

Tender specification

Sl no	Tender specification number	Unit number & project
1	BHE/PW/PUR/MAUDT2-STR U-4/1458	Unit 4 of 2x660 MW bunker structure

Supplying (Excluding BHEL supplied materials), Receipt, Collection & handling of materials from BHEL/CLIENT'S works/ stores/ storage yard; Transportation to erection site; Pre assembly, erection, alignment, bolting/ welding/ fastening, grouting, testing, final painting and handing over of bunker structures, raw coal bunkers, coal handling transfer points, coal conveyor galleries and its supporting trestle of bunker structures etc. at site of Unit # 4 of 2X660 MW NTPC MOUDA STPP STAGE II.

At

NATIONAL THERMAL POWER CORPORATION LIMITED (NTPC),

MOUDA

District: Nagpur

MAHARASHTRA

Price bid specification - Volume- II

Consisting of:

- Notice Inviting Tender,
- Volume-IA : Technical Conditions of Contract,
- Volume-IB : Special Conditions of Contract,
- Volume-IC : General Conditions of Contract
- Volume-ID : Forms & Procedures



Tender specification

Sl no	Tender specification number	Unit number & project
1	BHE/PW/PUR/MAUDT2-STR U-4/1458	Unit 4 of 2x660 MW bunker structure

Supplying (Excluding BHEL supplied materials), Receipt, Collection & handling of materials from BHEL/CLIENT'S works/ stores/ storage yard; Transportation to erection site; Pre assembly, erection, alignment, bolting/ welding/ fastening, grouting, testing, final painting and handing over of bunker structures, raw coal bunkers, coal handling transfer points, coal conveyor galleries and its supporting trestle of bunker structures etc. at site of Unit # 4 of 2X660 MW NTPC MOUDA STPP STAGE II.

At

NATIONAL THERMAL POWER CORPORATION LIMITED (NTPC),

MOUDA

District: Nagpur

MAHARASHTRA

EARNEST MONEY DEPOSIT: Refer Notice Inviting Tender

LAST DATE FOR TENDER SUBMISSION: Refer Notice Inviting Tender

THESE TENDER SPECIFICATION DOCUMENTS CONTAINING VOLUME-I AND VOLUME- II ARE ISSUED TO:

M/s.

.....

PLEASE NOTE:

THESE TENDER SPECS DOCUMENTS ARE NOT TRANSFERABLE.

For Bharat Heavy Electricals Limited

AGM (Purchase)

Place: Nagpur

Date:

Brief description of Job: Supplying (Excluding BHEL supplied materials), Receipt, Collection & handling of materials from BHEL/CLIENT'S works/ stores/ storage yard; Transportation to erection site; Pre assembly, erection, alignment, bolting/ welding/ fastening, grouting, testing, final painting and handing over of bunker structures, raw coal bunkers, coal handling transfer points, coal conveyor galleries and its supporting trestle of bunker structures etc. at site of Unit # 4 of 2X660 MW NTPC MOUDA STPP STAGE II.

ST. NO	DESCRIPTION OF ITEMS	UNIT	QTY	Rate (Rs) In figures	Rate (Rs) In words	AMOUNT (Rs) In figures
100	GROUTING AS PER SPECIFICATION FOR THE FOLLOWING:					
101	Providing & Grouting of pockets and underpinning work of any shape and size below base plate of columns after erection of necessary structural steel work, machinery with mix 1:1:2 (one part Cement : 1part Sand : 2 parts of 6mm down graded stone chips) at any elevation including roughening surface, cleaning, ramming, curing etc. complete (non-shrink hand grout using approved admixture) as per specification, including material arrangement by bidder and as directed by the Engineer.	CUM	8			
102	Providing & Grouting of pockets and underpinning work of any shape and size below base plate of columns after erection of necessary structural steel work, machinery with mix 1:1 (one part Cement : 1part Sand) (Crushing Strength of the grout shall generally be one grade higher than that of the base concrete, however minimum grade of grout shall be M30) at any elevation including roughening surface, cleaning, ramming, curing etc complete (non-shrink cementitious flowable grout as per specification using non-shrink cum plasticizer admixture shall be used) as per specification, including material arrangement by bidder and as directed by the Engineer.	CUM	13			
103	Providing & Grouting of pocket holes, pipe sleeves of any shape and size under base plate after erection and alignment if necessary, structural steel work, machinery at any elevations including roughening surface, cleaning, ramming, curing, etc with Conbextra GP-2 or equivalent all complete as per specifications, including material arrangement by bidder. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	CUM	5			
104	Same as item no 103 but with Conbextra GP1 or equivalent.	CUM	5			

ST. NO	DESCRIPTION OF ITEMS	UNIT	QTY	Rate (Rs) In figures	Rate (Rs) In words	AMOUNT (Rs) In figures
200	Structural steel works including Erection of material, skilled labour, material, equipments including suitable capacity gantry crane/s, crawler / Tyre mounted cranes, transportation, handling etc. at any level as per specification, drawings and as directed by engineer - in - charge.					
201	Pre assembly, erection, alignment, bolting/ welding/ fastening, grouting, testing, stability of structures, installation of temporary structures (Scaffolding, Access ladders, Working Platforms etc.), setting column bases, surface preparation, touch-up painting, dismantling and removal of all temporary structures (weight of temporary structures not payable) complete with all - labour, material,electrodes and other consumables,equipment, testing (mechanical and non-destructive), all other activities required for completion of the work including return of surplus/ waste steel materials to store etc. and handing over of bunker structures, raw coal bunkers, coal handling transfer points, coal conveyor galleries and its supporting trestle of bunker structures at project site as per specification, drawings and instructions of the Engineer.					
a)	Erection at site, preassembly of two -three pieces of columns/bunker shell before erection, erection, alignment, welding, etc. complete as per item description (201).	MT	9,609			
201 (b)	Extra over above ST NO. 201 (a) for Providing and making arrangements for erection of bunker shells by using Strand Jack Method , alignment & welding, Item includes supply of strand jacks in sets (minimum lifting capacity 50 MT per jack) connected with diesel/electric power packs,set of hydraulic hose and its accessories, set of strands, Hilman roller (if required),spare parts, specialist tools, supervisor/lifting engineer, Rigging Superintendent, Jack operators, labours, upto the specified height as per drawing. Preparation of drawing/scheme for lifting operation,design & detailing of any additional structural modificaion/fabrication,erection and welding of those structures like track beam for shifting of bunker shell pieces to the designed location,trolley,lifting lugs ,anchor plates,anchor/jack support beams,design checks for safe operation of jacks with respect to the existing/erected structural members and obtaining approval from BHEL-PEM all complete as per specification, drawings and instructions of the Engineer.-In-Charge.(BHEL crane shall be provided for feeding of bunker shell pieces at feeder floor elevation)	MT	707			
202	Providing and Applying finish coat and final finish coat of paints viz. final finish coat of Polyurethane based colour pigmented paint (solid by volume minimum 40%) of min. 25 micron DFT over finish coat of Polyamide cured colour pigmented Epoxy based paint (solid by volume minimum 60%) of minimum 40 microns DFT (Total 40+25= 65 microns) at site over and above finish product from BHEL works at all elevations to achieve an even shade with all materials, labour, equipment, handling, including protection and cleaning, scaffolding etc. complete as per specification, drawings and instructions of the Engineer. (Note: Intermediate, top and finishing coat paints shall be from same manufacturer and the paints shall have compatibility with one another). The rate shall be inclusive of total painting over the primer & intermediate coat.	MT	9,609			

ST. NO	DESCRIPTION OF ITEMS	UNIT	QTY	Rate (Rs) In figures	Rate (Rs) In words	AMOUNT (Rs) In figures
203	Supplying, fabrication, transportation, erection and alignment of factory made Electro-forged gratings with mild steel conforming to IS:2062 at all elevations including preparation of design drawings and fabrication drawings in flooring, platforms, drain and trench covers, walk-ways, passages, staircases with edge binding strips and anti-skid nosing in treads, fixing clamps etc complete with other fittings and fixtures including all taxes, duties, transportation, packing, grinding, drilling, bolting (supply of permanent grade 'C' mild steel bolts and nuts to be paid separately under ST NO. 205), all welding, edge preparation, blast cleaning of steel surfaces to near white metal surface (conforming to Sa 2 1/2 finish of Swedish Standard SIS-05-5900) followed by primer coat consisting of 2 coats of 35microns each coat of zinc-phosphate in phenolic alkyd medium . One coat to be applied at shop and the other after erection and two coats of approved colour, enamel finish paint, testing, complete as per specifications, drawings and instructions of the Engineer.	MT	8			
204	Extra over above ST NO. 203, for finishing the factory fabricated grating unit with hot dipped galvanisation @ 610gm/sqm over blast cleaned steel surfaces, as per specifications, drawings and instructions of Engineer instead of painting with 2 coats of red oxide primer followed by two coats of Enamel finish paint.	MT	20			
205	Supplying 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 39mm diameter and upto 300mm long for structural steel work complete as per specification, drawings and instructions of the Engineer.	Quintal	45			
206	Supply 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 39mm diameter and upto 300 mm long for structural steel work complete as per specification, drawings and instructions of the Engineer.	Quintal	125			
207 (a)	Erection of Stainless steel SS:304 grade liner of 4 mm thickness on M.S. plate for inside surfaces of conical hopper portion and part of vertical portion of bunkers including providing and 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 as per specification.	MT	85			
(b)	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	265			

ST. NO	DESCRIPTION OF ITEMS	UNIT	QTY	Rate (Rs) In figures	Rate (Rs) In words	AMOUNT (Rs) In figures
208	Dismantling of steel structure at any elevation, lowering of material and carriage of the dismantled material up to field fabrication shop or return to projects storage including temporary dismantling, cutting, re-welding, supporting, and restoring to correct position all temporarily dismantled members, re-alignment of all adjacent connected members to their correct positions, (weight of such adjacent members and temporarily dismantled members not payable) including scaffolding, staging, tools & tackles, gas cutting, welding, consumables etc complete as per specification, drawings and instructions of the Engineer.	MT	10			
209	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	5			
b)	In fabrication yard	MT	5			
210	Dismantling of metal sheet in cladding at any elevation, lowering of material and carriage of the dismantled material up to field fabrication shop or return to projects storage including scaffolding, staging, tools & tackles, gas cutting, welding, consumables, etc complete as per specification, drawings and instructions of the Engineer.	SQM	25			
211	Supply & Fixing in position of PTFE type sliding bearings of reputed make, individual bearing suitable for required vertical loads as per the construction drawings and for maximum displacement of +/- 50mm including all taxes, duties, transportations, installation, drilling, bolting, erecting, aligning etc., complete as per specification, drawings and instructions of the Engineer for the following:					
a)	10MT vertical load Capacity	Each	5			
b)	20MT vertical load Capacity	Each	5			

ST. NO	DESCRIPTION OF ITEMS	UNIT	QTY	Rate (Rs) In figures	Rate (Rs) In words	AMOUNT (Rs) In figures
c)	40MT vertical load Capacity	Each	13			
d)	60MT vertical load Capacity	Each	13			
211	Conducting radiography test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, tests reports , materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	50			
212	Conducting ultrasonic test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	100			
213(a)	Conducting ultrasonic test on steel plate as per ASTM-A435 or equivalent wherever specified by the engineer including provision of necessary equipment measuring devices gauges materials and labour as per specification complete (over and above the work already specified in the specification)	SQM	79			
(b)	Conducting dye penetration test on weld where specified by the engineer including provision of necessary equipment measuring devices gauges materials and labour as per specification complete (over and above the work already specified in the specification)	RM	25			
214(a)	Conducting magnetic particle test on welds wherever specified by the engineer including provision of necessary equipments, measuring devices, gauges, materials and labour as per specifications complete (over and above the work already specified in the specifications).	RM	100			
(b)	Re-erection of dismantled fabricatied structural steel members requiring additions, modification, (dismantling and additions to, alterations in and/or modification to be paid separately) including carriage of modified "Erection Marks" from the field fabrication shop to erection site, lifting to required posion, aligning in position, tack welding, final welding and touch up painting as per specs including temporary dismantling and re-erection of temporarily dismantled members, cutting, rewelding, supporting and restoring to the correct position of all temporarily dismnatled members, re-alignment of adjacent connected members, (weight of such temporarily dismantled members and adjacent membersnot payable) including scaffolding, staging, tools & tackles, gas cutting, welding, consumables, etc complete as per the specifications, drawings and instructions of the Engineer.	MT	5			
215	Supply, fabrication and fixing of GI(galvanizing at rate of 610 Gms/Sq. M as per IS:4736) MS pipe hand railing (1000 mm high) of 32 mm nominal bore dia (Medium Grade) including all members, fixtures, transportation, loading/unloading, painting etc. all complete as per the specifications.	MT	11			

ST. NO	DESCRIPTION OF ITEMS	UNIT	QTY	Rate (Rs) In figures	Rate (Rs) In words	AMOUNT (Rs) In figures
300	ERECTING ROOFING/SIDE CLADDING INCLUDING LAPS, SCAFFOLDING HOOKS, WASHERS, CORNER PIECES, ETC. LABOUR, EQUIPMENT, CLEATS, SHEETING RUNNER, RAILS MILD STEEL WIND TIES (HORIZONTAL/VERTICAL) AND ANY OTHER STEEL WORKS ETC. AT ALL ELEVATIONS COMPLETE AS PER SPECIFICATION, DRAWING AND AS DIRECTED BY THE ENGINEER FOR THE FOLLOWING:					
301	Design, supply & erection of thermally insulated sandwiched metal cladding for roofs with troughed profile permanently colour coated sheet on outside (top sheet) and plain permanently colour coated sheet on inside with 50mm thick mineral wool insulation in between the two sheets etc. with minimum purlin spacing of 1900 mm including the following. Outside sheeting of cladding system shall have troughed profile steel metal sheets with zinc coated (on both sides) to class Z275 (minimum) (as per IS:277) having minimum base metal thickness of 0.6mm of grade G275(minimum) (as per IS:513) OR troughed profile steel metal sheets coated with zinc aluminium alloy (Zn: 45 %; Al 55 %) (on both sides) at the rate of 150 Gms/Sq.M (minimum) having minimum base metal thickness of 0.5 mm of High Tensile steel(having mimimum yield strength 550 MPa), including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, water tight washers, epoxy sealant, flashing etc. all complete. Flashing shall have the same material and minimum overlap of 100 mm. Side laps & siphoning feature to prevent leakage including fixing of inner sheet to the structures. The troughed profile steel metal sheets shall be colour coated with Silicon Modified Polyester paint (SMP) (with silicon content of 30% to 50%) of 20 microns (nominal) on exposed surface and 7 microns (nominal) on inside surface over 5 micron (nominal) primer coat OR the troughed profile steel metal sheets shall be colour coated with total coating thickness of 35 microns (nominal) dry film thickness (DFT) comprising of Super Polyester paint of 20 microns (nominal) on one side (exposed side) over 5 micron (nominal) primer coat and 5 microns (nominal) Super Polyester paint over 5 microns (nominal) primer coat on inner side. Continued..	SQM	2,136			
	Inside sheeting of cladding system shall have plain profile steel metal sheets with zinc coated (on both sides) to class Z275 (as per IS:277) having minimum base metal thickness of 0.6mm of grade G275 (minimum) as per IS:513 shall be colour coated with total coating thickness of 35 microns (nominal) dry film thickness (DFT) comprising of Silicon Modified Polyester paint (SMP) (with silicon content of 30% to 50%) or Polyester paint, of 20 microns (nominal) SMP or Super Polyester paint on one side (exposed side) over 5 micron (nominal) primer coat and 5 microns (nominal) SMP or Super Polyester paint over 5 microns (nominal) primer coat on other side, including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, flashing, water tight washers, epoxy sealant etc. all complete. 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(at least 2 mm thick galvanised steel sheet of G 275) 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. Continued..					
	Mineral wool shall conform to IS : 8183, having a density of 32 Kg/Cu.M. for glass wool & 48 Kg/Cu. M. for rock wool. SMP and Polyester paint shall conform to Product type 4 of AS/ANZ 2728. Coated surface shall be provided with a protected guard film (polyethylene) of about 35 microns to avoid any damage to the coating during handling.					

VOLUME II PRICE BID SPECIFICATION
T.S.NO BHE/PW/PUR.MUDT2-STR U 4/1458

ST. NO	DESCRIPTION OF ITEMS	UNIT	QTY	Rate (Rs) In figures	Rate (Rs) In words	AMOUNT (Rs) In figures
302	<p>Design supply & erection of single sheet metal cladding for roof, external walls & or internal walls, ridge, hips, flashing/trimming /closure for vertical/ horizontal joints, capping, etc, with troughed profile steel metal sheets with zinc coated (on both sides) to class Z275 (as per IS: 277) having minimum base metal thickness of 0.6mm of grade G275 as per IS: 513 OR troughed profile steel metal sheets coated with zinc aluminium alloy (Zn: 45 %; Al 55 %) (on both sides) at the rate of 150 Gms/Sq.M (minimum) having minimum base metal thickness of 0.5 mm of High Tensile steel(having mimimum yield strength 550 MPa), including fixing to supports / rails by concealed fixing system, corrosion resistant self tapping / self drilling type fasteners with suitable cap, water tight washers, epoxy sealant, flashing, etc. all complete. The troughed profile steel metal sheets shall be colour coated with Silicon Modified Polyester paint (SMP) (with silicon content of 30% to 50%) of 20 microns (nominal) on exposed surface and 7 microns (nominal) on inside surface over 5 micron (nominal) primer coat OR the troughed profile steel metal sheets shall be colour coated with total coating thickness of 35 microns (nominal) dry film thickness (DFT) comprising of Super Polyester paint of 20 microns (nominal) on one side (exposed side) over 5 micron (nominal) primer coat and 5 microns (nominal) Super Polyester paint over 5 microns (nominal) primer coat on inner side.</p> <p>SMP and Super Polyester paint shall conform to Product type 4 of AS/ANZ 2728. Coated surface shall be provided with a protected guard film (polyethylene) of about 35 microns to avoid any damage to the coating during handling.</p>	SQM	8,207			
303	Providing and Fixing shear connectors of mild steel studs having 16mm dia and minimum 75 mm projected length above purlin/beams/girders passing through metal decking as per relevant IS codes and specification.	QUINTAL	0			

ST. NO	DESCRIPTION OF ITEMS	UNIT	QTY	Rate (Rs) In figures	Rate (Rs) In words	AMOUNT (Rs) In figures
400	FIXING RAIN WATER DOWN TAKE PIPES INCLUDING 2 COATS OF APPROVED PAINT OVER A PRIMARY COAT, ALL SPECIALS AND ACCESSORIES ETC. COMPLETE AS PER SPECIFICATION.					
401	PVC down take pipes of 100 mm dia	RM	NA			
402	PVC down take pipes of 150 mm dia	RM	NA			
400(A)	Providing and Fixing GI down take pipes conforming to IS:1239 /IS:3589 of medium duty all complete for following diameters.					
403	100 mm Dia	RM	1,452			
404	150 mm Dia	RM	750			
500	Doors, windows, ventilators, louvers, roof ventilators, rolling shutters, partitions including all labour, material, equipments, transportation, handling, preparation of working drawings etc. at any level as per specification, drawings and as directed by engineer - in - charge.					
501	Providing and Fixing steel windows of fixed type with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision. Glazing shall be of 6.0mm thk. toughened safety glass panes including all fittings, metal beadings, hold fasts, primer painting as per specification all complete.	SQM	100			
502	Providing and Fixing steel openable windows/ventilators with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision. Glazing shall be of 4.0mm thick float glass panes including all fittings, metal beadings, hold fasts, primer painting as per specification all complete.	SQM	50			
503	Providing and Fixing steel openable or fixed windows/ventilators with steel sections as per IS:1038, IS:1361 & IS:7452 latest revision. Glazing shall be of 6.0mm thick wired glass panes including all fittings, metal beadings, hold fasts, primer painting as per specification all complete.	SQM	200			
504	Providing and Fixing steel single or double shutter doors. Shutters shall be of 18 gauge M.S. sheets and shall present a flush surface on the outside. The inside shall be stiffened with semitubular edge and central stiffening rail which shall convey the lock. Complete with fixtures, Godrej make Mortice lock with handle on both sides, primer painting as per specification.	SQM	100			
505	Providing and fixing fire proof steel doors (single or double shutter) with, 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 and in accordance with BS EN 1634.TAC requirements and as per specification. Minimum ratings shall be 2 Hrs.	SQM	25			

ST. NO	DESCRIPTION OF ITEMS	UNIT	QTY	Rate (Rs) In figures	Rate (Rs) In words	AMOUNT (Rs) In figures
600	M.S. EMBEDMENTS					
601	Supplying and fabrication of M.S. embedments, M.S. inserts, pipe sleeves, guide rails, angle pieces, edge protection angles, rungs of various diameters, plates of dimensions as required including painting, cost of all labour, materials and equipment, transportation, loading, unloading, handling, welding, cutting, drilling, scaffolding and setting complete as per specifications, drawings and as directed by Engineer.	MT	0			
602 A	Supplying of MS Rod (conforming to IS: 2062) (Dia: 80 mm) as per specifications and as directed by the Engineer.	MT	36			
602 B	Supplying and fabrication of MS nuts, locknuts (IS: 1363, IS: 1364 & IS: 3138), washers, anchor plates, stiffener plates, protective tapes, primer, etc. upto & inclusive of 80 mm diameter, for the foundation bolts as per specifications and as directed by the Engineer.	Nos	1,000			
700	MISCELLANEOUS					
701	Supplying & Fixing Glazing with translucent sheets of Polycarbonate material including laps, scaffolding hooks, washers, corner pieces, etc., cleats, sheeting runner, rails mild steel frames, wind ties (horizontal / vertical) etc. at all elevations complete as per specification, drawing and as directed by the engineer for the following.					
a)	4mm thick fire retardant and ultraviolet resistant translucent polycarbonate clean sheet of GE plastic or equivalent approved make.	SQM	125			
b)	6mm thick multi (twin) wall fire retardant (Continuous use under temperature 100° C impact resistant and ultraviolet resistant polycarbonate sheet with sealed open edegs.	SQM	305			
702	Breaking/chipping existing concrete work at any level including cutting reinforcements, removing the rubbish within a lead of 1Km including making good the broken edges/surface with cement mortar, painting, finishing to match with existing finishing, scaffolding/supporting at any level, all complete including material arrangement by bidder and as directed by Engineer.	CUM	10			
703	Concreting of grade M-25 conforming to IS:456 with coarse sand and graded hard stone aggregate 20mm nominal size in foundations/Sub Structure/ Super Structure etc at any level, any shape, position or thickness etc complete including shuttering, curing, reinforcement, use of plasticizer/ superplasticizer conforming to IS:9103 (latest) to achieve required slump in concrete all complete including material arrangement by bidder and as directed by Engineer.	CUM	10			
704	Supplying, fabricating, erecting and installing following items in concrete/brickwall for all kind of works, including setting material in concrete, layout, scaffolding, cutting, forming, grinding, drilling, bolting, welding, jointing, testing etc. all complete.					
a	MS pipes of all diameters	Quintal	3			
b	PVC pipes / conduits of all diameters	Quintal	1			
c	UPVC pipes / conduits of all diameters	Quintal	1			

VOLUME II PRICE BID SPECIFICATION
T.S.NO BHE/PW/PUR.MUDT2-STR U 4/1458

ST. NO	DESCRIPTION OF ITEMS	UNIT	QTY	Rate (Rs) In figures	Rate (Rs) In words	AMOUNT (Rs) In figures
d	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for brick work at all levels with expansion sleeve of A6 polyamide:					
i	Upto 250 kg	Each	15			
ii	Beyond 250 Kg and upto 500 kg	Each	3			
iii	Beyond 500 Kg and upto 750 kg	Each	3			
e	Expansion fasteners (mechanical galvanised) of HILTI make or equivalent of safe tensile capacity as specified below for concrete work at all levels with expansion sleeve of stainless steel:					
i	Upto 250 kg	Each	10			
ii	Beyond 250 Kg and upto 500 kg	Each	6			
iii	Beyond 500 Kg and upto 750 kg	Each	6			
705	Designing, providing and Fixing of Heavy duty galvanised chemical anchor fasteners of Hilti/Equivalent make of 12mm diameter and appropriate length in concrete (minimum grade M20) to take direct tension of minimum 1MT including anchor fastener, materials, equipment, labour, scaffolding complete as per direction of Engineer.	Each	6			
706	Providing small size openings (having size within 150mmx150mm area) in existing finished Floors, Walls, Cladding, Roof etc. including making good the broken edges/surface with cement mortar, fixing steel /precast concrete section as lintel , painting, finishing to match with existing finishing, scaffolding/ staging works, gas cutting of reinforcement/structural work, cleaning and removing of all debris within 1Km lead etc. all complete as per specification and as directed by Engineer.	SQM	5			
Grand Total In Figures						
Grand Total In Words						