Civil & Structural work for construction of BHEL Tower (Package-1) at Plot no. 25, Sec-16A, Noida(UP)

VOLUME-2
PRICE BID

ISMG & Corporate Administration

BHARAT HEAVY ELECTRICALS LTD.

AGVC, Siri Fort, New Delhi-110 049

CONTRACTOR
(Sign with name, designation and date)

PREAMBLE OF PRICE BID

1.0. This Price Bid consists of only ONE Schedule:

Total price of the package is to be quoted by the bidders which shall form the basis for comparison for deciding lowest bid irrespective of the option chosen by the bidder against item no. 6 of the Price schedule. For further processing and award, total quoted amount by the L1 (lowest) bidder for the package shall be used for deriving individual item rate by BHEL based on % (percentage) weightage arrived at in accordance with foot note sl. no. 14 of price schedule.

2.0 The work to be carried out under the contract shall, except as otherwise provided in tender conditions, include all labour, materials, tools, plant, equipment, and transport which may be required in preparation of and for full & entire execution and completion of the Works. The descriptions given in the Schedule of Quantities shall, unless otherwise stated, be held to include all enabling & temporary works, waste on materials, carriage and cartage, carrying in return of empties, hoisting, setting, fitting and fixing in position and all other labours necessary in and for the full and entire execution and completion as aforesaid in accordance with good practice and recognized principles as laid down in Technical Specification & elsewhere in Tender Specification.

3.0 The price bid should not contain any condition. Conditional price Bids shall be summarily rejected.

4.0 The bidder should quote total price of entire work only against grand total (A) at page no. 15 of 15 of price bid in words as well as numerals.

5.0 Price Quoted shall include all taxes & duties except GST.

CONTRACTOR
(Sign with name, designation and date)

Vol-II, PRICE SCHEDULE

S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
1.0	**EARTH WORK:**					
1.1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5m in width as well as 10 sqm on plan) including setting out, levelling, shoring & strutting / slope protection with earthfilled gunny bags (wherever required), dressing the sides & bottom, ramming/compacting the excavated bottom, stacking of useful earth for backfilling/landscaping up to a lead of 100 m, dewatering, disposal of surplus excavated earth (excluding earth required for backfilling & garden purposes) outside BHEL premises by mechanical means by contractor to any lead & lift at contractor's own risk including taking neccessary approval from authority for disposal, levelling & dressing of disposed soil etc all complete for following depths below ground level as per drawings, specification and as per direction of Engineer-in-charge. (PCC plan area shall be measured for payment and nothing extra shall be paid for cutting in slope, slope protection, creating working space & dewatering). Lift of earth from specified depth to ground is included in each subhead of item mentioned below.					
	Depth from ground level but not exceeding 2 m	CUM	23,400.00	-	-	260.35
	Depth from ground level exceeding 2 m but not exceeding 4 m	CUM	23,400.00	-	-	367.31
	Depth from ground level exceeding 4 m but not exceeding 6 m	CUM	23,400.00	-	-	474.28
	Depth from ground levelexceeding 6 m but not exceeding 8 m	CUM	23,400.00	-	-	581.25
	Depth from ground level exceeding 8 m but not exceeding 10 m	CUM	23,400.00	-	-	688.22
	Depth from ground level exceeding 10 m but not exceeding 14 m	CUM	14,084.81	-	-	478.64
					-	
1.2	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, lift upto 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m. all kinds of soil.	CUM	561.00	-	-	8.25
					-	
1.3	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m :				-	
	All kinds of soil				-	
	Pipes, cables etc, not exceeding 80 mm dia	Mtr	300.00	-	-	3.66
	Pipes, cables etc. exceeding 80 mm dia. but not exceeding 300 mm dia	Mtr	300.00	-	-	5.97
	Pipes, cables etc. exceeding 300 mm dia but not exceeding 600 mm	Mtr	300.00	-	-	9.33
					-	
1.4	Filling/ backfilling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, density achieve at least 95% of max dry density as per IS 2720 Part VII, lead up to 100m and lift upto required depth.	Cum.	6,096.32	-	-	67.72
			-		-	
1.5	Supplying and filling in plinth with locally available sand under floors, including watering, ramming, consolidating and dressing complete.	Cum.	50.00	-	-	4.05
			-		-	
1.6	Felling trees of the girth (measured at a height of 1 m above ground level), including cutting of trunks and branches, removing the roots and stacking of serviceable material and disposal of unserviceable material. This disposal shall be carried out through authorized agencies of concerned forest department.		-		-	
(i)	Beyond 30 cm girth upto and including 60 cm girth	each	260.00	-	-	5.03
(ii)	Beyond 60 cm girth upto and including 120 cm girth	each	45.00	-	-	3.87
			-		-	
1.7	Clearing jungle including uprooting of rank vegetation, grass, brush wood, trees and saplings of girth up to 30 cm measured at a height of 1 m above ground level and removal of rubbish up to a distance of 50 m outside the periphery of the area cleared.	Sqm	15,000.00	-	-	9.54
			-		-	
1.8	Supplying chemical emulsion in sealed containers including delivery as specified		-		-	
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	Ltr	1,136.25	-	-	18.66
			-		-	
1.9	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment (excluding the cost of chemical emulsion) :		-		-	
	Along the external wall below concrete or masonry apron using chemical emulsion @ 2.25 litres per linear metre including drilling and plugging holes etc.		-		-	
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	Rmt	505.00	-	-	1.08
					-	
1.10	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with lead upto 50 metres.	Sqm	18,769.00	-	-	149.38
	TOTAL OF EARTH WORKS				-	
					-	
2.0	**CONCRETE WORK**				-	
					-	
2.1 (a)	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering including dewatering - All work up to plinth level				-	
(i)	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).	M3	3,116.43	-	-	1232.79
(ii)	1:5:10 (1 cement : 5 coarse sand :10 graded stone aggregate 40mm nominal size)	M3	3,041.15	-	-	1130.72
			-		-	
2.2	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets, sunken floor etc., up to floor five level (EL +22.5m approx.), excluding the cost of centering, shuttering and finishing :		-		-	
(ii)	1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 20 mm nominal size)	M3	2,803.16	-	-	1304.39
			-		-	

Vol-II, PRICE SCHEDULE

S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
2.3	Providing and laying damp-proof-course 40 mm thick with cement concrete 1:2:4 (1cement : 2 course sand : 4 graded stone aggregate 12.5 mm nominal size mixed with water proofing compound in cement concrete @ 1 kg per 50 kg of cement.	Sqm.	350.00	-	-	8.13
					-	
2.4	Centering and shuttering including strutting, propping etc. and removal of form work for		-		-	
(i)	Foundations, footings, bases for columns	Sqm.	100.00	-	-	1.71
					-	
2.5	Supplying and stacking at site				-	
(i)	90 mm to 45 mm size stone aggregate	Cum	2,470.35	-	-	291.55
(ii)	63 mm to 45 mm size stone aggregate	Cum	1,731.90	-	-	221.73
(iii)	Stone screening 13.2 mm nominal size (Type A)	Cum	658.45	-	-	87.57
(iv)	Moorum	Cum	924.60	-	-	52.53
					-	
2.6	Laying, spreading and compacting stone aggregate of specified sizes to WBM specifications in uniform thickness, hand picking, rolling with 3 wheeled road / vibratory roller 8-10 tonne capacity in stages to proper grade and camber, applying and brooming requisite type of screening / binding material to fill up interstices of coarse aggregate, watering and compacting to the required densit	Cum	4,089.00	-	-	162.22
					-	
2.7	Encasing RCC Hume Pipe alaround including bed with 100mm thk concrete bed 1:2:4 (1 cement: 2 coarse sand: 4 Graded stone aggregate of 20mm nominal size) including necessary form work complete as per drawing and as directed by Engineer in charge	Cum	15.00	-	-	7.14
	TOTAL OF CONCRETE WORK				-	
3.0	**R.C.C. / SHUTTERING WORK**				-	
					-	
3.1	Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering and reinforcement, including Dewatering & admixtures in recommended proportions as per IS: 9103 of approved make to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. (Note: Submitting design mix of concrete and its approval from Engineer incharge and all tests are included in the item rate.)				-	
	(Note :- The consumption of cement (per cum. of concrete) shall be as per approved concrete design mix and to achieve the required strength of concrete tested from samples taken during casting of concrete at site. No claim shall be entertained on account of additional cement consumption to achieve required target strength & other parameters.				-	
i)	All works upto ground floor level (considered as EL 0.0)	Cum	10.00	-	-	5.69
ii)	All works above ground floor to fifth floor level (EL +22.5m approx.	Cum	77.34	-	-	49.53
			-		-	
3.2	Providing and laying in position ready mixed M-25 grade concrete for reinforced cement concrete work, using fly ash and cement content as per approved design mix (IS:10262- Latest), and manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work, including pumping of **R.M.C**. from transit mixer to site of laying, excluding the cost of centering, shuttering and reinforcement, including cost of admixtures of approved make in recommended proportions as per IS : 9103 to accelerate / retard setting of concrete, improve workability without impairing strength and durability as per direction of the Engineer - in - charge. (Note: Submitting design mix of concrete and its approval from Engineer incharge and all tests are included in the item rate.)		-		-	
	NOTE- The cement used shall be ordinary portland cement conforming to IS 8112 - 1989 (Latest revision) of grade 43 / IS 12269 - 2013 (Latest revision) of grade 53. Minimum 15% Fly ash by mass to use as part replacement of ordinary portland cement with maximum upto 25%, for all works except where specifically mentioned in the Drawings and/or directed by the Engineer In-Charge . Portland pozzolana Cement confirming to 1489 (Part I) - 1991 (Latest revision) can also be allowed without additional fly ash. Fly ash conforming to grade I of IS 3812 (Part-1) only to be used as part replacement of OPC as per IS : 456. Uniform blending with cement to be ensured in accordance with clauses 5.2 and 5.2.1 of IS:456 -2000 in the items of BMC and RMC. The consumption of cement (per cum. of concrete) shall be as per approved concrete design mix and to achieve the required strength of concrete tested from samples taken during casting of concrete at site. No claim shall be entertained on account of additional cement consumption to achieve required target strength & other parameters		-		-	
(i)	All works upto **ground floor** level (considered as EL 0.0)	Cum	9,852.09	-	-	5823.85
(ii)	All works above **ground floor level to fifth floor level** (EL +22.5m approx.)	Cum	11,416.52	-	-	7559.00
(iii)	Extra for providing richer mixes at all floor levels		-		-	
(iv)	Providing M-30 grade concrete instead of M-25 grade BMC/RMC.	Cum	5,260.88	-	-	32.30
(v)	Providing M-35 grade concrete instead of M-25 grade BMC/RMC.	Cum	13,789.45	-	-	169.25
(vi)	Providing M-40 grade concrete instead of M-25 grade BMC/RMC.	Cum	1,052.74	-	-	19.38
(vii)	Providing M-45 grade concrete instead of M-25 grade BMC/RMC.	Cum	20.00	-	-	0.61
(viii)	Providing M-50 grade concrete instead of M-25 grade BMC/RMC.	Cum	20.00	-	-	1.09
3.3 (i)	Extra for R.C.C./P.C.C./ B.M.C/ R.M.C. work above 5th floor (Approx EL +22.5 m) to 9th floor level (Approx EL +39.0 m)	Cum	1,282.38	-	-	26.31
3.3 (ii)	Extra for R.C.C./P.C.C/ B.M.C/ R.M.C. work above 9th floor (Approx EL +39.0 m) to 13th floor level (Approx EL +55.65m)	Cum	2,214.46	-	-	90.88
3.3 (iii)	Extra for R.C.C./P.C.C./ B.M.C/ R.M.C. work above 13th floor (Approx EL +55.65 m) to 17th floor level (Approx EL +72.25 m)	Cum	1,795.03	-	-	110.50
3.3 (iv)	Extra for R.C.C./P.C.C./ B.M.C/ R.M.C. work above 17th floor (Approx EL +72.25 m) to 21th floor level (Approx EL +88.85 m)	Cum	791.55	-	-	64.97
			-		-	
3.4	Centring and shuttering including strutting, propping etc. and removal of form for :		-		-	

Vol-II, PRICE SCHEDULE

S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
(i)	Foundations, footings bases of columns etc. for mass concrete.	M2	1,469.83	-	-	25.18
	Note:-Floor to floor height shall be upto 5 Mtr with**fair face formwork** (refer tender drgs)		-		-	
(ii)	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	M2	5,569.92	-	-	186.28
(iii)	Suspended floors, roofs, Staircases, balconies & access platform.	M2	728.25	-	-	27.17
(iv)	Lintels, beams, plith beams, girders, bressumers & cantilevers.	M2	298.94	-	-	9.06
(v)	Column, pillars, piers,walls, abutments posts & struts	M2	6,319.87	-	-	261.19
	Note:-Floor to floor height shall be upto 4.5 Mtr with**fair face formwork** (refer tender drgs)		-		-	
(vi)	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	M2	8,716.39	-	-	291.51
(vii)	Suspended floors, roofs, Staircases, balconies & access platform.	M2	2,548.44	-	-	95.07
(viii)	Lintels, beams, plith beams, girders, bressumers & cantilevers.	M2	569.21	-	-	17.24
(ix)	Column, pillars, piers,walls, abutments posts & struts	M2	6,315.14	-	-	260.99
					-	
	TOTAL OF R.C.C. / SHUTTERING WORK				**-**	
					-	
4.0	**R.C.C. WORKS**				-	
4.1	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level and above plinth level for all floors and all height. Thermo-Mechanically Treated bars of grade Fe-500D or more.	Kg.	2,191,676.16	-	-	10957.92
	TOTAL OF R.C.C. WORKS				**-**	
					-	
5.0	**DIAPHRAM WALL WORKS**				-	
5.1	Constructing cast-in situ RCC diaphragm wall by providing and laying machine batched, machine mixed, self compacting, ready mix reinforced cement concrete, tremie controlled, of M 30 grade using minimum 400kg. cement per cum of concrete including providing and mixing required admixtures of approved make in recommended proportions as per IS : 9103, as approved by the Engineer-in-charge, for achieving 150- 200mm slump, for diaphragm wall having thickness as per approved structural design not exceeding 600 mm, in pannels of required depth and lengths as per approved drawing, including constructing necessary guide walls as required and as specified including boring in all kinds of soils, including working in or under water and / or liquid mud,	Cum	4,590.45	-	-	5626.57
	in foul conditions and pumping or bailing out of water and removing slush, including disposal of earth/ slush/ bentonite mixed soil muck (at contractor's own risk including taking neccessary approval if required from authority for disposal) etc. for all leads and all lifts, including preparing, providing and re-circulating bentonite slurry in the trench as and when required for all depths, including agitating bentonite slurry during trenching etc., providing and fixing stop ends or form tubes, upto the required depth of diaphragm wall including extracting the same after casting, including chipping off the bentonite adulterated concrete or unsound concrete up to the cut off level for obtaining the sound concrete, dressing undulations on the exposed face of diaphragm wall after excavation by chipping / chiseling etc. including filling the depression/ cavities with sound concrete etc. complete and as directed by the Engineer-in-charge, " including soil anchors, providing recess for bearing plates and fixing insert boxes for inclined soil anchors etc. complete as per the specifications and approved design and as directed by the Engineer-in-charge, but excluding the cost of reinforcement and inserts.				-	
	(rates include cost of all inputs of labour, material and T & P, cost of handling, lifting & placing in position the reinforcement cage in the trench (with dowel reinforcement bars & inserts if required as shown in drawing), including the additional cost of welding the reinforcement bars etc. involved in the work and all other incidental expenditure for completing the work as directed by the Engineer-in-charge), However, the actual area of the diaphragm wall, correct to two places of decimal, from design bottom level to the design cut off level (including portion anchored in the soil upto the design bottom level) only shall be measured for payment.				-	
	Note: Quoted rate shall include work of scarifying and removal of earth stuck to diaphragm wall's inner concrete surface exposed after excavation for basement work, cleaning the concrete surface with water/ air jet, removal of loose concrete from diaphragm wall surface, patch repair work to fill/ plug the voids in concrete with 1:1 (1 cement: 1 coarse sand/ stone chips of size finer than 10mm), structural pressure grouting if required and removing undulations of inner concrete surface of daiphragm wall to bring it to within **50**mm undulations, all scaffolding & staging work , design mix of concrete and its approval from Engineer incharge, testing etc. complete with all labour, materials and T&Ps as per specification and drawings.				-	
	The cement used shall be either ordinary portland cement conforming to IS 8112 - 1989 (Latest revision) of grade 43 or Portland pozzolana Cement confirming to 1489 (Part I) - 1991 (Latest revision). The consumption of cement (per cum. of concrete) shall be as per approved concrete design mix and to achieve the required strength of concrete tested from samples taken during casting of concrete at site. No claim shall be entertained on account of additional cement consumption to achieve required target strength & other parameters.				-	
	TOTAL OF D -WALL WORK				**-**	
6.0	**STEEL STRUCTURE WORK**				-	
	In this Section, two alternative system of Formwork for Suspended Floor casting is scheduled. Bidder has to opt any one of them i.e. Speed Floor system (option-A) or Metal Deck system (Option-B). Speed floor system (option-A) will have Speed floor joists and Metal deck system (option-B) will have secondary beams detailed in respective section. One section shall be executed (i.e. either option-A or option-B) as opted by the bidder. Work shall be done as per option opted by bidder.				-	
A	**Speed floor system (option-A)**				-	

Vol-II, PRICE SCHEDULE

S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
6.A1	Providing, fabricating , transporting, assembling & erection in position of Steel members for steel colunms, built up beams using Structural steel plate of thickness as per specification confirming to IS 2062, grade E350 BR as per latest IS Code and approved drawing with HSFG bolted connection joints (shop connections **(factory fabricated)** will be welded type and field connections will generally be bolted type unless otherwise specified) to the required profile & shape as called for as per the drawing & specifications.This item also includes the shear connectors /studs as per drawing & fusion weld to top of horizontal member except speed floor joist. This item also includes prepration of shop drawings & their approval, necessary templates,adequate temporary supports, scaffolding & staging, all cutting, grinding,sliding & all labour, tools, plants & equipments & operations etc. required to complete the job as per drawing & specification. Every precaution to be taken to prevent rusting of sections. This item also includes all test on materials & welded fabricated parts as per specification & direction of Engineer - in - Charge. Temporary bolts & nuts to be used during assembling shall be removed after site erection. The item to include cost of surface preparation and providing suitable primer (on structural **beams:** primer compatible for vermiculite cementious fire proof coating and on structural columns : 01 coat of red oxide zinc-chromate primer) in fabrication shop, including all touch up works after erection as per technical specification.				-	
	A) The scope of work for this item includes :				-	
	a) Design & fabrication of any additional temporary structure including all type of lifting brackets, supporting brackets ,which will be required for transportion & erection in position / launching of fabrication part or complete element in position.				-	
	b) Making provision & arrangement for required opening / inserts for fixing lights fixtures & funning cable conduits .				-	
	c) All incidentals, labour , equipement & plants required to execute & complete the job from fabrication to erection at final position as per drawing , specification & direction of Engineer - in -Charge				-	
	d) Cleaning & removing of all spoil , temporary arrangement for fixing speed floor joist				-	
	e) All safety measures required to execute & complete the work				-	
	f) Procurement of all materials from approved manufacturer & fabrication shop. Complete methodology for structural steel work. Name of workshop for fabrication works, Testing facilities & erection procedures etc. to be intimated for approval of Engineer - in - Charge.				-	
	g) The provision of temporary bearing / sand jacks for supporting steel members during erectio				-	
	h) Provision of stability during erection against wind load or any other type of loading on structural steel members during erection.				-	
	B) Measurement shall be only for structural steel which is erected & is part of permanent structure & paid as per approved shop drawings. All wastages , temporary works, Jigs, temporary assembly bolts, testings etc. are deemed to be included in quoted rates. No allowance or increase in weight for welding , nuts & bolts etc will be applicable.	Kg	3,105,946.26	-	-	22497.96
6.A2	Providing and fixing in positing of high strength structural bolts (Property class 8.8/10.9 as per IS: 1367 and product grade 'C' as per IS:1363) conforming to IS : 3757 and high strength structural hardened and tempered nuts (Property class '8'/10 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 300 mm long.	Kg	46,589.19	-	-	609.09
					-	
6.A3	Providing and applying Fire proofing of steel structures with VERMICULITE cementious coating as per ASTM E119/UL 263 designed for min 2 hrs of fire rating of required thickness. This item also includes fixing of wire mesh or suitable adhesive to the steel members as per manufacturer's recommendation if required. The item quoted includes all works required to complete the fire proofing work at all levels. Primer is not included in this item.				-	
	For 2 Hrs. Fire Rating	SQM	38,860.23	-	-	3086.03
					-	
6.A4	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.	Kg	10,000.00	-	-	60.07
					-	
6.A5	Design, fabrication, supply and erection in position at all levels of **speed floor joist** with shoes, bolts, washers & nuts etc. complete for Speed floor system as per drawing and specification. The speed floor joist shall meet the **fire rating requirement of 2 hr** as per relevant standard duly confirmed by manufacturer's test certificate and the cost for the same is deemed to be included in this item. This item also include all tests, welding of slab reinforcement with speed floor joist etc. complete	Kg	948,003.35	-	-	9044.18
6.A6	Providing & fixing formwork of 12 mm thick plywood and required lock bars for **speed floor system** for reinforced concrete slab casting works at all elevations, including labour, materials, fixing of lock bar in speed floor joist, placing of 12 mm thick plywood shuttering, removal of shuttering and locking bar after casting of slab etc. all complete as per specifications, drawings and instructions of the Engineer. (Re-use of Plywood shuttering and lock bars shall be allowed till fit for use and as per direction of Engineer In charge. Lock bar material and plywood shuttering shall be removed from site by the contractor after floor casting works are over).	Sqm	56,166.00	-	-	1240.36
	OR				-	
B	**Metal deck system (option-B)**				-	
6.B1	Providing, fabricating , transporting, assembling & erection in position of Steel members for **Secondary Beams** using Parallel flange beams/ built up beams of structural steel plate of thickness as per specification confirming to IS 2062, grade E350 BR as per latest IS Code and approved drawing with HSFG bolted connection joints **(** sho connections **(factory fabricated)** will be welded type and field connections will generally be bolted type unless otherwise specified) to the required profile & shape as called for as per the drawing & specifications.This item also includes the shear connectors /studs as per drawing & fusion weld to top of horizontal member except speed floor joist. This item also includes prepration of shop drawings & their approval, necessary templates,adequate temporary supports, scaffolding & staging, all cutting, grinding,sliding & all labour, tools, plants & equipments & operations etc. required to complete the job as per drawing & specification. Every precaution to be taken to prevent rusting of sections. This item also includes all test on materials & welded fabricated parts as per specification & direction of Engineer - in - Charge. Temporary bolts & nuts to be used during assembling shall be removed after site erection. The item to include cost of surface preparation and providing suitable primer (on structural **beams:** primer compatible for vermiculite cementious fire proof coating and on structural columns : 01 coat of red oxide zinc-chromate primer) in fabrication shop, including all touch up works after erection as per technical specification.				-	
	A) The scope of work for this item includes :				-	

Vol-II, PRICE SCHEDULE

S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
	a) Design & fabrication of any additional temporary structure including all type of lifting brackets, supporting brackets, which will be required for transportion & erection in position/ launching of fabrication part or complete element in position.				-	
	b) Making provision & arrangement for required opening / inserts for fixing lights fixtures & funning cable conduits .				-	
	c) All incidentals, labour , equipement & plants required to execute & complete the job from fabrication to erection at final position as per drawing , specification & direction of Engineer - in -Charge				-	
	d) Cleaning & removing of all spoil , temporary arrangement for structural members				-	
	e) All safety measures required to execute & complete the work				-	
	f) Procurement of all materials from approved manufacturer & fabrication shop. Complete methodology for structural steel work. Name of workshop for fabrication works, Testing facilities & erection procedures etc. to be intimated for approval of Engineer - in - Charge				-	
	g) The provision of temporary bearing / sand jacks for supporting steel members during erectio				-	
	h) Provision of stability during erection against wind load or any other type of loading on structural steel members during erection.				-	
	B) Measurement shall be only for structural steel which is erected & is part of permanent structure & paid as per approved shop drawings. All wastages , temporary works, Jigs, temporary assembly bolts, testings etc. are deemed to be included in quoted rates. No allowance or increase in weight for welding , nuts & bolts etc will be applicable.	Kg	4,752,880.87	-	-	26929.07
6.B2	Providing and fixing in positing of high strength structural bolts (Property class 8.8 as per IS: 1367 and product grade 'C' as per IS:1363) conforming to IS : 3757 and high strength structural hardened and tempered nuts (Property class '8'/10 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 300 mm long.	Kg	94,800.33	-	-	1239.39
6.B3	Providing and fixing Galvanised MS troughed metal sheet decking plate (Galvanized to Grade 275 minimum as per IS:277) for cast-in-situ RCC slab as per specification. Total coated thickness(TCT) of deck plate shall be 0.8mm of trough depth of 52 mm and having yield strength of minimum 240 MPa of approved make and shall serve as permanent shuttering to the roof slab over crest of metal decking including fixing of plates to purlins/ beams, side lapping, end lapping etc. all complete. This item includes fixing of sheet to top flange of beam with headed shear anchor studs of 16mm diameter, 75mm length thermo-mechanically fixed at maximum spacing of 400mm in the trough and stich screws between two adjacent sheets as per drawing and sealing with epoxy sealant. (No payments shall be made for laps).	SQM	54,253.90	-	-	3343.31
6.B4	Providing and applying Fire proofing of steel structures with VERMICULITE cementious coating as per ASTM E119/UL 263 designed for min 2 hrs of fire rating of required thickness. This item also includes fixing of wire mesh or suitable adhesive to the steel members as per manufacturer's recommendation if required. The item quoted includes all works required to complete the fire proofing work at all levels. Primer is not included in this item.				-	
	For 2 Hrs. Fire Rating	SQM	62,531.58	-	-	4965.86
6.B5	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.	Kg	10,000.00	-	-	60.07
					-	
	TOTAL OF STEEL STRUCTURE WORK FOR ITEM 6.A1 TO 6.A7 (SPEED FLOOR SYSTEM)-OPTION -A				**-**	
	TOTAL OF STEEL STRUCTURE WORK FOR ITEM 6.B1 TO 6.B5 (METAL DECK SYSTEM)-OPTION-B				**-**	
7.0	**BRICK WORK**				-	
	Note: Cement mortar with Portland pozzolana Cement confirming to 1489 (Part I) - 1991 (Latest revision). The total flyash content shall be minimum 30% by weight of cement. If 30% is not achieved from PPC cement, additional Fly ash conforming to grade I of IS 3812 (Part-1) only to be used. This is to meet "GRIHA-Green Building" requirement.				-	
7.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				-	
					-	
7.2	Cement mortar 1:6 (1cement : 6 coarse sand)	M3	287.06	-	-	120.49
			-		-	
7.3	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level (Approx EL +22.5 m) in all shapes and sizes i		-		-	
	Cement mortar 1:6 (1cement : 6 coarse sand)	M3	357.76	-	-	176.43
			-		-	
7.4 (i)	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above 5th floor (Approx EL +22.5 m) to 9th floor level (Approx EL +39.0 m)	cum	410.59	-	-	7.45
7.4 (ii)	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above 9th floor (Approx EL +39.0 m) to 13th floor level (Approx EL +55.65m)	cum	410.59	-	-	14.90
7.4 (iii)	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above 13th floor (Approx EL +55.65 m) to 17th floor level (Approx EL +72.25 m)	cum	410.59	-	-	22.35
7.4 (iv)	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above 17th floor (Approx EL +72.25 m) to 21th floor level (Approx EL +88.85 m)	cum	415.65	-	-	30.17
					-	
7.5	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level (Approx EL +22.5 m)		-		-	
	Cement mortar 1:4 (1 cement : 4 coarse sand)	sqm	1,404.80	-	-	84.91
			-		-	
7.6	Extra for providing and placing in position 2 nos, 6mm dia M.S. bars at every third course of half brick masonry (with F.P.S.bricks).	sqm	1,404.80	-	-	7.05
			-		-	
7.7	Providing and laying autoclaved aerated cement blocks masonry with 100 mm thick AAC blocks in super structure above plinth level up to floor V level (Approx EL +22.5 m) in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work	cum	796.06	-	-	479.48
			-		-	

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S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
7.8	Providing and laying autoclaved aerated cement blocks masonry with 150mm/230mm/300 mm thick AAC blocks in super structure above plinth level up to floor V level (Approx EL +22.5 m) with RCC band at sill level and lintel level with approved block laying polymer modified adhesive mortar all complete as per direction of Engineerin-Charge. (The payment of RCC band and reinforcement shall be made seperately).	cum	1,590.23	-	-	798.89
	TOTAL OF BRICK WORK				**-**	
					-	
8.0	**STEEL WORK**				-	
					-	
8.1	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6mm angle iron and 3mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer				-	
	Using M.S. angels 40x40x6 mm for diagonal braces	Sqm.	19.95	-	-	5.06
					-	
8.2	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, 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 complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 – part 1 and M.S. top cover of required thickness for rolling shutters.		-		-	
	80x1.25mm M.S. laths with 1.25 mm thick top cover	Sqm.	44.80	-	-	9.17
			-		-	
8.3	Providing and fixing ball bearing for rolling shutters	Each	15.00	-	-	0.50
			-		-	
8.4	Extra for providing mechanical device chain and crank operation for operating rolling shutters		-		-	
	Exceeding 10.00 sqm and upto 16.80 sqm in the area	Sqm.	44.80	-	-	2.87
			-		-	
8.5	Extra for providing grilled rolling shutters manufactured out of 8 mm dia. M.S. bar instead of laths as per design approved by Engineer-in-charge. (area of grill to be measured).	Sqm.	4.80	-	-	0.13
8.6	Providing and fixing T-iron frames for doors, windows and ventilators of mild steel Tee-sections, joints mitred and welded, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer. Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	Kg.	99.75	-	-	0.65
			-		-	
8.7	Steel work welded in built up sections/framed work including cutting, hoisting, fixing, in position and applying a priming coat of approved steel primer using structural steel etc. as required at all levels.		-		-	
(a)	In stringers, treads, landings etc. of stair cases, including use of chequered plate wherever required, all complete	Kg.	55.00	-	-	0.32
(b)	In gratings, frames, guard bar ladders railings, brackets, gates & similar works.	Kg.	3,578.56	-	-	27.17
8.8	Providing and fixing concertina coil fencing with punched tape concertina coil 600 mm dia 10 metre openable length (total length 90 m), having 50 nos rounds per 6 metre length, upto 3 m height of wall with existing angle iron 'Y' shaped placed 2.4 m or 3.00 m apart and with 9 horizontal R.B.T. reinforced barbed wire, stud tied with G.I. staples and G.I. clips to retain horizontal, including necessary bolts or G.I. barbed wire tied to angle iron, all complete as per direction of Engineer-in-charge, with reinforced barbed tape(R.B.T.) / Spring core (2.5mm thick) wire of high tensile strength of 165 kg/ sq.mm with tape (0.52 mm thick) and weight 43.478 gm/ metre (cost of M.S. angle, C.C. blocks shall be paid separately	RM	840.00	-	-	18.92
					-	
8.9	Steel work in built up tubular (round, square or rectangular hollow tubes etc.) trusses etc., including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc. complete		-		-	
(a)	Hot finished seamless type tubes	Kg.	129,285.00	-	-	1072.38
					-	
8.10	Providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing & staircases railing including applying a priming coat of approved steel primer		-		-	
	M.S. tube	Kg.	495.00	-	-	4.02
	TOTAL OF STEEL WORK				**-**	
					-	
9	**SEMIUNITISED STRUCTURAL GLAZING**				-	
					-	
9.1	Providing and supplying aluminium extruded tubular and other aluminium sections as per the architectural drawings and approved shop drawings , the aluminium quality as per grade 6063 T5 or T6 as per BS 1474,& tolerances conforming to DIN / EN standards from approved extruder including super Durability (Akzonobel) / Super durable (Jotun) powder coating of 60-80 microns conforming to AAMA 2604 of required colour and shade as approved by the Engineer-in-Charge. (The item includes cost of material such as cleats, sleeves, ss screws etc. necessary for fabrication of extruded aluminium frame work. Nothing extra shall be paid on this account).	KG	94714	-	-	2830.01
					-	
9.2	Designing, fabricating, protection, installing and fixing in position semi (grid) unitized system of structural glazing (with open joints) for linear as well as curvilinear portions of the building for all heights and all levels, including:				-	
					-	
a	Structural analysis & design and preparation of shop drawings for the specified design loads conforming to IS 875 part III (the system must passed the proof test at 1.5 times design wind pressure without any failure,basic wind speed 47m/s,class of structure-A,Terrain category-2), including functional design of the aluminum sections for fixing glazing panels of various thicknesses, aluminium cleats, sleeves and splice plates etc. gaskets, ss screws, toggles, nuts, bolts, clamps etc., structural and weather silicone sealants, flashings, fire stop (barrier)-cum-smoke seals, microwave cured EPDM gaskets for water tightness, pressure equalisation & drainage and protection against fire hazard including				-	
					-	

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S. No. (1)	**DESCRIPTION (2)**	**UNIT (3)**	**QTY. (4)**	**Rate (5)**	**Amount (6)**	**Weightage (7)**
b	Fabricating and supplying serrated M.S. hot dip galvanised (275gm/m^2 / Aluminium alloy of 6005 T5 brackets of required sizes, sections and profiles etc. to accommodate 3-Dimentional movement for achieving perfect verticality and fixing structural glazing system rigidly to the RCC/ masonry/structural steel framework of building structure using stainless steel anchor fasteners/bolts, nylon seperator to prevent bimetallic contacts with nutsand washers etc. of stainless steel grade 316, of the required capacity and in required numbers.				-	
					-	
c	Providing and filling, two part pump filled, structural silicone sealant and one part weather silicone sealant compatible with the structural silicone sealant of required bite size in a clean and controlled factory / work shop environment , including double sided spacer tape, setting blocks and backer rod, all of approved grade, brand an manufacture, as per the approved sealant design, within and all around the perimeter for holding glass.The system shall be designed considering surface temperatures of 45-55 deg Cel & temperature differential of 25 deg cel without creating excess stress in the system.				-	
					-	
d	Providing and fixing in position flashings of solid coloured aluminium sheet 1 mm thick and of sizes, shapes and profiles, as required as per the site conditions, to seal the gap between the building structure and all its interfaces with structural glazing to make it watertight.				-	
e	Making provision for drainage of moisture/ water that enters the curtain glazing system to make it watertight, by incorporating principles of pressure equalization, providing suitable gutter profiles at bottom (if required), making necessary holes of required sizes and of required numbers etc. complete.This item includes cost of all inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&P, scaffolding and other incidental charges including wastages etc., enabling temporary structures and services, cranes or cradles etc. as described above and as specified. The item includes the cost of getting all the structural and functional design including shop drawings checked by a structural designer, dully approved by Engineer-in-charge. The item also includes the cost of all mock ups at site, cost of all samples of the individual components for testing in an approved laboratory, field tests on the assembled working structural glazing as specified, cleaning and protection till the handing over of the building for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge.				-	
	Note:- 1. The quoted rate shall include all design, engineering & shop drawing approval from architect & consultant duly appointed by BHEL for the project. The quoted rate shall include all Taxes, duties, statutory obligations and safety code compliance as per site requirement.For the purpose of payment, only the actual area of structural glazing (including width of grooves) on the external face shall be measured in sqm.up to two decimal places.	Sqmt	17,655.0	-	-	3758.39
					-	
9.3	The following performance test are to be conducted on structural glazing system from the certified laboratories accreditated by NABL(National Accreditation Board for Testing and Calibration Laboratories), Department of Science & Technologies, India. Performance Testing of Structural glazing system Tests to be conducted in the NABL Certified laboratories. Complete system shall be warranteed for minimum 10 yrs against design & workmanship defects, as specified and as directed by engineer in charge.				-	
					-	
I	Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) & (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVh				-	
					-	
II	Static Water Penetration Test. (50pa to 1500pa) as per ASTME- 331-09 testing method for a range up to 2000 ml.				-	
					-	
III	Dynamic Water Penetration (50pa to 1500pa) as perAAMA 501.01- 05 testing method for a range upto 2000 ml				-	
					-	
IV	Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTME-330-10 testing method for a range upto 50 mn				-	
					-	
V	Seismic Movement Test (upto 30 mm) as per AAMA 501.4-09 testing method for Qualitative test. Tests to be conducted on site.				-	
					-	
VI	Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml				-	
	Each set of test comprising of all the above serial no. I to VI	JOB	1.00	-	-	147.96
					-	
9.4	**VISION GLASS PANELS (24mm IGU)**				-	
	Providing, assembling, packing & supplying of **vision glass panels** (IGUs) comprising of hermetically-sealed 6-12- 6 mm (24mm IGU THK.)insulated glass (double glazed unit) vision panel units of size and shape as required and specified,comprising of an outer heat strengthened float glass 6mm thick, of approved colour and shade with reflective soft coating on surface #2 of approved colour and shade, an inner Heat strengthned clear float glass 6mm thick, spacer tube 12mm wide, dessicants, including primary seal and secondary seal (structural silicone sealant) etc.all complete for the required performances and the Architectural drawings, as per the approved shop drawings, as specified and as directed by the Engineer-in-Charge.The IGUs shall be assembled in the factory/ workshop of the glass processor.“**(Payment for fixing of IGU Panels in the curtain structural glazing is included in cost of item No.2 above)“For payment, only the actual area of glass on face # 1 of the glass panels (excluding the areas of the grooves and weather silicone sealant) provided and fixed in position, shall be measured in sqm.**				-	
	Glass of approved make having properties (Aqua Green/ Aqua Marine colour as per approved sample from Saint Gobain,pilkington, Asahi Glass or equivalent) are				-	
	(I) visible Light transmittance (VLT) of More than 40%				-	
	(II) SF/Solar Heat Gain coefficient Less than or equal to 0.27				-	
	(III) U value of Less than or equal to 1.6 W/m2 degree K				-	
	Note;-The properties of performance glass shall be decided by technical sanctioning authority as per the site and green building requirement.	Sqmt	6460.00	-	-	2193.57
					-	
9.5	**SPANDREL GLASS PANEL**				-	

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S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
	Providing assembling, packing,supplying, Cleaning & Handover the Spandrel Glass Panels comprising of 6mm thick heat strengthened monolithic float glass of approved colour and shade with reflective soft coating on surface # 2 of approved colour and shade so as to match the colour and shade of the IGUs in the vision panels etc. ,all complete for the required performancesas specified, as per the Architectural drawings, as per the approved shop drawings, as specified, and as directed by the Engineer- in-Charge."For payment, only the actual area of glass on face # 1 of the glass panels (but excluding the area of grooves and weather silicone sealant) provided and fixed in position, shall be measured in sqm. (Payment for fixing of Spandrel Glass Panels in the curtain structural glazing included in cost of item No.2 above).				-	
	(i) Coloured tinted float glass 6mm thick substrate with reflective soft coating on face # 2,having properties as visible Light transmittance (VLT) of 56%,shading coefficient less than equal to 0.5 and U value of less than equal to 5.6 W/m2 K etc.The Glass of approved make of Saint Gobain,pilkington, Asahi Glass or equivalent with approved matching colour of vision glass (Aqua Green/ Aqua Marine)The properties of performance glass shall be decided by technical sanctioning authority as per the site requirement.	Sqmt	557.00	-	-	71.64
					-	
9.6	**OPNEABLE PANELS IN VISION PANEL**				-	
	Extra for openable side / top hung vision glass panels (IGUs) including providing and supplying at site all accessories and hardwares for the openable panels as specified and of the approved make such as heavy duty stainless steel friction hinges, min 4-point cremone locking sets with stainless steel plates, handles, buffers to ensure air tight sealing etc. including necessary stainless steel screws/ fasteners, nuts, bolts, washers etc.The system shall comprise of 2 barrier gasket design & shall have provision for drainage uncontrol water entering the system, all complete as per the Architectural drawings,as per the approved shop drawings and details, as specified and as directed by the Engineer- in-Charge.	Sqmt	710.0	-	-	184.49
9.7	**DOORS IN GLAZING**				-	
	Extra for Fabrication, Supply, Installation,Protection, Cleaning & Handover Single & Double shutter aluminium framed glazed door with (6+12mm air gap+6 mm thick) 24mm IGU (Insulated glass unit) opening outward custom designed to with stand the design wind pressure. The system shall have two barrier gasket system for weather sealing & provision for aluminium thrash hold at bottom.The profile system shall be as per detail drawings in total for outer and shutter frame assembly with minimum of 2 mm thickness.Door shutter shall be air tight and have crimped corner at top and SS tie rod at bottom for rigid connection. Including other accessories like Door closer / Door stopper / Door Lock all complete as per detail drawings and specification. (Payment for fixing of aluminium Glazed Door frame and Shutter in the curtain structural glazing included in cost of item No.2 and glass shall be paid in item no-4)).	Sqmt	50.40	-	-	37.06
					-	
9.8	**ALUMINIUM COMPOSITE PANEL CLADDING**				-	
	Designing, fabricating, testing, Installing,fixing,cleaning and handover in position Curtain Wall with Aluminium Composite Panel Cladding of approved make with open grooves for linear as well as curvilinear portions of the building , for all heights and all levels etc. including:				-	
a)	Structural analysis & design and preparation of shop drawings for pressure equalisation or rain screen principle as required, proper drainage of water to make it watertight including checking of all the structural and functional design.				-	
b)	Providing, fabricating,supplying and fixing panels of aluminium composite panel cladding in pan shape in solid or metallic colour of approved shades made out of 4mm thick aluminium composite panel (weight of panel should be 7.5 kg/Sqmt) material consisting of 3mm thick FR grade Class B as per EN 13501,mineral core sandwiched between two Aluminium sheets (each 0.5mm thick).The aluminium composite panel cladding sheet shall be coil coated, with Kynar 500 based PVDF conforming to AAMA 2605 or Lumiflon based fluoropolymer resin coating of approved colour and shade on face # 1 and polymer (Service) coating on face # 2 as specified using stainless steel screws, nuts, bolts, washers, cleats, weather silicone sealant, backer rods etc.The top coated surface of ACP shall comply with the "specification for coated coil for the exterior building application" issued by ECCA (European Coil Coating Association).The aluminium composite panel top and bottom skin should confirm to Aluminium Alloy 5005 (AlMg 1) marine grade series and H 22/24 temper with mechanical properties confirming to EN 485-2 standard. The ACP product must confirm to either BS 476 part 6 & 7 or ASTM E 84 standards along with EN-13501-1. The manufacturer must furnish Class 1A certificate for this ACP produced in the plant from which it is going to be supplied. The panel shall be designed for 12mm groove in horizontal & in verticals with close joint system. Vertical & Horizontal groove shall be filled by non staining high performance weather sealant. ACP panel shall have sub frame all around panel and aluminum stiffner profile as per structural requirements.The finished surface of ACP shall be protected with a self-adhesive (Rubber based) peel off foil with 70 microns thickness white or black, tested to withstand upto 6 months exposure to local weather condition without losing the original peel off characteristic or causing stain or other damages on the coated surface of the aluminium composite panel.Installation of ACP Coping/facia at terrace level sealing the top gap of the parapet wall and ACP Panel shall have GI stiffeners below with required aluminum grid work with necessary MS HDG / aluminum alloy brackets & SS fasteners.2nd barrier of 1mm thk GI sheet laid continuously below the copping to seal the parapet wall.Overlap of GI sheet shall be properly sealed with weather sealant All shade approval shall be as per Architect's Approval.as per approved sample from Alucobond Plus, Alpolic fr, Reynobond or equivalent.					
c)	The fastening brackets of Aluminium alloy 6005 T5 / MS with Hot Dip Galvanised with serrations and serrated washers to arrest the wind load movement, fasteners, SS 316 Pins and anchor bolts of approved make in SS 316, Nylon separators to prevent bi-metallic contacts all complete required to perform as per specification and drawing The item includes cost of all material & labour component, the cost of all mock ups at site, cost of all samples of the individual components for testing in an approved laboratory, field tests on the assembled working curtain wall with aluminium composite panel cladding, cleaning and protection of the curtain wall with aluminium composite panel cladding till the handing over of the building for occupation.The Contractor shall provide curtain wall with aluminium composite panel cladding, having all the performance characteristics all complete , as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer-in-Charge. Base frame (aluminium) work for ACP cladding is payable under the item no.1.However, for the purpose of payment, only the actual area on the external face of the curtain wall with Aluminum Composite Panel Cladding (including width of groove) shall be measured in sqm.up to two decimal places."	Sqmt	10638.00	-	-	4048.28
					-	
9.9	**FRAMELESS GLAZED SPIDER GLAZING FAÇADE @ GROUNG & 1ST FLOOR LVL.**				-	

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S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
	Design supply & installation of suspended Spider Glazing system designed to withstand the wind pressure as per IS 875 (Part-III) .The Suspended System held with Spider Fittings of SS-316 Grade Steel of approved manufacturer with glass panel having 12 mm thick clear toughened glass held together with SS- 316 Grade Stainless steel Spider & bolt assembly with laminated glass fins 21.52 mm thick (approx).The Glass fins and glass panel assembly shall be connected to Slab/ beams by means of SS- 316 Grade stainless steel brackets & Anchor bolts and at the bottom using SS channel of 50x25x2mm using fastener & anchor bolts, non staining weather sealants of approved make, Teflon/ nylon bushes and separators to prevent bi-metallic contacts, all complete to perform as per specification and approved drawings.The Articulated Routel bolts for facade glass shall be of SS 316 with all necessary accessories.the spider fittings of DORMA/Hafle make with 4,2&1 points spiders & stainless steel bolts as per design to be used.The complete system to be designed to accommodate thermal expansion & seismic movements etc. The joints between glass panels (6 to 8 mm) and gaps at the perimeter & in U channel of the assembly to be filled with non staining weather sealant, so as to make the entire system fully water proof & dust proof.All screws, all weather elements such as flashing, coping, approved silicon sealants, etc to make the system completely waterproof.All spider fittings should be designed to support the weight of the glass by direct bearing on the bolts wherein the structure shall be designed as per the relevant codes and able to withstand the relevant thermal movements.				-	
	The rate shall include all design, Engineering and shop drawing including approval from structural designer/ consultant/ architect duly appointed by BHEL for the project, labour, T&P, scaffolding,statutory obligations,safety codes,other incidental charges including wastage, enabling temporary services all fitting fixers nut bolts, washer, Buffer plates, fastener, anchors, SS channel laminated glass etc. all complete.The erection & removal of scaffolding, cleaning the façade and final handover to owner with complete satisfaction.Design calculations for the facade to be furnished and approved, by Architect consultant/client.For the purpose of payment, actual elevation area of Glazing including thickness of joints and the portion of Glass panel inside the SS channel shall be measured.	Sqmt	563.00	-	-	344.58
					-	
9.10	**FRAMELESS GLASS DOOR @ GROUNG FLOOR LVL.**				-	
	Supply and installation of openable Double/single leaf frameless glass door with patch fittings made from 12mm thick clear toughened glass including all accessories complete such as top patch fitting, bottom patch, top pivot, corner lock, pull handle,locking arrangement,floor spring conforming to DIN EN 1154 in long-time test/500,000 operating cycles).The above work complete in all respect as per approved detail drawings and to the satisfaction of engineer-in-charge / architect consultant	Sqmt	32.4	-	-	61.45
					-	
9.11	**GLASS BALUSTRADE & SS RAILING**				-	
	Design, Fabrication,Supply, Installation,Testing, Protection, Cleaning & Handover of Stainless Steel Glass Railing system custom designed to with stand the design wind load & Live load confirming to IS -875 (The system must pass the proof test at 1.5 times design wind pressure without any failure)				-	
	SS Railing system shall be deisgned for 800mm Height from upstand finish with Vertical SS Tapered plate of 12mm thk. SS Railing of 50mm Dia, 2mm thk. fixed to the SS Vertical plate as shown in the design drawings. Vertical plate fixed to the RCC Slab/RCC wall with SS base plate. All SS Plate / Tube shall be SS 304 grade, all in complete required to perform as per specification and drawing in conjunction with BOQ. Complete system shall be warranteed for minimum 10 yrs against design & workmanship defects.				-	
	The Glass are fixed to the SS Framing system by means of SS 316 Fabricated Fittings as indicated in the concept drawings.				-	
	Glass 13.52mm laminated glass consist of 6mm clear toughened glass + 1.52mm clear PVB + 6mm clear toughened glass.				-	
	All shade approval shall be as per Architect's Approval.				-	
	The quoted rate shall include all design, engineering & shop drawing approval from architect & consultant. The quoted rate shall include all Taxes, duties, statutory obligations and safety code compliance as per site requirement.	Rmt	381.00	-	-	326.23
					-	
	Total of Façade Works Amount				**-**	
					-	
10.0	**FLOORING WORK**				-	
					-	
10.1	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone agg.) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete		-		-	
	40mm thick with 20mm nominal size stone aggregate	Sqm	195.00	-	-	6.25
			-		-	
10.2	Painting runway/taxi track/apron marking with adequate no. of coats to give uniform finish with road marking paint of superior make as approved by the Engineer-in-charge i/c cleaning the surface of all dirt, scales, oil, grease and other foreign material etc. and lining out complete		-		-	
	New work (Two or more coats)	Sqm.	234.00	-	-	2.17
					-	
10.3	Providing and laying in position bitumen hot sealing compound for expansion joints etc.		-		-	
	Using grade 'A' sealing compound.	per cm depth per cm width per m length	200.00	-	-	0.04
					-	
10.4	Providing and laying CC pavement of mix M-25 with ready mixed concrete from batching plant. The ready mixed concrete shall be laid and finished with screed board vibrator, vacum dewatering process and finally finished by floating with neat finish including cutting and cleaning of grooves (as per drawing) using mechanical handcutter i.e. diamond saw etc. complete as per specifications and directions of engineer -in - charge. (Basement Parking)	Cum	2,340.00	-	-	1428.78
					-	
10.5	Extra over tender Item No. 10.4 for using dry shake non-metalic mineral based concrete surface floor hardener 4Kg/Sqm minimum as perapproved manufacturers specifications.	Sqm.	23,400.00	-	-	142.63
					-	

Vol-II, PRICE SCHEDULE

S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
10.6	Providing and fixing 10x10x7.50 cm Granite stone block hand cut and chisel dressed on top, for paving in floors, drains etc. laid over 20mm thick base mortar 1:4 (1 cement : 4 coarse sand) with joints 10mm wide filled with same mortar including ruled pointing etc. complete as per direction of engineer-in-charg	Sqm.	2,815.00	-	-	346.95
					-	
10.7	Providing and laying 60mm thick factory made cement concrete interlocking paver block of M -30 grade made by block making machine with strong vibratory compaction and of approved size and design/ shape laid in required color and pattern over and including 50mm thick compacted bed of coarse sand all complete as per specification, and including filling the joint with fine sand approved sample and drawing or as directed by Engineer in charge.	Sqm.	13,970.00	-	-	759.80
					-	
10.8	Providing and laying flamed finish Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the Architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including curing etc. all complete as specified and as directed by the Engineer-in-Charge :Flamed finish granite stone slab Jet Black, Cherry Red, Elite Brown, Cat Eye or equivalent as per approved sample. (Base Rate polished granite Rs140/- per sft)	Sqm.	1,610.00	-	-	410.71
					-	
10.9	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building, all complete as per the architectural drawings, with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand), laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade, including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge.Polished Granite stone slab jet Black, Cherry Red, Elite Brown, Cat Eye or equivalent,as per approved sample. (Base Rate polished granite Rs140/- per sft)	Sqm.	575.00	-	-	149.21
					-	
10.10	Providing and fixing 50 mm thick HDPE grass paver as per approved sample and design as per drawing laid over 50mm thick compacted sand base and sigle layer of WBM including filling of the joints with sweet earth, cutting edge pavers with cutter to required shape, size and pattern and setting with vibration complete in all respects as per manufacturers specification. (The payment of WBM shall be made for seperately) (Basic Rate= Rs.50per Sqft.)	Sqm.	100.00	-	-	6.97
					-	
	TOTAL OF FLOORING				**-**	
11.0	**ROOFING & WATER PROOFING**				-	
					-	
11.1	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatement of roofs, balconies, terraces etc consisting of following operations				-	
	Applying a slurry coat of neat cement using 2.75 kg. per Sqm of cement admixed with water proofing compound conforming to IS :2645 and approved by Engineer-in-charge over the RCC slab i/c adjoining walls up to 300 mm height including cleaning the surface before treatement				-	
	Laying brick bats with mortar using broken bricks/ bricks bats 25 mm to 115 mm size with 50 % of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound confirming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer cement mortar of mix 1:5(1cement 5 coarse sand) admixed with water proofing compound confirming to IS : 2645 and approved by Engineer-in-charge required slope and treating similarly the adjoining wall up to 300 mm height including rounding of junctions of walls and slabs.				-	
	After two days of proper curring applying a 2nd coat of neat cement slurry using 2.75 Kg / Sqm of cement admixed with water proofing compound confirming to IS : 2645 and approved by Engineer-in-charge.				-	
	Finishing the surface with 20 mm thick jointless cement mortor of mix 1:4 (1 cement : 4 coarse sand) admixed with water proofing compound confirming to IS : 2645 and approved by Engineer-in-charge. Including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300 x 300 mm Square 3 mm deep				-	
	The whole surface so finished shall be flooded with water for a minimum period of two weaks for curring and for final test. All above operations to be done in order and as directed and specified by the Engineer-in-charge.				-	
	With average thickness of 120 mm and minimum thickness at khurra/ spout as 65 mm	Sqm	1,238.00	-	-	113.15
11.2	Providing gola 75x75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone agg. 10 mm and down gauge) including finishing with cement mortar 1:3 (1 cement:3 fine sand) as per standard design:		-		-	
	In 75 x 75 mm deep chase	Rm	145.01	-	-	1.96
					-	
11.3	Providing and fixing machine moulded aluminium covering of approved pattern & design, made out of machine cut aluminium sheet and machine holed for receiving dash fastener, over expansion joints on vertical surfaces/ceiling floors, the fixing on plate in one row on one side of joint only shall be done with stainless steel dash fasteners of 8 mm dia and 75 mm long bolt including providing aluminium washers 2 mm thick & 15 mm dia , at a staggered pitch of 200mm centre to centre including drilling holes in the receiving surface and providing expandable plastic sleeves in holes etc. complete as per direction of Engineer-in-charge.				-	
	Anodised aluminium sheet 2.5mm thick (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15)	Kg	50.00	-	-	2.01
					-	
11.4	Making khurras 45 x 45 with average minimum thick ness of 5 cm cement concrete 1:2:4 (1 cement :2 coarse sand :4 stone aggregate of 20 mm niminal size) over P.V.C. sheet 1m x 1m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement rounding the edges and making and finishing the outlet complete	Nos.	12.00	-	-	0.20
					-	
11.5	Providing and mixing integral crystalline admixture for waterproofing treatment to RCC structures like water retaining tanks, retaining walls, reservior, sewage & water treatment plant, tunnels / subway and bridge deck etc. at the time of transporting of concrete into the drum of the ready-mix truck,using integral crystalline admixture @0.80% (minimum) to the weight of cement content per cubic meter of concrete) or higher as recommended by the manufacturer's specification in reinforced cement concrete at site of work. The material shall meet the requirements as specified in ACI-212-3R-2010 i.e. by reducing permeability of concrete by more than 90%, compared with control concrete as per DIN 1048 and resistant to 16 bar hydrostatic pressure. The crystalline admixture shall be capable of self-healing of cracks up to a width of 0.50mm. The work shall be carried out all complete as per specification and the direction of the Engineer-in-charge. The product performance shall carry guarantee for 10 years against anyn-Charge	Kg	100.00	-	-	3.32

Vol-II, PRICE SCHEDULE

S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
					-	
11.6	Providing and applying of swellable type water stop tape, 19mm x 25mm thick in linear meter (expansive nature) for construction joints treatment of RCC structure, such as raft slab, retaining walls, water storage tank and at the junctions of raft slab with the retaining walls etc.. After cleaning the surface, one coat of required primer for swellable water stop tape shall be applied throughout the length of the joint @3.78 litre per 240 running meter. Over the primed surface swellable type water stop tape shall be placed. The work shall be carried out all complete as per specification and the direction of the engineer-in-charge. The product performance shall carry guaranteed for 10 years against any leakage	Mtr	200.00	-	-	9.52
					-	
11.7	Providing and laying water proofing treatment in sunken portion of WC's bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying.for 48 hours. The rate includes preparation of surface, treatment a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours. The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.	Sqm	1,944.29	-	-	51.23
					-	
11.8	Grading roof for water proofing treatment with		-		-	
	Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size	Cum.	97.21	-	-	47.95
			-		-	
11.9	Extra for covering top of membrane with Geotextile, 120gsm non woven, 100% polyester of thickness 1 to 1.25mm bonded to the membrane with intermittent touch by heating the membrane by Butane Torch as per manufactures recommendation.	Sqm.	9,987.73	-	-	67.63
			-		-	
11.10	Providing and fixing Heat Resistant Terrace Tiles (300 mm x 300 mm x 20 mm) with SRI (solar refractive index) > 78, solar reflection >0.70 and initial emittance >0.75 on waterproof and sloped surface of terrace, laid on 20 mm thick cement sand mortar in the ratio of 1:4 (1 cement : 4 coarse sand) and grouting the joints with mix of white cement & marble powder in ratio of 1:1, including rubbing and polishing of the surface upto 3 cuts complete, including providing skirting upto 150 mm height along the parapet walls in the same manner.	Sqm.	1,238.00	-	-	125.76
					-	
11.11	Providing and laying roof insulation with 40 mm thick impervious sprayed, closed cell free Rigid Polyurethane foam over deck insulation conforming to IS - 12432 Pt. III (density of foam being 40-45 kg/cum), over a coat of polyurethane primer applied @ 6-8 sqm per litre, laying 400 G polythene sheet over PUF spray and providing a wearing course of 40 mm thick cement screed 1: 2 : 4 (1 cement : 2 coarse sand : 4 stone aggregate 20 mm nominal size) in chequered rough finish, in panels of 2.5 m x 2.5 m and embedding with 24 G wire netting and sealing the joints with polymerized mastic, all complete as per direction of Engineer-in-Charge.	Sqm.	1,238.00	-	-	125.88
11.12	Providing and laying APP (Atactic Polypropylene Polymer) modified prefabricated five layer 3 mm thick water proofing membrane, black finished reinforced with non-woven polyester matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 litre/sqm by the same membrane manufacture of density at 25°C, 0.87-0.89 kg/ litre and viscocity 70-160 cps. Over the primer coat the layer of membrane shall be laid using Butane Torch and sealing all joints etc, and preparing the surface complete. The vital physical and chemical parameters of the membrane shall be as under : Joint strength in longitudinal and transverse direction at 23°C as 650/ 450N/5cm. Tear strength in longitudinal and transverse direction as 300/250N. Softening point of membrane not less than 150°C. Cold flexibility shall be upto -2°C when tested in accordance with ASTM, D - 5147. The laying of membrane shall be got done through the authorised applicator of the manufacturer of membrane. The product performance shall carry guaranteed for 10 years against any leakage.				-	
	3 mm thick	Sqm.	10,487.12	-	-	386.40
	Water Tank, ETP, STP				-	
11.13	Providing and inserting 12mm dia galvanised steel injection nipple in honey comb area and along crack line including drilling of holes of required diametre (20mm to 30mm) up to depth from 30mm to 80mm at required spacing and making the hole & crack dust free by blowing compressed air, sealing the distance between injection nipple with adhesive chemical of approved make and allow it to cure complete as per direction of Engineer-In-Charge.	Nos	250.00	-	-	3.26
11.14	Providing and applying integral crystalline slurry of hydrophilic in nature for waterproofing treatment to the RCC structures like retaining walls of the basement, water tanks, roof slabs, podiums, reservior, sewage & water treatment plant, tunnels/ subway and bridge deck etc., prepared by mixing in the ratio of 5 : 2 (5 parts integral crystalline slurry : 2 parts water) for vertical surfaces and 3 : 1 (3 parts integral crystalline slurry : 1 part water) for horizontal surfaces and applying the same from negative (internal) side with the help of synthetic fiber brush. The material shall meet the requirements as specified in ACI- 212-3R-2010 i.e by reducing permeability of concrete by more than 90% compared with control concrete as per DIN 1048 and resistant to 16 bar hydrostatic pressure on negative side. The crystalline slurry shall be capable of self-healing of cracks up to a width of 0.50mm. The work shall be carried out all complete as per specification and the direction of the engineer-in-charge. The product performance shall carry guaranteed for 10 years against any leakage.				-	
	For vertical surface two coats @0.70 kg per sqm per coat	Sqm	400.00	-	-	16.54
	For horizontal surface one coat @1.10 kg per sqm.	Sqm	150.00	-	-	4.80
	TOTAL ROOFING & WATER PROOFING				-	
					-	
12.0	**FINISHING WORK**				-	
	Note: Cement Plaster with Portland pozzolana Cement confirming to 1489 (Part I) - 1991 (Latest revision). The total flyash content shall be minimum 30% by weight of cement. If 30% is not achieved from PPC cement, additional Fly ash conforming to grade I of IS 3812 (Part-1) only to be used. This is to meet "GRIHA-Green Building" requirement.				-	
12.1	12 mm cement plaster of mix :		-		-	
	Providing and applying smooth internal plaster with Cement Mortar 1:5 (1 cement : 5 coarse sand) 12 mm thick on brick masonry surface /AAC block masonry surface and concrete surface, so as to match the existing line and level of surrounding plaster, inclusive of scaffolding, raking out joints, roughening exposed concrete, bond coat of cement slurry on the interface,curing and finishing at all levels/height complete as per side incharge.	Sqm	6,003.76	-	-	89.23
			-		-	
12.2	15 mm cement plaster on the rough side of single or half brick wall of mix.		-		-	

Vol-II, PRICE SCHEDULE

S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
	Providing and applying smooth internal plaster with Cement Mortar 1:5 (1 cement : 5 coarse sand) 15 mm thick on brick masonry surface /AAC block masonry surface and concrete surface, so as to match the existing line and level of surrounding plaster, inclusive of scaffolding, raking out joints, roughening exposed concrete, bond coat of cement slurry on the interface ,curing and finishing at all levels/height complete as per side incharge.	Sqm	13,824.58	-	-	237.65
			-		-	
12.3	Providing 27 mm thick in 2 coats, 1st coat of 15 mm thick in Cement Mortar 1:5 (1 cement : 5 coarse sand) & 2nd coat of 12 mm thick in Cement Mortar 1:5 (1 cement : 5 coarse sand) on rough side of the diaphragm wall finished to a smooth finish including providing 3mmx3mm size grooves at junctions of two dissimilar materials all complete. Work shall including preparation of surface by wetting with water, applying cement slurry, curing, scaffolding & staging work complete with all labour, materials and T&Ps	Sqm	7,676.00	-	-	206.13
					-	
12.4	6 mm cement plaster to ceiling of mix		-		-	
	Providing and applying smooth internal plaster with Cement Mortar 1:3 (1 cement : 3 Fine sand) 6 mm thick on Ceiling and concrete surface, so as to match the existing line and level of surrounding plaster, inclusive of scaffolding, raking out joints, roughening exposed concrete, bond coat of cement slurry on the interface ,curing and finishing at all levels/height complete as per side incharge	Sqm	3,407.64	-	-	43.29
					-	
12.5	Providing Neat cement punning to a thickness of about 1.5mm, finished smooth with steel trowel including preparation of surfce, scaffolding, curing etc., at all levels/heights and locations complete as specified and as directed..	Sqm	2,000.00	-	-	7.53
					-	
12.6	Providing and laying 50 mm thick pre polished granite stone in coping over 20mm (average) thick base of cemer 1 : 4 (1 cement : 4 coarse sand) laid as per pattern,butt jointed, with a joint width of not more than 4mm, in cement mortar 1 : 2 (1 grey cement : 2 stone dust) mixed with pigment to match the shade of stone slab complete . (Base rate of Polished Granite- Rs250/Sft)	Sqm	144.00	-	-	53.16
					-	
12.7	Providing and fixing 18mm thick pre polished granite stone wall cladding upto 12m heigth, in required design and pattern wherever required, on 12 mm (average) thick cement mortar 1:3 (1 cement : 3 coarse sand) laid and jointed with cement slurry @ 3.3 kg/sqm including pointing with white cement slurry admixed with pigment of matching shade, including curing, to be secured to the backing and the sides by means of SS cramps and pins all complete as per Architectural drawings, details, and as directed by the Engineer-in-Charge. (Base Rate polished granite Rs140/- per sft)	Sqm	868.00	-	-	392.88
					-	
12.8	Finishing walls with textured exterior paint of required shade,New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqr	Sqm	988.00	-	-	13.15
					-	
12.9	Finishing walls with Acrylic Smooth exterior paint of required shade,New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including priming coat of exterior primer applied @ 2.20 kg/10 sqm	Sqm	1,686.00	-	-	14.31
					-	
12.10	Granite work: Supply and fixing of 40mm thick flamed granite band as per drg on cement mortar 1:3 mix (to the desired thickness to achieve the finished levels) cost including all materials to site, all labour charges and other necessary charges to complete.(Base Rate of flamed granite Rs240/- per sft	Sqm	30.00	-	-	11.06
					-	
12.11	Providing and laying at or near ground level factory made kerb stone of M-25 grade cement concrete in position to the required line, level and curvature, jointed with cement mortar 1:3 (1 cement: 3 coarse sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required complete etc. as per direction of Engineer-in-charge (length of finished kerb edging shall be measured for payment). (Precast C.C. kerb stone shall be approved by Engineer-in-charge)..	Cum	126.00	-	-	55.79
					-	
	TOTAL OF FINISHING WORK				-	
					-	
13.0	**NON-SCHEDULED ITEMS**				-	
					-	
13.1	Foam concrete filling in sunken portion of WC & Kitchen with approved quality of foam concrete including supply of labour, material and T & P etc. required for proper completion of the work as per direction of Engineer-in-charge.	Cum	25.00	-	-	11.49
			-		-	
13.2	Supplying, laying and fixing of std. chicken wire mesh IRCS-6(6 x 6 x 6/6) in positions at junctions of concrete & masonary works etc with nails/neat cement. all complete as per specification, drawing and instructions of enginner in charge.	Sqm	600.00	-	-	1.70
					-	
	TOTAL OF NON-SCHEDULED ITEMS				-	
					-	
14.0	**DISMANTLING**				-	
14.1	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 metres lead as per direction of Engineer - in - charge				-	
a)	Nominal concrete 1:3:6 or richer mix (i/c equivalent design mix	Cum.	10.00	-	-	0.88
b)	Nominal concrete 1:4:8 or leaner mix (i/c equivalent design mix	Cum.	12.00	-	-	0.65
					-	
14.2	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer - in- charge	Cum.	23.00	-	-	2.96
					-	
14.3	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge				-	
	In cement mortar	Cum.	105.00	-	-	7.82
					-	
14.4	Removing mortar from bricks and cleaning bricks including stacking within a lead of 50 m (stacks of cleaned bricks shall be measured) :				-	
	From brick work in cement mortar	1000 Nos	10,000.00	-	-	2.47
					-	
14.5	Dismantling doors, windows and clerestory windows (steel or wood) shutter including chowkhats, architrave, holdfasts etc. complete and stacking within 50 metres lead				-	
a)	Of area 3 sq. metres and below	Each	10.00	-	-	0.14
b)	Of area beyond 3 sq. metres	Each	5.00	-	-	0.10
					-	

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S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
14.6	Taking out doors, windows and clerestory window shutters (steel or wood) including stacking within 50 metres lead:				-	
a)	Of area 3 sq. metres and below	Each	10.00	-	-	0.05
b)	Of area beyond 3 sq. metres	Each	5.00	-	-	0.04
					-	
14.7	Dismantling steel work in single sections including dismembering and stacking within 50 metres lead i				-	
	Channels, angles, tees and flats	Kg.	4,000.00	-	-	0.34
					-	
14.8	Dismantling steel work in built up sections in angles, tees, flats and channels including all gusset plates, bolts, nuts, cutting rivets, welding etc. including dismembering and stacking within 50metres lea	Kg.	1,100.00	-	-	0.23
					-	
14.9	Dismantling tile work in floors and roofs laid in cement mortar including stacking material within 50 metres lead.				-	
	For thickness of tiles 10 mm to 25 mm	Sqm.	1,000.00	-	-	2.79
					-	
14.10	Dismantling stone slab flooring laid in cement mortar including stacking of serviceable material and disposal of unserviceable material within 50 metres lead	Sqm.	12.00	-	-	0.12
					-	
14.11	Demolishing mud phaska in terracing and disposal of material within 50 metres lea	Cum.	35.00	-	-	1.16
					-	
14.12	Dismantling roofing including ridges, hips, valleys and gutters etc., and stacking the material within 50 metres lead of:				-	
	G.I. Sheet	Sqm.	1,400.00	-	-	8.67
					-	
14.13	Dismantling C.I. or asbestos rain water pipe with fittings and clamps including stacking the material within 50 metres lead :				-	
	100 mm dia pipe	Mtr.	40.00	-	-	0.11
					-	
14.14	Dismantling G.I. pipes (external work) including excavation and refilling trenches after taking out the pipes, manually/ by mechanical means including stacking of pipes within 50 metres lead as per direction of Engineer-in-charge :				-	
a)	15 mm to 40 mm nominal bore	Mtr.	750.00	-	-	4.22
b)	Above 40 mm nominal bore	Mtr.	150.00	-	-	0.94
					-	
14.15	Dismantling C.I./uPVC pipes including excavation and refilling trenches after taking out the pipes, manually/ by mechanical means breaking lead caulked joints, melting of lead and making into blocks including stacking of pipes & lead at site within 50 metre lead as per direction of Engineer-in-charge				-	
a)	Up to 150 mm diameter	Mtr.	50.00	-	-	0.81
b)	Above 150 mm dia up to 300 mm dia	Mtr.	20.00	-	-	0.43
					-	
14.16	Dismantling of road gully chamber of various sizes including C.I. grating with frame including stacking of useful materials near the site and disposal of unserviceable materials within 50 metres lead including refilling the excavated gap.	Each	6.00	-	-	0.21
					-	
14.17	Dismantling of flushing cistern of all types (C.I./PVC/Vitrious China) including stacking of useful materials near the site and disposal of unserviceable materials within 50 metres lead	Each	4.00	-	-	0.14
14.18	Dismantling aluminium/ Gypsum partitions, doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material and stacking of serviceable material with in 50 meters lead as directed by Engineer-in-charge.	Sqm.	1,000.00	-	-	2.15
					-	
14.19	Dismantling old plaster or skirting raking out joints and cleaning the surface for plaster including disposal of rubbish to the dumping ground within 50 metres lea	Sqm.	1,930.00	-	-	3.82
					-	
14.20	Disposal of building rubbish / malba / similar unserviceable, dismantled or waste materials by mechanical means including loading, transporting, unloading to approved municipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all loads including all lifts involved	Cum.	2,665.00	-	-	28.38
	TOTAL OF DISMANTLING ITEMS				**-**	
15.0	**MISC. WORK**				-	
					-	
15.1	Providing and fixing high density thermocole, minimum density 30 kg/cm sq., when tested as ASTM D-3575, including using double sided adhesive Tape (of 25mmx25mmx2mm at four places per sqmtr to the casted surface to form the expansion joint so as to become one side of the shuttering while the expansion joint is being created.	RM	309.10	-	-	29.57
15.2	Providing and fixing Rebar with Epoxy resin and hardener of **FIS EM** or Hilti or approved equivalent make. The Chemical should have working life of 50 years. Drilling Hole with suitable drill bit to the specified depth through a rotary hammer, cleaning with brush and jet of clean air, filling resin and hardener using a static mixer to ensure proper mixing of the chemical. Use of Piston plugs and extension hose for longer embedment depths to ensure proper injection of the chemical without air bubble and then fixing the rebar. Conducting occasional site inspection, executing work by trained personnel and occasional supervision from the Manufacturer's representative in India. The Installation and setting instructions should be strictly followed as per the Manufacturers recommendation.				-	
15.2.1	16 mm dia	Nos	500.00	-	-	28.66
15.2.2	20 mm dia	Nos	250.00	-	-	20.67
15.2.3	25 mm dia	Nos	250.00	-	-	43.90
15.3	Providing and fixing Rebar with super bond resin and hardener of **FIS SB** or Hilti or approved equivalent make. The Chemical should have working life of 50 years. Drilling Hole with suitable drill bit to the specified depth through a rotary hammer, cleaning with brush and jet of clean air, filling resin and hardener using a static mixer to ensure proper mixing of the chemical. Use of Piston plugs and extension hose for longer embedment depths to ensure proper injection of the chemical without air bubble and then fixing the rebar. Conducting occasional site inspection, executing work by trained personnel and occasional supervision from the Manufacturer's representative in India. The Installation and setting instructions should be strictly followed as per the Manufacturers recommendation.				-	
15.3.1	8 mm dia	Nos	250.00	-	-	3.18
15.3.2	10 mm dia	Nos	250.00	-	-	4.64
15.3.3	12 mm dia	Nos	4,500.00	-	-	104.94
15.3.4	16 mm dia	Nos	3,500.00	-	-	139.13

Vol-II, PRICE SCHEDULE

S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
					-	
15.4	Providing & grouting of pocket holes, pipe sleeves in structural steel work/ machinery/ pipe supporting structures including roughening of surface, cleaning, ramming, curing etc. all complete with mix 1:1:2 (1 cement : 1 coarse sand : 2 aggregate of 6 mm down graded stonechips) using non shrink admixture as per specification, drawing and direction of engineer-in-charge. (Cost of all material and cleaning the pocket by compressed air shall be in the scope of the contractor).	Cum	5.00	-	-	6.63
					-	
	GUNNITING				-	
15.5	Providing and laying pressure guniting/shot-crete with cement mortar 1:4 (1 part cement : 4 parts coarse sand) by pressure gun reinforced with welded mesh of size 50mmx50mmx3mm fixed on the surface with nails/screws etc. The pressure guniting treatment shall be of 50mm average thickness. Work shall including preparation of surface by wetting with water, applying cement slurry, curing, scaffolding & staging work complete with all labour, materials and T&Ps.	sqm	7,676.00	-	-	629.24
15.6	Supply, fabrication and erection of structural steel work with MS tubular section (round, square or rectangular hollow tubes etc. with electric resistant, induction butt welded tubes) etc. of specified grade confirming to IS 4923 / IS 1161 ,Yield strength minimum 240 MPa as per latest IS Code to form structural frame work for external facade/ roof work at all levels upto 100 metre from ground floor level as per shop drawings based on the design approved by Engineer-in-charge. The rate shall include transportation of materials from steel manufacturer's yard to fabrication yard and then to site of work, making all necessary arrangement for safe handling and erection and hoisting i.e. like making temporary sturdy structure to take erection loads and loads of the fabricated sections/ materials during execution, dismantling temporary structure after completion of structure etc. Including applying Primer and PU paint of two coat of (total paint thickness approx 150 micron) of approved make and all work shall be carried out true to line and levels as per approved drawings and specifications.				-	
	The rate shall include cost of preparation of shop drawings based on approved structural design and drawings including incorporating modification and preparation of revised shop drawing as per direction of Engineer-in-Charge, materials and all operation lilke cuttings, bevelling, tack welding, fine welding and re-welding, filling and smoothening the edges to remove any blurrs and additional welds, making holes to receive nuts and bolts as required at site and in fabrication yard to maintain line & level, providing required machinery like hydra, cranes, jigs & fixtures, all necessary tools and plants to handle structural material, temporary jointing and disjointing, labour for carrying erection and geometrical control survey, field and lab testing charges etc. all complete as per approved architectural, structural and shop drawings and direction of Engineer-in-Charge	MT	50.00	-	-	481.43
15.7	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910, on 12 mm dia steel bar conforming to IS: 1786, having minimum cross section as 23 mmx25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specifications and having manufacture's permanent identification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Nos	150.00	-	-	4.34
					-	
15.8	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade :				-	
	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture.	Sq.mtr.	400.00	-	-	3.97
					-	
15.9	Supply, fabricating and fixing of mild steel embedments, embedment in shear wall , fixing insert plate, 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	4.50	-	-	29.02
					-	
15.10	Providing and laying of 600mm dia Non- Pressure NP3 class RCC Hume pipe/Casing pipe of sizes as drawings with collars jointed with stiff mixture of cement mortar mixed in the proportion of 1:2 (1 Cement:2 Fine Sand) including testing of joints complete.	RMT	75.00	-	-	16.68
					-	
15.11	Cutting Reinforced concrete (RCC) with mechanised tools like Core drilling machine etc. for cutting holes, cores in slab, beam, column, wall, D-wall or foundation as per direction of engineer in charge. Item includes for cutting of reinforcement bars.				-	
I	upto 300mm depth				-	
a	100 MMDia.	NOS.	10.00	-	-	0.31
b	150 MMDia	NOS.	8.00	-	-	0.35
c	200 MMDia	NOS.	8.00	-	-	0.46
d	300 MM Dia	NOS.	5.00	-	-	0.53
II	300 to 750mm depth				-	
a	150 MMDia	NOS.	15.00	-	-	1.46
b	200 MMDia	NOS.	8.00	-	-	0.99
c	300 MM Dia	NOS.	8.00	-	-	1.84
					-	
15.12	Providing and mixing water proofing compoundconforming to IS:2645 in concrete or cement mortar all complete.	Kg	15,000.00	-	-	54.33
15.13	Providing and erecting 2.00 metre high temporary barricading at site as per drawing/ direction of Engineer-in-Charge which includes writing and painting, arrangement for traffic diversion such as traffic signals during construction at site for day and night, glow lamps, reflective signs, marking, flags, caution tape as directed by the Engineer-in- Charge. The barricading provided shall be retained in position at site continuously i/c shifting of barricading from one location to another location as many times as required during the execution of the entire work till its completion. Rate include its maintenance for damages, painting, all incidentals, labour materials, equipments and works required to execute the job. The barricading shall not be removed without prior approval of Engineer-in-Charge. (Note :- One time payment shall be made for providing barricading from start of work till completion of work i/c shifting. The barricading provided shall remain to be the property of the contractor on completion of the work).	Metre	560.00	-	-	78.01

Vol-II, PRICE SCHEDULE

S. No. (1)	DESCRIPTION (2)	UNIT (3)	QTY. (4)	Rate (5)	Amount (6)	Weightage (7)
15.14	Felling of tree, removing its portion under the ground and stacking the salvaged wood at one location within the plot as per the instruction of the Engineer in charge.	Each	150.00	-	-	53.00
15.15	Buy Back of Salvaged Timber from felling of trees and disposal of the same through UP Forest Corporation or any other Government / Government authorized agency	CFT	450.00	-	-	-19.88
15.16	Buy Back of Salvaged fire wood from felling of trees and disposal of the same through UP Forest Corporation or any other Government / Government authorized agency	Kgs	15,000.00	-	-	-1.33
15.17	Disconnection of functional sewer line from nearest manhole which is not falling in excavated area	job	1.00	-	-	3.09
15.18	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete between two manholes.				-	
a	150 mm dia R.C.C pipe	Metre	250.00	-	-	6.63
b	300 mm dia R.C.C pipe	Metre	250.00	-	-	12.15
15.19	Providing and laying cement concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) alround S.W./RCC pipes including bed concrete as per standard design				-	
a	150 mm diameter	cum	100.00	-	-	6.63
b	200 mm diameter	cum	100.00	-	-	7.95
15.20	Making connection of drain or sewer line or storm water drain with existing manhole including breaking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cement mortar 1 : 3 (1 cement : 2 coarse sand) finished with a floating coat of neat cement and making necessary channels for the drain etc. complete for all pipes.	Each	10.00	-	-	0.71
15.21	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand), R.C.C. top slab with 1:2:4 mix (1cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size)150mm thick, inside plastering 12mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making necessary channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement complete as per standard design. Excavation and refilling of soil of all type is included Inside size 90 x 80 cm and 45 cm deep including C.I. cover with frame (light duty) 455 x 610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg) With F.P.S. bricks with class designation 7.5	Each	20.00	-	-	15.02
15.22	Disconnection of functional fire pipe line from nearest area which is not falling in excavation area	job	1.00	-	-	2.65
15.23	Disconnection of functional water pipe line from nearest area which is not falling in excavated area	job	1.00	-	-	2.65
15.24	Providing, laying, jointing and testing in position the following HPDE (PE-100) as per IS:4984. Pipes for water supply cut to required lengths making proper connections of required depths. Pipe to be laid below ground level in trenches upto required depth including excavation in all kind of soil (hard rock), dewatering, refilling, watering, ramming & removing the surplus excavated material and making good the same complete as required. Cost shall be inclusive of providing protection to pipe all round / haunches as per specification with minimum 150 mm thick all round compacted silver sand and providing thrust block. Connection to the existing functional lines is also inclusive. All work complete as per specification and satisfaction of the Project Manager.				-	
a	50 mm dia	Metre	250.00	-	-	8.83
b	65 mm dia	Metre	250.00	-	-	9.14
c	90 mm dia	Metre	250.00	-	-	15.06
	TOTAL OF MISC. WORKS				**-**	
				Grand Total (A)		**-**
	Value in words: Rupees _____					

Note	
1	**Only Grand total (A) is to be quoted in numerals as well as words**
2	Wherever, design falls under the contractor's scope, the contractor must provide the details of structural calculations of the member offered and also provide drawings of individual profiles, details of any other profiles that may be used - clearly indicating all dimensions, wall thickness and weight Kg./m for all items for approval by BHEL.
3	Cost of glass including cutting, edge grinding, making hole wherever required, wastages, stacking, carrying to heights and fixing in appropriate locations is included in the quoted rate as per the details for all items.
4	All shade approval shall be as per BHEL's Approval.
5	Item description should be read in congestion with specification written in any part/ section of the Tender Document, as applicable.
6	The executions of Items should be in strict compliance to the drawings, technical specifications and item description provided in the BOQ. In the event of conflicting provision in the schedule item and drawings, the contractor is required to seek clarification from BHEL before execution.
7	Bidder shall be responsible to design the system as per the sizes and shapes of the panels shown in the drawings including any modifications as may be required during execution and the designed system should withstand the designed wind pressure as well as all other incidental forces and stresses likely to be experienced under service conditions, i.e. dead weight, thermal expansion due to building movement both vertical and horizontal etc. Bidder shall also be responsible to design the entire glazing system, type & thickness of Glass considering the minimal spectral and physical parameters of the glass set out in the technical specifications and bills of quantities, sealant including Bite thickness, supporting arrangements including fastening device size & material, preparation of shop drawing in two stages namely project mock up stage and execution stage, fabrication, supply, erection of the system and testing the system as envisaged in the Technical specification and bills of quantities i.e. For Field test.
8	Bidder shall be responsible to provide a mock-up of Glazing & ACP Cladding at site without any extra cost.
9	Bidder shall be responsible to design the system in such a way that the sealants shall withstand movement up to 50% of provided gap or to the limitation of manufacturer's specification. Expose Sealant surface shall not crack on bubble. No acetify sealant shall be used. Electrometric Sealant shall not be allowed to use, unless otherwise the manufacturer render the services on Product back-up and guarantee.
10	Anchors, fasteners with nuts & washers and all other fastening materials shall be non-magnetic stainless steel of SS 316 grade steel.
11	Shop Drawing for Mock-up as well as for entire glazing system based on approval Design Parameters shall be provided for approval.
12	The work contained in item no. 11.1 shall be waranteed for a period of 7 years from the date of virtual completion of project.
13	The contractor shall be required to protect all components and material from damage or disfiguration of any kind at all stages of work until handling over. The entire glazing & cladding work including all the components involved in these items shall be guaranteed by the contractor as general and system guarantee for a period 10 (Ten) years including special guardant for glass, reflective coating of the glass. The contractor shall arrange to furnish to BHEL product/ system gaurantee from manufacturer in an approved performa on Non-judicial stamp paper to this effect. The guarantees from specialist applicators such as sealants, glass processing & coating, etc., shall also be submitted form the respective manufacturer / sub – vendor, counter signed by the contractor himself.

Sign and Stamp of the Bidder