bonded with BWP type phenolformaldehyde synthetic resin, partical board core conforming to IS 3087 type I, 35x12 mm thick teakwood beading all around including preparation of working drawings. godrej or equivalent make mortice lock with handels on both sides,approved ISI mark anodised fittings like door stopper,300mm long tower bolts,16x300mm long aldrops ,125mm long handles on both sides etc. butt hinges, sliding bolt, knobs, (all fittings shall be anodised aluminium color dyed), screws etc. all complete as per drawing, specification and instruction of engineer in charge. with commercial faces and teak wood edges.	SQM	100				
AA903	Providing, fitting and fixing factory made prelaminated solid core flush door shutter (MDF exterior grade) as per IS 2202 part II, 35mm thick homogenous particle board bonded with BWP type phenolformaldehyde synthetic resin, partical board core conforming to IS 3087 type I including preparation of working drawings. godrej or equivalent make mortice lock with handels on both sides,approved ISI mark anodised fittings like door stopper,300mm long tower bolts,16x300mm long aldrops ,125mm long handles on both sides etc. butt hinges, sliding bolt, knobs, (all fittings shall be anodised aluminium color dyed), screws etc. all complete as per drawing, specification and instruction of engineer in charge	SQM	50				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
904	Providing and fixing single or double steel door shutters with 45mm thk flush design shutter comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centres including void filled with mineral wool (density as per specification), all fittings, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	628				
905	Providing and fixing single or double steel door shutters with 18 gauge M.S. sheets shutter presenting a flush surface on the outside and inside stiffened with semitubular edge and central stiffening rail which shall convey the lock including fixtures, Godrej or equivalent make mortice lock with handle on both sides, shop and final painting etc all complete.	SQM	150				
906	Providing and fixing anodized extruded aluminium doors (single or double shutter) conforming to IS:1948, IS:1949 fabricated from extruded sections of HINDALCO/JINDAL or equivalent make having minimum 3mm wall thickness as per IS:1285, IS:733 and anodized and electro color coating of required shade as per IS 1868 (minimum anodized coating of grade AC15). fixed with rawl plugs, expansion fasteners,SS screws / fixing clips necessary filling of gaps at Junctions, at top, bottom & sides with required PVC / neoprene felt for bi-metallic protection etc. Glazing shall be clear float glass of 6mm thickness including snap fit type beading, concealed screws, fixtures, Godrej or equivalent make Mortice lock with handle on both sides, etc all complete. Aluminium section shall be smooth, free of stains, straight, mitred & jointed mechanically wherever required. (Glazing shall be paid separately)	SQM	6				
907	Providing and fixing fire proof steel doors (single or double shutter) with panic devices shall be 45mm thk flush design comprising of two outer sheets of 18 gauge steel sheets rigidly connected and reinforced inside with continuous vertical 20 gauge stiffeners, spot welded in position at not more than 150mm on centers including all fittings, shop painting with approved post office/signal red color fire resistant paint and mineral wool insulation (64 kg/cum density) complete and shall be fire proof as per IS:3614, TAC requirements and as per specification. Minimum ratings shall be 2 Hrs.(Panic devices to be provided at hand over.)	SQM	379				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
908	Providing and fixing steel windows/ventilator with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision.including all fittings, metal beadings, hold fasts, shop and final painting ,glazing etc. all complete. (Glazing shall be paid separately)						
a	openable type	SQM	742				
b	fixed type	SQM	125				
909	Providing and fixing anodised aluminium work of Jindal, Hindalco or other equivalent approved make for door frames, windows, ventilators, partitions, railing, grills etc with extruded standard tubular and other sections including all fittings & fixtures and accessories of approved make conforming to IS733 and IS1285, anodised and electro color dyed to required shade according to IS 1868 (minimum anodic coating of grade AC15), fixed with rawl plugs, expansion fasteners, SS screws or with fixing clips, including necessary filling of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt for bi-mettalic protection etc.including preperation of working drawings, aluminium cleat angle, aluminium snap-on-beading for glazing/panelling, stair case tread nosing, with all fittings and fixtures (like Godrej or equivalent make Mortice lock with handle on both sides, tower bolts, handles, door stopper with rubber shoes, 'L' drops, stays, floor springs, hydraulic door closures etc.), CP brass/stainless steel screws, providing and fixing hinges/pivots, and making provision for fixing of fitting wherever required including cost of PVC/neoprene gasket, all complete as per drawing, specification and instructions of engineer in charge (Glazing and panelling shall be paid seperately).Weight of aluminium section only shall be measured.	Kg	91313				
910	Providing and fixing of aluminium composite panel(ACP) of following thickness with PVDF or polyester coating for interior partition of approved shade ,color etc all complete as per specification.						
c	5mm	SQM	50				
911	Providing and fixing of door closers as per IS 3564 ,of approved make & quality all complete of following type :						
a	Over head hydraulic door closures	Each	71				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
b	Floor mounted Hydraulic door closers	Each	59				
912	Providing and fixing pressed steel frames fabricated from 16 gauge M.S sheet mortised, reinforced drilled and tapped for hinges and locks bolts strikes, hold fasts adjustable floor anchors, floor tiles/weather bars ,paintings etc all complete as per specifications.	Kg	13618				
A913	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 for hand operated only) including wire springs, top cover, primer & shop coats of approved enamel paint etc, all complete as per IS 6248 and specification of approved make of following types: The bottom lath shall be coupled to a lock plate fabricated from 3mm thick galvanised steel plate and securely rivetted with stiffening angles.(partly coiled and lath/full lath).						
a	Hand Operated	SQM	52				
b	Mechanically Operated	SQM	307				
c	Electrically operated	SQM	604				
914	Providing and fixing PVC doors(25 thk double skin) of sintex or equivalent make including all fitting & fixtures as per specification, drawing and instructions of engineer in charge.	SQM	370				
915	Providing, fixing and fitting of glazing of first grade class in steel/aluminium/wooden frames, where ever required, cleaning after fixing including hardware, gaskets, clips, beadings etc. all complete.						

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	4 mm thick clear sheet glass	SQM	1875				
b	4 mm thick clear float glass	SQM	125				
c	5.5 mm thick clear float glass	SQM	189				
d	6 mm thick wired glass	SQM	5372				
e	6mm thick Polycarbonate sheet multi (twin) wall fire retardant and ultra violet resistant with sealed open edges.	SQM	100				
f	4 mm thick ground glass	SQM	315				
g	6 mm thick tinted heat reflecting type float glass	SQM	88				
Ag	6 mm thick clear float glass	SQM	608				
h	6 mm thick clear toughened safety glass	SQM	496				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
i	Two nos. 6 mm thick clear toughened float glass hermetically sealed and separated by 12 mm thick air gap for thermal insulation (only single elevation area to be measured)	SQM	740				
j	Two nos. 6 mm thick tinted toughened float glass hermetically sealed and separated by 12 mm thick air gap for thermal insulation (only single elevation area to be measured)	SQM	150				
k	One outer 6mm thick tinted heat-reflecting type float glass and one inner 6mm thick plain float glass hermetically sealed and seperated by 12 mm thick gap for thermal insulation (only single elevation area to be measured).	SQM	100				
l	6 mm thick laminated glass	SQM	100				
916	Supplying and fixing weather stripping of approved make and quality to doors as per instructions of engineer in charge and specification complete.	RM	100				
917	Providing and fixing 12 mm thick BWP particle board, decorative veneer (prelaminated) on both sides, as panels in aluminium framed door shutter, fixed with necessary snap-on-beading etc. all complete (excluding aluminium works).	SQM	1410				
919	Providing and fixing 1 mm thk. MS sheet sliding shutters with frame and diagonal braces of 50X50X6 angle iron, 3 mm MS gusset plates at junction and corners, 25 mm dia pulley, 50X50X6 angle and T-iron guide at the top and bottom respectively including painting etc. all complete.	SQM	50				
920	Roof skylight structure for atrium with 6mm thick Polycarbonate sheet multi (twin) wall fire retardant and ultra violet resistant with sealed open edges for sky light for approved shape like dome, pyramidal etc. Joints are properly sealed with sealent, screws with pvc cap, self tapping screws, epdm rubber gasket.etc all complete as per detailed drawing and specification.	SQM	150				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A921	Supplying, installing and commissioning of self sliding mechanism for aluminum door (double shutter) including photo operated sensors, fittings, motors, mechanical systems, electrical systems, warranty all inclusive in working condition as per specifications and drawings (aluminum and glazing to be paid seperately)	EACH	6				
A922	Providing and fixing of wooden panels of veneered BWP grade plywood including teakwood baton grid for interior partition including fittings, fixtures etc all complete as per specification.	SQM	185				
A923	Providing and fixing 12 mm square MS rod grills for security on windows/ventilators including fixtures, painting etc. all complete.	SQM	748				
A924	Providing and fixing polished teakwood handrail on stainless steel/MS posts all complete as per specification and directions of engineer in charge (stainless steel/MS posts to be paid elsewhere)	CuM	461				
	1000 BRICKWORK						
	Brickwork masonry including all labour, material, equipment, transportation, handling, scaffolding etc. at all levels as per specification, drawings and as directed by engineer - in - charge.						
A1001	Providing brick work in cement mortar 1:5 (1 part cement 5 parts coarse sand) in walls, chambers etc. in thickness varying from 230mm to 460mm at all depths, places and positions below plinth including raking out joints, curing, scaffolding etc. complete excluding plastering and painting.						
a	Using fly ash lime/cement bricks confirming to IS 12894 with crushing strength of 75 kg/cm ²	CUM	965				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	CUM	147				
1002	Providing brick work in cement mortar 1:6 (1 cement 6 coarse sand) in walls, chambers etc. in thickness 230mm at all heights, places and position above plinth including raking out joints, curing, scaffolding etc complete excluding plastering and painting.						
a	Using fly ash lime bricks confirming to IS 12894 with crushing strength of 75 kg/cm2	CUM	655				
A1002	Providing brick work in cement mortar 1:5 (1 cement 5 coarse sand) in walls, chambers etc. in thickness 230mm at all heights, places and position above plinth including raking out joints, curing, scaffolding etc complete excluding plastering and painting.						
a	Using fly ash lime/cement bricks confirming to IS 12894 with crushing strength of 75 kg/cm2	CUM	12160				
c	Using burnt clay bricks of class designation 7.5 of nominal dimension	CUM	774				
1003	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc. in thickness 115mm at all heights, places and position above or below plinth/graded level including providing two nos. 8 mm diameter TMT bars at every fourth layer, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification. (TMT bars to be paid elsewhere)						
a	Using fly ash lime/cement bricks confirming to IS 12894 with crushing strength of 75 kg/cm2	SQM	200				
A1003	Providing brick work in cement mortar 1:4 (1 cement 4 coarse sand) in partition walls, chambers etc. in thickness 115mm at all heights, places and position above or below plinth/graded level including providing two nos. 8 mm diameter TMT bars at every fourth layer, raking out joints, curing, scaffolding etc complete excluding plastering and painting as per specification. (TMT bars to be paid elsewhere)						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	Using fly ash lime/cement bricks confirming to IS 12894 with crushing strength of 75 kg/cm ²	SQM	2198				
A1004	Providing brick soling including spreading of earth, ramming, watering including 25mm 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). Using brick on edge.						
a	Using fly ash lime/cement bricks confirming to IS 12894 with crushing strength of 75 kg/cm ²	SQM	150				
A1005	Providing brick soling including spreading of earth, ramming, watering including 25mm 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.)- Using flat bricks.						
a	Using fly ash lime/cement bricks confirming to IS 12894 with crushing strength of 75 kg/cm ²	SQM	100				
1006	Breaking of existing brick work at all levels including plastering, removing the rubbish up to a distance of 500 m including transportation, loading, unloading etc. all complete as directed by the engineer.	CUM	105				
1007	Providing and encasing of structural steel member with masonry work around flanges, webs etc. and filling the gap between steel and masonry by minimum 12mm thick mortar. Encased member shall be wrapped with chicken wire mesh with 50mm lap etc. complete as per specification. (Chicken wire mesh to paid separately)	CUM	52				
1008	Providing and laying 75 mm thick bed of dry brick aggregate including of excavation, disposal of surplus earth spreading of earth, ramming, watering etc. complete in all respects as directed by the engineer.	SQM	10				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1009	Making openings in existing brick wall or partition wall including making good the broken edges/surface with cement mortar etc. complete.	CUM	75				
1010	Supply and placing in position mild steel wire fabric of square mesh 25 mm size and wire diameter of 2 mm for encasing of steel sections in concrete including cutting, bending, fixing etc. complete.	SQM	3000				
A1010	Supply and placing in position chicken wire mesh at the junction of RCC/Structural steel and brickworks including cutting, bending, fixing etc. complete.	SQM	920				
1011	Filling existing brick wall/ partition wall opening at all level including making good the broken edges/surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/supporting at any level, removal of debris upto a lead of 1 km including loading, unloading, transportation etc. all complete.	SQM	70				
1012	Providing and filling brick bats in soak pits all complete.	CUM	100				
	1100 DAMP PROOF COURSE						
	Damp proof course including all labour, material, equipment, transportation, handling, shuttering, centering, curing etc at any level as per specification, drawings and as directed by engineer - in - charge.						
A1101	Providing Damp Proof Course 50mm thick 1:1.5:3 concrete (10mm and down graded aggregate) with 2% of approved admixture of water proofing compound all complete. Two layers of hot bitumen coating 85/25 grade as per IS:702 @ 1.7Kg./sqm shall be applied one before & one after the DPC.	SQM	2896				
	1200 CEMENT MORTAR PLASTER						
	Cement mortar plaster including making grooves wherever required including all labour, material, scaffolding, curing etc at any level as per specification, drawings and as directed by engineer - in - charge.						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1201	Providing 18mm thick plaster in two layers outside the building/boundary wall in cement mortar 1:6 on walls, finished to a smooth finish including providing 3mmx3mm size grooves at junctions of two dissimilar materials all complete.	SQM	1751				
A1201	Providing 20mm thick plaster in two layers outside the building/boundary wall in cement mortar 1:6 on walls, finished to a smooth finish including providing 3mmx3mm size grooves at junctions of two dissimilar materials all complete.	SQM	3320				
AA1201	Providing 20 mm thick in 2 coats, 1st coat of 12 mm thick in Cement Mortar 1:3 & 2nd coat of 8 mm thick in Cement Mortar 1:2 sand faced outside/inside the building/boundary wall finished to a smooth finish including providing 3mmx3mm size grooves at junctions of two dissimilar materials all complete.	SQM	42390				
1202	Providing 12mm thick plaster inside the building/boundary wall in cement mortar 1:6 on walls finished to a smooth finish as per specification all complete.	SQM	3320				
A1202	Providing 12mm thick plaster inside the building/boundary wall in cement mortar 1:3 on walls finished to a smooth finish as per specification all complete.	SQM	95133				
1203	Providing 12mm thick plaster in cement mortar 1:3 on walls with rough finish all complete.	SQM	3735				
1204	Providing 6mm thick plaster on ceiling in cement mortar 1:4 finished to a smooth all complete.	SQM	4549				
A1204	Providing 6mm thick plaster on ceiling in cement mortar 1:3 finished to a smooth all complete.	SQM	27412				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1205	Providing 12mm thick plaster in walls, drains/culverts with a paste of neat cement @ 1kg/sqm and rubbed smooth with trowel etc. all complete.	SQM	1100				
1206	Providing and making decorative plaster of all types and design on walls, ceilings, arcs, columns with various thickness upto 18 mm including finishing all complete.	SQM	20				
1207	Forming groove of uniform size from 12X12 mm upto 20X15 mm in plastered surface as per approved pattern, using wooden battens nailed to the under layer, including removal of wooden battons, repair of the edges of plaster panel and finishing the groove etc. complete as per specification, drawing and the instructions of engineer in charge.	RM	60				
1208	Providing drip coarse 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	1000				
1209	Providing and laying encasement to box type steel beams at all levels with lath plaster 50 mm nominal thickness with cement plaster (1:4) over chicken wire mesh including all labour, materials, equipment, handling, transporting, mixing, placing, leveling, curing and cleaning, finishing the exposed surfaces etc including centering and shuttering all complete as per specification, drawing and instructions of enginner in charge (chicken wire mesh to be paid separately)	SQM	455				
1210	Ruled pointing in masonry in CM 1:3 (1 cement and 3 fine sand) including raking out joints, curing etc. complete.	SQM	100				
	1300 FINISHES TO CONCRETE / PLASTERED SURFACES						
	Finishes, painting to concrete, plastered surfaces including all labour, material, equipment, surface preparation, scaffolding etc. at any level as per specification, drawings and as directed by engineer - in - charge.						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1301	Two or more coats of white wash/ colour wash as per IS 627 of approved brand and manufacture to give an even shade including a priming coat as per specifications.	SQM	1680				
1304	Two or more coats of acrylic distemper of approved brand and manufacture to give an even shade including a priming coat with distemper primer complete.	SQM	1250				
A1304	Two or more coats of acrylic washable distemper of approved brand and manufacture to give an even shade including a priming coat with distemper primer complete.	SQM	111634				
1305	Providing and applying two or more coats of acrylic emulsion paint as per IS 5411 of approved brand, shade and manufacture to give smooth, hard, durable & glossy finish over a coat of primer over prepared plaster surface as per manufacturers guideline.	SQM	28181				
1306	Providing and applying 2 or more coats of acid/alkali resistant paint of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying bitumen primer confirming 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	145				
A1306	Providing and applying 2 or more coats of chlorinated rubber based paint of approved brand and colour to floors, walls and ceiling including preparation of surface to receive paint, providing and applying primer complete all as per manufacturer's recommendations and as approved by engineer, at all heights above or below grade level, complete as per specifications.	SQM	7069				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1307	Two or more coats of fire resistant transparent paint 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	100				
1308	Two or more coats of black anti-corrosive bitumastic painting of approved brand and manufacture to give an even shade complete.	SQM	100				
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	106434				
A1311	Providing and applying resin bonded granular textured finish of vineratex or equivalent, for external applications 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	6475				
1312	Providing and applying 2 mm thick plaster of paris punning on walls including preparation of surface, staging, etc. to achieve a smooth even surface all complete as per specification and as directed by Engineer.	SQM	27813				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1313	Providing and applying ready made Epoxy Paint 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, oil, splash, spillage & acidic environment. The epoxy paint coating shall be of minimum 4 mm thickness.	SQM	150				
A1316	Providing and applying two coats of Epoxy coating with suitable pigments of approved shade as per specification and direction of Engineer. The epoxy paint shall be a two pack material and shall be resistant to water, oil, splash, spillage & acidic environment. The epoxy paint coating shall be of minimum 150 micron thickness over epoxy primer.	SQM	2542				
	1400 FLOORING AND SKIRTING						
	Flooring and skirting at any level including base layer, labour, material, equipments, transportation, handling, curing, polishing etc. at any level as per specification, drawings and as directed by engineer - in - charge.						
1401	Providing and laying 50 mm thick heavy duty cement concrete in flooring with metallic hardener pigmented topping 12mm thick uniform graded treated iron particles in flooring. Under layer of 38mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) and top layer of 12mm thick metallic concrete of mix 1:2 (1 cement hardner mix with approved quality metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips):	SQM	615				
A1401	Providing and laying 50 mm thick granolithic heavy duty cement concrete in flooring with non-metallic hardener pigmented topping 12mm thick in flooring. Under layer of 38mm thick cement concrete mix 1:1:2 (1 cement: 1 sand : 2 stone aggregates 12.5mm well graded) and top layer of 12mm thick non-metallic concrete of mix 1:2 (1 cement hardner mix with approved quality non-metallic hardening compound :2 stone aggregate 6mm nominal size) by volume including cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips)	SQM	41677				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
AA1401	Providing and laying 50 mm thick granolithic heavy duty cement concrete in flooring of cement concrete mix 1:1:2(1 cement: 1 sand : 2 stone aggregates 12.5mm well graded) including cement slurry, rounding off edges, aluminium strips etc. all complete for following (Quoted item rate shall be inclusive of providing glass joint strips)	SQM	19198				
A1402	Providing and laying 25 mm thick granolithic heavy duty cement concrete mix 1:1:2 (1 cement: 1 sand : 2 stone aggregates) flooring with non-metallic hardener pigmented topping of 10 mm thick uniform graded particles in skirting and dado complete as per specification.	SQM	423				
AA1402	Providing and laying 25 mm thick granolithic heavy duty cement concrete mix 1:1:2 (1 cement: 1 sand : 2 stone aggregates) flooring in skirting and dado complete as per specification.	SQM	209				
A1403	Providing and laying precast polished heavy duty cement concrete tiles (Carborundum topping) of size 300X300X22 thick of approved shade as per IS 1237, including cement mortar bedding of 1:3 (1 cement : 3 sand) jointed with neat cement slurry etc. all complete with pigment to match the shade of the tiles including rubbing, curing, grindig and polishing complete with laying as per IS 1443 etc. all complete for following:						
a	Laid in floors	SQM	8541				
b	Laid in skirting	SQM	160				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1405	Providing and laying 50 mm thick floor finish with 20mm thk Terrazo Tiles including cement mortar bedding of 1:3 (1 cement : 3 sand) with neat cement slurry etc. all complete.	SQM	1030				
A1405	Providing and laying 25 mm thick wall finish with cast in situ Terrazo including provision of base and etc. all complete.	SQM	1040				
1406	Providing and laying polished Kota stone 18mm to 20mm thk in flooring. Under bed shall average 30mm thk of 1 cement : 2 sand : 4 stone aggregates by volume and brought to proper level. The kota stone slabs/tiles laid over under bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including pigments, curing, grinding, granite polishing etc. all complete.	SQM	1119				
1408	Providing polished Kota stone 18mm to 20mm thk in skirting projecting 6mm from adjacent plaster including cutting brickwall upto the required depth, edging, finishing etc. all complete.	SQM	734				
1412	Providing and laying 18-20mm thick polished Granite stone of approved color and texture in flooring with brass/ stainless steel strips. Under bed shall average 30mm thk of 1 cement : 2 sand : 4 stone aggregate by volume and brought to proper level. The granite stone slabs/tiles laid over under bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including pigments, curing, grinding, granite polishing etc. all complete.	SQM	1555				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1413	Providing and laying 14 to16mm thick polished Granite stone of approved color and texture in flooring with brass/ stainless steel strips. Under bed shall average 35mm thk of 1 cement : 2 sand : 4 stone aggregate by volume and brought to proper level. The granite stone slabs/tiles laid over under bed, pressed and tapped down with wooden mallet to the proper level, lifted and pressed again with thick cement slurry spread over the surface with fine joint finished including pigments, curing, grinding, granite polishing etc. all complete.	SQM	254				
1414	Providing and laying polished Granite stone 18-20mm thk in skirting and dado with 6mm thick projection from adjacent plaster including mortar ,cement slurry ,pigments, curing, grinding,moulding, granite polishing etc. all complete.	SQM	24				
1415	Providing and laying polished Granite stone 14-16mm thk in skirting and dado with 6mm thick projection from adjacent plaster including mortar ,cement slurry ,pigments, curing, grinding,moulding, granite polishing etc. all complete.	SQM	12				
A1416	Providing and laying vitrified ceramic tiles of polished variety of size 600x600 from reputed / approved manufacturer, complete including underbed of cement mortar 1:3 with neat cement slurry etc. all complete for following						
a	8 mm thick tiles In flooring	SQM	16544				
Aa	7.5 mm thick tiles In flooring	SQM	192				
b	8 mm thick tiles in skirting and dado upto specific height	SQM	1610				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
Ab	7.5 mm thick tiles in skirting and dado upto specific height	SQM	25				
A1417	Providing and laying heavy duty anti skid ceramic tiles of matt finish of size 300x300mm from reputed / approved manufacturer including underbed of 43mm thick cement concrete mix 1:2:4 (1 cement: 2 sand : 4 stone aggregates 12.5mm well graded) etc. all complete for following.						
a	7mm thick tiles In flooring	SQM	2376				
c	7mm thick tiles In skirting and dado upto specific height	SQM	2046				
1418	Providing and laying 10 mm thk non-skid fully vitrified tiles of make 'MARBONITE' or 'FERRASTONE of BOSS Profile limited' or equivalent in flooring and skirting over 30 mm thick underbed of 1 part cement and 3 parts coarse sand by weight mixed with sufficient water, complete as per specification laid in pattern of following sizes						
a	400X400 mm	SQM	26				
b	600X600 mm	SQM	26				
A1418	Providing and laying 8 mm thk non-skid fully vitrified tiles of make 'MARBONITE' or 'FERRASTONE of BOSS Profile limited' or equivalent in flooring and skirting over 40 mm thick underbed of 1 part cement and 3 parts coarse sand by weight mixed with sufficient water, complete as per specification laid in pattern of following sizes						
a	400X400 mm	SQM	764				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
b	600X600 mm	SQM	1051				
A1419	Providing and laying granite stone slab of 12 mm thickness single piece for wash basin / sink slab /facia of black or approved colour with cutting,making corners,moulding and opening etc. all complete.	SQM	84				
1420	Providing and laying Heavy Duty dust pressed Ceramic Tiles of 7mm thick of reputed manufacturer of approved finish shade and colour including underbed of cement mortar 1:3 with neat cement slurry etc. all complete.						
a	300X300 mm	SQM	205				
b	600X600 mm	SQM	100				
1421	Providing and laying Heavy Duty dust pressed (grade-5) Ceramic Tiles (Matt Finish) of size 600x600mm(approved size) and 7mm thick of reputed / approved manufacturer (Kajaria,jhonson,Spartek or equivalent) of approved finish, shade and colour. The tiles shall be scratch resistance of minimum 5 on Mohr's scale and shall have a bending strength of 350 Kg./sqm,with Under bed shall average 43mm thk of 1 cement : 2 sand : 4 stone aggregates by volume and brought to proper level including cement mortar all complete.	SQM	20				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A1422	Providing & fixing Acid / Alkali resistant (Chemical resistant) tiles conforming to IS:4457 in flooring/Dado and shall be laid over bitumastic lining of min 12mm thick (to be laid in layers of 6mm each). The tiles shall be applied with 13 mm thick Potassium Silicate bedding mortar as per IS:4441, 4443 & 4832 and including preparation of surface, application of bitumen primer, curing etc. all complete for following thicknesses. The tiles should be abrasion resistant & durable.						
a	25mm thick	SQM	12322				
b	38mm thick	SQM	50				
1424	Providing & fixing chemical resistant (AR)(Acid / Alkali) bricks (75mm thick) conforming to IS:4860 in the floor of neutralization pit. Surface on which lining to be applied shall be prepared in accordance with IS:2395. Bitumen primer as per IS:158 followed by 18mm thick bituminastic followed by 6mm thick potassium silicate mortar bedding shall be provided before laying AR bricks. The joints between AR bricks shall be filled with resin type of mortar conforming to IS:4832, part II, seal coat of readymade epoxy paint shall be provided on joints to cover up any porosity that may be left in mortar. End sealing shall be done with bituminastic AR bricks shall be laid with 6mm wide & 50mm deep pointing (epoxy / furnace / CNSL) & acid curing shall be done all complete as per specification.	SQM	244				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A1424	Providing & fixing chemical resistant (AR)(Acid / Alkali) bricks (115mm thick) conforming to IS:4860 in the wall of neutralization pit. Surface on which lining to be applied shall be prepared in accordance with IS:2395. Bitumen primer as per IS:158 followed by 18mm thick bituminastic followed by 6mm thick potassium silicate mortar bedding shall be provided before laying AR bricks. The joints between AR bricks shall be filled with resin type of mortar conforming to IS:4832, part II, seal coat of readymade epoxy paint shall be provided on joints to cover up any porosity that may be left in mortar. End sealing shall be done with bituminastic AR bricks shall be laid with 6mm wide & 50mm deep pointing (epoxy / furnace / CNSL) & acid curing shall be done all complete as per specification.	SQM	498				
AA1424	Providing & fixing chemical resistant (AR)(Acid / Alkali) bricks (38mm thick) conforming to IS:4860. Surface on which lining to be applied shall be prepared in accordance with IS:2395. Bitumen primer as per IS:158 followed by 12mm thick bituminastic followed by 6mm thick potassium silicate mortar bedding shall be provided before laying AR bricks. The joints between AR bricks shall be filled with resin type of mortar conforming to IS:4832, part II, seal coat of readymade epoxy paint shall be provided on joints to cover up any porosity that may be left in mortar. End sealing shall be done with bituminastic AR bricks shall be laid with 6mm wide & 50mm deep pointing (epoxy / furnace / CNSL) & acid curing shall be done all complete as per specification.	SQM	369				
1425	Providing and laying polished Marble slabs (Aranga white or equivalent approved shade/color /design) 20 mm thk in staircase landing/skirting and corridors over minimum 20 mm thick underbed of 1 cement : 2 sand : 4 stone aggregates by volume mixed with sufficient water to form a stiff workable mass. The marble slabs shall be laid over under-bed, 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 moulded marbel nosing, pigments, curing, grinding, making corners, granite polishing etc. complete.	SQM	1				
1427	Providing and fixing glazed ceramic tiles of approved color and design of size 200x300mm / 300x300mm in dado of approved size, projecting 6mm uniformly from adjacent plaster or wall finish. The mix for underbed plaster shall consist of 1part cement and 3 parts sand by weight. fairly moist but firm, tiles shall be pressed over under bed by applying cement slurry including pigments, curing etc all complete for following thicknesses:						
a	5mm thick	SQM	510				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A1428	Providing and laying 2 mm thick antistatic PVC flooring / skirting of approved shade,as per IS:3462 and laying as per IS:5318 all complete.	SQM	450				
A1429	Providing and fixing removable type flooring system (Height of floor 800 mm)consisting of fire resistant particle board of size 600X600X35 mm with 0.05 mm thick aluminium foil lining at bottom and with 2 mm thick anti static PVC topping including proprietary floor supporting system complete as per specification.	SQM	750				
1430	Providing and fixing dividing strips in joints of cast in situ floorings at various elevations, finishing, all labour, material etc. complete as per drawing, specification and instructions of engineer in charge.						
a	Glass strips 40 mm wide and minimum 6 mm thick.	RM	254				
b	Aluminium strips 40 mm wide and minimum 3 mm thick	RM	354				
c	Brass strips 20 mm wide and minimum 4 mm thick.	RM	145				
1500 ROOFING / SIDE CLADDING							
	Roofing / side cladding work including all labour, material, equipment, transportation, handling, scaffolding, laps, hooks, washers, corner pieces etc. at any level as per specification, drawings and as directed by engineer - in - charge.						

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A1501	Designing, providing and fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour and conforming to class3 of IS 14246 over roof purlins for cast-in-situ roof slab as per relevant IS code and specification. Bare metal thickness of deck plate shall be minimum 0.8mm with minimum trough depth of 44 mm having minimum yield strength of 250 MPa and shall serve as permanent shuttering to the roof slab 100mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 150 kg/sqm during construction between purlins as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to purlins, side lapping, end lapping etc. all complete for below mentioned spans. The sheet shall be permanently coated with silicon modified polyester paint of minimum 20 micron DFT on exposed surface (facing operating floor) and minimum 7 micron on other face over epoxy primer applied over hot dipped galvanising @ 275 gm/sqm including fixing of sheet to purlin with self drilling white zinc plated heat treated carbon steel screws of minimum 5.6 mm dia @ 260mm c/c in the trough and stich screws between two adjacent sheets and sealing with epoxy sealant. Measurement of profile sheeting shall be of the plan area of roof covered by MS trough metal decking.						
a	Span Upto 1800mm	SQM	6000				
AA1501	Designing, providing and fixing permanently color coated galvanised MS troughed metal sheet decking plate of approved colour and conforming to class3 of IS 14246 over floor beams for cast-in-situ slab as per relevant IS code and specification. Bare metal thickness of deck plate shall be minimum 0.8mm with minimum trough depth of 44 mm having minimum yield strength of 250 MPa and shall serve as permanent shuttering to the slab 150mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 150 kg/sqm during construction between beams as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to beams, side lapping, end lapping etc. all complete for below mentioned spans. The sheet shall be permanently coated with silicon modified polyester paint of minimum 20 micron DFT on exposed surface (facing operating floor) and minimum 20 micron on other face over epoxy primer/phosphate primer applied over hot dipped galvanising @ 275 gm/sqm including fixing of sheet to purlin with self drilling white zinc plated heat treated carbon steel screws of minimum 5.6 mm dia @ 260mm c/c in the trough and stich screws between two adjacent sheets and sealing with epoxy sealant. Measurement of profile sheeting shall be of the plan area of floor covered by MS trough metal decking.						
a	Span Upto 1700mm	SQM	2280				
b	Span Exceeding 1700mm and upto 2500 mm	SQM	918				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
AAA1501	Designing, providing and fixing permanently cold rolled troughed profile sheets manufactured from tested quality CR rolls as per IS:513 over roof purlins for cast-in-situ roof slab as per specification and relevant IS codes. Bare metal thickness of deck plate shall be minimum 0.8mm with minimum trough depth of 44 mm having minimum yield strength of 250 MPa and shall serve as permanent shuttering to the roof slab 100mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 150 kg/sqm during construction between purlins as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to purlins, side lapping, end lapping etc. all complete for below mentioned spans including Pre treatment and Phosphating of sheet with application of primer and final paint coating as per specification and fixing of sheet to purlin with self drilling white zinc plated heat treated carbon steel screws of minimum 5.6 mm dia @ 260mm c/c in the trough and stich screws between two adjacent sheets and sealing with epoxy sealant. Measurement of profile sheeting shall be of the plan area of roof covered by MS trough metal decking.						
a	Span Upto 1800mm	SQM	4000				
AB1501	Designing, providing and fixing permanently cold rolled troughed profile sheets manufactured from tested quality CR rolls as per IS:513 over floor beams for cast-in-situ floor slab as per specification and relevant IS codes. Bare metal thickness of deck plate shall be minimum 0.8mm with minimum trough depth of 44 mm having minimum yield strength of 250 MPa and shall serve as permanent shuttering to the floor slab 150mm thick measured over crest of metal decking & shall have adequate strength to support weight of green concrete and imposed loads of min 150 kg/sqm during construction between beams as per manufacturer's recommendations/ calculations/ test certificates for approval including fixing of plates to beams, side lapping, end lapping etc. all complete for below mentioned spans including Pre treatment and Phosphating of sheet with application of primer and final paint coating as per specification and fixing of sheet to beam with self drilling white zinc plated heat treated carbon steel screws of minimum 5.6 mm dia @ 260mm c/c in the trough and stich screws between two adjacent sheets and sealing with epoxy sealant. Measurement of profile sheeting shall be of the plan area of roof covered by MS trough metal decking.						
a	Span Upto 1700mm	SQM	1920				
b	Span Exceeding 1700mm and upto 2500 mm	SQM	2796				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1502	Providing and fixing shear connectors of mild steel studs having 16mm dia and minimum 75 mm projected length above purlin passing through metal decking as per relevant IS codes and specification.	QUINTAL	151				
1503	Designing, providing and fixing External sheet of Permanent colour coated metal cladding with troughed M.S. sheets of 0.6mm bare metal thickness having minimum yield strength 250 MPa and zinc-aluminium alloy coating not less than 150 gm/sqm total on both sides including fixing to supports / rails by concealed/exposed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently colour coated with Polyfluro Vinyl Coating (PVF2) of minimum dry film thickness (DFT) 20 microns over suitable primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum DFT 7 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability.	SQM	7953				
A1503	Designing, providing and fixing External sheet of Permanent colour coated metal cladding with troughed M.S. sheets of 0.6mm bare metal thickness having minimum yield strength 250 MPa and zinc-aluminium alloy coating not less than 150 gm/sqm total on both sides including fixing to supports / rails by concealed/exposed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently colour coated with Polyfluro Vinyl Coating (PVF2) of minimum dry film thickness (DFT) 20 microns over suitable primer. Inner face of the sheet shall be provided with same paint of minimum DFT 12 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability.	SQM	4500				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1504	Designing, providing and fixing External sheet of Permanent colour coated metal cladding with high strength tensile steel sheet 0.5mm bare metal thickness having minimum yield strength 350 MPa and zinc-aluminium alloy coating not less than 150 gm/sqm total on both sides including fixing to supports / rails by concealed/exposed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently colour coated with Polyfluro Vinyl Coating (PVF2) of minimum dry film thickness (DFT) 20 microns over suitable primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum DFT 7 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability.	SQM	6615				
A1504	Designing, providing and fixing External sheet of Permanent colour coated metal cladding with high strength tensile steel sheet 0.5mm bare metal thickness having minimum yield strength 350 MPa and zinc-aluminium alloy coating not less than 150 gm/sqm total on both sides including fixing to supports / rails by concealed/exposed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently colour coated with Polyfluro Vinyl Coating (PVF2) of minimum dry film thickness (DFT) 20 microns over suitable primer. Inner face of the sheet shall be provided with same paint of minimum DFT 12 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability.	SQM	4500				
1505	Designing, providing and fixing Inner sheet of Permanent colour coated metal cladding with troughed M.S. sheets of 0.6mm bare metal thickness having minimum yield strength 250 MPa and zinc-aluminium alloy coating not less than 180 gm/sqm total on both sides of both sheets including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing, Z spacers etc. all complete. The exposed surface of the sheet shall be permanently colour coated with silicon modified polyester paint of minimum dry film thickness (DFT) 20 microns over suitable primer. Other face of the sheet shall be provided with suitable pre-coating of minimum DFT 7 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability. The sheet shall be fixed directly to side runners and Z spacers as per IS : 277. The sheet shall be fixed at the rate not more than 1500mm center to center to hold the insulation and external sheeting.	SQM	11547				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1506	Providing and fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS 8183 having a density of 32 kg/cum glass wool or 48 kg/cum for rock wool, for cladding/under deck insulation including application of glue and tying with lacing wire, for glass/rock wool as per manufacturer's recommendations.	SQM	6639				
1507	Providing and fixing insulation of resin bonded mineral wool of 50 mm nominal thickness conforming to IS 8183 having a density of 32 kg/cum glass wool or 48 kg/cum for rock wool, for cladding/under deck insulation including wrapping in black polythene black supported over weld mesh 75X75X1.6 MM dia to hold in position and application of glue & tying with lacing wire, for glass/rock wool as per manufacturer's recommendation.	SQM	5246				
1508	Providing and installing under deck insulation using minimum 0.05 mm thick aluminium foil on exposed surface followed by 0.56 mm dia and 24 Gx 25 mm mesh GI wire netting, fixed at various elevations with rawl plugs including clips but excluding cost of insulation.	SQM	404				
A1508	Providing and installing fire resistant under deck insulation using Lloyd Foam or equivalent 50 mm thick polyurethane Foam including minimum 0.05 mm thick aluminium foil on exposed surface followed by 0.56 mm dia and 24 Gx 25 mm mesh GI wire netting, fixed at various elevations with rawl plugs including clips.	SQM	11191				
1509	Providing and fixing non metal opaque PVC sheet similar to ONDEX roofing or equivalent including all fixing accessories.	SQM	100				
1510	Providing and fixing 1 mm thick corrugated/semicorrugated G.I. sheet in roofs, cladding of minimum galvanisation of 275 gsm total on both sides with minimum 150mm overlapping, 8 dia G.I. hook bolts or 'J' Bolts and nuts @305 mm c/c along with G.I. and bitumen washers including cutting of sheets for opening etc. all complete.	SQM	585				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1511	Designing, providing and fixing External roof cladding sheet of Permanent colour coated with troughed M.S. sheets of 0.6mm (or high tensile steel sheet of 0.5mm minimum thickness) for side cladding bare metal thickness having minimum yield strength 250 MPa and zinc-aluminium alloy coating not less than 275gm/sqm total on both sides including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing etc. all complete. The exposed face of the sheet shall be permanently colour coated with Polyfluro Vinyl Coating (PVF2) of minimum dry film thickness (DFT) 20 microns over suitable primer. Inner face of the sheet shall be provided with suitable pre-coating of minimum DFT 12 microns over suitable primer. The permanent colour coated sheet shall meet the general requirements of IS : 14246 and shall conform to class 3 for the durability.	SQM	1950				
	1600 FALSE CEILING						
	False ceiling including all labour, material, equipment, transportation, handling, suspension system etc at any level as per specification, drawings and as directed by engineer - in - charge.						
1603	Providing and fixing permanently colour coated aluminium false ceiling of approved colour and Luxalon 84 C or approved equivalent with corrosion resistant aluminium alloy panels of minimum thickness 0.5mm including 50mm thick mineral wool insulation(density 48 kg/cum) conforming to 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 all complete. Suitable M.S. channel grid with minimum MC 75 shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. (Materials for structural platform grid made up of MS Channels/ Beams / Angles shall be supplied by BHEL and shall be paid under ST No 2301)	SQM	50				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A1603	Providing and fixing permanently colour coated aluminium false ceiling of approved colour (closed type plain panels) or approved equivalent with corrosion resistant aluminium alloy AA5050 panels of minimum thickness 0.5mm fixed on roll formed carriers. Additional hangers and height adjustment clips shall be provided for return air grills, light fixtures, A.C. ducts etc all complete. Suitable M.S. channel grid with minimum ISMC175 shall also be provided above the false ceiling level for movement of personnel to facilitate maintenance of lighting fixtures, AC ducts etc. (Materials for structural platform grid made up of MS Channels/ Beams / Angles shall be supplied by BHEL and shall be paid under ST No 2301)	SQM	11281				
1606	Providing and Fixing 12mm thick Gypsum board plain/perforated false ceiling tiles(600x600mm) of India Gypsum or equivalent make in plan or elevation with aluminium grid, metal suspension system, anchor fastener adjustable hangers etc. including one coat of primer, two or more coats of acrylic emulsion paint of approved colour to give an even shade with smooth finish all complete.as per architectural design and detail.metal suspension system as per ASTM C-635 shall be hot dipped M.S.galvanized (grade 180 as per is :277) nominal size of T-section shall be 24 x 38 mm or 24 x 25 mm cross runners. 24mm wide exposed flange surface shall be permanently color coated.suspension system shall be as per manufacturer's specification supported over movement platform.The work to be complete as per specifications, drawings and direction of engineer.(Materials for structural platform grid for movement made up of MS Channels/ Beams / Angles shall be supplied by BHEL and shall be paid under ST No 2301)	SQM	754				
	1700 RAIN WATER DOWN TAKE PIPES						
	Rain water down take pipes including all labour, material, transportation, 2 coats of approved paint over one primary coat, fixtures, accessories etc at any level as per specification, drawings and as directed by engineer - in - charge.						
1702	Providing and fixing galvanised MS down take pipes of 100 mm dia-Medium quality as per IS:1239(part-I) / IS:3589 all complete.	RM	201				
1704	Providing and fixing galvanised MS down take pipes of 150 mm dia-Medium quality as per IS:1239(part-I) all complete.	RM	250				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1705	Providing and fixing UPVC down take pipes of 110mm diameter- Class 3 as per IS:4985 all complete.	RM	859				
1706	Providing and fixing UPVC down take pipes of 160mm diameter- Class 3 as per IS:4985 all complete.	RM	592				
1708	Providing and fixing HDPE down take pipes conforming to IS:4984 as per specification of following diameters.						
a	110 mm Dia	RM	645				
b	160 mm Dia	RM	4053				
c	150 mm Dia	RM	430				
d	200 mm Dia	RM	953				
	1800 MISCELLANEOUS WORKS						
	Miscellaneous works including all labour, material, equipment etc. at any level unless otherwise specified as per specification, drawings and as directed by engineer - in - charge.						

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1801	Providing and Filling in trenches, plinths, area paving and other underground structures with graded stone aggregate of size range 63 mm to 45 mm in layers not exceeding 230 mm in thickness including breaking of stone boulders to required sizes, filling the interstices with selected sand and compacting to 85 % of original volume of stone stack for all lifts etc. all complete. Payment shall be made for the measurement of the volume of the compacted fill.	CUM	23803				
1803	Anti termite chemical treatment of soil with Chlorpyriphos/Lindane E.C. 20% with 1% concentration conforming to IS:8944 and as per IS 6313 all complete. (Plinth area of building at ground floor only shall be measured for payment)	SQM	2671				
1804	Supply and installation of approved 25mm thick vibration damping resilient pads on/around foundation of vibrating equipment and at other locations all complete.	SQM	85				
1805	Providing 50mm thick premix carpet surfacing laid to slope in two layers 30mm and 20mm respectively with 12mm downgraded stone chips mixed with 80/100 grade bitumen @ 52 Kg/Cu.M including compaction etc. all complete.	SQM	1240				
1806	Providing 50mm thick anti corrosive layer laid to required slope consisting of clean & well graded coarse sand mixed with A90 grade bitumen for softening point upto 45 degree Celcius or A65 grade bitumen for softening point above 45 degree celcius as per IS: 73 or its equivalent quality 8 to 10% by volume and rolled or compacted all complete.	SQM	1240				
1807	Providing and fixing G.I strips minimum 1.5mm thk and 150mm wide including fixing accessories etc. all complete.	Kg	100				

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				(In fig)	(In Words)	(In fig)	(In Words)
1808	Providing and fixing aluminium strips minimum 18 SWG thk and 300mm wide over expansion joints with minimum lap of 50mm length including brass / aluminium screws, rawl plugs etc. all complete.	Kg	790				
1809	Providing Chemical injection grouting with pressure pump for water retaining concrete structures conforming to IS:6494, including fixing nozzles, cost of approved cement, admixture, curing etc. all complete . Payment shall be made as per the consumption of chemical grout.	Kg	100				
1810	Providing, laying and fixing rails and guide rails in concrete for transformer, rail track including cutting of rails, joining of rails, anchoring lugs etc all complete.	MT	193				
1811	Providing and fixing weep holes in Drains consisting of 100 mm dia HDPE pipe sleeves with single side covering for the pipe mouth with galvanised welded wire fabric of 20 mm sq. opening covered with 40 mm downgraded aggregates in 300 X 300 mm sq. and 300 mm deep size all complete.	EACH	30				
1812	Laying of earthing mats/rods including risers, transportation from yard stores, loading, unloading, cutting to length, welding, protective painting of joints etc. all complete. (Excavation & Back filling shall be paid separately under respective item of earth work. Earthing mats/rods shall be supplied by BHEL free of cost)	MT	299				
1813	Providing Earthing pit as per drawing with charcoal & salt, GI pipes, GI earth electrodes, GI wire, GI strips, brick chamber with covers including associated earthwork etc. all complete.	EACH	30				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1814	Construction of below ground earthing system test pits as per drawing/ sketches including brickwork, plaster, concreting, reinforcement, formwork, providing & fixing GI strips/pipes, GI wires, covers etc as per drawing & specification including associated earthwork.	EACH	25				
1815	Providing and fixing GI rungs in concrete/brick walls having zinc coating of minimum 900 g/sqm etc. all complete.	Kg	3762				
1816	Providing and fixing PVC pressure release valve of minimum dia 90mm in water retaining structure including 160 mm dia housing pipe of minimum length 3.75 m with perforation as per IS4558, nylon jali, perforated end plug, collar, graded filter, excavation, fixing in concrete slab/wall etc. all complete.	EACH	255				
1817	Providing and fixing HDPE pipes in concrete/ brick work of following sizes including cutting, fixing and levelling in position etc. all complete.						
a	Upto 75 mm dia	RM	644				
b	100 mm dia	RM	145				
c	150 mm dia	RM	384				
d	200 mm dia	RM	168				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1818	Providing and laying dry stone pitching of 230 mm thickness for slope protection in cement mortar 1:6 including hammer dressing, raking of joints, pointing, preparing the bedding surface and voids filling with stone aggregate etc. all complete.	SQM	158				
A1819	Design, supply, fabrication, erection and epoxy painting of stoplog gates in CW Pumps with embedments required, lifting beams, special tools & plants, spare parts for three years, machining, casting, all materials such as groove of Stainless Steel 316L , 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, , erection along with a second stage concreting to true plumb and levels, submission of drawings / fabrication drawings for engineers approval etc all complete. The leakage through rubber seal shall not be more than 5 lit/min/metre length of seal under maximum head.(only weight of structural steel including embedments shall be considered for payment purpose). (Stainless Steel component shall be measured seperately for payment)	MT	114				
A1820	Stainless steel component mentioned under ST No. 1819/A1819/A1821/B1821	MT	18				
A1821	Supplying, fabricating, erecting in position and testing / examining bolted and / or welded structural steel work for stationary screens made out of stainless steel SS 316L mesh over MS frame including cutting, straightening if required, edge preparation, bolting / welding of joints, cleaning, sand blasting, galvanised with minimum coating of zinc as 750 gms/sqm followed by application of an etcing primer and dipping in black bitumen as per BS 3416 etc all complete.(Stainless Steel mesh shall be paid seperately).	MT	24				
1822	Cutting of groove of 10mm X 40mm size with groove cutting machine in concrete paving all complete.	RM	355				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1823	Fire proofing of steel structures with VERMICULITE cementious coating including supply of all materials for vermiculite materials, reinforcement mesh (3mm thick wire, 50x50 size mesh) , nuts, tie wires, weldings, surface preparation, curing, staging, compatible paintings etc. all complete.	CUM	15				
1824	Supply & fixing expanded metal steel sheet conforming to IS:412. Size of mesh shall be 10mmX40mm with strands of 2.5mm width and 1mm thickness to the structural steel for facilitating fireproofing works.	SQM	20				
1825	Supply and laying approved quality Stone aggregate 40mm size in transformer yards.	CUM	501				
1826	Supply and laying approved quality rounded pebbles / gravels of 40mm size in transformer yards.	CUM	356				
1827	Supply and laying fire clay refractory brick work with fire clay mortar conforming to IS: 6 & 195 including curing etc. all complete on tank pads & in building walls.	CUM	10				
1828	Dismantling old existing reinforced/non-reinforced brickwork/blockwork/stone masonry work in mud/lime/ cement mortar at any level including clearing/cleaning, stacking the serviceable materials at plant site and disposal of unserviceable materials within a lead upto1km all complete.	CUM	55				
1829	Dismantling old existing plain/re-inforced concrete work at any level including clearing/cleaning, stacking the serviceable materials at plant site and disposal of unserviceable materials within a lead upto 1km all complete.	CUM	68				

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				(In fig)	(In Words)	(In fig)	(In Words)
1830	Dismantling old existing structural steel work at any level including plates, bolts, cutting rivets, welding, dismembering and stacking the dismantled materials within a lead upto 1km etc all complete.	MT	53				
A1831	Sprinkling of water by water tanker fitted with perforated GI pipe (portable tanker minimum 3000 litre capacity) for roads and miscellaneous area within plant boundary including using hose for sprinkling water wherever required, for dust suppression and reduction of suspended material at site for day to day work, as directed by BHEL site engineer (water for this purpose shall be provided by BHEL free of cost and utilisation of machine will be in terms of Tank-hour put in actual use for water sprinkling).	TANK-HR	1000				
1832	Providing & filling Bentonite Powder (Sodium base) mixed with water in electronic earthing pit as per drawing & direction below ground level including all materials, transportation, labour, incidental etc all complete as per specification.	CUM	10				
1833	Supply & fixing FRP (fibre reinforced plastic) sheets 2 mm thick including GI hooks/ J or L bolts, nuts, washers, bitumen washers etc. complete including overlap 100mm .	SQM	390				
A1834	Anti weed chemical treatment of soil with suitable chemical etc all complete.	SQM	100				

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ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A1835	Providing and placing approved quality of 250 micron thick heavy duty low density polyethylene liner (LDPE) films manufactured from polyethylene resin over cement sand mortar 1:4 in the base of reservoir/pond as well as on side slopes of embankment to prevent seepage including joining with approved method including testing, necessary excavation, fixing at the edges in plain cement concrete by providing 400mm wide and 300mm thick plain cement concrete 1:2:4 on the top of embankment (the cost of plain cement concrete 1:2:4 shall be excluded and shall be payable separately) as shown in the drawing etc all complete as per specification and as directed by the engineer-in-charge. Minimum width of LDPE liner shall be 6m.	SQM	9086				
A1836	Providing and placing 300mmx300mm size and 75mm thick precast concrete tiles of grade M-20 over 50 mm thick 1cement:4sand mortar on LDPE liner at the bed of reservoir and on side slopes of embankment, filling joints with 1cement : 3sand mortar etc all complete as per specification and as directed by the engineer-in-charge. The rate shall be inclusive of cement sand mortar as well.	SQM	9086				
A1837	Supplying, stacking and laying sand of approved quality as sand blanket/cushion over base/bed and on slopes of embankment/canal including screening, washing (wherever required), watering, compaction, dressing, necessary trimming if any including all leads and lifts etc all complete as per specification and as directed by the engineer-in-charge.	CUM	2600				
A1838	Providing random rubble (RR) stone masonry in foundation, super structure, boundary wall, retaining wall and embankment with cement mortar 1:6 at all elevations including all labour, material, equipment, handling, scaffolding etc. all complete.	CUM	10				
A1839	Providing and fixing sliding layer of bitumen paper or craft paper over the screed layer for water retaining structures to destroy the bond between the screed and the base slab concrete of the water retaining structure etc all complete.	SQM	100				
A1843	Design of scheme and layout for Rain water Harvesting system for the plant in consultation with 'Central ground water authority/Board or State ground water authority or MOEF authorized agency', submission to BHEL/TANGEDCO, incorporation of comments in submitted scheme and layout to finally obtain approved scheme and layout from BHEL/TANGEDCO including all necessary expenses, consultancy charges etc. all complete as per specification.	LUMPSU M	1				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
	2000 FENCING AND GATES						
	Fencing and gates including all labour, material, equipment etc at any level as per specification, drawings and as directed by engineer - in - charge.						
2001	Supplying and erecting in position 2.4 m high PVC coated galvanised chain linked fencing of minimum 8 gauge (including PVC coating) of mesh size 75mm x 75mm. The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 12 gauge. GI barbed wire fencing of height of 600 mm confirming to IS 298 at top of chain link fencing shall be provided with 4 strands of barbed wire hot dip galvanised wire of 12G comprising of 2 ply of wires with barbs of 16G spaced at 100mm. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts, accessories etc. all complete. (Structural post shall be separately under item 2007)	RM	459				
2003	Supplying and erecting in position 2.4 m high PVC coated galvanised chain linked fencing of minimum 8 gauge (including PVC coating) of mesh size 75mm x 75mm. The diameter of the hot dip galvanised steel wire for chain link fencing excluding PVC coating shall not be less than 12 gauge. Concertina of height of 600 mm at top of chain link fencing shall be provided with all accessories. Concertinal shall be from tensile serrated galvanised wire (HTSW) made with wire diameter of 2.5 mm which will be stretched to 6m and attached on two strands of galvanised HTSSW (high tensile spring steel wire) of 2.5mm dia by means of clips at 1m interval. These two HTSSW strands will be attached to the fence posts/ angles with 12 mm security fasteners. Cost to include for GI hook bolts, rings & washers, hot dip galvanised tension wires, 25X6 mm GI flat stretcher bar at end posts etc. all complete. (Structural post shall be separately under ST No. 2007)	RM	560				
A2005	Supplying and fixing 1000mm high G.I. barbed wire fencing on top of boundary wall consisting of 8 string barbed wire of 6 gauge with 8 strands and with anti climbing arrangement of 50x50x8 Y shaped angles including GI clips, anchors, accessories etc. all complete. (Structural post shall be separately under ST No. 2301)	RM	9950				
2008	Supply, fabrication and fixing of mild steel posts for fencing including painting etc all complete.	MT	1				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2009	Supply, fabrication and installing in position and testing galvanised MS Gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete.	MT	8				
2010	Supply, fabrication and installing in position and testing MS Gates out of channels, joists, angles, flats, plates, pipes, welded steel wire mesh & sheets including stiffners, bracings, fabricated hinges, MS Aldrops with locking arrangement, tempered steel pivot, guide track of MS Tee, bronze aluminium ball bearing arrangements, castor wheels, paintings etc. all complete as per specification.	MT	90				
A2011	Supply, fabrication and installing in position Motorized sliding MS gate of approved size and design, erecting and fixing at main enterance including all guides, rails, alignments, control panels, switches, paintings etc all complete as per specification and as directed by Engineer. The gate shall be operable by push button at designated areas at both the guard house and the security office in the Administration / Plant Service area, and by card reader or key switches	MT	25				
2100 WATER SUPPLY							
Water supply work including men, material, equipment etc. at any level as per specification, drawings and as directed by engineer - in - charge.							
2101	Providing and fixing in position tested heavy duty type chromium plated (CP) brass long neck bib cocks including sockets, union, nuts etc all complete - 15mm nominal bore.	EACH	365				
2102	Providing and fixing in position heavy duty brass stop cock of approved quality including all specials etc all complete - 15mm nominal bore.	EACH	289				
2103	Providing and fixing in position heavy duty brass full way valve with wheel of approved quality including all specials etc all complete for following sizes:						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	25mm nominal bore.	EACH	86				
b	50mm nominal bore.	EACH	76				
2104	Providing and fixing GI pipes class B medium class conforming to IS:1239 pipes shall be concealed and painted with anticorrosive paint, complete for internal works with GI sockets, unions, elbows, tees, nipples etc and clamps including cutting and making good the walls etc all complete for following sizes:						
a	15 mm nominal bore.	RM	780				
b	20 mm nominal bore.	RM	520				
c	25 mm nominal bore.	RM	400				
2105	Providing and fixing GI pipes class B complete for external work with GI sockets, unions, elbows, tees, nipples etc including trenching & refilling, anti-corrosive paint etc all complete for following sizes:						
a	15 mm nominal bore.	RM	730				
b	20 mm nominal bore.	RM	1034				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
c	25 mm nominal bore.	RM	1494				
d	50 mm nominal bore.	RM	269				
2106	Providing and fixing 610mmx453mmx6mm thk mirror from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws etc all complete.	EACH	54				
A2106	Providing and fixing 1200mmx900mmx5.5mm thk mirror from reputed mirror manufacturer. Mirror shall be mounted with glass adjustable revolving CP brackets with CP screws etc all complete.	EACH	99				
2107	Providing and fixing 610mmx127mmx6mm thk clear glass with C.P Guard rails and mounted on C.P. brackets etc all complete.	EACH	29				
2108	Providing and fixing 25 mm diameter stainless steel towel rails (600mm X 25mm) all complete.	EACH	98				
2109	Providing and fixing 20mm dia chromium plated M.S. pipes wall mounted towel rod with C.P. Brackets etc all complete.	EACH	18				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2110	Providing and fixing C.P. soap holder mounted with C.P. screws etc all complete.	EACH	98				
A2111	Providing and fixing stainless steel liquid soap dispenser. Dispenser shall be round and easily revolving with removable threaded nozzle and mounted on C.P. brackets etc all complete.	EACH	98				
2112	Providing and fixing glazed vitreous wall mounted paper holder with suitable cover cum cutter fitted with CP screws etc. sll complete.	EACH	50				
2113	Providing and fixing chromium plated brass shower rose with 15 or 20 mm inlet all complete.	EACH	25				
A2114	Providing & fixing in position P.V.C. water tank of Syntex or approved equivalent including making all necessary inlet & outlet pipes, fixture, ball cocks, valves etc all complete for following capacities. GI pipes shall be paid separately under ST No. 2105.						
a	1000 litres capacity	EACH	46				
b	2000 litres capacity	EACH	41				
c	5000 litres capacity	EACH	4				
d	10000 Liters capacity	EACH	2				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2115	Providing and fixing approved stainless steel sink with integrated drainboard as per IS:13983 of size 915x460x178mm with CI brackets, stainless steel chain with rubber plug 40mm, cp brass waste trap with necessary union complete including painting the fittings, cutting and making good the wall where required etc. all complete.	EACH	6				
A2116	Providing and fixing glass shelves 600mmx127mmx4 mm with chromium plated brackets all complete.	EACH	25				
A2117	Providing and fixing metal storing cabinets all complete.	EACH	65				
A2118	Providing Minimum 600 mm long porcelain tray etc all complete..	EACH	65				
A2119	Providing and fixing Recessed porcelain soap tray in shower area etc all complete.	EACH	65				
A2120	Providing and fixing grab bars, barrier-free access and appropriate fittings and fixtures for toilets for handicapped etc. all complete.	EACH	25				
	2200 SANITARY WORKS						
	Sanitary work including all labour, material, equipment etc. at any level as per specification, drawings and as directed by engineer - in - charge.						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2201	Supply and fixing glazed vitreous china Wash Basin conforming to IS:2556 part 4 of oval shape with R.S. or C.I. brackets painted white, 15mm chromium plated brass hot & cold faucets with nylon washers, chromium plated brass chain with rubber plug, 32mm chromium plated brass bottle trap and waste of standard pattern, 32mm dia chromium plated brass trap unions, plastic connection pipe with chromium plated nuts, fittings, cutting and making good the walls where required etc all complete.						
a	White	EACH	50				
b	Colored	EACH	133				
2202	Providing and fixing approved vitreous china laboratory sink of size 600x400x200mm conforming to IS:2556 (part-5) with R.S. or C.I. brackets, chromium plated brass chain with rubber plug 40mm, CP brass waste and 40mm CP brass trap with necessary union complete including painting the fittings, cutting and making good the wall where required etc. all complete.	EACH	14				
2203	Providing and fixing stainless steel kitchen sink of size 610x510x200mm conforming to IS: 13983 including all fittings etc. all complete.	EACH	7				
A2203	Providing and fixing stainless steel kitchen sink of size 600x400x200mm conforming to IS: 13983 including all fittings etc. all complete.	EACH	5				
2204	Providing and fixing colour glazed vitreous china European type water closet conforming to IS:2556 with siphon, open front solid plastic seat and plastic cover, low level 12.5 litre PVC flushing cistern (same colour as WC) with valveless fittings, necessary C.P connections etc all complete.						
a	Floor mounted	EACH	69				
b	Wall mounted	EACH	14				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2205	Providing and fixing colour glazed vitreous indian type Orissa pattern (580x440mm) water closet conforming to IS:2556 part 3 with all fittings including foot rests, low level 12.5 litre PVC flushing cistern with valveless fittings, necessary C.P connections etc all complete.	EACH	70				
2206	Providing and fixing white flat back glazed vitreous china urinals of size 440x265x355 mm with photo voltaic control flushing system as per IS:2556 (part 6, section 1) with flush pipes, lead pipes, gratings, traps and necessary C.P. fittings etc. all complete.	EACH	150				
2207	Supply, laying and jointing UPVC pipes of class 3 as per IS:4985 including bends, branches and all other necessary fittings, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete for following.						
a	75mm dia pipes	RM	254				
b	110mm dia pipes	RM	145				
c	160mm dia pipes	RM	567				
d	200mm dia pipes	RM	456				
A2207	Supply, laying and jointing Supreme B class stoneware pipe including bends, branches and all other necessary fittings, socket and spigot joint, M.S holder bats/clamps, cutting and making good the walls and floors, lead jointing, testing etc all complete for following.						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Palnt Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	110mm dia pipes	RM	1110				
2208	Providing, laying light duty non pressure NP3 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc all complete for following.						
a	200mm dia	RM	4120				
Aa	250 mm dia	RM	250				
b	300mm dia	RM	225				
Ab	400mm dia	RM	150				
c	450mm dia	RM	145				
d	600mm dia	RM	145				
e	900mm dia	RM	145				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2209	Providing, laying light duty non pressure NP2 class RCC pipes with collars jointed with stiff mixture of cement mortar 1:2 including testing of joints etc complete for following.						
a	150mm dia	RM	190				
Aa	200mm dia	RM	280				
b	250mm dia	RM	330				
c	300mm dia	RM	230				
d	500mm dia	RM	170				
2210	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 for following:						
a	400mm dia	RM	50				
2211	Providing and fixing C.I Manhole heavy duty cover of size 600mmx450mm including frame from reputed manufacture etc. all complete.	EACH	140				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2212	Providing and fixing circular heavy duty C.I. manhole cover of 600 mm dia with frame etc. all complete.	EACH	25				
2213	Providing and fixing square mouth S.W Gully trap 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 etc all complete for following sizes:						
a	100x100mm P or S Type.	EACH	20				
b	150x100mm P or S Type.	EACH	23				
c	150x150mm P or S Type.	EACH	52				
2215	Providing and fixing C.I. floor traps with C.P jalli all complete.	EACH	281				
2216	Providing and fixing heavy duty UPVC floor traps with C.P jalli all complete.	EACH	20				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2217	Providing and installing approved brand single tap water cooler of 80 L cooling capacity all complete.	EACH	46				
2218	Providing and installing approved brand single tap water cooler of 150 L cooling capacity all complete.	EACH	15				
2219	Providing and fixing white vitreous urinal partitions of size 675x325x85mm all complete.	EACH	15				
2220	Providing and fixing eye and face drinking water fountain (combined unit with receptacle conforming to IS: 10592) all complete as per specification.	EACH	20				
A2221	Supply, laying and jointing HDPE pipes including bends, branches and all other necessary fittings, M.S holder bats/clamps, cutting and making good the walls and floors, jointing, testing etc all complete for following.						
a	75mm dia pipes	RM	156				
b	110mm dia pipes	RM	124				
c	160mm dia pipes	RM	1010				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
d	200mm dia pipes	RM	510				
	2300 STRUCTURAL STEEL						
	Structural steel works including all labour, material, equipments, transportation, handling etc. at any level as per specification, drawings and as directed by engineer - in - charge.						
2301	Supply, fabrication and erection of structural steel with mild steel rolled section / built up section / combination of both conforming to IS:2062, pipes conforming to IS:1161/ IS:1239, chequered plate conforming to IS: 3052, mild steel rounds, monorails, stays, safety chains, ladders, MS grating etc. in columns, beams, gantry girders, bunkers, silos, hoppers, roof trusses, portals, laced purlins, space frames, hangers, struts, monorails, galleries, stiffeners, wall beams, sheeting runners, brackets, stub columns, bracings, cleats, trestles, base plates, splice plates, chequered plate flooring, decking and seal plates, steel frame grid over false ceiling, walkway platforms, ladders, stairs, stringers, treads, landings, hand-rails etc including 2 coats of redoxide zinc-chromate primer (one coat at shop and one coat after erection), connection design & preparation of fabrication drgs, collection of steel from stores, fabrication, straightening, cutting, bending, rolling, grinding, machining, drilling, welding, electrodes and other consumables, alignment, erection bolts & nuts (weight of erection bolts, nuts and welds not payable), assembly, edge preparation, preheating (min preheat and interpass temperature of 20o C for welding over 20 mm and upto 40 mm & 66o C for welding over 40 mm and upto 63 mm & 110o C for thickness over 63 mm & use of low hydrogen/ radiogenic electrodes), post heating, testing of welders, inspection of welds, visual inspection, non destructive and special testing, rectification and correction of defective welding works, production test plate, inspection and testing, erection scheme, protection against damage in transit, stability of structures, installation of temporary structures, setting column bases, surface preparation by means of manual or mechanical power tools as per IS:1477 part 1, touch-up painting, rectification, dismantling and removal of all temporary structures (weight of temporary structures not payable), return of surplus / waste steel materials to store etc all complete. Including appointment of a separate agency, approved by BHEL, for review and approval of fabrication drgs, in consultation with BHEL.	MT	22560				
2302	Extra over ST NO. 2301 for blast cleaning of steel structures 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 25 micron (DFT) after erection, instead of primer coat of red oxide zinc-chromate, including touch-up painting etc all complete.	MT	171				
A2302	Extra over ST NO. 2301 for blast cleaning of steel structures to near white metal surface(Sa 2 1/2) as per SIS 05-5900 and applying 100 micron total DFT zinc silicate primer(two coats of 50 mm DFT each), instead of two coats of primer of red oxide zinc-chromate, including touch-up painting etc all complete.	MT	22445				
2304	Providing and applying two coats of synthetic enamel paint with minimum 50 micron total dry film thickness (DFT) of approved make and shade to achieve an even shade over steel sections already having primer coats and keeping overall DFT with primer not less than 110 microns including protection and cleaning, scaffolding etc. all complete.	MT	114				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A2305	Providing and applying two coats of high built epoxy based colour Finish paint of approved brand with minimum 90 micron Dry film thickness of each finish coat including protection and cleaning, scaffolding etc. all complete.	MT	22445				
2306	Providing, laying and clamping of crane rails over the crane girder at all elevations as per IS 3443 including all fixtures, clamps, testings etc. all complete as per drawing and specification.	MT	32				
2307	Supplying, fabrication, erection and alignment of factory made electroforged galvanised grating units with mild steel (having minimum galvanisation of 610 g/sqm) conforming to IS:2062 in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads etc. including fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.	MT	482				
2309	Extra over above ST NO. 2301 for finishing the grating units with hot dipped galvanisation @ 610 gm/sqm over blast cleaned steel surfaces instead of painting with two coats of red oxide zinc-chromate primer all complete.	MT	26				
2310	Providing and fixing in position of permanent mild steel bolts (class 4.6 as per IS : 1367 and grade `C' as per IS: 1363) and nuts, washers etc. up to and inclusive of 39 mm diameter and upto 300mm long for structural steel work etc all complete.	Quintal	69				
2311	Providing and fixing in positing of high strength structural bolts (of property class 8.8 and product grade `C' as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class `8' as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc. up to and inclusive of 39 mm diameter and upto 300 mm long for structural steel work etc all complete.	Quintal	1439				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2312	Dismantling of steel structure, lowering of material and carriage of the dismantled material up to field fabrication shop / projects storage including temporary dismantling, cutting, re-welding, supporting, and restoring to correct position all temporarily dismantled members, re-alignment of all adjacent connected members to their correct positions (weight of such adjacent members and temporarily dismantled members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	62				
2313	Addition to, alterations in and/or modification of "Erection Marks" including cutting of parts, gauging of welds, cutting, grinding, fabrication, welding, drilling holes, straightening, removal of bends, raising to the required level, painting, transportation, return of unutilised steel pieces to the project store, temporarily dismantling, cutting, re-welding, supporting and restoring to correct position of all the temporarily dismantled members, realignment of adjacent connected members (weight of such temporarily dismantled and adjacent members not payable) etc all complete for the following:						
a	In erected position	MT	21				
b	In fabrication yard	MT	45				
2314	Re-erection of dismantled fabricated structural steel members including carriage of modified "Erection Marks" from the field fabrication shop to erection site, lifting to required posiion, 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 members not payable), scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc all complete.	MT	52				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A2316	Supply, fabrication and erection of minimum 6 mm thick stainless steel liner of grade SS 316 L; Finish Grade 2B (Cold rolled, Annealed & Pickled and Skin passed) on M.S. plate for inside surfaces of hopper & mouth of hopper of bunkers including fixing with stainless steel studs, bolting (including countersunk), welding with electrode classification E308L for welding of stainless steel to stainless steel and E309 for stainless steel to mild steel etc. all complete.	MT	198				
2317	Providing and fixing in position PTFE type sliding bearings of reputed manufacturer, individual bearing suitable for required vertical loads as per the construction drawings and for maximum displacement of ±50 mm including all taxes, duties, transportation, installation, drilling, bolting, erecting, aligning etc all complete for following vertical loads.						
a	20 Tons	EACH	5				
b	25 Tons	EACH	5				
c	40 Tons	EACH	16				
d	50 Tons	EACH	4				
e	60 Tons	EACH	20				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2318	Providing and fixing flexible open ended bellow strap of neoprene of minimum thickness 2 mm and minimum width 200 mm with aluminium stripped edges as sealing below top of bunker and bottom of tripper floor to avoid the coal dust nuisance all complete.	RM	720				
A2319	Supply, fabrication and fixing of stainless steel hand railing including transportation, loading/unloading etc. all complete as per specification.	MT	18				
A2320	Supply, fabrication and fixing of GI pipe hand railing (1000 mm high) of 32 mm/40 mm/50 mm dia (Medium Grade) including transportation, loading/unloading, painting etc. all complete..	MT	72				
2321	Conducting radiography test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	194				
2322	Conducting ultrasonic test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	144				
2323	Conducting ultrasonic test on steel plates as per ASTM-A435 or equivalent wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	SQM	144				
2324	Conducting magnetic particle test on welds wherever specified including equipments, measuring devices, gauges, test report etc. all complete.	RM	144				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2325	Conducting dye penetration test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges etc. all complete (over and above the work already specified in the specifications.)	RM	404				
	ROAD WORKS						
	Providing Road Work including necessary material, labour, machinery, transportation etc as per specification, drawing, relevant IRC & IS codes and as directed by the Engineer-in-charge for the following.						
2401	Preparation of sub grade by excavating earth to required depth for all types of soil/ash, dressing to camber and consolidating the base including making good the undulation etc and disposal of surplus earth within a lead upto 1 km etc. all complete.	CUM	59000				
A2402	Supplying and filling with selected good earth of approved quality in layers not exceeding 300 mm loose thickness using borrowed soil (borrowed soil to be arranged by the bidder) and compacted so as to achieve at least 98 % maximum dry density as per IS-2720 (Part-VII) including royalty/seignorage fee (if any), sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, teting etc all complete.	CUM	57600				
2404	Providing & laying water bound macadam sub base course in layers of required thickness with crushed stone aggregates 90 to 40 mm down size, stone screening & blinding material including screening, sorting, spreading to template & consolidation with road roller including carriage, spreading & consolidation of blinding material moorum etc all complete.	CUM	13195				
2405	Providing & laying water bound macadam base course in layers of required thickness with stone aggregate 63mm to 40mm size, stone screening and blinding material including screening sorting, spreading to template and consolidation with road roller including carriage, spreading and consolidation of blinding material moorum etc all complete.	CUM	8797				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2412	Supplying and laying 400mmx100mmx375mm deep precast concrete kerb stone of grade M-20 with 20 mm nominal size stone aggregate and of shape as per detailed drawing including fixing with cement mortar (1:2) in 13mm thick joints, finishing of joints with neat cement paste, making drainage opening where required etc all complete.	RM	29700				
2413	Providing & laying edge protection on both edges of black topping using brick on edge (bricks with crushing strength of 75 kg/cm ²) with full brick width (230 mm) etc all complete.	RM	11790				
A2414	Supply and laying 150mm dia R.C.C NP-3 type Hume pipe in raised shoulders as rain water drains as per detailed drawing including fixing with cement mortar (1:2) in 13mm thick joints, finishing of joints with neat cement paste etc all complete.	RM	4445				
2415	Providing and fixing PVC pipes in cable duct banks, openings in RCC work at all elevations of following sizes including cutting, fixing and levelling in position as per drawings, specifications all complete.						
	i) 100 mm dia	RM	2017				
	ii) 150 mm dia	RM	2017				
	iii) 200 mm dia	RM	2017				
	Providing and placing concrete work including cost of labour, materials and equipment for handling, transportation, batching, mixing, placing, vibrating, shuttering, formwork and curing (excluding cost of reinforcement), with mechanised equipments like batching plant, transit mixer, concrete pump etc. complete as per drawing, specification and as per direction of engineer in charge for the following.						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2418	Providing and laying of plain cement concrete of grade M15 using 40 mm graded stone aggregate including providing and fixing formwork, compaction etc. all complete	CUM	7350				
A2418	Providing and laying of plain cement concrete of grade M20 using 40 mm graded stone aggregate including providing and fixing formwork, compaction etc. all complete	CUM	3518				
2419	Providing and laying cement concrete of grade M30 using 20 mm nominal size stone aggregate with approved admixture (if required), provision for necessary joints including compaction, finishing to lines and grades, curing and providing & fixing forwork etc. all complete. (Excluding the cost of reinforcement and dowel bar)	CUM	18412				
REINFORCEMENT							
2421	Providing and fixing in position MS dowel bar reinforcement including surface painted with bitumen and greasing, dowel end caps with cotton fills etc all complete as per specification, drawing and as directed by Engineer.	MT	66				
MISCELLANEOUS							
A2424	Supplying and installation of Dura board HD100 or its equivalent as approved by the Engineer, as filler material in joints including nailing, installation as per manufacturer's recommendation etc. all complete.						
b	20 mm wide joints.	RM	1250				
2425	Providing and filling in position hot applied bitumen sealing compound (Grade A) of specified thick confirming to IS 1834 including cleaning, mixing, heating, pouring/injecting sealing compound in gaps in joints, sealant primer etc all complete as per specification, drawing and as directed by Engineer.	RM	38632				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
A2427	Providing & laying 80 mm thick M20 Grade precast interlocking concrete pavers of approved colour and pattern as per specification and recommendation of manufacturer.	SQM	22125				
B2427	Providing & laying 60 mm thick M20 Grade precast interlocking concrete pavers of approved colour and pattern as per specification and recommendation of manufacturer.	SQM	22125				
A2428	Providing and laying 100mm thick sand layer below concrete pavers including compaction etc all complete as per specification, drawing and as directed by Engineer.	SQM	44250				
2429	Providing and laying Impermeable plastic sheeting 125 microns thick laid flat without creases as per IRC 15-2002 etc all complete as per specification, drawing and as directed by Engineer.	SQM	73650				
2430	Providing and laying Inverted Choke with 25 mm course of screenings (Grading-B) over prepared subgrade including compaction etc all complete as per specification, drawing and as directed by Engineer.	CUM	2200				
2500	PILING						
2501	Mobilisation of hydraulic rotary piling rigs (applicable to ST No 2503) and accessories capable of pile boring/drilling in all types of strata/installing various size of bored cast in situ RCC piles to project site and demobilisation of the same after completion of piling works etc all complete.	Each	6				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2502	Mobilisation of Driven cast in situ RCC piling rigs (applicable to ST No 2503A) and accessories capable of installing 550mm diameter piles in all types of soil to project site and demobilisation of the same after completion of piling works etc all complete.	Each	6				
2503	Installation of Bored cast-in-situ RCC vertical pile as per IS 2911 (Part 1 Sec 2) with diameter and length as specified (length to be measured from pile cut-off level to the bottom of pile) using cement concrete grade M30 conforming to IS:456 with 20 mm nominal size stone aggregates with a minimum cement content of 400Kg per cum of concrete including providing all materials (but excluding reinforcement steel for which measurement/payment shall be made separately), boring/drilling in all types of soil, 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 including empty boring from ground level to pile cutoff level etc all complete as per specification, drawing and as directed by the engineer-in-charge for the following.						
Ad	Pile with 600 mm diameter and 25 m length below cut off level	Each	1240				
e	Pile with 760 mm diameter and 25 m length below cut off level	Each	2681				
2503A	Installation of driven cast-in-situ RCC vertical pile as per IS 2911 (Part 1, Sec. 1) by driving a suitable MS casing pipe (removable) having detachable MS shoe (flat/conical) at the bottom and driving using atleast 5 MT hammer for the length as specified (length to be measured from pile cut-off level to the bottom of pile)/for the desired set criteria (to be finalised during contract stage) so as to achieve the desired design load carrying capacity using cement concrete grade M30 conforming to IS:456 with 20 mm nominal size stone aggregates with a minimum cement content of 400Kg per cum of concrete including providing all materials (but excluding reinforcement steel for which measurement/payment shall be made separately), providing plasticiser wherever required, breaking pile head to cut off level and exposing pile reinforcement for embedment in pile cap, empty driving etc including providing approved MS shoe(design and drawing of MS shoe shall be submitted by bidder for approval without extra cost to BHEL/Owner) etc all complete as per specification, drawing and as directed by the engineer-in-charge for the following.						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
Aa	Pile with 550 mm diameter and 20 m length below cut off level	Each	4146				
2503AA	Installation of Bored cast-in-situ RCC vertical pile as per IS 2911 (Part 1 Sec 2) with diameter and length as specified (length to be measured from pile cut-off level to the bottom of pile) using cement concrete grade M35 conforming to IS:456 with 20 mm nominal size stone aggregates with a minimum cement content of 400Kg per cum of concrete including providing all materials (but excluding reinforcement steel for which measurement/payment shall be made separately), boring/drilling in all types of soil, 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 including empty boring from ground level to pile cutoff level etc all complete as per specification, drawing and as directed by the engineer-in-charge for the following.						
e	Pile with 760 mm diameter and 26 m length below cut off level	Each	250				
2504	Extra over ST. No. 2503 for pile length more than the specified length of 25m below cut off level for the following.						
c	For 600 mm diameter pile	Rm	2240				
d	For 760 mm diameter pile	Rm	2681				
2504A	Extra over ST. No. 2503A for pile length more than the specified length of 20m below cut off level for the following.						
b	For 550 mm diameter pile	Rm	4146				
2504AA	Extra over ST. No. 2503AA for pile length more than the specified length of 26m below cut off level for the following.						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
d	For 760 mm diameter pile	Rm	25				
2505	Rebate on ST.No.2503 for pile length less than the specified length of 25m below cut off level for the following.						
c	For 600 mm diameter pile	Rm	740				
d	For 760 mm diameter pile	Rm	2681				
2505A	Rebate on ST.No.2503A for pile length less than the specified length of 20m below cut off level for the following.						
b	For 550 mm diameter pile	Rm	4146				
2505AA	Rebate on ST.No.2503AA for pile length less than the specified length of 26m below cut off level for the following.						
d	For 760 mm diameter pile	Rm	25				
2508	Conducting routine load test on single job pile as specified in accordance with IS 2911 (Part-4) including preparation of pile head for testing, necessary excavation, providing all arrangements of loading, unloading, test equipments/accessories, jacks, recording of results, labour, submission of test report etc but excluding the cost of installation of job pile complete as per specification, drawing and as directed by the engineer-in-charge for the following.						
a	For vertical compression test by maintained load method						

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
ii	550 mm diameter pile	Each	62				
iii	600 mm diameter pile	Each	11				
iv	760 mm diameter pile	Each	40				
b	For lateral load test						
ii	550 mm diameter pile	Each	62				
iii	600 mm diameter pile	Each	11				
iv	760 mm diameter pile	Each	40				
c	For tension/uplift test						
ii	550 mm diameter pile	Each	62				
iii	600 mm diameter pile	Each	11				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
iv	760 mm diameter pile	Each	40				
2509	Carrying out low strain pile integrity test on 600mm/760mm diameter pile including all arrangements for test, equipments/accessories, materials, labour, submission of test report etc but excluding the cost of installation of job pile all complete as per specification and as directed by the engineer-in-charge.	Each	3421				
2512	Driving a 550mm diameter empty MS casing pipe with bottom closed with approved detachable MS shoe down to a maximum depth of 30m below ground level using at least 5MTweigh drop hammer and furnishing the set calculation to establish a safe load carrying capacity in vertical compression including providing detachable MS shoe etc all complete	Each	18				
2513	Conducting Dynamic cone penetration Test at specified locations as per IS-4968,Part-II for a maximum depth up to 28m below ground level and submission of approved test report etc as per specification. The rate shall include mobilization of necessary testing equipments etc to the project site and demobilization of same after completion of tests.	EACH	210				
2514	Conducting Dynamic cone penetration Test at specified locations as per IS-4968,Part-II for a maximum depth greater than 28m and up to 32m below ground level and submission of approved test report etc as per specification. The rate shall include mobilization of necessary testing equipments etc to the project site and demobilization of same after completion of tests.	EACH	150				
2515	Conducting Dynamic cone penetration Test at specified locations as per IS-4968,Part-II for a maximum depth greater than 32m and up to 35m below ground level and submission of approved test report etc as per specification. The rate shall include mobilization of necessary testing equipments etc to the project site and demobilization of same after completion of tests.	EACH	10				
2600	Levelling and Grading						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
2601	Earth work in stripping of top soil upto a maximum depth of 0.20m below ground level so as to exclude all debris, grass, vegetation, bushes, trees having girth upto 300mm including roots and organic materials etc for leveling and grading including dressing to specified levels & grades and compacting the graded/stripped surface by manual/mechanical means, disposal of stripped materials within a lead upto 1km etc all complete as per specification, drawing and as directed by the engineer-in-charge.	Sq.m	240666				
2602	Earth work in filling upto any depth below ground level for grading to proper grade and level in layers not exceeding 300 mm loose thickness with approved good quality murrum (murrum is a borrowed material to be arranged by the bidder) and compacted as specified including supplying murrum, royalty/seignorage fee (if any), sorting, spreading, breaking clods, watering, ramming/compaction by manual/mechanical means, dressing, finishing to required lines, grades and slopes, tesing, all lead and lifts etc all complete as per specification, drawing and as directed by the engineer for the following. Rate to include compaction of ground before starting filling using road roller of 12 T.						
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VIII)	CUM	650000				
2603	Extra over ST No.2601 for carriage of unserviceable material/earth for every 1 km or part thereof beyond an initial lead of 1km.	Cum	48133				
	MISCELLANEOUS						
E1	Consolidation of subgrade/ existing surface with 12 T power roller or vibromax including dozing of dumped ash/earth and making good the undulations with ash and rerolling the subgrade for road, hard surfacing of equipment store, fabrication yard, assembly yard etc as directed by BHEL.	SQM	50000				

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Package 2 - Main Paint Civil, Structural and Architectural Work, Piling and Levelling and Grading

ST. NO	DESCRIPTION OF ITEM	UNIT	Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
E2	Providing and laying stone for making erection roads, hard surfacing etc with specified sizes of approved quality hard rock rubble or hand broken hard metal of sizes ranging from 100mm to 150mm, etc in one layers approximately 200mm total thickness including moorum after compaction, hand packing, filling in interstices with quarry spalls/ moorum and providing a morrum layer of 25mm thickness (consolidated) including watering, thoroughly compacting layer with 12 tonne power roller or vibromax with minimum 8 passes etc all as per the direction of the engineer and as per specification.	CUM	1000				
E3	Spreading and laying available ash/earth in layers, levelling, compacting with Vibromax or suitable equipment for making it fit to receive a layer of moorum or placement of plates for movement of cranes/heavily loaded trailer etc.	CUM	1000				
E4	Providing and fixing Green Net over erected structure to prevent ingress of ash dust in designated areas. (frame work shall be paid in respective item)	SQM	1000				
	TOTAL						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantit	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1	Earth work in <u>excavation in all types of soil</u> including moorum, ash which can be excavated by any means including setting out, levelling, dewatering (but excluding special type of dewatering viz. well point method), shoring & strutting (wherever required), dressing the sides & bottom, all lifts, ramming/compacting the excavated bottom, stacking, disposal of surplus excavated materials within a lead upto 500 m, spreading/levelling of disposed materials etc all complete for following depths below ground level including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge						
a	Depth from ground level but not exceeding 2 m	cum	7545				
b	Depth exceeding 2 m but not exceeding 4 m	cum	6700				
c	Depth exceeding 4 m but not exceeding 6 m	cum	5910				
d	Depth exceeding 6 m but not exceeding 8 m	cum	1625				
2	Extra over Item No. 1 for <u>dewatering of ground water by well point method</u> as per IS 9759.	cum	7500				
7	<u>Back filling</u> upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness using/with selected materials <u>from compulsorily excavated soil</u> & ash available within a lead upto 500m and compacted as specified including re-excavation of stacked earth, watering, ramming/compaction by manual/mechanical means, dressing etc all complete.for the following including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantit	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	cum	5730				
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	200				
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	200				
8	<u>Back filling</u> upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness <u>using/with selected materials directly from excavation</u> and compacted as specified including watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.						
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	cum	500				
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	100				
g	Extra over item No. 1 and 3 to 7 for <u>carriage of excavated earth/selected materials</u> for every 1 km or part thereof beyond an initial lead of 500m.	cum	14765				
10	<u>Back filling</u> upto any depth below ground level around foundations, plinths, trenches, drains etc to proper grade and level in layers not exceeding 250 mm thickness <u>using/with approved borrowed soil</u> (borrowed soil/ morrum to be arranged by the bidder) and compacted as specified including supplying borrowed soil, royalty (if any), watering, ramming/compaction by manual/mechanical means, dressing etc all complete for the following including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer- in-charge.						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantit	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
a	Each layer compacted so as to achieve at least 95% maximum dry density as per IS-2720 (Part-VII)	cum	1800				
b	Each layer compacted so as to achieve at least 90% maximum dry density as per IS-2720 (Part-VII)	cum	200				
c	Each layer compacted so as to achieve at least 85% maximum dry density as per IS-2720 (Part-VII)	cum	200				
11	<u>Supplying and filling sand</u> upto any depth below grade slab, around foundations, etc. in layers not exceeding 250 mm thickness and compacted so as to achieve at least 80% relative density as per IS-2720 (Part-XIV) including spreading, watering, ramming/compaction by manual / mechanical means, dressing, royalty (if any) etc. all complete including necessary men/women, materials, equipment, loading, transportation, unloading etc as per specification, drawing and as directed by engineer-in-charge.	cum	395				
12	<u>Supplying and laying</u> (inside chimney in the space below the grade level slab) <u>crushed rock</u> (63mm down graded) and sand fill in layers no more than 150 mm thick each and thoroughly compacted by compacting equipment and by water flooding to achieve maximum density for all leads and lifts including all labour, materials, equipment etc. complete as per drawings, specifications and directions of the Engineer.	cum	650				
13	Providing and laying <u>Nominal Mix plain cement concrete (1:3:6)</u> with graded aggregate (with maximum size of coarse aggregate not exceeding 40 mm) at all levels for all kinds of <u>work like mass concrete, lean concrete, mudmat, filling</u> etc. including labour, materials, equipment, handling, transporting, batching, curing, testing etc. all complete as per specifications, drawings and instructions of the Engineer.	cum	335				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
14	Providing and laying <u>design mix cement concrete</u> with graded aggregate (maximum size of coarse aggregate not exceeding 20 mm) <u>for reinforced concrete work</u> at all levels for all kinds of work, including labour, materials, equipment, handling, transporting, batching, mixing, placing, levelling, compacting, curing, testing etc. and rendering or cleaning and finishing the exposed surface with cement mortar (1:3) to give smooth and even surface, all complete as per specifications, drawings and instructions of the Engineer, but excluding all formwork and reinforcing steel:						
i	For all works below ground level (except chimney shell)						
b	Grade M-30 (foundations, etc)	cum	12900				
ia	Extra over St. No. 14(i) for controlling of temperature of fresh concrete for raft/pilecap to less than 23 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	6450				
ii	For all other works						
a	Grade M-20 (grade level slab)	cum	120				
b	Grade M-30 for chimney shell, corbels and external platforms and other shell attachments.	cum	155				
c	Grade M-35 for chimney shell, corbels and external platforms and other shell attachments.	cum	15890				
d	Grade M-25 for all other components of the super structure, roof slab, mini shells, beams, columns wall etc.	cum	20				
15	Providing and applying <u>two coats of bitumen</u> grade 85/25 as per IS 702 (@ 1.7kg/sqm) with 1% antistripping compound conforming to IS 6241 in foundation, shell, pedestal etc <u>on concrete surfaces exposed to soil / ash</u> including surface preparation etc. all complete.	Sqm	2930				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
16	Providing and placing reinforcement, for reinforced concrete work, at all levels, for all kinds of work, including transportation, cleaning, derusting, straightening, cutting, bending, binding in position with annealed wire and/or welding, providing concrete cover blocks, pins, separators, chairs, supports for reinforcement, etc. with all materials, labour, equipment, handling, transporting, testing, etc. preparation of bar bending schedules, all complete as per specifications, drawings and instructions of the Engineer.						
i	For all works below ground level (except chimney shell)						
a	High strength deformed bars	Mt	1450				
ii	For all other works						
a	Mild steel reinforcement bars	Mt	100				
b	High strength deformed bars	Mt	1550				
16 (a)	Extra over ST No.16 for providing fusion bonded epoxy coating by mechanised & qualified process including blast cleaning to white metal as per Swedish code, heating in induction heater, electrostatically spraying the epoxy powder, complete fusion to give minimum coating thickness of 200-300 microns, gradual cooling without affecting the properties of steel, testing as per ASTM 775 and IS:13620, flexibility & holiday test, proper packing, safe transportation, touchup at site, etc. complete to ensure proper resistance of FBE against corrosive environment including transport of the steel from BHEL site store to vendor plant and bringing back to site and special handling during straightening, cutting, bending, placing and providing PVC coated binding wire.						
i	For all works below ground level (except chimney shell)						
a	High strength deformed bars	Mt	1450				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
ii	For all other works						
a	Mild steel reinforcement bars	Mt	100				
b	High strength deformed bars	Mt	1550				
17	Providing and fixing <u>formwork</u> of approved quality for cast-in-situ, plain or reinforced concrete works of any type and section (including curved surfaces and chimney shell) for all elevations, including labour, materials, equipment, waste of forms, shoring, strutting, scaffolding, staging, tying, nailing, caulking, bolting etc. and removal of form work and staging etc. all complete as per specifications, drawings and instructions of the Engineer.						
	For all works below ground level (except chimney shell)	Sqm	3165				
	For all other works						
a	Inner and outer faces of wind shield with slip form shuttering	Sqm	39265				
b	All other components of the superstructure including slabs, beams, columns, walls, enclosures, mini shells, external platforms, corbels, other shell attachments, chases/recesses in shell etc.	Sqm	930				
18	Providing and fixing <u>formwork in shell openings</u> (above 0.1 sq.m surface area) including cutting, formation of shapes and all other operations required for making the required shape and size, removal of formwork, all complete as per specifications, drawings and instructions of the Engineer.	Sqm	150				
19	Providing and placing in position at all levels, <u>building paper (kraft paper)</u> , as per IS:1397, between concrete surfaces including the cost of labour, material, etc. complete as per drawings and instruction of the Engineer.	Sqm	80				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantit	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
20(A)	Supplying and installation of <u>Dura board HD100</u> or its equivalent as approved by the Engineer, as filler material in joints including nailing, installation as per manufacturer's recommendation etc. all complete.						
a	12 mm wide joints. SQM	Sqm	40				
21	Providing and filling, at all levels, <u>bitumen sealing compound</u> (hot applied type) conforming to IS:1834, for sealing gaps and joints in concrete, including cleaning, mixing, heating, pouring or injecting, application of primer, cost of all labour, material and equipments etc., complete as per drawings, specifications and instructions of the Engineer.	Kg	605				
22	Preparing detailed fabrication drawings and after approval by the Engineer, supplying, fabricating, erecting and installing <u>miscellaneous steel parts to be embedded/cast in concrete</u> (like staircase embedments, corbel face plates, etc) at all positions and levels including the cost of all labour, materials and equipments for setting materials in concrete, grouting, welding, bolts & bolting, expansion anchors, drilling, cutting, etc. complete as per drawings and specification.	Mt	6				
23	Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting <u>structural steel work</u> for the stair case (from grade level to roof level), internal platforms, walkway gallery structures, chequered plate panels (for floors of internal and external platforms), treads and landings of the staircase including brackets, kick plates, structural members, beam support bearings on the shell, stiffeners, seats, blockouts, ready to bolt fixtures, cost of all labour, material and equipment, transporting, lifting to all heights, setting in place, welding to cast in fixing place, cutting, grinding, drilling, bolts and bolting, anchor fasteners, welding, preheating and post heating for welding, testing, primer and finish painting etc. complete as per drawing and specifications.	Mt	450				
24 (a)	Supplying, fabrication, erection and alignment of factory made <u>galvanised grating units</u> with mild steel conforming to IS:2062 in platforms, staircases with edge binding strips and anti-skid nosing in treads etc. including including hot dip galvanisation as per IS:4759, fixing clamps, fittings, fixtures, all taxes, duties, packing, grinding, drilling, welding, edge preparation, etc. all complete.	Mt	125				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantit	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
25	Providing and fixing in positing of <u>high strength structural bolts</u> (of property class 8.8 and product grade `C` as per IS: 1367) and conforming to IS: 3757 and high strength structural hardened and tempered nuts (of property class `8` as per IS:1367) conforming to IS:6623 with hardened and tempered washers as per IS:6649 etc. up to and inclusive of 39 mm diameter and upto 300 mm long for structural steel work etc all complete.	Quintal	50				
26	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and erecting, at all levels, structural steel flues (liners) ,(Structural steel sections to be used for flue shall be corrosion resistant steel type " COR-TEN-B" having an yield stress 250MPa conforming to IS 2062 (E250) of minimum thickness 10mm unless noted, complete with all bends, flanges, stiffeners, all other flue attachments, support system, collars, access manholes and gas sampling ports alongwith gaskets and other accessories, staying system, including the cost of all labour, material and equipment, transporting, lifting to all heights, setting in place, cutting, grinding, drillings, bending, bolts and bolting, welding, preheating and post-heating for welding, testing, etc. complete as per drawings and specifications.	Mt	1275				
27	Providing, fabricating and installing at various locations and elevations of the chimney system the following <u>miscellaneous mild steel items</u> complete with the cost of all labour, material and equipment, transporting, lifting, setting in place, cutting, grinding, drilling, welding, bolts and bolting, anchor fasteners and anchoring, priming, painting, grouting etc. complete as per drawings and specifications:						
a	Mild steel ladders with cage, hood access hatch, louvers, bird screens, hood drain basin covers and other miscellaneous mild steel items not specifically mentioned.	Mt	17				
b	32/40 mm nominal bore medium class tubular hand railing for stair case and internal and external platforms.	Mt	41				
c	Providing minimum 275 gsm Hot dipped galvanisation on mild steel parts as per specification.	Mt	5				
d	Providing Hot dipped galvanisation on mild steel parts as per specification/IS: 4759.	Mt	55				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
28	Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting, at all levels, <u>mild steel strakes</u> complete with all stiffeners, attachments, fasteners, pipe sleeves, etc. including the cost of all labour, material and equipment, transporting, lifting to all heights, setting in place, embedding components in concrete, fixing to cast-in embedments, cutting, grinding, drilling, bolts and bolting, welding, preheating and post heating for welding , testing, grouting, primer and finish painting of exposed components, etc. complete as per drawing and specifications.	Mt	25				
29	Supplying, fabricating and <u>installing in the liners, gas sampling and gas opacity measurement ports</u> made from SS grade 316L pipe including the cost of all labour, materials, bolts and bolting, asbestos gaskets, cover plates & all other accessories, painting etc., complete as per drawings and specifications.	Each	10				
30	Preparing detailed fabrication drawings after approval by the Engineer, providing, fabricating and erecting, at all levels <u>SS Mini Shell</u> at roof shell of grade A316L , etc. complete as per drawing and specifications.	Mt	32				
31	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing at all levels, <u>stainless plates</u> (including stainless steel screws and fasteners) of grade AISI 316L <u>and lead sheets beams</u> and over the mild steel in the platform beam bearing, flue supports bearings, flue restraints brackets/ buffers etc. including the cost of all labour material & equipment, transporting, lifting to all heights, setting in place, cutting, grinding, drilling, welding of stainless steel using compatible & approved stainless steel electrodes, testing & machining flat and polishing the contact surfaces of stainless steel, coating the polished surfaces with silicone grease, etc., complete as per drawings and specifications.						
a	Stainless steel components.	Mt	0.24				
b	Lead Sheets.	Kg	80				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantit	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
32	Preparing detailed fabrication drawings and after approval by the Engineer, providing, fabricating and installing <u>expansion compensator joints</u> including bolster in the flue liner including all labour, material and equipment transporting, hoisting, fixing in position, drilling, cutting, bolts and bolting, etc. along with the user handbooks (giving details of installation, dismantling and maintainance procedures for the expansion joints), testing, etc complete as per drawings and specifications.	Sqm	160				
33	Supplying ,Fabricated Ready to Install, <u>spare expansion compensators</u> alongwith bolster including the cost of all labour, material and equipment, accessories, transporting, proper packaging (for several years of storage), and delivery to site store complete in all respects as per drawings and specification.	Sqm	45				
34	Supplying and laying in position <u>shaped acid resisting bricks</u> conforming to class - I of IS:4860 at all elevations for liner, baffle wall construction (with sloped A/R mortar toppings over brick work) complete including the cost,of all labour, material and equipment, raking joints, flush pointing, cleaning, curing, etc. complete as per drawings and specifications.	Cum	25				
35	Supplying and laying in position <u>shaped fire bricks</u> conforming to IS-6 group A at all elevations for liner, baffle wall construction (with sloped A/R mortar toppings over brick work) complete including the cost,of all labour, material and equipment, raking joints, flush pointing, cleaning, curing, etc. complete as per drawings and specifications.	Cum	25				
37 (a)	Supplying, and placing in position <u>Load bearing insulation assembly</u> including (i) a properly machined mild steel plate with recess at its top for seating PTFE (Poly Tetra Fluoro Ethylene) sheets conforming to BS:5400 (ii) saddle plate (MS) in the middle having stainless steel plate fixed at its bottom surface and lead / elastomeric sheet at top, and (iii) top late formed of two numbers insulation blocks each made of minimum 50 mm thick rigid, non-combustible asbestos fibre reinforced lime-silica board (SINDANYO BLOCKS NATURAL GRADE CS-51) or equivalent bonded to mild steel plates at top and bottom. For side restraints assembly of insulation blocks of SINDANYO Natural Grade CS-51 or equivalent and stainless steel plate shall be used. All stainless steel in these assemblies shall conform to AISI-316L and mild steel to IS:2062. SINDANYO BLOCKS or equivalent shall be suitable for operation at 320oC and shall primarily satisfy the following physical properties: i) Minimum compressive stress prior to onset of compression yield of not less than 12 N/sq.mm. ii) Minimum shear strength of 30 N/sq.mm when tested in accordance with BS:3497-1979. iii) Thermal conductivity shall not exceed 0.67 W/m Deg.C at a mean temperature of 200oC and its coeff. of linear expansion not to exceed 1.2x10 ⁻⁵ per Deg.C. iv) Adhesive used for bonding purposes shall be of material with equivalent high temperature properties as approved Foundation Engineer. It may be of "Fortafix	Nos.	64				
38	Supplying and laying <u>vermiculite concrete</u> in the liner basin including the cost of all labour, material and equipment for handling, transporting, mixing, lifting, placing, curing, finishing of surface etc. complete as per drawings and specifications.	Cum	5				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
42	Supplying and installing ready mix castable refractory concrete at opening of chimney shell baffle wall and at other locations including all necessary arrangement for keeping them in position as per drawings and approval of Engineer.	Cum	5				
44	Providing, fabricating and laying in position asbestos mill boards, over the mini shells below the cast iron cap segments, in between the cap segments and wherever as directed by the engineer, including the cost of all labours, material and equipment, cutting, drilling, etc., complete as per drawings and specifications.						
a	25 mm thick asbestos mill boards.	Sqm	15				
46	Providing and installing, at all levels, resin bonded glass wool insulation slabs of density not less than 64 kg/m ³ with an installed thickness of not less than 100 mm, on the outside surface of steel flue liners, on the outside surface of brick liner, on the inside surface of concrete windshield, inside surface of concrete minishells, under the cast iron caps and wherever as directed by the Engineer, in two layers (each 50 mm thick) including the cost of all labour, material and equipment, transporting, lifting to all heights, etc., inclusive of plated or galvanised accessories such as pins/studs/anchors/wire netting, speed washers, tying wires, etc. welding of pins/studs to steel surfaces or embedding of pins/studs/anchors in concrete surfaces, fixing, cutting, cutting, lapping, binding, testing, etc. complete as per drawings and specifications.	Sqm	4050				
46 (a)	Providing and installing, at all levels, resin bonded glass wool insulation slabs of density not less than 64 kg/m ³ with an installed thickness of not less than 50 mm, on the outside surface of steel flue liners, on the outside surface of brick liner, on the inside surface of concrete windshield, inside surface of concrete minishells, under the cast iron caps and wherever as directed by the Engineer, in two layers (each 25 mm thick) including the cost of all labour, material and equipment, transporting, lifting to all heights, etc., inclusive of plated or galvanised accessories such as pins/studs/anchors/wire netting, speed washers, tying wires, etc. welding of pins/studs to steel surfaces or embedding of pins/studs/anchors in concrete surfaces, fixing, cutting, cutting, lapping, binding, testing, etc. complete as per drawings and specifications.	Sqm	2030				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantit	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
47	Providing and installing, at all levels, <u>resin bonded rock wool insulation</u> slabs of density not less than 100 kg/cu.m with an installed thickness of not less than 100 mm, on the outside surface of steel flue liners, on the outside surface of brick liner, on the inside surface of concrete windshield, inside surface of concrete minishells, under the cast iron caps and wherever as directed by the Engineer, in two layers (each 50 mm thick) including the cost of all labour, material and equipment, transporting, lifting to all heights, etc., inclusive of plated or galvanised accessories such as pins/studs/anchors/wire netting, speed washers, tying wires, etc. welding of pins/studs to steel surfaces or embedding of pins/studs/anchors in concrete surfaces, fixing, cutting, cutting, lapping, binding, testing, etc. complete as per drawings and specifications.	Sqm	4050				
47 (a)	Providing and installing, at all levels, <u>resin bonded rock wool insulation</u> slabs of density not less than 100 kg/cu.m with an installed thickness of not less than 50 mm, on the outside surface of steel flue liners, on the outside surface of brick liner, on the inside surface of concrete windshield, inside surface of concrete minishells, under the cast iron caps and wherever as directed by the Engineer, in two layers (each 25 mm thick) including the cost of all labour, material and equipment, transporting, lifting to all heights, etc., inclusive of plated or galvanised accessories such as pins/studs/anchors/wire netting, speed washers, tying wires, etc. welding of pins/studs to steel surfaces or embedding of pins/studs/anchors in concrete surfaces, fixing, cutting, cutting, lapping, binding, testing, etc. complete as per drawings and specifications.	Sqm	2030				
47 ©	Providing and installing, for the exposed portion of flue at the top, the insulation material, having a minimum density of 200 kg/cum, consisting of 6 layers of insulation material each of a minimum thickness of 25 mm and all joints shall be staggered, wherever as directed by the Engineer, including the cost of all labour, material and equipment, transporting, lifting to all heights, etc., inclusive of plated or galvanised accessories such as pins/studs/anchors/wire netting, speed washers, tying wires, etc. welding of pins/studs to steel surfaces or embedding of pins/studs/anchors in concrete surfaces, fixing, cutting, cutting, lapping, binding, testing, etc. complete as per drawings and specifications.	Sqm	500				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantit	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
48	Providing and packing, at all levels, <u>loose glass wool insulation</u> to a density not less than 64 kg/m ³ between the insulated minishells and brick liners at expan joints between the lining segments and wherever as directed by the Engineer including the cost of all labour, material and equipment, filling, ramming, testing, etc. complete as per drawings and specifications.	Cum	5				
49	Providing and packing, at all levels, <u>loose rock wool insulation</u> to a density not less than 100 kg/cu.m between the insulated minishells and brick liners at expanjoints between the lining segments and wherever as directed by the Engineer including the cost of all labour, material and equipment, filling, ramming, testing, etc. complete as per drawings and specifications.	Cum	5				
50	Providing and painting, at all levels, inside surface of chimney shell, inside and outside surfaces of minishells, underside of roof slab and other concrete components/surfaces of the chimney as indicated in the drawings and wherever as directed by the Engineer, with <u>acid and heat resisting black bituminous paint</u> (conforming to type I(i) of IS:158) in as many number of coats (not less than four coats in any case) as required to give a paint DFT of not less than 150 microns including the cost of all labour, materials, equipment, surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specifications.	Sqm	19250				
53	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <u>synthetic enamel paint</u> in alternate bands of colours 'signal red' and 'pure/bright white including the cost of all labours, material and & equipment,surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specification.	Sqm	16450				
54	Providing and painting, at all levels, the external surfaces of chimney shell and wherever as directed by the Engineer, with <u>acid and heat resistant polyurethane paint</u> in alternate bands of colours 'signal red' and 'pure/bright white including the cost of all labours, material and & equipment surface preparation, primer and finish painting, protecting, cleaning etc. complete as per drawings and specification.	Sqm	3750				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
55	Proving and laying over the <u>chimney roof, a composite acid and heat protection treatment</u> including providing of slopes for roof drainage including the cost of all labour, material and equipment, etc., complete as required for preparing the roof concrete, laying under bed of plain cement concrete screed to slopes, preparation of screed surface for painting, painting the screed surface with black bituminous paint, applying bitumenmastic in layers, laying acid resisting(A/R) mortar bed and laying 75 mm thick acid resisting(A/R) bricks with A/R mortar, curing, pointing(with phenolic based A/R cement), protection and cleaning, finishing, etc., complete as per drawing and specifications.	Sqm	270				
56	Providing, fitting& fixing, <u>outlet and overflow, cast iron roof drain heads (with gratings)</u> in chimney roof including sockets, adapters, brackets, hangers, supports, etc., casting-in and jointing to 150 mm nominal bore rainwater pipes, grouting, etc. including the cost of all labour material and equipment, transporting, lifting, setting in place, painting, etc. complete as per drawing and specifications.	Each	8				
57	Providing, fitting and fixing <u>rainwater pipes</u> at all levels internally from the chimney roof to ground level upto the hood drain basin including shoes, bends, junctions, flanges,hoppers, sockets, adaptors, brackets, hangers, supports, anchor fasteners, spacers, pipe sleeve through shell, silicon or vulcanised butyl seaant, foam backing material, jointing, socketing, grouting, caulking, primer and finish painting etc. complete including the cost of all labour, material and equipment, complete as per drawing and specifications:						
a	150 mm nominal bore <u>cast iron pipes.</u>	Rm	25				
b	150 mm nominal bore <u>medium class galvanised mild steel pipes.</u>	Rm	550				
c	150 mm nominal bore <u>UPVC.</u>	Rm	25				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
58	Providing and laying 50 mm thick <u>cement concrete flooring</u> (comprising of 12 mm thick non-metallc concrete hardener topping over 38 mm thick under bed of concrete) over the grade level slab inside the chimney, including the cost of all labour, material and equipment, etc. complete as required for preparation of base, laying underbed and topping, finishing, rounding of edges, corners and junctions, curing, testing, etc. complete as per drawing and specifications.	Sqm	790				
59	Providing and installing an <u>electrically operated grill type steel roll-up door</u> (with the bottom 0.5 metres of the curtain in solid type) at chimney base, in opening of size 7.8 m by 7.1 m, with all hardware and mechanisms, fittings and fixtures, locking arrangements, frames, fasteners, gear handle arrangement for standby manual operation, all electrical accessories such as motors, control systems, cables, etc. including the cost of all labour, material and equipment, fixing in position, grouting primer and finish painting, testing, etc., complete as per drawing and specifications.	Each	1				
60	Providing and installing at any level and location, mild steel, double plate, <u>personnel access doors</u> , in shell openings of size 1.1m by 2.15m, complete with all fittings and fixtures, locking arrangements, frames, fasteners including the cost all labour, material and equipment, lifting to all heights, setting in place, grouting primer and finish painting, etc., complete as per drawing and specifications.	Each	7				
61	Supply, fabricating and fixing of <u>cleanout door</u> of size 650X825 mm. The door should be solid steel construction with inner plate 8mm and outer plate 6mm with suitable infill of stiffners, & filled with insulation mataterial and all other fittings, fixtures, fasteners including the cost of painting etc complete as per drawings and specification. The door should be hinged type and providing with locking device in addition to swivel studs with wing nuts on remaining 3 edges. The should be openable both from inside & outside and removable insulation to be provided around door opening. The door shall be provided with a minimum two coats of acid & alkali resistant paint confirming to IS158 type-I to give a DFT of 75microns. The outside surface shall be provided with minimum 2 coats of Zinc redoxide primer and two coats of synthetic enamel paint.	Each	2				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
63	Supplying, fabricating and installing <u>mild steel/Stainless steel hatches</u> at various locations in the chimney system complete with locking arrangements, frames, insulation, fittings and fixtures and all mechanisms and accessories reqd. for proper operation including all labour, painting etc. complete as per drawings and specifications.						
a	Hood Access Hatch	Each	1				
c	Liner Access Hatch	Each	2				
64	Conducting <u>load testing on girders</u> for 1.25 times the full load, on ground , including provision of test bed and jacks, dial gauges and other supplies complete as per specification and drawings and approval of engineer in-charge.	Pair	2				
65	Designing, supplying, fabricating and installing after approval by the Engineer, <u>non-metallic expansion joints</u> to seal gaps between chimney components and to meet the service requirements as given in the specifications alongwith the cost of all components of the expansion joint, insulation, galvanised bolts, nuts, washers, anchor fasteners and retaining bars, packing materials and reinforcements at the connecting ends and flanges, lapping etc. including preparation of brick surface (to be connected to the expansion joint) with potassium silicate resisting mortar for proper leak tight bearing surface, with the cost of all labour and equipment, user hand books (giving details of installation, dismantling and maintenance procedures for the expansion joints) etc. complete as per drawings and specifications for:						
a	Expansion joint <u>between ducts and liners.</u> (2 Nos.)	Sqm	20				
66	Supplying and erecting after approval by Engineer an <u>Elevator</u> from ground upto top of chimney with landing at various platform level complete as per spec. and drawings.	Lumpsum	1				
	ELECTRICAL ITEM FOR THE BOQ						
E1	415V, 200A, 50 KA for 0.25 sec, 4 wire AC Distribution Board with 1No. incomer (SFU) & 9 nos. of 100A (TPN) outgoing complete in all respects	No.	1				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
E2	415V, 200A, 4 wire AC Emergency Lighting distribution board alongwith 50KVA lighting transformer (415/433 V, Dyn11, Z=4%, ±2x2.5% Off Ckt. Tap) with 2 nos. of incomers with auto changeover facility using contacts and 6 nos. 100A SFU (TPN) outgoing complete in all respects. In case load requirement of chimney can not be met by 50 kVA lighting transformer after considering loading of 80 to 85%, 100 kVA lighting transformer shall be provided alongwith suitably rated components without any commercial implications to the purchaser.	No.	1				
E3	Normal AC lighting panel outdoor type with degree of protection IP 65 with one no. 100A SFU (TPN) Incomer , 18 outgoing (16A SP MCBs)	No.	3				
E4	Emergency lighting panel outdoor type with degree of protection IP 65 with One no. of 100A TPN/SFU incomer and 12 outgoing (16A, SP MCBs)	No.	3				
E5	Aviation lighting panel outdoor type with degree of protection IP 65 with one no. 100A SFU (TPN) Incomer , 8 outgoing 32A SFU (TPN), photodetector and timer circuit along with 100A contactor to control aviation lighting system.	No.	1				
E6	Aviation obstruction lights :						
a)	GEC Cat. No. ZA750(L) NEON WITH minimum 20 years maintenance free life.(Low intensity (Multi LED type- B as per ICAO)	No.	16				
b)	Medium intensity flashing RED light as per ICAO standard having intensity of 2000 to 20,000 candles depending upon background illuminance & flashing frequency 40-60/min with all accessories WITH minimum 20 years maintenance free life (Medium intensity Multi LED type- B as per ICAO)	No.	12				
E7	Aviation Distribution Board (ADB) with one 32A SFU (TPN) incomer and 8 nos. SP 20A MCB. Construction is same as Lighting Panel.	Each	3				
E8	250W metal halide Flood lights with fixtures, lamps and all control gears & accessories	No.	48				
E9	Metal halide Well glass type luminaries with 70W lamp with all controlgears & accessories(Metal Halide fixtures)	No.	110				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantit	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
E10	Metal halide Well glass type luminaries with 150W lamp with all controlgears & accessories. (Metal Halide fixtures)	No.	50				
E11	63Amp welding switch socket with plug & other Mounting accessories	No.	8				
E12	3 pin, 1 ph, 240V,15Amp. Power socketscomplete with plug Switches etc.	No.	8				
E13	AL conductor, XLPE insulated, Armoured, ST-2 outer sheath, FRLS type 1100V grade conforming to IS-7098 Part I.						
a.	3½ C x95mm ² Al for connection between ACDB/ELDB/ welding sockets	RM	1400				
b.	3½ Cx35mm ² Al for Lighting panel incoming supply	RM	1000				
c.	4C x16mm ² Al Conductor, XLPE insulated, Armoured, PVC outer sheath, FRLS type 1100V grade conforming to IS-7098 Part I for connection between ALP/ADB/Aviation Lights	RM	1600				
E14	PVC insulated 1100V grade stranded Cu Conductor lighting wires conforming to IS-694 for the following.						
a)	2.5 mm ²	RM	3000				
b)	4.0 mm ²	RM	9000				
E15	GI pipe conduit with minimum 25 mm dia with GI junction boxes, GI pull boxes & accessories etc. complete in all respects.	RM	7000				
E16	PVC coated Flexible steel conduit 25mm dia with accessories	RM	500				

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Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
E17	Lightning protection Air terminal : Lead coated copper material of 20mm dia & 2 metre long each.	RM	25				
E18	Electrical equipment earthing materials including down conductors						
a)	Below ground earthing system	RM	150				
b)	Above ground earthing system	RM	1500				
E19	16 SWG GI wire for equipment earthing	RM	100				
E20	Test links for down conductors	nos.	4				
E21	Earthpit with earthing electrode including brick chamber with cover, accessories etc. complete in all respect.	nos.	4				
E22	Telephone socket with junction box etc. complete as per drawings & specifications.	Each	10				
E23	Telephone handsets complete as per drawings & specifications.	Each	10				
E24	Telephone cable (minimum 4 pair) of minimum 0.6 mm dia annealed high conductivity electro copper conductor, PVC insulated, twisted, PVC tape wrapped, screened, tip corded, PVC sheathed, confirming to relevant ITD (Indian Telephones department) specification						
a)	24 pairs	RM	150				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
b)	4 pairs	RM	300				
E25	GS cable trays. Cable trays shall be of ladder type constructed of minimum 2 mm thick mild steel hot dip galvanise including cover, cabling material, accessories etc. complete as per drawings & specifications.						
a	600 mm wide	RM	150				
b	300 mm wide	RM	150				
c	150 mm wide	RM	100				

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantit	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
Note :	1. Ambient temperature for design of all electrical equipment shall be considered as 55°C for chimney electrical system. 2. Schedule of Equipment has been indicated for reference only. All electrical items shall be supplied on as required basis. 3. All cable termination shall be with required Cable glands & lugs for complete electrical systems of Chimney.						
	MAUX ITEM FOR THE BOQ						
1.0	VENTILATION SYSTEM FOR CHIMNEY						
1.1	Centrifugal fan with casing and support with motor, dry panel type pre-filter & all fittings complete with fixing frame, inlet air louvers, bird sceen, vibration isolators for fans and local isolator control panels, Drive Pulleys, V-belt, belt guards, slide rails, Dampers at fan outlet and flexible connection with matching flanges at fan inlet and outlet, Vibration isolators (cushy foot type/neoprene rubber pad), foundation bolts and nuts etc.	Nos	3				
1.2*	MS DUCTING, DIFFUSER/GRILL WITH EXPOXY PAINT						
a)*	18 G	SQM*	500				
b)*	20 G	SQM*	500				
1.3*	MS Grilles with VCD	SQM*	20				
1.4*	Wall mounted dampers (gravity operated) for different areas.	SQM*	10				
1.5*	Inlet Louvres	SQM*	10				
	Total						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 3 - 275m Height RCC Twin Flue Steel Chimney

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
NOTE :	The bidder shall furnish unit rates for variable item (marked *) i.e., ducting, supply grilles, diffusers, gravity damper, etc for necessary adjustment (plus or minus) variation during detailed engg. stage. The unit rates quoted above shall be considered and no separate unit rates shall be quoted. Unit rates shall be valid throughout the contract.						

Tender Specification BHEL PSSR SCT 1575 for CIVIL WORKS at 2 x 660 MW ENNORE SEZ TPP

Package 4 : Cooling Tower

ST. NO	DESCRIPTION OF ITEM	UNIT	Total Quantity	Rate		Amount	
				(In fig)	(In Words)	(In fig)	(In Words)
1	Construction of Natural Draught Cooling Tower including design, manufacture, assembly, inspection and testing at manufacturer's and/or his sub-contractors works, proper packing, delivery at site, transportation, unloading/handling at site, erection, site painting, commissioning, testing of Natural draft cooling tower (NDCT) including electrical, C&I, civil & structural works, as specified & as necessary including PG test for completeness in all respects and for efficient & trouble free operation.	Nos	2				