

SUMMARY OF PRICES		
<b>Name of work: - Complete Interior &amp; Furnishing works such as Flooring, Wall &amp; ceiling finishes, Partitioning, Wood work, False Ceiling, Plumbing, Electrical &amp; other ancillary works for under construction DFCCIL C. O. Building complex at Sec-145, Noida.</b>		
S. No	DESCRIPTION OF SCHEDULES	AMOUNT COST (in Rs.)
I	<b>SCHEDULE-I (INTERIOR &amp; FURNISHING WORKS)</b>	
(i)	Execution of all works as per “Schedule-Items” (as per CPWD DSR 2016/2018/2019 without GST)	11,17,22,043
(ii)	Execution of all works as per “Non-Schedule-Items”	31,78,53,262
	<b>Total (Schedule-I)</b>	<b>42,95,75,305</b>
II	<b>SCHEDULE-II (FURNITURE WORKS)</b>	
(i)	Execution of all works as per “Schedule-Items” (as per CPWD DSR 2016/2018/2019 without GST)	0
(ii)	Execution of all works as per “Non-Schedule-Items”	11,19,54,065
	<b>Total (Schedule-I)</b>	<b>11,19,54,065</b>
III	<b>SCHEDULE-III (ELECTRICAL WORKS)</b>	
(i)	Execution of all works as per “Schedule-Items” (as per CPWD DSR 2016/2018/2019 without GST)	6,84,00,932
(ii)	Execution of all works as per “Non-Schedule-Items”	8,31,62,565
	<b>Total (Schedule-II)</b>	<b>15,15,63,497</b>
IV	<b>SCHEDULE-IV (HVAC &amp; BMS WORKS)</b>	
(i)	Execution of all works as per “Schedule-Items” (as per CPWD DSR 2018/2019 without GST)	2,96,79,225
(ii)	Execution of all works as per “Non-Schedule-Items”	8,01,97,925
	<b>Total (Schedule-III)</b>	<b>10,98,77,150</b>
V	<b>SCHEDULE-V (LOW VOLTAGE WORKS)</b>	
(i)	Execution of all works as per “Schedule-Items” (as per CPWD DSR 2016/2018/2019 without GST)	0
(ii)	Execution of all works as per “Non-Schedule-Items”	29,27,09,911
	<b>Total (Schedule-IV)</b>	<b>29,27,09,911</b>
	<b>Grand Total (Schedule-I+ II+ III+IV+V)</b>	<b>1,09,56,79,927</b>
	<b>Grand Total (Schedule- I+ II+ III+IV+V) Incl. GST @ 18%</b>	<b>1,29,29,02,314</b>

**Notes:**

- 1) This proforma is just for information and perusal. However, the rates are to be filled in Online mode in Financial Bid “Packet-B”.
- 2) **Schedule Items:** The cost of Schedule items given above are as per CPWD DSR 2018/2019 without GST. The rates of items for CPWD DSR 2018/2019 (as mentioned in BOQ) have been worked out after deducting GST component from the CPWD DAR 2018/2019.
- 3) **Non-Schedule Items:** The cost of Non-Schedule items given above (*other than CPWD DSR 2018/2019*) are **as per current market rate analysis (excluding GST, as GST would be paid extra by DFCCIL)**.
- 4) All efforts have been made to make the document/BOQ complete in all respect for successful commissioning of the works, however, if any minor item has not been specifically mentioned or being omitted, the same shall be executed without any extra cost by the agency, so as to ensure successful and satisfactory commissioning of the item / work. In this regard, decision of Engineer/DFCCIL shall be final & binding.

## **(Schedule of Prices and Total Prices)**

**Name of Work: Complete Interior Fitout works such as Flooring, Wall & Ceiling finishes, Partitioning, Wood work, Plumbing, Electrical, HVAC, Low Voltage & other anciliary works for under construction DFCCIL C. O. Building complex at Sec-145, Noida**

## Form- 4

		<b>SCHEDULE-I</b>				
		<b>INTERIOR &amp; FURNISHING WORKS</b>				
(i)		<b>SCHEDULED DSR ITEMS</b>				
A		<b>INTERIOR WORKS</b>				
		<b>SUBHEAD 1: EXCAVATION WORKS</b>				
1	D.S.R. 2.6	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in-charge.				
	D.S.R. 2.6.1	All kinds of soil	Cum	1,500.00	162.00	2,43,000.00
2	D.S.R. 2.8	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.				
	D.S.R. 2.8.1	All kinds of soil	Cum	2791.12	225.3	6,28,839.00
3	D.S.R. 2.25	Filling 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, lead upto 50 m and lift upto 1.5 m.	Cum	2093.34	196.1	4,10,504.00
		<b>Total of the Sub-Head - Excavation work :</b>				<b>12,82,343.00</b>
		<b>SUBHEAD 1: CONCRETE WORKS</b>				
4	D.S.R 4.1	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level.				

CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01

4.1	D.S.R 4.1.8	1:4:8 (1 Cement : 4 coarse sand (zone-III) : 8 graded stone aggregate 40 mm nominal size)	Cum	336.81	5169.3	17,41,072
4.2	4.1.5	1:3:6 (1 Cement : 3 coarse sand (zone-III) : 6 graded stone aggregate 20 mm nominal size)	Cum	364.70	5,588.48	20,38,104.55
4.3	4.1.3	1:2:4 (1 Cement : 2 coarse sand (zone-III) : 4 graded stone aggregate 40 mm nominal size)	Cum	100.00	6,061.25	6,06,125.00
5.1	4.10	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size).	Sqm	20.00	310.62	6,212.40
5.2	4.11	Providing and laying damp-proof course 50mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand(zone-III) : 4 graded stone aggregate 20mm nominal size).	Sqm	20.00	374.02	7,480.46
6	4.12	Extra for providing and mixing water proofing material in cement concrete work in doses by weight of cement as per manufacturer's specification.	kgs per 50 bag of cement	106.00	50.49	5,351.94
7	4.13	Applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7 kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	Sqm	40.00	98.21	3,928.40
8	D.S.R 4.20.1.1	M-15 grade plain cement concrete (cement content considered @ 240 kg/cum)	Cum	12.00	7,054.20	84,650.40
		<b>Total of the Sub-Head - Concrete work :</b>				<b>44,92,925.08</b>
		<b>SUBHEAD 2: RCC WORKS</b>				
9	5.3	Reinforced cement concrete work in beams, suspended floors, roofs having slope up to 15° landings, balconies, shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases up to floor five level, excluding the cost of centering, shuttering, finishing and reinforcement, with 1:1.5:3 (1 cement : 1.5 coarse sand	Cum	50.00	8,717.68	4,35,884.00

		(Zone-III) : 3 graded stone aggregate 20 mm nominal size).				
10	5.37	Providing and laying in position ready mixed M-25 grade concrete for reinforced cement concrete work, using cement content as per approved design mix, 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 finishing and reinforcement, including cost of admixtures 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 Architect/Client.				
		(Note :- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/recoverable separately).				
10.1	5.37.1	All works upto plinth level	Cum	100.00	7,498.79	7,49,879.00
11	5.34	Extra for providing richer mixes at all floor levels				
		Note:- Excess/less cement over the specified cement content used is payable /recoverable separately.				
	5.34.1	Providing M-30 grade concrete instead of M-25 grade BMC/ RMC. (Note:- Cement content considered in M-30 is @ 340 kg/cum	CUM	1177.2	62.3	73,340
	5.35	Add for using extra cement in the items of design mix over and above the specified cement content therein.	Quintal	353.16	601.2	2,12,320
12		<b>Centering and shuttering including strutting, propping etc. and removal of form for :</b>				
12.1	5.9.1	Foundations, footings bases of columns etc. for mass concrete.	Sqm	751.5	254.3	1,91,106
12.2	5.9.5	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	Sqm	600.00	492.90	2,95,740.00
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**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

12.3	5.9.19	Weather shade, Chajjas, corbels etc., including edges	Sqm	150.00	684.60	1,02,690.00
13	5.22	<b>Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level.</b>				
13.1	5.22.6	Thermo-Mechanically Treated bars of grade Fe-500D or more.	Kg	49,875.00	74.55	37,18,181.47
		<b>Total of the Sub-Head - RCC Work :</b>				<b>57,79,140.27</b>
		<b>SUBHEAD 3: MASONRY WORKS</b>				
14	D.S.R 6.1	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:				
	D.S.R 6.1.2	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	225.63	5497.7	12,40,446
15	6.12	Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundations and plinth in :				
	6.12.2	cement mortar 1:4 (1 cement : 4 coarse sand)	Sqm	150	690.85	1,03,628
16	6.13	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.				
	6.13.2	Cement mortar 1:4 (1 cement :4 coarse sand)	Sqm	100	832.23	83,223
17	6.15	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry.	Sqm	40	71.52	2,861
18	6.38	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 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	80.00	7,345.85	5,87,668.00
					-	
19	6.5	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above floor V level, for	Cum	30.00	211.29	6,338.70

		each four floors or part thereof by mechanical means.				
		<b>Total of the Sub-Head - Masonry Work :</b>				<b>20,24,164.05</b>
		<b>SUBHEAD 5: ROAD WORKS</b>				
20	D.S.R. 16.78	Construction of granular sub-base by providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, carriage of mixed material by tippers to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.				
	D.S.R. 16.78.2	With material conforming to Grade-II (size range 53mm to 0.075mm) having CBR Value-25	CUM	3452.625	2354.7	81,29,896
21	D.S.R. 16.79	Providing, laying, spreading and compacting graded stone aggregate (size range 53 mm to 0.075 mm ) to wet mix macadam (WMM) specification including premixing the material with water at OMC infor all leads & lifts, laying in uniform layers with mechanical paver finisher in sub- base / base course on well prepared surface and compacting with vibratory roller of 8 to 10 tonne capacity to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.	CUM	452.925	2358.4	10,68,178
22	D.S.R. 16.80	Construction of dry lean cement concrete sub base over a prepared sub-grade with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per specifications, cement content not to be less than 150 Kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, for all leads & lifts, laid with a mechanical paver, compacting with 8-10 tonne vibratory roller, finishing and curing etc.	CUM	1506.6	3465.9	52,21,725

		complete as per direction of Engineer-in-charge.				
23	D.S.R. 16.75	Providing and laying C.C. 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, vacuum dewatering process and finally finished by floating, brooming with wire brush etc. complete as per specifications and directions of Engineer-incharge. (The panel shuttering work shall be paid for separately). (Note:- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/ recoverable separately).	CUM	1177	7734.9	91,03,977
24	D.S.R. 16.69	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 be 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). process and finally finished by floating, brooming with wire brush etc. complete as per specifications and directions of Engineer-incharge. (The panel shuttering work shall be paid for separately). (Note:- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/ recoverable separately).	CUM	168.75	7478.7	12,62,031
25	D.S.R. 16.45	Providing and fixing in position pre-moulded joint filler in expansion joints.	Per cm depth joints. per cm width per metre length	108000	2.8	3,02,400

CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01

26	D.S.R 16.46	Providing and laying in position bitumen hot sealing compound for expansion joints etc				
	D.S.R 16.46.1	Using grade 'A' sealing compound.	per cm depth per cm width per metre Length	108000	2.9	3,13,200
27	D.S.R 16.68	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, of approved size, design & shape, laid in required colour and pattern over and including 50mm thick compacted bed of coarse sand, filling the joints with line sand etc. all complete as per the direction of Engineer-in-charge.	Sqm	1569.6	767.3	12,04,354
28	D.S.R 14.92	Extra for covering top of membrane with Geotextile, 120 gsm non woven, 100% polyester of thickness 1 to 1.25 mm bonded to the membrane with intermittent touch by heating the membrane by Butane Torch as per manufactures recommendation.	Sqm	2196	89.1	1,95,664
29	D.S.R. 5.28	Providing and fixing in position 12mm thick bitumen impregnated fiber board conforming to IS: 1838, including cost of primer, sealing compound Grade-A in expansion joints.	Per CM Depth Per 100M	108	497.9	53,773
30	D.S.R 16.47	Painting runway/taxi track/apron marking with adequate nos 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 ail dirt, scales, oil, grease and other foreign material etc. and lining out complete.				
	D.S.R 16.47.1	New work (Two or more coats)	Sqm	108	134.7	14,548
		<b>TOTAL</b>				<b>2,68,69,746</b>
		<b>SUBHEAD 4: FLOORING WORKS</b>				
31	8.11	Providing and fixing machine cut, mirror/ eggshell polished, Marble stone work for wall lining (veneer work) including dado, skirting, risers of steps etc., in required design and pattern				

		wherever required, stones of different finished surface texture, on 12 mm (average) thick cement mortar 1:3 (1 cement: 3 coarse sand) laid and jointed with white cement slurry @ 3.3 kg/sqm including pointing with white cement slurry admixed with pigment of matching shade, including rubbing, curing, polishing etc. all complete as per Architectural drawings, and as directed by the Engineer-in-Charge.				
31.1	8.11.1	18 mm thick Italian Marble stone slab, Perlato, Bottachino Classico, Rosso Verona, Fire Red or Dark Emperadore etc. Stone to be approved by Architect.	Sqm	765.50	7,878.35	60,30,876.93
32	8.2	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills, facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (a cement: 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels.				
	8.2.2	Granite of any colour and shade				
32.1	8.2.2.2	Area of slab over 0.50 sqm	Sqm	142.49	3,578.26	5,09,880.94
33	11.51	Stone work in Wave Pattern/ Geometric Design Pattern/ Abstract Pattern, Linear Pattern Straight Pattern as per Design/ Drawing. Machine cut, mirror/ diamond polish, Marble Combination stone work in Flooring, skirting and steps etc., stones of different finished surface texture, laid over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with white cement slurry @ 4.4 kg/Sqm, including pointing with white cement slurry admixed with pigment to match the marble shade, including rubbing, curing and polishing etc. all complete as specified.				
33.1	11.51.1	18 mm thick Italian Marble stone slab, Perlato, Bottachino Classico, Rosso Verona, Fire Red or Dark Emperadore etc. Stone to be approved by Architect/Client.	Sqm	550.00	5,344.82	29,39,651.00
33.2	11.56.1	Polished Granite stone slab jet Black, Cherry Red, Elite Brown, Cat Eye or	Sqm	875.00	3,148.75	27,55,170.42

		equivalent.. Stone to be approved by Architect/Client.				
34	16.87	Providing and laying gang saw cut 30 mm thick, mirror polished pre moulded and pre polished machine cut granite stone of required size and shape of approved shade, colour and texture in footpath, flooring in road side plazas and similar locations, laid over 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) including grouting the joints with white cement mixed with matching pigment, epoxy touch ups etc. complete as per direction of Architect/Client.	Sqm	49.99	3,577.54	1,78,859.35
35	8.3	Providing edge moulding to 18 mm thick marble stone counters, Vanities etc., including machine polishing to edge to give high gloss finish etc. complete as per design approved by Architect/Client.				
35.1	8.3.1	Marble work	Meter	76.80	196.74	15,109.63
36	8.5	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/ Granite/ stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	Each	128.00	655.85	83,948.80
37	8.7	Providing and fixing cramps of required size & shape in RCC/ CC / Brick masonry backing with cement mortar 1:2 (1 cement :2 coarse sand), including drilling necessary hole in stones and embedding the cramp in the hole (fastener to be paid separately).				
	8.7.2	Stainless steel cramps	Kg	500.00	546.96	2,73,480.00
38	11.46	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joint with white cement & matching pigments etc. complete.				
38.1	11.46.2	Size of Tile 600x600 mm	Sqm	275.00	1,380.22	3,79,560.50

38	11.26	Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) :				
	11.26.1	25 mm thick.	Sqm	588.07	1,367.72	8,04,311.00
39	11.27	Kota stone slabs 20 mm thick in risers of steps, skirting, dado and pillars laid on 12 mm (average) thick cement mortar 1:3 (1 cement 3coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.	Sqm	67.13	1,616.12	1,08,490.54
					-	
40	8.31	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours,shades except burgundy, bottle green, black of any size as approved by Engineerin-Charge, in skirting, risers of steps and dados, over 12 mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @3.3kg per sqm, including pointing in white cement mixed with pigment of matching shade complete.	Sqm	375.25	919.91	3,45,196.23
41	11.41	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS: 15622, of approved make, in all colors and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), jointing with grey cement slurry @ 3.3 kg/ Sqm including grouting the joints with white cement and matching pigments etc., complete.				
41.1	11.41.4	Size of Tile 1000x1000 mm	Sqm	9,970.00	2,231.47	2,22,47,755.90
42	11.48	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg				
		of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling / grouting and finishing complete.				
42.1	11.48.4	Size of Tile 1000x1000 mm	Sqm	9,970.00	122.63	12,22,621.10

43	11.54	Providing and fixing removable raised/false access flooring with system and its components of approved make for different plenum height with possible height adjustment upto 50 mm, comprising of modular load bearing floor panels supported on G.I. rectangular stinger frame work and G.I. Pedestal etc. all complete, as per the Architectural drawings, as specified and as directed by Engineer.				
		a) Providing at required spacing to form modular framework, pedestals made out of GI tube of thickness minimum 2 mm and 25 mm outer diameter, fully welded on to the G.I. Base plate of size 100mm x 100mm x 3mm at the bottom of the pedestal tube, G.I. pedestal head of size 75mmx75mmx3.5 mm welded with GI fully threaded stud 16mm outer diameter with two GI Check nuts screwed on the stud for level adjustment upto 50mm, locking and stabilizing the pedestal head in position at the required level. The pedestals shall be fixed to the subfloor (base) through base plate using epoxy based adhesive of approved make or the machine screw with rawl plug.				
		b) Stringers system in all steel construction hot dipped galvanized of rectangular size 570x20x30x0.80mm thick having holes at both ends for securing the stringers on to the pedestal head using fully threaded screws ensuring maximum lateral stability in all directions, the grid formed by the pedestal and stringer assembly shall receive the floor panel, this system shall provide adequate solid, rigid support for access floor panel, the system shall provide a minimum clear uninterrupted clearance between the bottom of the floor for electrical conduits and wiring etc. all complete as per the Architectural drawings.				
		c) Providing and fixing Access Floor panel of 600x600x32 mm medium grade Filled Steel anti static high pressure Lamination of 800H grade (FS800H). Access Floor panel shall be steel welded construction with an enclosed bottom pan with uniform pattern of 64 hemispherical cones. The top and bottom plates of Steel Gauges: top 0.6 mm and bottom 0.7 mm fused spot welded together (minimum 64 welds in each dome and 20 welds along				

		each flange). The panel should be corrosion resistant epoxy coated for lifetime rust protection and cavity formed by the top and bottom plate is filled with Pyrogrip noncombustible Portland cementitious core mixed with lightweight foaming compound.				
		The access floor shall be factory finished with Anti-static High Pressure laminate with Non Warp technology upto 1mm thickness for superior adhesion and Surface flatness within 0.75mm. The panel is to withstand a Concentrated Load of 363 kgs applied on area 25mm x 25mm without collapse in the centre of the panel which is placed on four steel blocks. The panel will withstand and Uniformly Distributed Load (UDL) minimum 1250 kg/Sqm and, an impact load of 50kg all complete as per the approved manufacturers specification. All specification must be printed on the side of the panel to ensure the quality of the product. 450 mm Finished Floor Height (FFH).				
	11.54.2	450 mm Finished Floor Height (FFH).	Sqm	723.62	4,789.55	34,65,814.17
		<b>Total of the Sub-Head - Flooring :</b>				<b>4,13,60,726.50</b>
		<b>SUBHEAD 5: PLASTERING &amp; FINISHES</b>				
44	13.1	12 mm cement plaster of mix :				
44.1	13.1.1	1:4 (1 cement: 4 fine sand)	Sqm	1,000.00	238.26	2,38,260.00
45	13.4	12 mm cement plaster of mix :				
	D.S.R. 13.4.1	1:4 (1 cement : 4 coarse sand)	Sqm	483.75	247.00	1,19,486.25
46	13.62	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade :				
46.1	13.62.1	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture	Sqm	299.97	158.17	47,446.25
47	13.80	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	Sqm	6,999.90	102.81	7,19,659.72

48	13.45	Finishing walls with textured exterior paint of required shade :				
48.1	13.45.1	New work (Two or more coats applied @ 3.28 ltr/10 Sqm) over and including priming coat of exterior grade primer applied @ 2.20kg/10 Sqm	Sqm	1,512.00	207.14	3,13,195.68
49	13.37	White washing with lime to give an even shade :				
49.1	13.37.1	New work (three or more coats)	Sqm	5,051.97	25.49	1,28,774.72
50	13.82	Wall painting with acrylic emulsion paint, having VOC (Volatile Organic Compound) content less than 50 grams/ litre, of approved brand and manufacture, including applying additional coats wherever required, to achieve even shade and colour.				
50.1	13.82.2	Two coats	Sqm	1,502.90	95.36	1,43,316.54
		<b>Total of the Sub-Head - Plastering &amp; Finishing :</b>				<b>17,10,139.16</b>
		<b>SUBHEAD 6: DOORS &amp; WINDOWS</b>				
51	9.1	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position with hold fast lugs or with dash fasteners of required dia & length ( hold fast lugs or dash fastener shall be paid for separately).				
51.1	9.1.1	Second class teak wood	Cum	4.50	1,16,234.86	5,23,056.87
52	9.96	Providing and fixing aluminium sliding door bolts, ISI marked anodized anodic coating not less than grade AC 10 as per IS : 1868), transparent or dyed to required colour or shade, with nuts and screws etc. complete :				
52.1	9.96.1	300x16 mm	Each	8.00	229.60	1,836.80
53	9.100	Providing and fixing aluminium handles, ISI marked, anodized (anodic coating not less than grade AC 10 as per IS : 1868) transparent or dyed to required colour or shade, with necessary screws etc. complete :				
53.1	9.100.1	125 mm	Each	184.00	53.26	9,799.84
54	9.20	Providing and fixing ISI marked flush door shutters conforming to IS: 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or				

		cross bands and face veneers on both faces of shutters.				
54.1	9.20.1	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	Sqm	320.00	2,699.95	8,63,984.00
55	9.23	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of flush door shutters (over all area of door shutter to be measured).	Sqm	320.00	358.39	1,14,684.80
56	9.26	Extra for cutting rebate in flush door shutters (Total area of the shutter to be measured).	Sqm	28.80	83.61	2,407.97
57	9.53	Providing 40x5 mm flat iron hold fast 40 cm long including fixing to frame with 10 mm diameter bolts, nuts and wooden plugs and embedding in cement concrete block 30x10x15cm 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 20mm nominal size)	Each	1,056.00	160.00	1,68,960.00
58	9.76	Providing and fixing bright finished SS 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	Each	168.00	636.39	1,06,913.52
59	9.74	Providing and fixing bright finished SS tower bolts (barrel type) with necessary screws etc. complete :				
59.1	9.74.1	250x10	Each	168.00	333.62	56,048.16
59.2	9.74.2	150x10	Each	16.00	267.72	4,283.52
60	9.82	Providing and fixing stainless steel hanging type floor door stopper with necessary screws, etc. complete.	Each	184.00	95.27	17,529.68
61	21.19	Filling the gap in between aluminium/ stone/ wood/ glass frame and adjacent RCC/ Brick/ Stone/ wood/ Ceramic/ Gypsum work by providing weather/structural non sag elastomeric PU sealant over backer rod of approved quality as per Architectural drawings and direction of Architect/Client complete, complying to ASTM C920, DIN 18540-F & ISO 11600				
61.1	21.19.1	Upto 5 mm depth and 5 mm width	Rmt	2,825.75	111.70	3,15,636.28
62	21.1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up				

		standard tubular sections/appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) :				
		For fixed portion				
	21.1.1.2	Powder coated aluminium (minimum thickness of powder coating 50 micron)	Kg	145.00	407.41	59,074.60
		<b>Total of the Sub-Head - Doors &amp; Windows</b>				<b>22,44,216.03</b>
		<b>SUBHEAD 7: STRUCTURAL STEEL</b>				
63	10.2	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	Kg	3,000.00	90.85	2,72,550.00
64	10.19	Providing and fixing mild steel round holding down bolts with nuts and washer plates complete.	Kg	600.00	74.87	44,922.00
65	10.25	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.				
65.1	10.25.1	In stringers, treads, landings etc. of stair cases, including use of chequered plate wherever required, all complete	Kg	600.00	83.61	50,166.00
65.2	10.25.2	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	Kg	1,250.00	117.00	1,46,250.00
66	9.48	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. including priming coat with approved steel primer all complete.				

CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01

66.1	9.48.1	Fixed to steel windows by welding	kg	800.00	147.59	1,18,072.00
67	10.18	Providing and fixing circular/ Hexagonal cast iron or M.S. sheet box for ceiling fan clamp, of internal dia 140 mm, 73 mm height, top lid of 1.5 mm thick M.S. sheet with its top surface hacked for proper bonding, top lid shall be screwed into the cast iron/ M.S. sheet box by means of 3.3 mm dia round headed screws, one lock at the corners. Clamp shall be made of 12 mm dia M.S. bar bent to shape as per standard drawing.	Each	8.00	153.79	1,230.32
68	10.6	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.				
68.1	10.6.1	80x1.25 mm M.S. laths with 1.25 mm thick top cover	Sqm	46.20	2,628.66	1,21,444.09
69	10.7	Providing and fixing ball bearing for rolling shutters.	Each	28.00	374.87	10,496.36
70	10.8	Extra for providing mechanical device chain and crank operation for operating rolling shutters.				
70.1	10.8.1	Exceeding 10.00 sqm and upto 16.80 sqm in the area	Sqm	20.79	987.99	20,540.31
70.2	10.8.2	Exceeding 16.80 sqm in area	Sqm	25.41	987.99	25,104.83
71	10.9	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	9.24	597.28	5,518.87
		<b>Total of the Sub-Head - Structural Steel Work :</b>				<b>8,16,294.78</b>

		<b>SUBHEAD 8: WATERPROOFING</b>				
72	D.S.R 22.5	Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :				
	(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)	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	120.00	416.00	49,920.00
73	22.23	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, reservoir, 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 engineerin-C129charge. The product performance shall carry guarantee for 10 years against any leakage.				
73.1	22.23.1	For vertical surface two coats @0.70 kg per Sqm	Sqm	50.00	432.54	21,627.00

73.2	22.23.2	For horizontal surface one coat @1.10 kg per Sqm.	Sqm	50.00	333.39	16,669.50
74	13.18	Neat Cement Punning (1mm thick)	Sqm	3,549.40	56.03	1,98,872.88
75	22.7	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: (a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge. (d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming 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 300x300 mm square 3 mm deep. (e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for	Sqm	1,357.00	1,248.66	16,94,431.62

		final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge : 22.7.1 With average thickness of 120 mm and minimum thickness at khurra as 65 mm.				
	14.90	Providing and laying APP (Atactic polypropylene Polymer) modified prefabricated five layer, 3 mm thick water proofing membrane, black finished reinforced with glass fibre matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 litre/sqm by the same membrane manufactured of density at 25°C, 0.87 - 0.89 Kg/litre and viscosity 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 350/300 N/5 cm. Tear strength in longitudinal and transverse direction as 60/80N. 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:				
		3mm thick	Sqm	1,357.00	458.00	6,21,506.00
		<b>Total of the Sub-Head - Water Proofing :</b>				<b>26,03,027.00</b>
		<b>SUBHEAD 9: FALSE CEILING</b>				
76	<b>12.45</b>	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/Sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37 mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5mm dia x 50 mm long with 6 mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with				

		intermediate G.I. channels 45x15x0.9 mm running at the rate of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I.				
		wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound, jointing tapes, finishing with jointing compound in 3 layers covering upto 150 mm or both sides of joint and two coats of primer suitable for board, all as per manufacture's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification but excluding the cost of painting :				
76.1	12.45.1	12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- Part I.	Sqm	1,502.90	997.90	14,99,743.91
		<b>TOTAL False Ceiling</b>				<b>14,99,743.91</b>
		<b>SUBHEAD 10: WALL PANELLING</b>				
77	9.154	Providing and fixing frame work for partitions/ wall lining/ paneling etc. made of 50x25x1.6 mm hollow MS tube, placed along the walls, ceiling and floor in a grid pattern with spacing @ 60 cm centre to centre both ways (vertically & horizontally) or at required spacing near opening, with necessary welding at junctions and fixing the frame to wall/ ceiling/ floors with steel dash fasteners of 8 mm dia, 75 mm long bolt, including making provision for opening for doors,	Kgs	24,320.00	110.94	26,98,060.80

		windows, electrical conduits, switch boards etc., including providing with two coats of approved steel primer etc. complete.				
		<b>TOTAL Wall Paneling</b>				<b>26,98,060.80</b>
		<b>SUBHEAD 11: HORTICULTURE</b>				
<b>79</b>	DSR (H) 2.2	Supplying and stacking of good earth at site including royalty and carriage upto 5 km complete (earth measured in stacks will be reduced by 20% for payment).	Cum	1,250.00	419.20	5,23,995.54
<b>80</b>	DSR (H) 2.8	Spreading of sludge, dump manure and/or good earth in required thickness as per direction of officer-in-charge (cost of sludge, dump manure and/ or good earth to be paid separately).	Cum	1,250.00	41.21	51,506.70
<b>81</b>	DSR 1.1	Transportation of good earth by mechanical means including loading, unloading and stacking at site as per direction of engineer-in-charge. Note: The rates will be applicable to net quantities after deduction of prescribed per-Centage for voids mentioned in the specification under subhead "Carriage of materials"	Cum	1,250.00	130.90	1,63,627.23
	DSR 1.1.2	Lead up to 2 Km				
<b>82</b>	DSR (H) 2.28	Preparation of mounds of various size and shape by available excavated / supplied earth in layers not exceeding 20 cm in depth, breaking clods, watering of each layer, dressing etc., lead upto 50 meter and lift upto 1.5 m complete as per direction of Officer-in-charge.	Cum	350.00	358.30	1,25,406.25
<b>83</b>	DSR (H) 6.1	Providing and stacking of Alpinia Variegated (three in one) having ht. 30 cm and above, with fresh and healthy variegated foliage in 25 cm size of Earthen Pot/Plastic Pot & as per direction of the officer-in-charge.	Each	60.00	110.76	6,645.54
<b>84</b>	DSR (H) 6.2	Providing and stacking of Alternanthera species of height 15 cm to 20 cm, full of branches and foliage in 15 cm size of Earthen Pot/Plastic Pot & as per direction of the officer-in-charge.	Each	60.00	18.30	1,098.21
<b>85</b>	DSR (H) 6.3	Providing and stacking of Asparagus marrie, well developed 15 to 20 leaves, full of branches and foliage in 25 cm size of Earthen Pot/Plastic Pot & as per direction of the officer-in-charge.	Each	60.00	50.36	3,021.43

86	DSR (H) 6.4	Providing and stacking of Asparagus sprengeri of height 30 cm to 45 cm, full of leafy branches in 15 cm size of Earthen Pot/Plastic Pot & as per direction of the officer-in-charge..	Each	60.00	18.30	1,098.21
87	DSR (H) 6.5	Providing and stacking of Aspidistra, having 10 to 15 leaves well developed with fresh & healthy in 25 cm size of Earthen Pot/Plastic Pot & as per direction of the officer-in-charge.	Each	60.00	36.61	2,196.43
		<b>SUPPLY AND INSTALL LAWN</b>				
88	DSR (H) 2.34	Providing & laying Selection no. 1 grass turf with earth 50mm to 60mm thickness on existing ground prepared with proper level and ramming with required tools wooden and than rolling the surface with light roller make the surface smoothen and light watering the same, as per direction of officer in charge	Sqm	20,538.52	75.31	15,46,807.29
		<b>SUPPLY AND INSTALL PLANTING MEDIA</b>				
89	DSR (H) 2.14	Digging holes in ordinary soil and refilling the same with the excavated earth mixed with manure or sludge in the ratio of 2:1 by volume (2 parts of stacked volume of earth after reduction by 20% : 1 part of stacked volume of manure after reduction by 8%) flooding with water, dressing including removal of rubbish and surplus earth, if any, with all leads and lifts (cost of manure, sludge or extra good earth if needed to be paid for separately)				
89.1	2.14.1	Holes 1.2 m dia and 1.2 m deep	Each	150.00	272.63	40,895.09
89.2	2.14.2	Holes 90 cm dia, and 90 cm deep	Each	150.00	116.43	17,464.29
89.3	2.14.3	Holes 60 cm dia, and 60 cm deep	Each	250.00	35.67	8,917.41
89.4	2.14.4	Holes 45 cm dia, and 45 cm deep	Each	3,475.00	15.27	53,055.80
90	DSR (H) 2.57	Plantation of Trees, Shrubs, and Hedge at site i/c watering and removal of unserviceable material's as per direction of officer in charge (excluding cost of plant & water)				
90.1	2.57.1	Trees Plant	Each	1,126.00	5.71	6,434.29
90.2	2.57.2	Shrubs Plant	Each	2,801.00	2.86	8,002.86
90.3	2.57.3	Hedge Plant /Ground cover	Each	320.00	1.92	614.29
91	D.S.R (H). 2.4	Supplying and stacking at site dump manure from approved source, including carriage upto 5 km complete (manure measured in stacks will be reduced by 8% for payment) :				

	D.S.R (H). 2.4.3	Screened through sieve of I.S. designation 4.75 mm	cum	1,250.00	256.92	3,21,149.55
		<b>TOTAL HORTICULTURE</b>				<b>28,81,936.39</b>
		<b>SUBHEAD 11: DEMOLITION AND DISMANTLING WORKS</b>				
92	15.3	Demolishing R.C.C. work manually/ by mechanical means including stacking of steel bars and disposal of unserviceable material within 50 meters lead as per direction of Engineer.	CUM	15.00	2,263.13	33,946.93
93	15.5	Extra for cutting reinforcement bars manually/ by mechanical means in R.C.C. or R.B. work (Payment shall be made on the cross sectional area of R.C.C. or R.B. work) as per direction of Engineer.	Sqm	25.00	770.85	19,271.25
94	15.7.4	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 meters lead as per direction of Engineer.	CUM	15.00	1,312.41	19,686.15
		In cement mortar				
95	15.8.3	Removing mortar from bricks and cleaning bricks including stacking within a lead of 50 m (stacks of cleaned bricks shall be measured):	1000 nos	5.00	4,357.95	21,789.75
		From brick work in cement mortar				
96	D.S.R. 15.43.1	Dismantling manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer:				
		Water bound macadam road	Sqm	200	139.3	27,860
97	15.60	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, beyond 50 m initial lead, for all leads including all lifts involved.	CUM	20.00	123.97	2,479.40
		<b>Total of DISMANTLING &amp; DEMOLISHING :</b>				<b>1,25,033.48</b>
		<b>Total of INTERIOR WORKS (SCHEDULE ITEMS) – “A”</b>				<b>9,63,87,496.59</b>

	<b>DSR 2018 Item No.</b>	<b>PLUMBING WORKS (DSR 2018)</b>				
		<b>SUBHEAD 12: SANITARY INSTALLATIONS</b>				
99	17.78	Providing and fixing white vitreous china extended wall mounting water closet of size 780x370x690 mm of approved shape including providing & fixing white vitreous china cistern with dual flush fitting, of flushing capacity 3 litre/ 6 litre (adjustable to 4 litre/ 8 liters), including seat cover, and cistern fittings, nuts, bolts and gasket etc. complete.	Each	81.00	12,368.26	10,01,829.06
100	17.7A	Providing and fixing wash basin with C.I. brackets, 15 mm dia CP Brass single hole basin mixer of approved quality and make, including painting of fittings and brackets, cutting and making good the walls wherever required:-				
		(a) White Vitreous China Wash basin size 550x400 mm with a 15 mm CP Brass single hole basin mixer	Each	36.00	3,931.96	1,41,550.56
101	17.7B	Providing and fixing wash basin with C.I. brackets, 15 mm dia pillar cock, 32mm PTMT waste coupling of standard pattern painting of fitting and brackets, cutting and making good the walls wherever required.	Each	56.00	2,141.70	1,19,935.20
		White vitreous china flat back wash basin size 550x400mm with single 15MM PTMT pillar cock.				
102	17.10	Providing and fixing Stainless Steel A ISI 304 (18/8) kitchen sink as per IS:13983 with C.I. brackets and stainless steel plug 40 mm, including painting of fittings and brackets, cutting and making good the walls wherever required :				
	17.10.1	Kitchen sink with drain board				
	17.10.1.3	510x1040 mm bowl depth 200 mm	Each	22.00	4,985.80	1,09,687.60
103	18.21	Providing and fixing plasticized PVC connection pipe with brass unions :				
	18.21.2	45 cm length				
	18.21.2.1	15 mm nominal bore	Each	244.00	74.11	18,082.84

CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01

104	18.53	Providing and fixing C.P. brass angle valve for basin mixer and geyser points of approved quality conforming to IS:8931				
	18.53.1	15mm nominal bore	Each	244.00	475.00	1,15,900.00
105	17.34	Providing and fixing toilet paper holder :				
	17.34.1	C.P. brass	Each	88.00	521.21	45,866.48
106	18.52	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931.				
	18.52.1	15 mm nominal bore	Each	88.00	541.29	47,633.52
107	17.31	Providing and fixing 600x450 mm beveled edge mirror of superior glass (of approved quality) complete with 6 mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	Each	92.00	1,145.58	1,05,393.36
108	17.69	Providing and fixing PTMT Waste Coupling for wash basin and sink, of approved quality and colour.				
	17.69.1	Waste coupling 31 mm dia of 79 mm length and 62mm breadth weighing not less than 45 gms	Each	114.00	89.06	10,152.84
109	17.22A	Providing and fixing CP Brass 32mm size Bottle Trap of approved quality & make and as per the direction of Engineer.	Each	178.00	788.44	1,40,342.32
110	17.71	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour, weighing not less than 105 gms.	Each	41.00	141.56	5,803.96
111	17.73	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings arrangement of approved quality and colour.				
	17.73.1	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms	Each	22.00	495.85	10,908.70
		<b>TOTAL C/F SANITARY FITTINGS</b>				<b>18,73,086.44</b>

		<b>SUBHEAD 13: SOIL, WASTE, RAIN WATER PIPES</b>				
112	2.1	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 by Engineer, within a lead of 50 m :				
		All Kind of Soil				
112.1	2.10.1.1	Pipes, cables etc, not exceeding 80 mm dia.	Mtr	20.00	199.00	3,980.00
112.2	2.10.1.2	Pipes, cables etc. exceeding 80 mm dia. but not exceeding 300 mm dia.	Mtr	1,915.00	325.00	6,22,375.00
112.3	2.10.1.3	Pipes, cables etc. exceeding 300 mm dia but not exceeding 600 mm	Mtr	199.00	508.00	1,01,092.00
113	2.11	Extra for excavating trenches for pipes, cables etc. in all kinds of soil for depth exceeding 1.5 m, but not exceeding 3 m. (Rate is over corresponding basic item for depth upto 1.5 metre).	Mtr		127%	
113.1		Pipes, cables etc, not exceeding 80 mm dia.	Mtr	4.00	252.73	1,010.92
113.2		Pipes, cables etc. exceeding 80 mm dia. but not exceeding 300 mm dia.	Mtr	383.00	412.75	1,58,083.25
113.3		Pipes, cables etc. exceeding 300 mm dia but not exceeding 600 mm	Mtr	39.80	645.16	25,677.37
114	2.12	Extra for excavating trenches for pipes, cables, etc, in all kinds of soil for depth exceeding 3 m in depth, but not exceeding 4.5 m. (Rate is over corresponding basic item for depth upto 1.5 metre.)			315.05%	
		Pipes, cables etc. exceeding 300 mm dia but not exceeding 600 mm	Mtr	19.90	1,600.45	31,849.03
115	19.16	Providing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS : 10910 on 12mm dia steel bar conforming to IS : 1786 having minimum cross section as 23 mmx25mm and over all minimum	Each	434.00	416.00	1,80,544.00

		length 263 mm and width as 165mm 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.				
116	19.7	Constructing brick masonry manhole in cement mortar 1:4 ( 1 cement : 4 coarse sand ) with R.C.C. top slab with 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 mix (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement complete as per standard design :				
117	19.7.1	Inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty) 455x610 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) :				
	19.7.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	25.00	9,737.00	2,43,425.00
118	19.8	Extra for depth for manholes :				
	19.8.1	Size 90x80 cm				
	19.8.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	metre	4.00	6,699.00	26,796.00
119	19.9	Constructing brick masonry circular type manhole 0.91 m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand), inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse				

		sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard design :				
	19.9.1	0.91 m deep with SFRC cover and frame (heavy duty, HD- 20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg., fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering all complete. (Excavation, foot rests and 12mm thick cement plaster at the external surface shall be paid for separately) :				
	19.9.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	40.00	9,855.00	3,94,200.00
120	19.1	Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.67 m				
	19.10.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	metre	10.00	5,758.00	57,580.00
121	19.11	Constructing brick masonry circular manhole 1.22 m internal dia at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement :4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard design :				
	19.11.1	1.68 m deep with SFRC Cover and frame (heavy duty HD- 20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded				

		stone aggregate 20 mm nominal size) including centering, shuttering all complete. (Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be paid for separately) :				
122	19.11.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	each	12.00	18,960.00	2,27,520.00
123	19.12	Extra depth for circular type manhole 1.22 m internal dia (at bottom) beyond 1.68 m to 2.29 m :				
	19.12.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	metre	1.00	7,472.00	7,472.00
124	19.13	Constructing brick masonry circular manhole 1.52 m internal dia at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard design :				
	19.13.1	2.30 m deep with SFRC Cover and frame (heavy duty HD- 20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering all complete. (Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be paid for separately) :				
	19.13.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	each	10.00	40,589.00	4,05,890.00
125	19.14	Extra depth for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :				
	19.14.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	metre	1.20	17,423.00	20,907.60
126	19.6	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 :				
126.1	19.6.2	150 mm dia. R.C.C. pipe	Metre	80.00	413.00	33,040.00
126.2	19.6.3	250 mm dia. R.C.C. pipe	Metre	1,715.00	674.00	11,55,910.00
126.3	19.6.4	300 mm dia. R.C.C. pipe	Metre	120.00	771.00	92,520.00
126.4	19.6.5	450 mm dia. R.C.C. pipe	Metre	93.00	1,243.00	1,15,599.00
126.5	19.6.6	500 mm dia. R.C.C. pipe	Metre	96.00	1,479.00	1,41,984.00
126.6	19.6.7	600 mm dia. R.C.C. pipe	Metre	10.00	1,740.00	17,400.00
126.7	19.6.8	700 mm dia. R.C.C. pipe	Metre	25.00	2,262.00	56,550.00
126.8	19.6.9	800 mm dia. R.C.C. pipe	Metre	20.00	2,699.00	53,980.00
127	19.3	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) up to haunches of R.C.C. pipes including bed concrete as per standard design :				
127.1	19.3.2	150 mm dia. R.C.C. pipe	Metre	80.00	562.00	44,960.00
127.2	19.3.4	250 mm dia. R.C.C. pipe	Metre	1,715.00	769.00	13,18,835.00
127.3	19.3.5	300 mm dia. R.C.C. pipe	Metre	120.00	887.00	1,06,440.00
128	19.27	Constructing brick masonry road gully chamber 50x45x60 cm with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) including 500x450 mm pre-cast R.C.C. horizontal grating with frame complete as per standard design :				
	19.27.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	50.00	4,651.00	2,32,550.00
129	19.4	Providing and fixing square-mouth S.W. gully trap class SP-1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design:				
	19.4.1	100x100 mm size P type				
	19.4.1.1	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Each	15.00	2,060.00	30,900.00
130	D.S.R. 14.90	Providing and laying APP (Atactic Polypropylene Polymer) modified prefabricated five layer, 3 mm thick water proofing membrane, black finished reinforced with glass fibre matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 litre/sqm by the same membrane manufactured of density at 25°C, 0.87 - 0.89 kg/litre and viscosity 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 350/300 N/5 cm. Tear strength in longitudinal and transverse direction as 60/80N. 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 :				
	D.S.R. 14.90.1	3 mm thick	Sqm	120.00	458.00	54,960.00
131	D.S.R. 22.14	Grading roof for water proofing treatment with				
	D.S.R. 22.14.1	Cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size)	Sqm	120.00	6,183.00	7,41,960.00
132	12.41	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion				
		i) Single socketed pipes				
132.1	12.41.1	75 mm diameter	Meter	20.00	179.55	3,591.00
132.2	12.41.2	110 mm diameter	Meter	468.00	272.36	1,27,464.48
133	12.42	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion.				
	12.42.1	Coupler				
133.1	12.42.1.1	75 mm	Each	4.00	69.51	278.04
133.2	12.42.1.2	110 mm	Each	94.00	105.18	9,886.92
					-	
134	12.22	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement,	Each	12.00	217.90	2,614.80

		rounding the edges and making and finishing the outlet complete.				
135	12.44	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams.	Each	11.92	42.19	502.90
		<b>TOTAL C/F SOIL, WASTE, RAIN WATER &amp; VENT PIPES-B SCHEDULE ITEMS</b>				<b>68,50,328.32</b>
		<b>SUBHEAD 14: WATER SUPPLY INTERNAL</b>				
136	18.7	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer.				
		Internal work Exposed on wall				
136.1	18.7.2	20 mm nominal outer dia Pipes	Meter	237.00	274.06	64,952.22
136.2	18.7.3	25 mm nominal outer dia Pipes	Meter	185.00	329.64	60,983.40
136.3	18.7.4	32 mm nominal outer dia Pipes	Meter	122.00	429.06	52,345.32
136.4	18.7.5	40 mm nominal outer dia Pipes	Meter	145.00	579.11	83,970.95
136.5	18.7.6	50 mm nominal outer dia Pipes	Meter	90.00	806.70	72,603.00
137	18.8	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer.				
		Concealed work, including cutting chases and making good the walls etc.				
137.1	18.8.2	20 mm nominal outer dia Pipes	Meter	1,083.00	426.92	4,62,354.36
137.2	18.8.3	25 mm nominal outer dia Pipes	Meter	566.00	501.74	2,83,984.84
137.3	18.8.4	32 mm nominal outer dia Pipes	Meter	16.00	606.38	9,702.08
138	DSR	Supplying, laying/ fixing, testing and commissioning of following nominal sizes of hot water piping inside the building (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges etc.) duly insulated with following closed cell elastometric nitrile rubber of				
	(E&M)-16.2					

		minimum 45 Kg / cu m density, thermal conductivity 0.037 W/MK or better at 20 deg mean temperature class 'O' insulation applied by suitable adhesive complete including repairing of damage to building etc. as per specifications and as required complete in all respect.				
138.1	16.2.12	40mm dia. (32 mm thick insulation)	Meter	10.00	820.54	8,205.40
138.2	16.2.13	32 mm dia(19 mm thick insulation)	Meter	15.00	670.53	10,057.95
138.3	16.2.14	25 mm dia(19 mm thick insulation)	Meter	25.00	558.04	13,951.00
139	17.73	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings arrangement of approved quality and colour.				
139.1	17.73.1	450 mm long towel rail with total length of 495 mm, less than 170 gms 78 mm wide and effective height of 88 mm, weighing not	Each	22.00	495.85	10,908.70
140	18.17	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :				
140.1	18.17.1	25 mm nominal bore	Each	65.00	443.88	28,852.20
140.2	18.17.2	32 mm nominal bore	Each	27.00	518.97	14,012.19
140.3	18.17.3	40 mm nominal bore	Each	40.00	605.71	24,228.40
140.4	18.17.4	50 mm nominal bore	Each	9.00	776.07	6,984.63
140.5	18.17.5	65 mm nominal bore	Each	4.00	1,328.66	5,314.64
140.6	18.17.6	80 mm nominal bore	Each	3.00	1,980.26	5,940.78
141	18.10	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc.				
141.1	18.10.5	40mm dia nominal bore	Meter	40.00	571.07	22,842.80
142	18.12	Providing and fixing G.I. pipes 'B' class complete with G.I. fittings including, trenching and refilling etc.				
		external works				
142.1	18.12.3	25 mm dia nominal bore	metre	115.00	325.49	37,431.47
142.2	18.12.4	32 mm dia nominal bore	metre	40.00	379.20	15,167.86
142.3	18.12.5	40 mm dia nominal bore	metre	10.00	431.38	4,313.80
142.4	18.12.6	50 mm dia nominal bore	metre	270.00	504.69	1,36,266.30
142.5	18.12.7	65 mm dia nominal bore	metre	255.00	639.29	1,63,018.95
142.6	18.12.8	80 mm dia nominal bore	metre	135.00	773.57	1,04,431.95
143	8.7 (2019)	100 mm dia nominal bore	metre	410.00	1,452.68	5,95,598.80
144	18.40	Painting G.I. pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality :				
144.1	18.40.3	25 mm dia nominal bore	metre	115.00	12.63	1,452.45

**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

144.2	18.40.4	32 mm dia nominal bore	metre	40.00	15.22	608.80
144.3	18.40.5	40 mm dia nominal bore	metre	50.00	17.32	866.00
144.4	18.40.6	50 mm dia nominal bore	metre	270.00	20.85	5,629.50
144.5	18.40.7	65 mm dia nominal bore	metre	320.00	25.85	8,272.00
144.6	18.40.8	80 mm dia nominal bore	metre	135.00	30.00	4,050.00
144.7	18.40.8	100 mm dia nominal bore	metre	410.00	30.00	12,300.00
145	18.41	Providing and filling sand of grading zone V or coarser grade all-round the G.I. pipes in external work.				
145.1	18.41.3	25 mm dia nominal bore	metre	115.00	132.50	15,237.50
145.2	18.41.4	32 mm dia nominal bore	metre	40.00	135.94	5,437.60
145.3	18.41.5	40 mm dia nominal bore	metre	10.00	137.63	1,376.30
145.4	18.41.6	50 mm dia nominal bore	metre	270.00	142.81	38,558.70
145.5	18.41.7	65 mm dia nominal bore	metre	255.00	225.40	57,477.00
145.6	18.41.8	80 mm dia nominal bore	metre	135.00	232.28	31,357.80
145.7	18.41.9	100 mm dia nominal bore	metre	410.00	246.07	1,00,888.70
146	18.31	Providing and fixing CI sluice valve (with cap) complete with bolts, nuts, rubber insertions etc. (the tail pieces if required will be paid separately)				
146.1	18.31.1.2	100 mm dia (Class-II)	Each	2.00	3,951.83	7,903.66
146.2	18.31.3.2	150 mm dia (Class-II)	Each	1.00	3,951.83	3,951.83
147	18.17	Providing and fixing gun metal gate valve with C.I. wheel of approved quality				
		(screwed end) :				
147.1	18.17.1	25mm nominal bore	Each	2.00	443.88	887.76
147.2	18.17.1A	20 mm nominal bore	Each	1.00	410.89	410.89
147.3	18.17.2	32mm nominal bore	Each	2.00	518.97	1,037.94
147.4	18.17.3	40mm nominal bore	Each	2.00	605.71	1,211.42
147.5	18.17.4	50mm nominal bore	Each	2.00	776.07	1,552.14
147.6	18.17.5	65 mm nominal bore	Each	4.00	1,328.66	5,314.64
147.7	18.17.6	80 mm nominal bore	Each	2.00	1,980.27	3,960.54
148	18.18	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :				
148.1	18.18.1	15 mm nominal bore	each	1.00	302.41	302.41
148.2	18.18.2	20 mm nominal bore	each	2.00	345.00	690.00
148.3	18.18.3	25 mm nominal bore	each	2.00	351.79	703.58
149	18.46	Providing and fixing G.I. Union in G.I. pipe including cutting and threading the pipe and making long screws etc. complete (New work) :				
149.1	18.46.1	15 mm nominal bore	each	1.00	210.49	210.49
149.2	18.46.2	20 mm nominal bore	each	2.00	233.17	466.34
149.3	18.46.3	25 mm nominal bore	each	2.00	303.66	607.32
149.4	18.46.4	32 mm nominal bore	each	2.00	343.08	686.16
149.5	18.46.5	40 mm nominal bore	each	2.00	404.02	808.04

150	18.36	18.36 Constructing masonry Chamber 60x60x75 cm, inside in brick work in cement mortar 1:4 (1 cement : 4 coarse sand) for hydrants, with C.I. surface box 350x350 mm top and 165 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), i/c necessary excavation, foundation concrete 1:5:10 (1 cement : 5 fine sand:10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick, finished with a floating coat of neat cement complete as per standard design :				
	18.36.1	With common burnt clay F.P.S.(non modular) bricks of class designation 7.5 each 8856.70	each	11.00	7,907.77	86,985.47
151	DSR 14.16	Supplying and laying of following size DWC HDPE pipe IS marked along with all accessories like socket, bend, coupler etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. direct in ground (75 cm below ground level) including excavation and refilling the trench but excluding sand cushioning and protective covering etc., complete as required.				
151.1	DSR 14.16.3	120 mm dia (OD-120 mm & ID-103 mm nominal)	RM	400.00	204.46	81,784.00
151.2	DSR 14.16.5	200 mm dia (OD-200 mm & ID-175 mm nominal)	RM	600.00	370.54	2,22,324.00
152	19.36	Providing and laying Non Pressure NP-4 class (Heavy duty) R.C.C. pipes including collars/spigot jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement : 2 fine sand) including testing of joints etc. complete				
	19.36.1	450 mm dia RCC pipes. Metre	RM	200.00	2,358.04	4,71,608.00
153	18.40	Painting G.I. pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality :				
153.1	18.40.5	40mm dia nominal bore	Meter	40.00	17.32	692.80
153.2	18.40.7	65mm dia nominal bore	Meter	42.00	25.85	1,085.70
		<b>TOTAL C/F WATER SUPPLY-C SCHEDULE ITEMS</b>				<b>34,77,121.47</b>

		<b>SUBHEAD 15: RAIN WATER HARVESTING PITS</b>				
154	23.1	Boring/drilling bore well of required dia for casing/ strainer pipe, by suitable method prescribed in IS: 2800 (part I), including collecting samples from different strata, preparing and submitting strata chart/bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of Engineer –in-charge, upto 90 metre depth below ground level.				
	23.1.1	All types of soil				
154.1	23.1.1.1	300 mm dia.	Meter	300.00	457.40	1,37,220.00
	23.1.2	Rocky strata including Boulders			-	
154.2	23.1.2.1	300 mm dia	Meter	50.00	1,092.10	54,605.00
155	23.3	Supplying, assembling, lowering and fixing in vertical position in bore well, unplasticized PVC medium well casing (CM) pipe of required dia, conforming to IS: 12818, including required hire and labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer –in-charge.			-	
	23.3.3	200 mm nominal size dia.	Meter	300.00	951.80	2,85,540.00
156	23.4	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS: 12818, including hire & labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer-in-charge.			-	
	23.4.3	200 mm nominal size dia.	Meter	100.00	1,014.10	1,01,410.00
157	23.5	Supplying, filling, spreading & leveling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	cum	50.00	1,184.40	59,220.00
158	23.6	Supplying, filling, spreading & leveling gravels of size range 5 mm to 10 mm, in the recharge pit, over the existing layer of boulders, in required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	cum	50.00	1,184.40	59,220.00
159	23.7	Supplying, filling, spreading & leveling coarse sand of size range 1.5 mm to 2 mm in recharge pit, in required thickness over gravel layer, for all leads	cum	50.00	1,184.40	59,220.00

		& lifts, all complete as per direction of Engineer –in-charge.				
160	23.8	Gravel packing in tubewell construction in accordance with IS: 4097, including providing gravel fine/ medium/ coarse, in required grading & sizes as per actual requirement, all complete as per direction of Engineer-in-charge.	cum	11.20	1,337.20	14,976.64
161	23.15	Providing and fixing Bail plug/ Bottom plug of required dia to the bottom of pipe assembly of tubewell as per IS:2800 (part I).			-	
	23.15.3	200 mm dia	each	7.00	274.80	1,923.60
	D.S.R. 19.19	Providing and fixing in position pre-cast R.C.C. manhole cover and frame of required shape and approved quality				
162	19.19.3	H D - 20				
	19.19.3.1	Circular shape 560 mm internal diameter	Each	42.00	1,313.80	55,179.60
163	D.S.R. 2.6	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in-charge.				
	D.S.R. 2.6.1	All kinds of soil	Cum	800.00	162.40	1,29,920.00
164	D.S.R. 2.25	Filling 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, lead up to 50 m and lift upto 1.5 m.	Cum	600.00	196.10	1,17,660.00
	D.S.R. 5.9.1	Foundations, footings bases of columns etc. for mass concrete.	Sqm	250.00	254.30	63,575.00
165	D.S.R. 4.1.8	1:4:8 (1 Cement : 4 coarse sand (zone-III) : 8 graded stone aggregate 40 mm nominal size)	Cum	40.00	5,169.30	2,06,772.00
166	D.S.R. 5.37	Providing and laying in position ready mixed M-25 grade concrete for reinforced cement concrete work, using cement content as per approved design mix, 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, finishing and reinforcement, including cost of admixtures 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.				
	D.S.R. 5.37.1	All works upto plinth level	Cum	180.00	7,498.80	13,49,784.00
167	D.S.R. 5.9.2	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	SQM	600.00	544.00	3,26,400.00
168	D.S.R. 5.9.3	Suspended floors, roofs, Staircases, balconies & access platform.	SQM	180.00	618.80	1,11,384.00
		<b>TOTAL OF RAINWATER HARVESTING WORKS (SCHEDULE-ITEMS)</b>				<b>31,34,009.84</b>
		<b>TOTAL OF PLUMBING WORKS (SCHEDULE-ITEMS) - "B"</b>				<b>1,53,34,546.07</b>
		<b>TOTAL FOR INTERIOR &amp; PLUMBING WORKS (SCHEDULE-ITEMS) (A+B)</b>				<b>11,17,22,043</b>

**Explanatory Notes for BOQ:**

- (i) All DSR items contain item nos. and, if any discrepancy is found in nomenclature, then scheduled nomenclature of CPWD DSR 2018/2019 will prevail.
- (ii) The rates of all CPWD DSR Items are already exclusive of GST. However, the rates of all items of DSR 2018 & 2019 are evaluated excluding GST component on DAR basis.
- (iii) The Quantity mentioned in the Schedules is approximate and the DFCCIL reserves the right to increase / decrease the same as per site requirement.

<b>I</b>		<b>INTERIOR &amp; FURNISHING WORKS</b>				
(ii)		<b>NON SCHEDULE ITEMS</b>				
A		<b>INTERIOR WORK</b>				
		<b>SUBHEAD 1: FLOORING WORKS AND STONE WORK ON WALLS</b>				
1	N.S	Stone work or inlay work as per design in stone work by machine / manual for stone work in Wave Pattern/ Geometric Design Pattern/ Abstract Pattern, Linear Pattern Straight Pattern as per Design/ Drawing. Machine cut, mirror/ diamond polish, Marble Combination stone work in Flooring and wall/ dado/ steps etc., stones of different finished surface texture, laid/ fixed over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with white cement slurry @ 4.4 kg/Sqm, including pointing with white cement slurry admixed with pigment to match the marble shade, including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer.				
	N.S	18 mm thick Italian Marble stone slab, Perlato, Rosso, Bottachino, Verona, Fire Red or Dark Emperadore etc. Stone to be approved by Engineer.	Sqm	100.00	7,757.00	7,75,700.00
2	N.S	Extra For Providing-V- Groove of Size 6 x 6 mm in Stone Wall Lining in Bottachino/Grey William at all levels as per Architect drawing.	Mtr	100.00	190.00	19,000.00
3	N.S	Extra For Providing-V- Groove/ Halfset joint of Size 10 x 10 mm in Stone Wall Lining in Bottachino/Grey William at all levels as per Architect drawing.	Mtr	100.00	225.00	22,500.00
4	N.S	Providing and laying at site 12mm thick wooden laminated floor having an inbuilt wear resistance, impact resistance The planks shall be placed on an under lay of foam and 0.2mm thick alkali resistant polyethylene sheet. All as per manufacturer specification. The wooden flooring shall be of AC-4 grade. Laminate should be high pressure laminate over MDF. The planks sizes shall be as per manufacturers specifications.	Sqm	32.17	2,742.00	88,210.14

**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

5	N.S	Providing and fixing at site 10mm to 12mm thick 100mm high laminated wooden skirting/trim all complete as Engineer.	Rmt	35.00	581.00	20,335.00
6	N.S	Providing and fixing Carpet flooring using Carpet Tile of approved make, shade and pattern and of the following specification: High Cut – Low Loop Carpet tile, Premium Solution Dyed Nylon with Anti Stain Treatment, 1/10 gauge, minimum Pile height should be 8.0mm Cut and 3.5mm Loop or with acceptable tolerance, total minimum thickness 9.0mm, Tile size should be minimum 500mm x 500mm, Secondary Back Commercial 100% Re-cyclable. All yarns used are Solution dyed to minimize use of water and exclude any effluent production.	Sqm	4,080.00	3,022.00	1,23,29,760.00
7	N.S	Entry Mat System Providing & Fixing entrance matting (Heavy Duty) with enhanced absorption. Construction - Looped pile carpet design with solid vinyl backing. Material - Polypropylene & Nylon with vinyl backing. Size - Standard/ as per site	Sqm	81.70	8,473.00	6,92,235.63
8	N.S	Providing and laying of 6mm thick PVC Vinyl flooring including foam backing, vinyl floor covering of size minimum 1200 mm width x 6 meters length of weight 4400 g/m2 with wear layer thickness of 1 mm. Wear layer should be treated with Protocol (UV cured Polyurethane surface treatment) which facilitates ease of maintenance and eliminates the use of acrylic emulsions. Residual indentation should be less than 0.25mm & should conform to EN ISO 24343-1(EN 433). The product should have antibacterial properties. The product should also fulfill dimensional stability(EN ISO 23999(EN 434) & effect of furniture leg(EN 424). It should also be suitable for underfloor heating. The product should have excellent sound absorption of 24 db and excellent shock absorbent behavior. The laid flooring shall confirm the fire rating Cfl-S1 class as per EN 13501-1.	Sqm	217.25	3,022.00	6,56,519.23
9		Providing and laying Square or Rectangular paving stones, made from minimum 3"-4" thick stone with 0.647% absorption with edges snap cut or sawn complete with Concrete Edge Restraints. The paver to be laid over sound, crushed stone or gravel with a maximum size	Sqm	165.17	5,596.00	9,24,291.32

		aggregate of 100 percent passing the 2" sieve and having a range of 0 to 10 percent passing the 200 sieve. with dry mix, containing polymeric binding agent, activated with water and nonwoven needle-punched geotextile fabric, manufactured for subsurface drainage applications, made from polyolefins or polyesters; with elongation greater than 50 percent.				
10		Providing and laying 50 mm thick pre polished granite stone in coping over 20mm (average) thick base of cement 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	250.00	3,403.38	8,50,844.40
11		Providing and fixing 18mm thick pre polished granite stone wall cladding upto 12m height, 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	650.00	4,172.99	27,12,440.64
12		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.				
12.1		8 mm dia	Nos	200.00	117.27	23,454.72
12.2		12 mm dia	Nos	200.00	215.00	43,000.32

		<b><i>TOTAL for FLOORING WORKS</i></b>				<b>1,91,58,291.39</b>
		<b>SUBHEAD 2: DOORS &amp; WINDOWS</b>				
13	N.S	Supply, fixing and Installation of Slim Line Modular Aluminium Fixed partitioning frame of 100-105 mm x 25-30 mm which can accommodate 2 panels of glass of 10 mm thickness separated by 40-50 mm distance for better sound insulation and acoustic properties. The rate to include Design, Fabrication, Supply, Installation & Handover of slim line fixed partition system. The fixed partition system should accommodate openable door on Hinges. Door to be paid separately. The system of fixed partition with openable door to be custom designed to withstand the design confirming to IS -875 part III. The system shall have two barrier gasket system to hold glasses .	Sqm	2,103.66	12,670.00	2,66,53,372.20
		Microwave cured EPDM gaskets to accommodate glass thickness as per structural requirement, weather sealants, SS 310 grade screws of approved make, all in complete required to perform as per specification and drawing in conjunction with BOQ.				
		The extruded aluminium sections of Alloy 6063 T5 / T6 & tolerances confirming to DIN / EN standard, of approved Architectural sizes , from approved extruder. The structural profiles shall have minimum 1 to 1.6mm wall thickness. All the internal visible surfaces shall have high Durability) / Super durable (Jotun) Powder coating of 60 - 80 micron confirming to ASTM E 283, ASTM E 331, ASTM E 330AAMA 2604 or anodizing shade as approved by Engineer with minimum 25 micron The non visible aluminium surfaces shall have minimum chromatising treatment.				
		Material shall be as per make list in tender document..				
		All shade approval shall be as per Engineer's Approval.				
		The system shall demonstrate performance for air seal / water seal / structural requirement . The system performance test shall be mandatory. The performance test shall be carried out at an accredited laboratory having fully atomized data acquisition system with provision to capture all values in the test results sheet . The sequence of test and standard shall be				

		ASTM E 283, ASTM E 331, ASTM E 330 , AAMA 501.1.				
		The quoted rate shall include all design, engineering & shop drawing approval from Engineer.				
		Glass : 2 NO.10 mm clear Heat strengthened/ TOUGHENED Glass				
		Tolerance of 5 mm allowed in both dimension of the cross section of the slim line partition as per manufacturers specification.				
14	N.S.	Supply, fixing and installation of Slim Line Modular Aluminums single glazed partition frame of 100-105 mm x 25-30 mm with in bottom and top channel with acoustic gasket as per specification.	Sqm	263.11	9,620.00	25,31,154.76
		The rate to include Design, Fabrication, Supply, Installation & Handover of Fixed partition frame. The fixed partition should accommodate 10mm heat strengthened glass. Sliding Door to be paid separately. The fixed partition to be custom designed to with stand the design confirming to IS - 875 part III. The system shall have barrier gasket system to hold the glass.				
		Microwave cured EPDM gaskets to accommodate glass thickness as per structural requirement, weather sealants, SS 310 grade screws of approved make, all in complete required to perform as per specification and drawing in conjunction with BOQ.				
		The extruded aluminum sections of Alloy 6063 T5 / T6 & tolerances confirming to DIN / EN standard, of approved Engineerural sizes, from approved extruder. The structural profiles shall have minimum 1 to 1.6mm wall thickness. All the internal visible surfaces shall have high Durability / Super durable (Jotun or approved equivalent) Powder coating of 60 - 80 micron confirming to AAMA 2604 or anodizing shade as approved by Engineer with minimum 25 micron The non-visible aluminum surfaces shall have minimum chromatzizing treatment.				
		Material shall be as per make list in tender document.				
		All shade approval shall be as per Engineer's Approval.				
		The system shall demonstrate performance for air seal / water seal / structural requirement. The system performance test shall be mandatory to verify performance test shall be carried out at an accredited laboratory having fully atomized data				

		acquisition system with provision to capture all values in the test results sheet. The sequence of test and standard shall be ASTM E 283, ASTM E 331, ASTM E 330, AAMA 501.1.				
		The quoted rate shall include all design, engineering as per drawing /approval from Engineer				
		Glass: 10 mm clear Heat strengthened/Toughened				
		Tolerance of 5 mm allowed in both dimension of the cross section of the slim line partition as per manufacturers specification.				
15	N.S	Door shutter for Modular Slimline Aluminium partitioning frame should be of 44mm x 70mm using outer frame of 100-105 mm x 25-30 mm vertical 2 top frame and 50mm x 25mm as outer frame. Hingable door width 0.90mt - 1.10mt as per drawing. Glass beads at horizontal top and bottom should accommodate glass 11.52 mm thick acoustic glass of combination (5mm + two layers of 0.76 mm thick acoustic PVB + 5mm) HS glass for optimum sound insulation wherever required. Microwave cured EPDM gaskets to the glass as per requirement. Door to function on hinges.	Sqm	191.10	37,344.00	71,36,438.40
		Tolerance of 5 mm allowed in both dimension of the cross section of the slim line partition as per manufacturers specification.				
16	N.S.	Supply, fixing and installation of Slim Line Modular Aluminum single glazed SLIDING DOOR PARTITION SYSTEM unit width size of slider door shall be per site requirement with top outer frame of 46x76mm, shutter with top and bottom channel of 30mmx38mm and vertical channels of 18mmX38MM with acoustic gasket as per specification.	Sqm	207.90	47,218.00	98,16,622.20
		The rate to include Design, Fabrication, Supply, Installation & Handover of slim Sliding door system and Fixed partition frame system unit Sliding Openable Door should be on Sliding Mechanism. Partition paid in item above. The system of Sliding door and fixed partition to be custom designed to withstand the design confirming to IS -875 part III. The system shall have barrier gasket system to hold the glass.				
		Microwave cured EPDM gaskets to accommodate glass thickness as per				

		structural requirement, weather sealants, SS 310 grade screws of approved make, all in complete required to perform as per specification and drawing in conjunction with BOQ.				
		The extruded aluminum sections of Alloy 6063 T5 / T6 & tolerances confirming to DIN / EN standard, of approved Engineerural sizes, from approved extruder. The structural profiles shall have minimum 1 to 1.6mm wall thickness. All the internal visible surfaces shall have high Durability / Super durable (Jotun or approved equivalent) Powder coating of 60 - 80 micron confirming to AAMA 2604 or anodizing shade as approved by Engineer with minimum 25 micron The non-visible aluminum surfaces shall have minimum achromatizing treatment. Material shall be as per make list in tender document.				
		All shade approval shall be as per Engineer's Approval.				
		The system shall demonstrate performance for structural requirement. The system performance test shall be mandatory to verify The performance test shall be carried out at an accredited laboratory having fully automised data acquisition system with provision to capture all values in the test results sheet. The sequence of test and standard shall be ASTM E 283, ASTM E 331, ASTM E 330 , AAMA 501.1.				
		The quote rate shall include all design, engineering & shop drawing approval from Engineer				
		Specifications for Acoustic Glass : 11.52 mm thick acoustic glass of combination (5mm + two layers of 0.0.76 mm thick acoustic PVB + 5mm) HS glass for optimum sound insulation wherever required				
		Tolerance of 5 mm allowed in both dimension of the cross section of the slim line partition as per manufacturers specification.				
17	N.S.	Extra for Providing and fixing of Lacquered Glass. 10 mm Extra Clear Glass used for lacquered glass should be of Saint Gobain/ ASAHI/ Pilkington in place of 10mm thick Toughened glass and should be toughened in horizontal tempering line. Lacquered glass to be made industrially (via air brushing process); opaque (if viewed against a support wall), coated with WATER BASED lacquer colour of brand Colour Spray AQUA by Regaled – United				

		Kingdom Or Equivalent Brand ;Which is binded by Nano particle pure acrylic); Gloss Level – 40 ; where VOC < 1% ; highly durable ; humid resistant (conforms to BS EN 1036 1999); environmentally friendly (no lead, no arsenic, no copper, no formaldehyde; compressive strength (1000 MPa) & tensile strength (40 MPa),same as float glass as per the detailed drawings, paid extra over 10mm Heat Strengthened glass in slim partition and color as approved by Engineer. Colour to be checked and tested via INDEX Colour shade card used worldwide as a colour choosing parameter. the lacquered glass should be fixed in microwave cured EPDM gasket provided in the partition system. Lacquered glass shall not loose its color and shall not fade in colour even if it is placed exposed to direct Sun light. It shall withstand heat , rains and sunlight and shall not lose its colour and shall not fade away.				
17.1	N.S.	Providing and fixing of two 10mm thick Toughened Lacquered Glass in place of double glazed toughened glass in slimline partitions.	Sqm	62.82	13,186.00	8,28,344.52
17.2	N.S.	Providing and fixing of one 10mm thick Toughened Lacquered Glass in place of one glazed toughened glass in slimline partitions.	Sqm	40.97	6,593.00	2,70,121.80
17.3	N.S.	Providing and fixing of one 10mm thick Toughened Lacquered Glass in place of 11.52mm thick laminated glass.	Sqm	20.00	5,478.00	1,09,560.00
18	N.S.	Extra for Providing and fixing Two 12mm thick Acrylic Solid surface acrylic in place of Two 10mm glass in aluminum partitions in item N.S. 13, 14, 15, 16 as per drawing/Engineer. Acrylic surface should be joint less and shall be duly fixed in a manner that there is no buckling or warping. Acrylic strips of 50 mm cut out of same color and product width should be inserted in the gap created between two acrylic surfaces and fixed with appropriate adhesive to ensure that the acrylic surface are adequately supported so that no buckling, swelling or warping takes place and the surfaces remain true to its shape in the partition frame. Acrylic solid surface shall have Antibacterial certificate and TUV (Austria) FR grade certified.				
18.1	N.S.	Providing and fixing of two 12mm thick Acrylic Solid Surface Sheet in place of double glazed toughened glass in slimline partitions.	Sqm	26.25	13,350.00	3,50,437.50

**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

18.2	N.S.	Providing and fixing of one 12mm thick Acrylic Solid Surface Sheet in place of one glazed toughened glass in slimline partitions.	Sqm	26.25	6,675.00	1,75,218.75
18.3	N.S.	Providing and fixing of one 12mm thick Acrylic Solid Surface Sheet in place of 11.52mm thick laminated glass.	Sqm	18.38	5,561.00	1,02,211.18
19	N.S	Providing and fixing of Wooden fire rated doors as per BS:476 Part- 20 & 22 & IS 3614 part-2 for stability, integrity and thermal insulation. 03 Criteria Wooden door confirming to IS 277 with the following specification. Recommended fire door shall have doors prior tested at CBRI for maximum rating of 2hrs tested either with or without vision panel. Individual Test certificates should be available for glass used in vision lites confirming the required fire ratings. Any deviation in specification other than what is mentioned in the test certificates are not allowed. Proper label confirming the type of door and the hourly rating is mandatory. Approved manufacturer should be ISO Certified company.	Each	38.00	16,619.00	6,31,522.00
		Door leaf shall be minimum 52mm thick fully flush door with or without vision panel. 52mm thick shutter, comprising of 75mm x 44mm hardwood internal timber frame work, with infill of 48 kg/m3, ceramic fiber blankets, coated with FR intumescent coating on both sides for insulation. The coated insulation shall be sandwiched between maximum 12mm thick Calcium Silicate Boards on both sides (edge to edge on internal Hardwood frame) having a maximum density of 900 Kgs/ Cum, clad with 3mm ply commercial ply on both faces. (The same can be pasted with 1mm thick laminate (as per approved shade) or replaced with 4mm thick teak ply as per Engineer requirement at an extra cost) on both sides of the shutter, with 50mm x 10mm hard wood lipping all round the shutter. The door frame will be made out of Hardwood of maximum section 120 x 70mm and coated with Fire retardant Primer. The rebate shall be of 20mm x 54mm in the Door Frame to accommodate the shutter . Both frame and shutter shall be fitted with intumescent Fire seal strips , The shutter fitted with 10x4mm Fire seal and Frame with 1 no. Fire seal of size 20x4mm on all the three sides of the except bottom. The item to include door handles, hydraulic door closer, concealed tower bolt				

		and all necessary hardware with double handle, panic bar etc to be inserted				
		The pasting of the ply/veneer/laminate should be done using automatic machine and should be free from any nails or perforations.				
19.1		a) Size 2000 X 2400mm with panic bar (Double Hung)				
20	N.S.	Providing and fixing overhead cam action door closer with adjustable closing force in two independent ranges, EN2-4, with easy opening action and adjustable power, could take maximum door weight upto 80 Kg and should be fire tested.	Each	184.00	7,324.00	13,47,616.00
21	N.S.	Supply and fixing of pull Handle back to back with 305mm CTC, adjustable fixing for glass, wood and metal doors in satin stainless steel. The pull handles should have supporting washer with raised beveling on the outer surface. Length =457mm, 32 mm dia.	Each	122.00	3,081.00	3,75,882.00
22	N.S	Providing and fixing of Eco resin translucent panel 10mm thickness floral or stone finished of approved make complete as per specification & approval of Engineer as per tender drawing. These panels will be fixed to wall with SS studs/BB frame and maintain gap off 200mm from the wall. LED lights at the back as required includes supply and fixing of backlit ecoresin panel which includes Ecoresin panel, LED lights and necessary hardware for fixing of Ecoresin Panel. The item does not includes the providing electrical point which is a part of the Electrical BOQ.	Sqm	15.00	1,09,193.00	16,37,895.00
23	N.S	<b>Supply and Installation of Automatic sliding door Set, 1 operator as per approved dwg. Compliant with European standards .Product should be TÜV test certified for 1 Million cycles , tested according to the low voltage guidelines &amp; operator unit power consumption not exceeding 100 W/Hr. , fulfils DIN 18650 standards. The track profile should be flexible for both surface mounted &amp; ceiling hung application with additional profile for vibration &amp; sound dampening feature. It should includes micro processor controlled drive unit, with self learning mechanism, program selector with knob, motion detection sensor – 2 nos , 1 on each side , including passage safety combi-sensor on one side , mechanical components, toothed</b>				

		belt, cover profile not exceeding 110mm visible H, floor guide for frameless glass (02 nos), glass clamping rail (02 nos), Body finish : standard silver anodized operator profile electromechanical lock with 12 mm plain toughened frameless glass for complete elevation - 2 moving panels. UPS of 750 VA shall be provided by others, which will give power backup of 20 min. Only & if the duration of power cut to the operator is more than 30 min., then separate arrangement needs to be done for the same as automatic operator requires uninterrupted stabilized power supply. It should include Wall Corner Protection. (WCP). Note: The rate is for 2x2.4m size, in case size of the door changes then adjustment of increase/decrease in glass area size shall be done at the rate of Rs.2200/sqm and it will be adjusted as per accepted tender percentage.				
		The above work complete in all respect as per approved drawings and to the satisfaction of Engineer.				
	N.S	2000mmx2400mm/ 1800X2400	SQm	144.00	45,091.00	64,93,104.00
24	N.S.	PARTITION ABOVE FALSE CEILING - FORMED OF METAL FRAME WORK				
		Partition from false ceiling level till true ceiling level				
		Framework -				
		To be formed Metal frame of minimum 1.5 mm thickness in tubular sections				
		Infill - Layers of Fiber glass wool insulation - 1000gms/m2				
		As an acoustic requirement, contractor to affix 50mm thick 1 layers of Fiber glass wool insulation of density 1000gms/m2, of wrapped in GI chicken mesh on both sides				
		Cladding - First layer on both sides - Fiber cement board Density 1400kg/M3	Sqm	880.27	2,343.00	20,62,477.30
25	N.S	Providing and fixing fiber glass wool to be fixed between two panels of lacquered glass/ acrylic, etc. approximately 50mm thickness	Sqm	2,090.65	1,156.00	24,16,786.78
		Infill - Layers of Fiber glass wool insulation - 1000gms/m2				
		As an acoustic requirement, contractor to affix 48-50mm thick 1 layers of Fiber glass wool insulation of density 1000gms/m2				

26	N.S	Providing and fixing 600 mm deep pantry cabinet below counter wooden cupboards shutters with teak wood shutter 20mm thick shutter fixed to cabinet by means of necessary brass fittings such as hinges tower bolt ball catcher handle etc. complete including 19 mm thick vertical/ horizontal partitions of commercial ply board with drawer unit with guide rail including locking arrangement and knobs heavy duty ss hanger rail etc. painting of wooden members with two or more coats of synthetic enamel paint of approved make in the inner side and shade over over a coat of primer complete and melamine polish on the outer surface as per Architect's design and drawings. All surfaces to be covered with laminate 1mm thick. All drawers to have necessary stainless steel, grills, jaalis, utensil holder and other stainless steel accessories of reputed brand. Note: Size of the individual cabinets/drawers may be even upto 30cmX15cm.	Sqm	72.24	7,352.00	5,31,108.48
27	N.S	Providing and fixing 450 mm deep pantry cabinet above counter wooden cupboards shutters with teak wood shutter 20mm thick shutter fixed to cabinet by means of necessary brass fittings such as hinges tower bolt ball catcher handle etc. complete including 19 mm thick vertical/ horizontal partitions of commercial ply board with drawer unit with guide rail including locking arrangement and knobs heavy duty SS hanger rail ext. painting of wooden members with two or more coats of synthetic enamel paint of approved make in the inner side and shade over over a coat of primer complete and melamine polish on the outer surface as per Architect's design and drawings. Note: Size of the individual cabinets/drawers may be even upto 30cmX15cm.	Sqm	42.60	6,695.00	2,85,207.00
28.1	N.S	Providing and fixing 12 mm thick frameless toughened glass door shutter with glass of approved brand and manufacture, including providing and fixing top & bottom pivot & spring type fixing arrangement and making necessary holes etc. for fixing required door fittings, all complete as per direction of Engineer (Cost includes providing & fixing of Door handle, lock . top patch , bottom patch , Floor Spring Top and bottom pivot and stopper).(one set of hardware for one door. payment in Sqm of door size. minimum width of door 0.9 mtr)	Sqm	123.50	12,362.00	15,26,707.00

**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

28.1	N.S	Providing & Fixing 6mm toughened glass in sliding Door & window shutter etc.	Sqm	145.00	1,761.12	2,55,362.40
28.2	N.S	Providing & Fixing 8mm toughened glass in sliding Door & window shutter etc.	Sqm	75.00	2,287.15	1,71,536.25
28.3	N.S	Providing & Fixing 10mm toughened glass in sliding Door & window shutter etc.	Sqm	50.00	2,674.28	1,33,714.00
29.1	N.S.	<b>Supplying and fixing mirror finish Digital Lock without cut-out. Digital door lock to be stand-alone systems with an electronic control mechanism. The lock to be enable to be operated with all three modes with fingerprint + password + IC card</b> from the list of specified make with necessary accessories. Should have a capacity of 10 administrators and more than 300 ordinary users. Should have minimum 2 cards. Cost of two cards included. Locks to operate either on alkaline batteries or rechargeable lithium-ion cell ones. In both cases, an alert or indicator should be there to indicate the level of battery level when batteries need to be replaced. Lock to have Speedy and accurate access with the optical finger print authentication. The fingerprint recognition to be robust against any dust or foreign materials.	Each	59.00	26,193.00	15,45,387.00
		<b>TOTAL for DOORS &amp; WINDOWS</b>				<b>6,73,87,786.51</b>
		<b>SUBHEAD 3: STRUCTURAL STEEL</b>				
30	NS	Providing and fixing in position of 1 mm thick GI louvers with swinging type arrangement by means of SS hinges with shutters of desired profile and shape to MS framework. The job shall be completed in all respects as per Architectural Drawings including fixing, necessary locks, hardware and within the spacing required, one or more coat of approved quality steel primer and two or more coats of synthetic enamel paint.	Kg	6,050.00	170.00	10,28,500.00
31	NS	Providing and fixing of Stainless Steel (Grade 304) cladding with sheet of thickness 1.5mm on MS built up sections/ structural steel	Kgs	599.60	393.00	2,35,642.80
		<b>TOTAL for STRUCTURAL STEEL</b>				<b>12,64,142.80</b>
		<b>SUBHEAD 4: FALSE CEILING</b>				
32	N.S.	Acoustical wooden ceiling in melamine finish with custom perforation 595x1195x16mm, Square edge (T15 Grid System)	Sqm	865.84	9,267.00	80,23,701.29

		Supply & installation of acoustical wooden ceiling in melamine finish with perforation made of pinewood E1 grade fiberboard, with big circular perforations of 50mm dia, melamine laminated finish, 5-test fire retardant grade/ Non FR, size 595x1195x16mm, Square edge, volume density of base board 800Kg/m <sup>3</sup> , weight 8.8Kgs/m <sup>2</sup> which is suspended by using 0.3mm thick metal grid system.				
		Metal grid system of 600x1200mm module includes wall angle with unequal flanges of 15/19mm, length 3000mm, fixed along the perimeter of walls with the help of nylon sleeves and suitable fasteners at 300mm centers. Then suspend the MainT with flange width 15mm, height 32mm and length 3600mm, from the soffit slab with help of soffit cleat and wire rod with leveling spring clip at 1200mm centres. CrossT with flange width 15mm, height 26mm and length 1200mm is interlocked into the pre-cut slots in the Main at 600mm centers in the perpendicular direction to the Main. Acoustical wooden ceiling in melamine finish 595x1195x12/16mm shall be placed into the grid size of 600x1200mm.				
		Technical Parameters				
		<ul style="list-style-type: none"> <li>• Fire (Class) – 1 &amp; P (For FR grade)</li> <li>• Acoustics – NRC upto 0.85</li> <li>• Thermal conductivity (W/mk)– na</li> <li>• Climate (°C, RH) – 40, 70</li> <li>• Light reflectance (%) – Colour Dependant</li> <li>• Green (VOC, RC %) – Low, 25</li> </ul>				
33	N.S	Supply and installation of Stretch NRC system consisting of FR Grade NRC fabric with high-performance integrated core and acoustically-transparent face covering of choice colour, size 1.7mx75m, stretched by using combination of strut Cross Channel and Strut Tracks, woodfiber 10mm wooden base, polyfiber 10x10 infill with requisite accessories.	Sqm	110.65	5,699.00	6,30,594.35
		The strut system includes strut Cross Channel, fully knurled, sectional thickness 0.55mm, length 3600mm, web 40, depth 10mm and equal flanges of 15mm is fastened to the wall @ 600mm centers. Wooden base 10mm is then installed on the strut along the marking lines with metal fasteners at 300mm centers. Strut tracks to be installed on wooden base, by first applying adhesive on both surfaces for a true and continuous secure grip, and heavy-				

		duty fasteners at 150mm centers on one/both sides of strut tracks.				
		Wood fiber square edge magnesite bonded pinewood fiber panels of size 600x1200x15mm having density 400kg/m <sup>3</sup> , weight 6kg which is fixed to Strut Cross Channel inbetween tracks. Long edge of panels should be perpendicular to length of Strut Cross Channel. Polyfiber 10x10mm pasted on woodfiber by using adhesive.				
		The stretch NRC acoustical fabric of width 1.7m is stretched and tucked into the strut tracks and secured to the locking jaws with purpose-specific tucking tools to obtain smooth, taut, wrinkle-free finish. Ensure the weft and weave of the fabric along with the surface are all oriented in one direction to achieve uniform shade. Note: Minimum 100mm additional fabric is required for tucking hence maximum module wall fabric width would be 1600mm. Frame work is not in this scope				
		Technical Parameters of fabric				
		<ul style="list-style-type: none"> <li>• Fire (Class) – 1</li> <li>• Acoustics – na</li> <li>• Thermal conductivity (W/mk)– NA</li> <li>• Climate (°C, RH) – 50, 90</li> <li>• Light reflectance (%) – Colour Dependant</li> <li>• Green (VoC, RC %) – Low, 25</li> </ul>				
		Technical Parameters of Woodfiber				
		<ul style="list-style-type: none"> <li>• Fire (Class) – 1 &amp; P</li> <li>• Acoustics – NRC 0.97 (For 40mm C50 Mounting)</li> <li>• Thermal conductivity (W/mk)– 0.07</li> <li>• Climate (°C, RH) – 50, 95</li> <li>• Light reflectance (%) – 80</li> <li>• Green (VoC, RC %) – Low, 30</li> </ul>				
34	N.S	Supply & installation of acoustical wooden ceiling in melamine finish made of pinewood E1 grade fiberboard, with slotted perforations, melamine laminated finish, flame retardant grade, size 1200/600x600x16mm, tongue and groove edge, volume density of base board 800Kg/m <sup>3</sup> , weight 9.3Kgs/m <sup>2</sup> (6R16), 10.4Kgs/m <sup>2</sup> (6R32), 10.3Kgs/m <sup>2</sup> (G5R16) installed by using strut framework system.	Sqm	348.87	8,893.00	31,02,532.04
		Strut framework system includes Strut aluminium core cross channel having thickness 0.55mm, length 3600mm, knurled web 40mm, depth 10mm and equal flanges 15mm is fastened to wall or framework behind vertically/horizontally at every 600mm c/c. Strut aluminium core				

		cross channel, thickness 0.5mm, length 2400mm, web 15mm & 27mm, depth 18mm and flanges of 7mm with suitable edge & centre brackets is then fixed perpendicular to the Strut with the help of fasteners at every 300mm centers. Acoustical wooden ceiling in melamine finish of size 600x600x16mm in then fixed perpendicular to strut with suitable edge & centre brackets. Contractor to provide expansion joints of 3mm at every 4.8m bothways.				
		Panels are backlined with polyfiber 10x25 held in position with dab spots of adhesive.				
		Technical Parameters				
		<ul style="list-style-type: none"> <li>• Fire (Class) – 1 &amp; P (For FR grade)</li> <li>• Acoustics – NRC upto 0.85</li> <li>• Thermal conductivity (W/mk)– na</li> <li>• Climate (°C, RH) – 40, 70</li> <li>• Light reflectance (%) – Colour Dependant</li> <li>• Green (VOC, RC %) – Low, 25</li> </ul>				
35	N.S	Supply & Installation of LOOP Type 2 system formed as an open metal ceiling with an open area of more than 50% and to the flare [5mm] of the perforation pattern [RV-50-40] the ceiling has a three-dimensional visual effect and hides the insight into the plenum. Bypassing the perforation, the S-shaped sides of the LOOP interlock both the long and front side joint with a non magnetic suspension, the elements are installed with a circumferential 1 mm joint, thus compensating tolerances in X and Y direction. The non-magnetic suspension system effectuates a self-alignment of the elements [puzzle effect]. The module size 966x1115x1.0mm steel is perforated with 60mm deep drawn holes .The substructure consists of a form perforated L profile as a lateral grid which is suspended from the ceiling with nonius adjustable upper and lower parts or with threaded rods using official approved dowel plugs. The grid profiles are to be connected together at the ends by means of longitudinal connectors [screw fasteners]. The spacing of the grid profile is according to the requirements of DIN EN 13964. On profiles angles, C-band raster as secondary profiles are bolted on by means of C channel hanger bracket with threaded bolts. Only construction parts approved by the manufacturer may be used. Provide necessary supports, provisions as per the Engineers / PM's	Sqm	2,112.79	23,646.00	4,99,59,148.21

		Instructions. Tolerances according to TAIM, DIN EN 13964 and quality controlled to ISO 9001:2015 approved by SIS.Finish of ceiling is in RAL 9016 white/ RAL 9006 Silver grey powder coated with minimum 60 microns powder coating thickness.Visual perception of the ceiling to give seamlesslarge perception and openless to area.				
36	NS	Supply and installtion of Braided metal open compartment ceiling. Braided metal open compartment ceiling is a decorative single blade open compartment ceiling system manufactured from 0.95mm thick perforated Aluminium blades pressed together, available in white, Black or other Non metallic RAL finish. The unique process in which the aluminium blades are punched creates a interwoven structure finish resulting in daylight reflecting off the exposed perforated edges producing a radiant effect which can be enhanced with illumination to create a reflected spacious modern ceiling. The ratio between cell dimension and cell height allows the technical elements of Braided metal open compartment ceiling to effectively disappear in the ceiling void which guarantees maximum transparency. The panel having cell size of 33.33 x 33.33 mm. The assembled Braided metal open compartment ceiling ceiling shall be in size of 600x1200 made out of single blades in 0.95mm (W) x 40mm (H) having perforation of QG 3.5 x 3.5mm and open area of appx 90 % . The ceiling panels are then clipped into secondary galvanized mild steel metal carriers, coated in black finished at 1200mm c.c. Wire clips shall hold the cell ceiling panels into the secondary galvanized mild steel metal carriers. Once the secondary galvanized mild steel metalcarriers are installed then primary angles made out of galvanized mild steel metal, are cross connected to the secondary galvanized mild steel metal carriers at 1200mm c.c. for lateral bracing. The whole ceiling shall be suspended by threaded rods installed 1200mm c.c. The panels are fully downward demountable / hinged from the proprietary secondary galvanized mild steel metal carrier section using spring panels.The system should be in accordance with Material class A2-s1, d0 according to EN 13501-01 “non-combustible”, as per the Direction of Engineers. The system will meet fire	Sqm	400.50	11,807.00	47,28,703.50

		retardant standards of BS 476: Part 6 & Part 7. Tolerances according to TAIM, DIN EN 13964 and quality controlled to ISO 9001:2015 approved by SIS, LEED certification by IGBC. Manufacturer shall have the fully automatic powder coating system with power and free conveyerize 3mtr/minute capacity. Powder coating plant shall be equipped with latest modern technology with fully automatic inline Pre-treatment using nano technology, Inline automatic water drying system after pretreatment.				
37	N.S.	Supply , fixing and installation of hanging false ceiling made of 12mm thick Acrylic solid surface. the ceiling could be in curve or could be in linear geometric shape as per the design requirement and the cost shall include all shapes and sizes. The acrylic solid surface could be of solid colour, pattern or could be translucent as per the requirement of design/ drawing. The curvatures in the acrylic solid surface shall be made as flawless as possible to give even finish. The adhesive used for joining the acrylic solid surfaces shall be of the same manufacturer of the same colour so that the joints are not visible and shall be as seamless as possible in case they're not required to have grooves or end to end see-through slits. The frame shall be of Stainless Steel tube 40x40 mm minimum 3 mm thick with 3 mm thick 40x40 mm Stainless Steel Tube/flat minimum 3 mm thick over the MS tube frame as per requirement of stability and weight carrying capacity and its requirement for support. The support structure of Stainless Steel and MS shall be so sturdy so as to carry the weight of the Acrylic, lights and diffusers etc. as per site. The rate will not include the cost of framing. The Acrylic Surface has to be screwed over the Stainless Steel as per design requirement to ensure maximum stability and strength to structure and Acrylic surface shall touch only the Stainless Steel Structure. The edges of the Acrylic solid surface should be given a border of 50 to 100 mm in all edges. The entire Acrylic ceiling surface shall be joint less or shall have a grooves/slits as per design requirement. The joints at the edges should be joint less and seam less. The acrylic solid surface shall have cutouts for strip lights and other lights as per design. The hanging arrangement shall be done as per the requirement of lights required as	Sqm	750.23	9,056.00	67,94,091.94

		per the design and reflections of light as instructions of Engineer. Perforations shall be made for lights. The joints are to be treated to give a seamless and joint less finish as per the manufacturer's specifications. Acrylic solid surface shall have Antibacterial certificate and TUV (Austria) FR grade certified. The shapes could be elliptical, circular, curved in any design as per site, drawing or Engineers directions.				
37	NS	Supply & Installation of Linear hook-on ceiling System. The non perforated panels are made to 2100(L)x300(W) or approved size manufactured out of minimum 0.6mm thick galvanized mild steel sheets and hooked onto the shorter side. Finish of the panels to be powder coated with graphic digitally printed UV cured woodgrain finish with minimum 60 microns base coating. All panels are hooked onto a secondary grid known as U1005 installed at shorter side of the panel to ensure individual demounting of panels for easy accessibility of services. A primary grid of perforated L- Angle in 30x30x1.2mm thick galvanized steel primary carriers in galvanized mild steel is installed perpendicularly to hook on profiles at maximum centers at 1200mm. The entire ceiling shall be suspended with threaded rod using Hilti fastener with minimum load of at least 0.5kn per anchor. The suspension system shall be as per manufacturer specification. The panels shall include the site cutting / making openings for services e.g. lights for information boards, smoke detectors, speakers, diffusers, grills etc. Measurement to be done on edge to edge basis without any deductions for AC grills or any other services integrated within the false ceilings. Tolerances according to TAIM, DIN EN 13964 and quality controlled to ISO 9001:2015 approved by SIS, LEED certification by IGBC. Manufacturer shall have the fully automatic powder coating system with power and free conveyerize 3mtr/minute capacity. Powder coating plant shall be equipped with latest modern technology with fully automatic inline Pre-treatment using nano technology, Inline automatic water Drying system after pretreatment.	Sqm	424.93	6,576.00	27,94,339.68
38	NS	Supply and Installation of Clouds NRC, square edge, FR grade NRC fabric (colour as per approved by the Engineer wrapped	Sqm	92.00	13,842.00	12,73,412.78

		grassfire core panel of size 600x1200x25mm having volume density 120Kgs/m3 and weight 3kg/m2. Each cloud is provided with 4 sets of accessories containing spring hooks, levelling clip and hanger wires. Springs to be rotated and anchored at back of each panel at four points to hold the panel stable. Supplied hanger wires to be first dropped from the beam/slab/truss to desired height with suitable cleats/anchor bolts. Subtex Clouds NRC panels are then suspended using spring hooks and hanger wires and levelled into position with supplied levelling clips.				
		Technical Parameters				
		• Fire (Class) – 1 & P				
		• Acoustics – NRC 0.9				
		• Thermal conductivity (W/mk)– 0.07				
		• Climate (°C, RH) – 49, 90				
		• Light reflectance (%) – Colour dependent				
		• Green (VoC, RC %) – Low, 25				
39	NS	Providing and fixing organic metal ceiling composed of elegant circles and/or organic shapes. The organic metal ceiling is to counterpoint the strict lines of conventional ceilings with a flowing, harmonious room look. The ceiling should integrate the round lighting areas or round ceiling elements, which diameter determines the basic size of the different ceiling elements. Additionally, spot lights or LED lines should be integrated into the joints. The system should allow creation of individual ceiling configurations with only a few different parts. The dynamics of the ceiling can be influenced by the choice of the circles as well as by the possibility to choose the colour. The organic metal ceiling should have an option to be used as a closed ceiling or as a circular raft ceiling. The form elements made of sheet steel should be available in any RAL colours. Module size should be 1204mm×1204mm Joint width, 10mm Also available on request in the 600 or 900mm modules. Linear ceiling system Module size is to be 1204mm×1806mm and Joint width is 10 mm.The organic metal ceiling should be acoustically effective using perforated rectangular metal panels with acoustic fleece on the rear side.	Sqm	18.03	44,960.00	8,10,628.80

		The ceiling elements are to be fitted on the rear side with bolts and magnets and screwed on a rectangular ceiling system suspended in rail channels in the system. The organic metal ceiling elements at the butt of plates should be force-fitted. Security ropes prevent uncontrolled swinging down of the ceiling elements. The rail channels are to be tightened by means of screws to L-shaped primary carriers. The L-shaped primary carriers are to be used to enable lateral stiffening and should be suspended to the structural slab using patented suspension elements or threaded rods. The round area lightings are an integral part of the creative metal ceiling organic metal ceiling.				
		The round shape should be in the diameter 600, 900, 1200mm and determines the basic size of the ceiling. If Required ,lights will be supplied on extra cost.				
40	NS	Supply and Installation of Custom Made Triangular Hook On metal Ceiling system made out of 0.70 mm thick sheet. The ceiling panels are suspended form-fitting and tension-free by means of a special sub structure. Panels to be custom made perforated to 20x20x20mm Triangular CNC Punched Pattern @ 34.7mm Centres having sound absorption of approx. 0.70 with use of special acoustic tissue pasted at the back of panels. Panels to come in sizes 1000x1000x1000mm ( Can vary as per requirement).Panels to be powder coating win selected Non Metallic RAL finish with Coating thickness of appx 70-80 µm. Demounting is performed without tools. Tolerances and quality requirements according to TAIM, DIN EN 13964. Delivery and installation of a System substructure consisting of form punched angles as a lateral grid which is suspended pressure-rigid from the bare ceiling with threaded rods using official approved dowel plugs. The angles are to be connected together at the ends by means of longitudinal connectors. The spacing of the grid angles is according to the requirements of DIN 18168 and DIN EN 13964 as well as the loads of the system and are to be determined and checked by the contractor. On the grid angles A-Z shaped carrier profiles 1.50mm Galvanized steel are attached as longitudinal profile with threaded bolts [secured against loosening].	Sqm	152.63	10,259.00	15,65,831.17

		<p>The longitudinal connection of the Z-shaped carrier profiles are made by means of profile connectors. The spacing of the Z-shaped carrier profiles is to be matched exactly to the spacing of the hook-in sides of the metal panels so that panels rest tension-free in the system. Care is to be taken to ensure horizontal and flush alignment. It is only permissible to use structure components that have been approved by the manufacturer of the metal panels. All parts are made of galvanised steel. Substructure: Manufactureres specially designed hook on substructure, Threaded rods/fasteners, other fixing accessories included. The maximum suspension allowed is upto 2.0 mtr. No additional framing, bridging, lateral supports is to be a part of the quoted price by the contractor. The system should be in accordance with Material class A2-s1, d0 according to EN 13501-01 "non-combustible", as per the direction of Engineer. The system will meet fire retardant standards of BS 476: Part 6 &amp; Part 7. Tolerances according to TAIM, DIN EN 13964 and quality controlled to ISO 9001:2015 approved by SIS, LEED certification by IGBC. Manufacturer shall have the fully automatic powder coating system with power and free conveyerize 3mtr/minute capacity. Powder coating plant shall be equipped with latest modern technology with fully automatic inline Pre-treatment using nano technology, Inline automatic water drying system after pretreatment.</p>				
41	NS	<p>Supply and Installation of 50mm Hingeable open compartment ceiling with cell size of 50mm in X and Y direction made out of 0.4mm thick coil coated Aluminium. The assembled compartment ceiling panels shall be in size of 600x1200 made out of blades in 9mm (W) x 40mm (H). The assembled cell ceiling panels are then clipped into metal secondary carriers in galvanized mild steel, coated in black enamelled finished at 1200mm c.c. Wire clips shall hold the cell ceiling panels into the metal secondary carriers in galvanized mild steel carriers. Once the metal secondary carriers in galvanized mild steel carriers are installed then primary angles made out of galvanized mild steel, type primary angles are cross connected to the secondary carriers in galvanized mild steel carriers at 1200mm c.c. for lateral bracing</p>	Sqm	3,656.77	6,581.00	2,40,65,205.18

		The whole ceiling shall be suspended by threaded rods installed 1200mm c.c. All panel modules must be hingeable through wire clips. The panels are fully downward demountable / hinged from the manufacturers specially designed secondary carriers in galvanized mild steel section using spring panels. The system should be in accordance with Material class A2-s1, d0 according to EN 13501-01 "non-combustible", as per the Direction of Engineer. The system will meet fire retardant standards of BS 476: Part 6 & Part 7. Tolerances according to TAIM, DIN EN 13964 and quality controlled to ISO 9001:2015 approved by SIS, LEED certification by IGBC.				
42	N.S	Providing and fixing perforated ceiling tile made out of 0.50 mm thick galvanized mild steel sheet with acoustic fleece. Tile composite system to be provided to improve sound absorption (in black or approved RAL colour). Perforation should be adequate to improve sound absorption. The perforation should be equal distance and both the surfaces shall be smooth.	Sqm	1,935.00	2,868.00	55,49,580.00
43	NS	Providing and fixing backlit Ceiling in 12 mm acrylic solid surface sheet of approved make. Acrylic solid surface shall have Antibacterial certificate and TUV (Austria) FR grade certified, Ceiling Installation to be done in translucent glacier ice color, thickness (12 mm), design backlit provision as approved by Engineer. The material should be CNC cut to achieve the desired design as per Engineer. The CNC cut Acrylic solid surface sheet to be fixed on ceiling. Adhesive of the same color. The material used shall be very translucent and the light shall pass through the acrylic solid surface enhancing the design and the lights passing should be very visible. The rate to exclude the framing, the frame should be of stainless steel or wood as per requirement of stability and weight carrying capacity and its requirement for support. The hanging/fixing arrangement and boxing shall be done as per the requirement of light translucency and reflection of lights required as per the design and instructions of Engineer. The backlit ceiling shall have the light passing and shall have translucency.	Sqm	25.46	10,681.00	2,71,980.98
		Acrylic solid surface shall have Antibacterial certificate and TUV (Austria)				

		FR grade certified. The cost of framing and boxing included.				
		<b>TOTAL for FALSE CEILING</b>				<b>10,95,69,749.91</b>
		<b>SUBHEAD 5: WALL PANELLING</b>				
44	N.S.	PERFORATED ZINC TITANIUM CLADDING : Supply, & Installation of Titanium zinc Interlocking wall cladding panels in Pre Patina BLUEGREY/GRAPHITE GREY Finish. The wall cladding system shall comprise of the following described 0.8/1 mm interlocking panels of 250-300 mm width and max 1000 mm length. The interlocking panels are to be fixed using necessary accessories as proposed by suppliers standard methodology and connected end to end. Screws should be of SS Grade 410. Rivets powder coated in same finish as the sheets and made of Aluminium. The substructure should be erected using Aluminium box sections of 25/30 x 50/60 dimensions. The Zinc sheets shall be as per EN 988 standards and must have TUV Certifications. The sheets should be purely natural without addition of any pigmentations.	Sqm	80.00	6,061.00	4,84,880.00
		Perforation : Custom CNC punching as per approved drawings . Circular perforation of varying diameters shall be done as per approved drawings to meet the façade intent .				
45	N.S	Providing and fixing of Lacquered Glass. 6 mm Extra Clear Glass used for lacquered glass should be of Saint Gobain/ ASAHI/ Pilkington and should be toughened in horizontal tempering line. Lacquered glass could be fixed with (Dow corning - 789) / Pentagon double sided tape @2-3 per Sqm) on a perfectly leveled 12mm thick water proof marine plywood / MDF / Mineral fiber board which is mounted on the RCC wall/any other structure Or installed using Stainless Steel Patch fitting Or Stainless Steel studs Or Aluminum frame. (Ply, MDF, MFB, SS Fitting, Aluminum Frame etc. to be paid separately) Lacquered glass to be made industrially (via air brushing process); opaque (if viewed against a support wall), coated with WATER BASED lacquer colour of brand Colour Spray AQUA by Regaled – United Kingdom Or Equivalent Brand ;Which is binded by Nano particle pure acrylic);	Sqm	2,802.36	6,965.00	1,95,18,415.67

		Gloss Level – 40 ; where VOC < 1% ; highly durable ; humid resistant (conforms to BS EN 1036 1999); environmentally friendly (no lead, no arsenic, no copper, no formaldehyde; compressive strength (1000 MPa) & tensile strength (40 MPa), same as float glass as per the detailed drawings and as approved by Engineer. Colour to be checked and tested via INDEX Colour shade card used worldwide as a colour choosing parameter.				
46	N.S	Supply and placing of Green Wall planting media of organic fertilizer like crop residue, vermin compost, wood ash, poultry manure ,cow urine etc., lighter than the soil, with good moisture capacity and used to ensure that load on vertical wall is minimized in Kg/Sqft.	Sqm	25.00	11,751.00	2,93,751.50
		UV Stabilized polypropylene planters of nominal size 19.6 Inches(Length)X6.2 inches(Height)X9 inches (Wide) of each module or equivalent make, specially designed to keep the centre of gravity of growing plants with in the planters with suitable Geo-Textile separator to separate the planting media with water reservoir and keep the perforation holes unclogged. The installation of planter will be such that to make it theft proof.				
		Plants of minimum height 152mm(5 plants for each planter) such as Interim, Lal sag, Alternanthera Chlorophytum vareigated, Jade, Schafflera, etc. selected on the basis of temperature, incidence of sun light and humidity on site ;in pattern finalised in consultation with as per direction of Engineer.				
		Drip Irrigation - with BIS approved 50 mm CPVC pipes, inlet supply of water, outlet pipe for distribution of water with 25mm Dia pipe and grid of dripper with 15mm Dia pipe with dripper. Nozzles can unscrewed and cleaned in case of clogging. The installation shall be without pump set. The watering should be as per Gravitational				
		Force i/c fixing. The suitable pressure compensating device, valve, elbow, end cap and all other accessories required to complete the irrigation system				
		.				
		Mild Steel pipe frame grouting in RCC of mix 1:2:4, @ 51cm center to center embedded with vertical MS square pipe size 2.5cmX2.5cm with MS rectangular Pipe of 5cmX 2.5cm of border frame with				

		MS Flats 25mm(W)X 2.3mm thick weight not less than 2.5 kg per mtr. 15cm center to center horizontally and with MS flats to hang the planter, with or without connecting plate on supporting wall or standalone including cutting, hoisting, fixing in position, welding etc. & frame painted with 2 coats of Black ate-corrosive bitumastic paint in all complete as per site requirement.				
		Complete maintenance of vertical garden with supply of water for irrigation through pump set/water tanker including watering through drip irrigation, cleaning/replacement of dripper, replacement of dripper, change of pot pattern after 15 days interval or as per requirement of site complete. T&P shall be provided by the Contractor. The cost of casualty of plants 25% as natural casualty for the first three years and also refilling of cup inside covered by Geotextile cloth of 250 GSM in bottom and further fill up 1:2 ratio with coco peat and soil rite mixture all complete.				
47	NS	Supply installation testing and commissioning of pump set for Green Wall	Each	6.00	6,885.00	41,310.00
		Single phase submersible motor pump set - suitable HP, in underground tank with starter panel completer in all respect (KSB, Kirloskar, Techno, Texmo, Taro, Calama, Plugra, Crompton Greaves etc.) Note : motor pump shall be able to cover upto area of 1000 sqft comprising of 10 normal/standard panel of size 10ft x10ft =100ft each.				
48	NS	Providing and installation of Moss Wall as per manufacturer's Specifications	Sqm	50.00	23,502.00	11,75,100.00
49	NS	Supply and Installation of square edge, fabric wrapped pinewood fiber panel of size 600x1200x20mm sculpted in as per drawing and design as per the instruction of the Engineer, density 400 kgs/m <sup>3</sup> , weight 8kg/m <sup>2</sup> installed using Strut framework system with non-visible fasteners using Strut H-Spline.	Sqm	1,944.00	9,798.00	1,90,47,266.93
		The Strut framework systems includes strut 50mm Cross Channel having thickness 0.7mm, length 3600mm, knurled web 50, depth 50mm and equal flanges 15mm is fastened to wall positioned horizontally in a regular manner at 600mm c/c. Strut H-Spline having sectional thickness 2mm and length 2400mm to be				

		fixed perpendicular to the Strut 50mm Cross Channel at 600mm centers. The kerfed edge fabric wrapped panels shall be then inserted into the Strut H-spline along their long edges of 2400mm against framework to perfect fit with staggered short edges. Note: Thickness is given for bare Panels				
		The system is backlined with the acoustical infill of polyfiber				
		Technical Parameters				
		<ul style="list-style-type: none"> <li>• Fire (Class) – 1 &amp; P</li> <li>• Acoustics – NRC 0.95 (For 25mm C50 Mounting)</li> <li>• Thermal conductivity (W/mk)– 0.08</li> <li>• Climate (°C, RH) – 50, 90</li> <li>• Light reflectance (%) – colour dependant</li> <li>• Green (VOC, RC %) – Low, 30</li> </ul>				
50	NS	Supply & installation of acoustic melamine panels made of pinewood E1 grade fiberboard, with slotted perforations, melamine laminated finish, flame retardant grade, size 1200/600x600x16mm, tongue and groove edge, volume density of base board 800Kg/m3, weight 9.3Kgs/m2(6R16), 10.4Kgs/m2 (6R32), 10.3Kgs/m2(G5R16) installed by using Strut framework system.	Sqm	193.22	9,265.00	17,90,183.30
		Strut framework system includes Strut aluminium core cross channel having thickness 0.55mm, length 3600mm, knurled web 40mm, depth 10mm and equal flanges 15mm is fastened to wall or framework behind vertically/ horizontally at every 600mm c/c. strut aluminium core cross channel, thickness 0.5mm, length 2400mm, web 15mm & 27mm, depth 18mm and flanges of 7mm with suitable edge & centre brackets is then fixed perpendicular to the Strut with the help of fasteners at every 300mm centers. Acoustic melamine panels of size 600x600x16mm in then fixed perpendicular to with suitable edge & centre brackets. Contractor to provide expansion joints of 3mm at every 4.8m bothways.				
		Panels are backlined with polyfiber 10x25 held in position with dab spots				
		Technical Parameters				
		<ul style="list-style-type: none"> <li>• Fire (Class) – 1 &amp; P (For FR grade)</li> <li>• Acoustics – NRC upto 0.85</li> <li>• Thermal conductivity (W/mk)– na</li> <li>• Climate (°C, RH) – 40, 70</li> <li>• Light reflectance (%) – Colour Dependant</li> <li>• Green (VOC, RC %) – Low, 25</li> </ul>				

51	N.S	Supply and Installation of square edge, fabric wrapped pinewood fiber panel sculpted as per design requirement of size 600x2400x20,25,30,40,50mm, density 400 kgs/m <sup>3</sup> , weight 8,10,12,16,20kg/m <sup>2</sup> installed by using Strut framework system with non-visible fasteners using H-Spline.	Sqm	1,015.50	9,092.00	92,32,885.09
		The Strut framework systems includes Strut Cross Channel having thickness 0.7mm, length 3600mm, knurled web 50, depth 50mm and equal flanges 15mm is fastened to wall positioned horizontally in a regular manner at 600mm c/c. Strut H-Spline having sectional thickness 2mm and length 2400mm to be fixed perpendicular to the Strut CC50 Cross Channel at 600mm centers. The Kerfed edge fabric wrapped panels shall be then inserted into the Strut H-spline along their long edges of 2400mm against framework to perfect fit with staggered short edges.				
		Technical Parameters				
		<ul style="list-style-type: none"> <li>• Fire (Class) – 1 &amp; P</li> <li>• Acoustics – NRC 0.95 (For 25mm C50 Mounting)</li> <li>• Thermal conductivity (W/mk)– 0.08</li> <li>• Climate (°C, RH) – 50, 90</li> <li>• Light reflectance (%) – colour dependant</li> <li>• Green (VOC, RC %) – Low, 30</li> </ul>				
52	N.S	Supply & installation of acoustical melamine finish wooden perforated board made of pinewood E1 grade fiberboard, with big circular perforations of 50mm dia, melamine laminated finish, Flame retardant grade, size 600x1200x16mm, Square edge, volume density of base board 800Kg/m <sup>3</sup> , weight 8.8Kgs/m <sup>2</sup> installed by using Strut framework system and Z bar.	Sqm	429.15	9,268.00	39,77,362.20
		Strut framework system includes Strut having thickness 0.55mm, length 3600mm, knurled web 35, depth 20mm and equal flanges 15mm is fastened to wall positioned vertically in a regular manner at 600mm c/c. Z-bar having 40mm height, thickness 1mm is first fixed behind the panels by using suitable fasteners. Another length of Z-bar are then installed over Strut horizontally at spacing so as to match with Z-bar at rear of acoustical melamine finish wooden perforation panels. Acoustical melamine finish wooden perforation panels of size 600x1200x16mm are then slid into the Z-bar fixed on Strut. Long edges of panels should be perpendicular to Z-bar and Short edges of the panel are staggered.				

		Panels are backlined with polyfiber 10x25 held in position with dab spots of approved adhesive				
		Technical Parameters				
		<ul style="list-style-type: none"> <li>• Fire (Class) – 1 &amp; P (For FR grade)</li> <li>• Acoustics – NRC upto 0.85</li> <li>• Thermal conductivity (W/mk)– na</li> <li>• Climate (°C, RH) – 40, 70</li> <li>• Light reflectance (%) – Colour Dependant</li> <li>• Green (VOC, RC %) – Low, 25</li> </ul>				
53	N.S.	Supply & installation of acoustical wooden wall penalling made of pinewood E1 grade fiberboard, melamine laminated finish, groove perforated slats L8-2 - (2mm grooves @ 8mm centers) / L16-2 - (2mm Slats @16mm pitch) / L32-2 - (2mm grooves @ 32mm centers) / L64-2 - (2mm grooves @ 64mm centers) / L128-2 - (2mm grooves @128mm centers), backlined with acoustical fleece, tongue-groove edge for a seamless look, Flame retardant Grade, size 128x2440x16mm, volume density of base board 800Kg/m3, weight 8Kgs/m2 (L16), 10.5Kgs/m2 (L32), 11Kgs/m2 (L64) installed by using Strut framework system.	Sqm	473.75	12,787.00	60,57,845.09
		Strut framework system includes Strut aluminium core cross channel having thickness 0.55mm, length 3600mm, knurled web 40mm, depth 10mm and equal flanges 15mm is fastened to wall or framework behind vertically/horizontally at every 600mm c/c. Strut CC18 aluminium core cross channel, thickness 0.5mm, length 2400mm, web 15mm & 27mm, depth 18mm and flanges of 7mm with suitable edge & centre brackets is then fixed perpendicular to the Strut Cross channel with the help of fasteners at every 400mm centers. Slats of size 128x 2440x16mm in then fixed perpendicular to struts with suitable edge & centre brackets. Short edges of the panel are staggered. Contractor to provide expansion joints of 3mm at every 4.88m length wise and 4.992m width wise.				
		Panels are backlined with polyfiber 10x25 held in position with dab spots of approved adhesive				
		Technical Parameters				
		<ul style="list-style-type: none"> <li>• Fire (Class) – 1 &amp; P (For FR grade)</li> <li>• Acoustics – NRC 0.77 (For E300* Mounting)</li> <li>• Thermal conductivity (W/mk)– na</li> <li>• Climate (°C, RH) – 50, 70</li> </ul>				

		<ul style="list-style-type: none"> <li>• Light reflectance (%) – 75 (Maple Arce)</li> <li>• Green (VOC, RC %) – Low, 25</li> </ul>				
54	N.S.	Supply and installation of magnesia board of thickness 12mm having density 1000kgs/m3, weight 12kg/m2 fixed on the either side of metal framework.	Sqm	1,504.47	3,288.00	49,46,684.21
		Technical Parameters of magnesia board				
		<ul style="list-style-type: none"> <li>• Core - Magnesia</li> <li>• Fire - upto 150 minutes</li> <li>• Acoustics - STC upto 44-50</li> <li>• Climate (OC RH) - 50, 99</li> <li>• Termite resistance - Yes</li> <li>• Moisture Absorption - 6.8% after 2hrs and 11.3% after 24hrs soaking</li> <li>• Metal framework not included</li> <li>• Wet Expansion - &lt; 0.02% from ambient to saturation</li> <li>• Dry Contraction - <math>\leq</math> 0.02% from evaporation</li> <li>• Moisture Movement - 0.02%</li> <li>• Light reflectance - 80 %</li> <li>• Green (RC %) - 30</li> <li>• Hygiene (VoC, Clean room) – Low, Class 1</li> <li>• Strength - Antisag</li> <li>• Impact - 4kg hammer 175mm</li> </ul>				
55	N.S.	Providing and fixing designer Wall Paneling with 3D engraving in 18mm thick acrylic solid surface sheet of approved make or as approved by Engineer basic white color. Design & fixing arrangement as per direction of Engineer. The material should be CNC 3D cut to achieve the desired design. The CNC cut Acrylic solid surface sheet to be fixed in a box frame or on a frame or on a flat surface as per the drawing and design and as per the instructions of the Engineer. The material used shall be very translucent and the light shall pass through the acrylic solid surface enhancing the design and the lights passing should be very visible. The cost shall include the framing and Boxing of wood / plywood and the frame should be of stainless steel or wood as per requirement of stability and weight carrying capacity and its requirement for support. The 3D shall be done as per the requirement of light translucency and reflection of lights required as per the design and instructions of Engineer. The backlit ceiling shall have the light passing and shall have translucency. Acrylic solid surface shall have Antibacterial certificate and TUV (Austria) FR grade certified.the	Sqm	85.00	19,417.00	16,50,483.83

56	N.S.	Paneling with acrylic solid surface. Providing and fixing wall cladding panels with 6mm acrylic solid surface, non-porous and homogeneous seamless, stain resistant, repairable, durable, hygienic environment friendly surfacing material acrylic solid surface sheet of or approved make with a minimum thickness 06 mm in color, design, fixing in customize design arrangement as per direction of Engineer. Acrylic solid surface sheet to be fixed on wall on top of 12 mm marine ply. Adhesive of the same color to provide inconspicuous joints. Grooves to be given at every 1mtr to give expansion & contraction movement to material. The rate is inclusive of all operation, material and required pattern. Cost of base like framework and 12mm thick ply will be paid under respective item. Acrylic solid surface shall have Antibacterial certificate and TUV (Austria) FR grade certified.	Sqm	2,739.60	7,505.00	2,05,60,664.98
57	N.S.	Providing & supplying & fixing panel of aluminium composite panel cladding in approved shape made out of 4mm thk ACP sheet material consisting of 3mm thk FR grade mineral core having 2 hours fire resistance in accordance to ASTM E119-12 and BS476 part 6 and 7 class 0 sandwiched between two aluminium sheets (each 0.5 mm thk of AA 5005/AA3105 grade) the aluminium composite panel cladding sheet shall be coil coated Polymer coating of bottom face as specified. (Overall weight of ACP shall not be less than 7.5 kg/sqm). The main frame using shall consist of M10 X 100 SS anchor fastener, 110 X 75 X 60 X 6 mm thk AL Bracket on beams & 100 x 70 x 60 x 6mm thk AL Bracket on walls, 38mm X 38mm X 2.5 mm thk aluminium tube, AL pop rivets, 20mm X 20mm X 75mm X 2mm thk angle AL cleat, M6 x 70mm S.S. nut bolt, EPDM gasket, weather silicon including 'H' frame/ scaffolding etc. Services wherever required. As per details drawings & instructions of client/ architect.	Sqm	30.00	7,391.00	2,21,730.00
		<b>TOTAL for WALL PANELLING</b>				<b>8,89,98,562.79</b>
		<b>SUBHEAD 6: PAINT WORKS</b>				
58	N.S.	Heat reflective cool coating for roofs				
		Finishing Terrace with a premium specially formulated roof and exterior				

		coating which reflects the damaging UV rays and reduces the internal temp of the buildings.				
		Reflects damaging ultra violet rays from the structures. • Reduces internal energy demand. • Dirt pick-up resistant technology. • Excellent elongation and adhesion. • Carbonation resistant. • Breathable and waterproof.				
		SURFACE PREPARATION • Thoroughly abrade the surface to remove loose particles, dust and laitance incrustations and existing paint using coarse wire brushes and water jetting. • Fill up all the cracks and crevices with Putty.				
		No. of Coats:- 1 Primer + 2 top coats.	Sqm	1,490.71	319.00	4,75,536.49
		<b>TOTAL for PAINT WORKS</b>				<b>4,75,536.49</b>
		<b>SUBHEAD 7: MISCELLANEOUS WORKS SUCH AS BLINDS, FILMS, RAILINGS ETC.</b>				
59	N.S.	Roller blind fabric should be made up of 35% Fiberglass, 65% Vinyl on Fiberglass, it should have specific low emissivity treatment and Lead free with <b>Greenguard Gold certification</b> . Fabric approved by <b>Melanoma International Foundation (MIF)</b> , it should cut UV rays with 97% approximately and antimicrobial properties as per ASTM E 2180, ASTM G21 & G22, AATCC30 Part 3, ASTM D 3273, GREENGUARD Mold and Bacteria Standard ASTM 6329; <b>includes Microban antimicrobial additives</b> . It should have 3% openess, fabric thickness should be 0.50-0.55 mm, fabric weight should be 478 grams per square meter, The fabric should be Flame retardant as per California U.S. Title 19 (small scale), NFPA 701 TM#1 (small scale), NFPA 101 (Class A Rating), IBC Section 803.1.1 (Class A Rating), BS 5867 Part 2 Type B Performance, NFPA 701 TM#2 (large scale), CAN/ULC-S 109 (large and small scale), CAN/CGSB2-4.162-M80.				
		Roller Upper Tube: Made of high strength extruded aluminium alloy, finish powder coated with min 60 micron coating, Size of 40 mm outer dia and wall thickness of min. 1.2mm, Special feature, it has end to end groove to hold fabric inside for better strength. Bottom Tube: Made of high strength extruded aluminium alloy, finish powder coated with min 60 micron coating, Size of 20 mm height and wall thickness of min. 1.2mm, Special feature, it has end to	Sqm	319.06	1,572.00	5,01,560.75

		end groove to hold fabric inside for better strength. Control Unit: Made of high strength reinforced Nylon grade 6, consisting of outside sleeve and centre shaft, sleeve shall provide bearing surface of roller tube and rotate freely on centre shaft, providing smooth quiet and long wearing operations. Brackets: Fixing brackets is made of mild steel with zinc coating, made of thickness of min. 0.7mm. Ball Chain: Made of 2mm thickness polyester cord with moulded 4.5mm round plastic balls.				
		<b>BLACKOUT ROLLER BLINDS</b>				
60	N.S.	Roller Blinds to cover windows with fabric which can block 100% light and glare. Fabric: Max width 2.5 mtr, Composition: 100% polyester, Weight 360 gsm, Openness factor 0%, light fastness 6-7 grade				
		Roller Upper Tube: Made of high strength extruded aluminium alloy, finish powder coated with min 60 micron coating, Size of 40 mm outer dia and wall thickness of min. 1.2mm, Special feature, it has end to end groove to hold fabric inside for better strength. Bottom Tube: Made of high strength extruded aluminium alloy, finish powder coated with min 60 micron coating, Size of 20 mm height and wall thickness of min. 1.2mm, Special feature, it has end to end groove to hold fabric inside for better strength. Control Unit: Made of high strength reinforced Nylon grade 6, consisting of outside sleeve and centre shaft, sleeve shall provide bearing surface of roller tube and rotate freely on centre shaft, providing smooth quiet and long wearing operations. Brackets: Fixing brackets is made of mild steel with zinc coating, made of thickness of min. 0.7mm. Ball Chain: Made of 2mm thickness polyester cord with moulded 4.5mm round plastic balls.	Sqm	1,233.00	1,729.00	21,31,849.22
61	N.S.	Providing & Fixing Automated (RF) remote for Blinds	Each	17.00	3,435.00	58,395.00
62	N.S.	Providing & Fixing Automated motor for Blinds with specification:	Each	54.00	5,654.00	3,05,316.00
		Size-L1/L2- 564/577mm, Torque 6 NM, Speed 28 rpm, Rated, Current 0.5Amp, Rated Power 121 Watt, Rated Voltage 230 Volt, Rated Frequency 50HZ, Thermal Cutoff 4Minute, No of cables 3 Index				

		Protection IP44,Average Running Noise 32-42 DBA				
63	N.S.	Supply of Crystal Glass film FROSTED effect with approved artwork, cut using digital plotter. Self-adhesive, bubble-free installation to be done on clean glass , by Authorized Installer's Warranty for a period of 18 months for interior application.	Sqm	856.13	1,234.00	10,56,463.80
64	N.S	Providing & Fixing Digitally reproduced Film on Lift lobbies & Corridor partitions of Clear Graphics 114 make or approve equivalent. The film shall be Durable inkjet printed graphics on self adhesive vinyl, special CLEAR film to produce coloured imagery on glass. Customized imagery with approved graphics including providing company warranty, at all leads & lifts etc.	Sqm	56.00	3,326.00	1,86,256.00
65	N.S	Providing and fixing of 12mm thick toughened ceramic digitally printed glass. 12 mm annealed Glass used for digital printing and should be of Saint Gobain/ ASAHI/ Pilkington and should be toughened in vertical tempering line. Digitally printed glass must be and only be of ceramic ink and printed on DIPTECH/TECGLAS Plant; ink should be of ceramic and carrier should be terephthalene oil, Which is then tempered post printing so that the ceramic ink embeds inside the glass making it permanent and homogeneous;; highly durable ; water resistance , UV resistance; environmentally friendly (no lead, no arsenic, no copper, no formaldehyde; compressive strength (1000 MPa) & tensile strength (40 MPa),same as float glass as per the detailed drawings and as approved by Engineer.	Sqm	108.00	9,473.00	10,23,044.21
66	N.S.	Viewing Gallery & Terrace Railing	Rmt	62.00	16,377.00	10,15,374.00
		Providing Modular ( weld free, component base) Glass balustrade system (Frameless handrail ) 50mm dia x 1.6 mm thick handrail fixed to 10 to 12mm thick monolithic T/G glass or 13.52 laminated glass with glass mounted handrail bracket at every 1000mm to 1200 mm C/C(two no per Glass), just below (75mm) top edge of the glass , Bottom of the glass is fixed with One pairs of Spigot (with out baseplate - D1 type 1200 mm C/C fixed to floor by m16 x 150mm long stud with epoxy grout				

		or without base plate - D2 Two per each Glass Panel) Floor with M12 x120mm anchor fastener with domenut. .Complete with End caps, Mid Span sleeve, Elbows. All the material of handrail and components should be of SS 304 grade satin finish.				
67	N.S	Staircase Railing Providing & Fixing Modular (weld free Components base) Balustrade & Handrail system, 50.8 mm dia x 1.6mm thick handrail fixed to the Balustrade of 50 .8 mm dia x 1.6 mm thick with top adapter( neck) type fixed with 2nos of M4x10mm Allen CSk Screw. The balustrade fixed to Top of the straight or staircase with Base plate with M12 x120mm long anchor fastener. The balustrade C/C 900 to 1000mm, The Ht. of the handrail 1000mm from FFL. Glass infill of 10 mm thick toughened monolithic Glass or 13.52 thick laminated toughened glass is Fixed to the Balustrade with Glass Clamp (Four per balustrade) by M8 avdel insert & M8 x25mm Allen cap screw , Complete with all End cap, Mid Span Sleeve, Elbows. All the material of handrail, balustrade and components should be of SS 304 grade satin finish.	Rmt	140.76	14,435.00	20,31,856.17
68	N.S.	Providing and fixing Lattice jaali partitions in 12mm thick acrylic solid surface sheet of approved make manufactured as per guidelines of ISO19712. The material should be CNC cut to achieve the desired design as per Engineer. The CNC cut Acrylic solid surface sheets to be fixed with the help of Aluminum/Metal Box section/ Teak wood of 50x50x3mm from all the 4 sides/ teak wood/ oakwood frame. Single jaali of approx. size of 0.75mtr x 1.8 mtr or as per design & metal frame to be supported with the help of Hilti/ or approved fasteners. Adhesive of the same color. The rate is inclusive of framework, material and required pattern approved. The Acrylic Solid Surfaces should be installed by company authorized Quality Fabricators. The 6mm routed CNC cut Acrylic solid surface sheets/ lattice jali to be fixed with the help of 25x25 mm Aluminum tube/ Terak wood or 25x25mm aluminium frame/ 25x25mm teak wood or 75x75mm class teak wooden frame from all the 4 sides of the lattice jaali. Lattice jaali frame	Sqm	49.98	12,966.00	6,48,040.68

		to be supported with the help of Hilti/ or approved fasteners as per requirement.				
		The rate is inclusive of all operation, framework, material and required pattern. The material used shall be as per the Engineer and the light shall pass through the acrylic lattice jaali cut solid surface enhancing the design. Acrylic solid surface shall have Antibacterial certificate and TUV (Austria) FR grade certified.				
69	N.S.	Designing, Enlarging, supplying, execution, fixing and installation of 3D copper mural with hammering to in panels in various sizes varies from 2 to 4.5 sqmtr. Concept of copper mural will be specially designed keeping in mind that the art mural will enhance the ambience and would improve its look aesthetically as per the design approved. Hammered and designed Copper to be encased over ply (12mm thick) and covering the edges of the ply with the copper sheet. Mannequins and other desired elements shall be as per the approved design and the mannequins shall be made out of copper sheet and encased around ply (12mm thick). the design elements of the mannequins/ reliefs/ objects shall be placed/ fixed over the 3D hammered copper battering surface as per the approved design. The painting of the mannequins and other elements shall be as per the color scheme of approved design and the final mild and thin coatings on top of the entire surface shall be of PU. The fixing details shall be as per approved design and the ply surface shall be fixed with suitable fasteners etc. to ensure stability of the elements, mannequins and hammered copper mural with adequate hammering The copper mural relief shall enhance the aesthetic beauty of the vertical/ horizontal surface as per site. Transportation to site included. Installation and fixing the mural is included. Scaffolding and support system to all height included.	Sqm	20.00	33,690.00	6,73,800.00
70	N.S.	Supply and fixing of prefabricated GI Trap 600 mm x 600 mm doors of to be recessed in ceilings wherever required.	Sqm	72.00	9,930.00	7,14,960.00
71	N.S.	Designing and placing Sliding name plate for dignatories	Nos.	80.00	1,165.00	93,200.00
		personalized acrylic desk nameplate Made with high quality acrylic				

		Dimensions: 2"l x 10"w x 1"h				
		Produced without using liquid solvents. No VOC emissions.				
		Made of ultra-durable acrylic				
72	N.S.	Designing, Enlarging, supplying, execution, fixing and installation of stain glass mural sandwich panel in 5mm stain toughened glass panel+5 mm thick toughened clear glass facing outside. Concept of stain glass will be specially be designed keeping in mind that the art mural will enhance the ambience and would improve its look aesthetically.	Sqm	38.00	28,154.76	10,69,925.93
		Material:				
		The material used in making the stain glass will be lead, 5 stain toughened glass panel+5 mm thick clear toughened glass, Imported resins and staining chemicals, imported color dyes overall thickness of glass in 10mm,thw two panes will be sealed with silicon as/approved from all sides.				
		Framing:				
		Cost includes frame of aluminum powder coating which runs around the glass panel fixed to wall/RCC column.				
73	N.S	<b>Wall art</b>				
		Providing & Placing of Carved Wooden Mural in melamine finish panels of sizes 690mm (W) x 30-40mm (D) x 1000mm (H). The fixing details shall be as per approved design and the surface shall be fixed with suitable fasteners drilled etc. to ensure stability of the wooden mural. The carved wooden mural shall enhance the aesthetic beauty of the vertical/ horizontal surface as per site. Transportation to site included. Installation and fixing the mural is included. Scaffolding and support system to all height included. The design could be approved by the Engineer.	Each	11.00	65,500.00	7,20,500.00
74	N.S	Supplying, fabricating hoisting and fixing of MS pipe of varying diameters fixed by means of arc welding or flanges for hoisting the National flag. The flag is to be hoisted upto a height of 50m. MS Pipe, Concrete foundations, base plate, stiffner plate, holding down bolts to be as per the design and detail approved by the Engineer/ Engineer In Charge.	Kgs	3,200.00	129.00	4,12,800.00
		The cost of structural members, bolts and hoisting arrangement including flag, pulley, rope etc. to be included in the item.				

		The rate in kgs to include the items of flag, pulley, rope, structural members etc. Concrete & finishing items as per Architectural detail to be paid extra in their respective items.				
75	N.S	Stainless Steel Glass Covering/ partition using spider fittings:- Fabrication, Supply & Installation of horizontal and vertical directional Covering/ partition using spider fittings (Conforming to SS304 Grade, Satin Finish) with various size of Covering/ partition using spider fittings. Structure consisting of SS304-219, 168 Tubular Sections with 75 x 75 Sections, fixing Plate (if required as per Architectural plans), with 4-Arm Stainless Steel Spider Glass fitting Arrangements with 8 + 1.52 + 8 mm Thick Laminated Toughened Glass fixed with clear weather Silicon as per drawing and details. direction as per Engineer In Charge.	Sqm	93.72	28,155.00	26,38,686.60
76	N.S	ACOUSTIC SLIDING FOLDING PARTITION				
		The partitions shall comprise of flat panels, plus 1 expanding panel (telescopic element) for closure. The sound coefficient (Rw) shall be 50dB. The sound insulation tests of the movable walls are carried out under German DIN standard with results measured in Rw. This is a standard test in a laboratory with so called flanking sound transmission. This test is the most realistic because it is a measurement under site conditions including sound transmission through ceiling, doors, walls etc. The panels shall stack at the end of the track in center stacking formation. The thickness of each panel is 85mm including 16mm thick MDF on both sides. The partition runs on a specially designed and firmly held track of heavy-duty aluminum in which a specially designed trolley on ball bearing runs smoothly and noiselessly. The closure of the spaces above, below and between the panels is done by a specially designed mechanism, which closes these gaps to prevent passage of sound.	Sqm	35.00	24,635.00	8,62,225.00
		<b>Installation:</b> The track received from the manufacturer is affixed to this structure with suitable suspension arrangement after leveling and straightening. Also the longevity and ease of operation depends on the precision and level of track				

		achieved before the partition is installed. Therefore the installation process is as important as the quality of the partition. As we have been in the business for the last 20 years we are well aware of the problems and take care of them before they cause any trouble. These panels are thereafter suspended in the track and checked for smooth operation, parallel horizontal movement and sealing all around.				
77	N.S	Providing & Fixing Centre Pole Outdoor Café Umbrella with Diameter is 3.5m which should provide great coverage to table. Fabric should be 100% Waterproof and weatherproof. Rod should be made up of MS, and the rotator liver should be made up of PVC. 20L Water Base shall be included with this umbrella, which could be either filled with water or sand for sturdiness.	No.s	4.00	12,238.00	48,952.00
78						
79	NS	Providing and fixing 16mm dia Dowel bar at expansion joint in RCC Road with 450mm long pvc cap	Nos	4,000.00	120.00	4,80,000.00
80	NS	Providing, supplying and filling of local earth by mechanical transport up to any lead, also including rolling, compacting and watering of the earth in layers not exceeding 20cm in trenches, plinth, sides of foundation etc. complete to achieve dry density upto 95% as per Proctor density in road work Extra for compaction of earth work in embankment under optimum moisture conditions to give at least 95% of the maximum dry density	Cum	9,417.60	279.03	26,27,792.93
81	NS	Providing and laying factory made chamfered edge Cement Concrete Grass Pavers in foot path, park & lawns driveway or light & traffic parking etc. of required strength, thickness & size/shape, Factory made, laid in required pattern over 50mm thick compacted bed of Fine sand, compacting and proper embedding/ laying of inter locking Grass Pavers into the sand bedding, filling the joints with sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand, all complete as per manufacturer's specifications & direction of Engineer-in-Charge	Sqm	2,745.00	1,172.69	32,19,034.05

82	NS	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.				
		upto 300mm depth				
82.1		100 mm dia	Nos	250.00	285.04	71,260.00
82.2		150mm dia	Nos	400.00	407.20	1,62,880.00
82.3		200 mm dia	Nos	400.00	529.36	2,11,744.00
82.4		300mm dia	Nos	50.00	977.28	48,864.00
85	NS	Providing and fixing Glass Reinforced Concrete (G.R.C) Screens in approved size, pattern, design, shade and thickness of 50mm on frame and design element in 30mm thick casted with power spray method have weight approximately between 3.5 – 4 Kg per Sq. Ft. . The screens should be made from ‘53 grade’ White Portland Cement, Quartz, Fine Silica Sand, having Alkali Resistant Glass Fiber percentage 3.5-4% with minimum zirconia content 16%, Super Plasticizers, Polymers and U.V resistant non fading Synthetic inorganic exterior grade pigments should be used for homogeneous concrete pigmentation . The material casting should take place in FRP Moulds. The GRC screens flexural strength average L.O.P should be above or equivalent to 6N/mm2 & Modulus of Rupture should be above or equivalent to 15 N/mm2 .The fixing of Screens should be ‘Dry fixing’ i.e. to be done with M.S Galvanized Clamps, or S.S. -304 clamps, fixtures and fasteners of Hilti / Fischer or self - tapping screws or as per approved shop drawings approved by Architects/ consultants,including scaffoldings required etc. complete by specilized vender in strict supersion as per direction of engineer. (NOTE- MS base frame requiried to support GRC panel to be paid for in separte head .)	Sqm	100.00	3,821.98	3,82,197.92
		<b>TOTAL for MISCELLANEOUS WORKS SUCH AS BLINDS, FILMS, RAILINGS ETC.</b>				<b>2,33,96,978.25</b>
		<b>SUBHEAD 7: Horticulture</b>				
86	N.S.	Supply and installation of Artificial Turf - 40 mm thickness –	Sqm	81.00	851.00	68,931.00
		Supply and installation of Drain cells & application of Solvent below the Drain Cells.				

		Drain cells functions as a highly efficient lightweight drainage system that rapidly captures and transports even high water volumes associated with torrential rain.				
		What goes under artificial turf other than Drain Cells:				
		1. Large Stones. Rocks ranging from three-eighths to three-fourths of an inch are perfect for artificial grass sub-base .				
		2. Fine Materials. It is imperative to have a filler material, called fines, to surround the larger crushed rocks for overall turf stability. ...				
		3. Ideal Mixture.				
		4. Weed Fabric.				
87	N.S	Supply of Plants with Planters for display of plants at Reception and diff area of Building indoor/Outdoor, highly resistant to breakage, harsh weathers and ultra violet rays.				
87.1	N.S	Areca palm (3'-4' ht., bushy) & planter size -13"X13"X18" with fillers	Each	10.00	2,104.00	21,040.00
87.2	N.S	Spathypyllum wallici (1'-2' ht. bushy) & FRP planter size -7.5"X7" with fillers	Each	40.00	1,067.00	42,680.00
87.3	N.S	Bosten fern (1'-2' ht. bushy) with & FRP planter size -7.5"X7" with fillers	Each	30.00	1,207.00	36,210.00
87.4	N.S	Drasaena marginata (2' ht. multibranch) & FRP planter size - 10"X10"X10" with Fillers	Each	20.00	1,366.00	27,320.00
87.5	N.S	Ficus lyrata (4' ht. branched ) & planter size -13"X18" with Fillers	Each	3.00	1,885.00	5,655.00
87.6	N.S	Snake Plant (2.5' Ht. ) & planter size -10"X 10"X10" with Fillers	Each	55.00	788.00	43,340.00
87.7	N.S	Alocasia with 6" pvc (white) pot of 1' ht	Each	10.00	728.00	7,280.00
87.8	N.S	Raphis Palm 3-4' ht. multi tiller (4-5 tiller)	Each	10.00	3,729.00	37,290.00
87.9	N.S	Chamadora of 5-6' ht. bushy	Each	10.00	3,530.00	35,300.00
87.10	N.S	Japanese bamboo/ Black bamboo of 4'-5' ht. multi tiller (7-8 tiller)	Each	10.00	2,593.00	25,930.00
87.11	N.S	Ficus elastica of 2' ht. bushy	Each	9.00	1,067.00	9,603.00
88	N.S	Supplying and stacking of good earth at site including royalty and carriage up to 1 km (earth measured in stacks will be reduced by 20% for payment).for 1249.05 sq.m. area	cum	53.35	800.00	42,676.80
89	N.S	Spreading of sludge, dump manure and / or good earth in required thickness as per direction of Officer-in-charge (Cost of	cum	28.27	25.00	706.76

		sludge, dump manure and / or good earth to be paid separately).				
90	N.S	Supplying and stacking of cowdung or sludge manure at site by mechanical transport, loading-unloading including royalty and carriage with all lead and lifts (cow dung manure measured in stacks will be reduced by 8% for payments) 0.0125mm( ½ inch) for Lawn, .025mm (1 Inch ) for Ground Cover and 1/3 volume of pits.	Cum	28.27	275.00	7,774.39
91	N.S	Mixing earth and sludge or manure in the required proportion specified or directed by the Officer-in-charge.	cum	10.00	20.00	200.00
92	N.S	Fine dressing of ground	100 Sqm	355.64	175.00	62,237.00
93	N.S	Grassing with American Zed Blue grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn, free from weeds and fit for mowing including supplying good earth,if needed (the grass and good earth shall be paid for separately).				
93.1	N.S	With grass Turf	Sqm	167.17	45.00	7,522.65
93.2	N.S	Supply of American Zed Blue Grass for grassing	Sqm	167.17	500.00	83,585.00
93.3	N.S	Uprooting rank vegetation and weeds by digging the area to a depth of 60cm, removing all weeds and other growth with roots by forking repeatedly, breaking lods, rough dressing, flooding with water, uprooting fresh growths after 10 to 15 days and then fine dressing for planting new grass, including disposal of all rubbish with all leads and lifts. 100sqm 3197.25.	100 sqm	3.50	30.00	105.00
94	N.S	Digging holes in ordinary soil and refilling the same with the excavated earth mixed with manure or sludge in the ratio of 2:1 by volume (2 parts of stacked volume of earth after reduction by 20% : 1 part of stacked volume of manure after reduction by 8%) flooding with water, dressing including removal of rubbish and surplus earth, if any, with all leads and lifts (cost of manure, sludge or extra good earth if needed to be paid for separately) :				
94.1	N.S	Holes 45 cm dia, and 45 cm deep for shrubs	each	922.00	45.00	41,490.00
94.2	N.S	Holes 60 cm dia, and 60 cm deep for palms	each	16.00	60.00	960.00

95	N.S	Complete maintenance of the entire garden features having as per yard stick in the garden area i.e. lawn trees, shrubs, hedge, flower beds, foliages, creepers etc. including hoeing,weeding pruning replacement of plants, gap filling, watering, mowing of lawn, grass cutting by lawn mover and brush cutter , removal of garden waste, applying insecticide, pesticide & fertilizers(whenever required) top dressing of lawn with good earth and manure and maintenance of other garden related works as directed by office-in-charge (Cost of Good Earth, Manure, Fertilizer, Insecticide, Pesticide , lawn mover and brush cutter with fuel will be provided by the Department & other T & P material/articles shall be provided by the contractor.)				
95.1	N.S	Mali with Prestegious, Machine and tools	per Month	1.00	21,000.00	21,000.00
95.2	N.S	Providing and applying of cocopeat manure for Grass,Plants,Trees, Ground Cover and all related to Horticulture works .	Bag	30.00	418.00	12,540.00
95.3	N.S	Supply and applying of organic manure before and after plantation as per requirement.	Bag	10.00	460.00	4,600.00
95.4	N.S	Vermi Compost	Bag	35.00	418.00	14,630.00
95.5	N.S	Coco manure chips	Bag	2.00	1,900.00	3,800.00
96	N.S	Supply and plantig the following plants/sapplings of minimum 18" high including dressing neatly, watering etc., complete and initial maintainance for 365 days as directed by the Engineer-in-charge.				
96.1		<b>Medium Plants / Palm</b>				
a	N.S	Cycus Revoluta	Each	8.00	4,940.00	39,520.00
96.2		<b>Small Plants</b>				
a	N.S	Ixora Chinsis	Each	8.00	304.00	2,432.00
96.3		<b>Topiary</b>				
a	N.S	Ficus microcarpa multi roots Ht 5-6'	Each	4.00	49,400.00	1,97,600.00
b	N.S	Ficus Retusa multi Branch ht 7-8'	Each	4.00	7,980.00	31,920.00
96.4		<b>Ground Cover</b>				
a	N.S	Dinella	Each	200.00	65.00	13,000.00
b	N.S	Penisittum diff colour	Each	90.00	65.00	5,850.00
c	N.S	Wadelia	Each	120.00	15.00	1,800.00
d	N.S	Pentas	Each	120.00	114.00	13,680.00
e	N.S	Lantana sellowiana	Each	120.00	50.00	6,000.00
f	N.S	Zephyranthes candida	Each	120.00	50.00	6,000.00
g	N.S	Heliconia dwarf	Each	120.00	115.00	13,800.00
		<b>TOTAL FOR HORTICULTURE</b>				<b>9,96,008.60</b>

		<b>SUBHEAD 8: WATERPROOFING</b>				
97	N.S	Providing & laying foam khangar in sunken portions	Cum	32.94	6,489.00	2,13,747.66
		<b>TOTAL FOR WATERPROOFING</b>				<b>2,13,747.66</b>
		<b>TOTAL FOR INTERIOR WORKS (NON-SCHEDULE ITEMS) – “A”</b>				<b>31,14,60,804.41</b>
<b>B</b>		<b>PLUMBING WORKS</b>				
		<b>SUBHEAD 9: SANITARY INSTALLATIONS</b>				
98	N.S	Providing and fixing sink mixer with swivel spout including cutting and making good the wall complete as per required.	Each	22.00	3,524.00	77,528.00
99	N.S	Providing and fixing toilet tissue paper dispenser wall mount -Medium Traffic paper type C fold/ M fold capacity as per requirement .	Each	40.00	2,218.00	88,720.00
100	N.S	Providing and fixing Electrical storage water heaters of adequate capacity fixing on wall with dash fastener complete as per manufacturers specifications. Horizontal/vertical outlets fixed to floor with all accessories.				
		5 Liters water mounted heater (Toilet)	Each	36.00	6,800.00	2,44,800.00
101	N.S	Supplying, Installation, Testing and Commissioning C.P. Pillar cock with aerator including cutting and making good the wall wherever required.	Each	90.00	2,550.00	2,29,500.00
102	N.S	Supplying, Installation, Testing and Commissioning of twin flush concealed cistern with knob and frame and fittings, nuts, bolts and gasket etc. complete including cutting and making good the wall wherever required.	Each	78.00	5,100.00	3,97,800.00
103	N.S	Supplying, Installation, Testing and Commissioning urinal partition of size 90x320x720 mm deep. including cutting and making good the wall wherever required.	Each	76.00	3,570.00	2,71,320.00
104	N.S	Providing and fixing white vitreous china with battery based infrared sensor operated urinal of approx. size 610 x 390 x 370 mm having pre & post flushing with water (250 ml & 500 ml consumption), having water inlet from back side, including fixing to wall with suitable brackets all as per	Each	82.00	15,210.00	12,47,220.00

		manufacturers specification and direction of Architect/Engg/Client.				
105	N.S	Providing and fixing, testing and commissioning of (Health faucet) with 1mtr. Long easy flex tube in chrome finish & with hook etc. complete.	Each	82.00	1,609.00	1,31,938.00
106	N.S	Providing and making arrangement for shut-off the water supply line in to the tank comprising motorized valve, liquid level controller to control cut-in and cut-out of motorized valve when the water is low and high in Overhead water tank complete with necessary electrical works, probs etc.				
106.1	N.S	40mm dia	Each	1.00	18,159.00	18,159.00
106.2	N.S	65mm dia	Each	1.00	37,561.00	37,561.00
107	N.S	Supplying automatic 'NO-Touch ' SS electric hand-driers complete with all accessories & fittings.	Each	42.00	12,659.00	5,31,678.00
108	N.S	Providing and fixing white vitreous china extended wall mounting automatic water closet of size 700 x 410 x 535 mm 305 mm WD	Each	7.00	1,00,980.00	7,06,860.00
		Soft Close Seat Cover Complete intelligent EWC set with remote control, Automatic opening and closing seat cover with				
		three cleansing modes to cover all requirements of hands-free hygiene & comfort and six water temperature & five water volume adjustments for comfort of use				
		Water pressure and heating protection devices for safety of use				
		Auto flushing when user walks away				
		<b>TOTAL OF SANITARY INSTALLATIONS</b>				<b>39,83,084.00</b>
		<b>SUBHEAD 10: SOIL, WASTE, RAIN WATER PIPES</b>				
		<b>Note:</b> Rates quoted for this subhead are inclusive of cutting hole in RCC slabs/beams by diamond core cutting machine and making good the same as per satisfaction of Project Manager/Site-in-charge for which nothing extra will be paid. Agency shall be provide suitable size sleeves for fixing of pipes & fixtures.				
109	N.S	Providing and fixing Poly propylene Trap with minimum 50mm water seal with rubber seal on inlet to push fit hopper for indirect waste connections.				

CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01

	N.S	a) 110 mm inlet & 110 mm outlet.	Each	132.00	1,967.00	2,59,644.00
110	N.S	Providing and fixing stainless steel grating (without hole type) approved make and quality grade 304 on top of floor trap. The rate includes the cost of all ancillary works and material as required to complete the works.				
110.1	N.S	80mm size	Each	58.00	389.00	22,562.00
110.2	N.S	127mm Size	Each	132.00	554.00	73,128.00
111		Providing and fixing sound insulated Polypropylene piping system with 3 layer pipe , push-fit type, food safe, having high impact and stiffness, offering sound levels of not more than 22 dBA ,with all necessary fittings, supports , fitted with factory fitted lip ring (Inside toilets & kitchens). Nothing extra will be paid for supports.				
111.1	N.S	40 mm outer dia	Meter	153.00	573.00	87,669.00
111.2	N.S	75mm outer dia	Meter	98.50	887.00	87,369.50
111.3	N.S	110 mm outer dia	Meter	212.00	1,382.00	2,92,984.00
112	N.S	Providing and fixing PP clean out plug for cleaning.				
		For 110 OD Pipe	Each	59.00	324.00	19,116.00
113		Providing and fixing Upvc CLEANOUT PLUG for cleaning.				
113.1	N.S	For 110 OD Pipe	Each	2.00	114.00	228.00
113.2	N.S	For 160 OD Pipe	Each	2.00	318.00	636.00
114	12.41	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion				
		i) Single socketed pipes				
	N.S	160mm diameter	Meter	85.00	1,408.00	1,19,680.00
115	12.42	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion.				
	12.42.1	Coupler				
	N.S	160mm	Each	17.00	308.00	5,236.00
		<b>TOTAL for SOIL, WASTE, RAIN WATER PIPES</b>				<b>9,68,252.50</b>

		<b>SUBHEAD 11: WATER SUPPLY INTERNAL</b>				
116	18.7	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer.				
		Internal work Exposed on wall				
116.1	N.S	65 mm nominal outer dia Pipes	Meter	105.00	1,960.00	2,05,800.00
116.2	N.S	80mm nominal outer dia pipes	Meter	24.00	2,547.00	61,128.00
117	DSR (E&M)	Supplying, laying/ fixing, testing and commissioning of following nominal sizes of hot water piping inside the building (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges etc.) duly insulated with following closed cell elastometric nitrile rubber of minimum 45 Kg / cu m density, thermal conductivity 0.037 W/MK or better at 20 deg mean temperature class 'O' insulation applied by suitable adhesive complete including repairing of damage to building etc. as per specifications and as required complete in all respect.				
	N.S	20 mm dia(19 mm thick insulation)	Meter	65.00	125.00	8,125.00
118	18.1	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc.				
	N.S	65mm dia nominal bore	Meter	42.00	816.00	34,272.00
		<b>TOTAL for WATER SUPPLY INTERNAL</b>				<b>3,09,325.00</b>
		<b>TOTAL FOR PLUMBING WORKS (NON-SCHEDULE ITEMS) – “B”</b>				<b>52,60,661.50</b>
<b>C</b>		<b>SUBHEAD 12: SIGNAGES</b>				
119	N.S	<b>Suspended</b>				
		Suspended-Aluminium Modular Signage using Aluminium Alloy 6063 extrusion with Anodizing (The thickness of the anodization is typically 30 microns. The integrity of the anodize coating is tested to meet the international specifications ISO 2143-1981.)With 10 year Warranty in normal working condition.				

		Clear Cover : Clear UV protected 1mm thick Poly carbonate Sheet with Non Glare/Glossy Finish.				
		Plastic End Cap : High Quality ABS End Caps with Screws which can be fastened into the extrusion.				
		Graphics : Photo paper Insert				
		Hanging cable and Fastening Element to be made of SS 304				
		Size : 150MM X 200MM	No.	153.00	688.50	1,05,340.50
120	N.S	<b>Door Mounting</b>				
		Aluminium Modular Signage using Aluminium Alloy 6063 extrusion with Anodizing (The thickness of the anodization is typically 30 microns. The integrity of the anodize coating is tested to meet the international specifications ISO 2143-1981.) Clear Cover : Clear UV protected 1mm thick Poly carbonate Sheet with Non Glare/Glossy Finish. Plastic End Cap : High Quality ABS End Caps with Screws which can be fastened into the extrusion. With 10 year Warranty in normal working condition.				
		Graphics : Photo paper Insert				
		Size : 150MM X 200MM	No.	457.00	688.50	3,14,644.50
121	N.S	<b>Suspended</b>				
		Suspended-Aluminium Modular Signage using Aluminium Alloy 6063 extrusion with Anodizing (The thickness of the anodization is typically 30 microns. The integrity of the anodize coating is tested to meet the international specifications ISO 2143-1981.) With 10 year Warranty in normal working condition.				
		Clear Cover : Clear UV protected 1mm thick Poly carbonate Sheet with Non Glare/Glossy Finish.				
		Plastic End Cap : High Quality ABS End Caps with Screws which can be fastened into the extrusion.				
		Graphics : Photo paper Insert				
		Hanging cable and Fastening Element to be made of SS 304				
		Size : 210MM X 150MM	No.	16.00	688.50	11,016.00
122	N.S	<b>Directional Signs</b>				
		Suspended-Aluminium Modular Signage using Aluminium Alloy 6063 extrusion with Anodizing (The thickness of the anodization is typically 30 microns. The integrity of the anodize coating is tested to				

		meet the international specifications ISO 2143-1981.) With 10 year Warranty in normal working condition.				
		Clear Cover : Clear UV protected 1mm thick Poly carbonate Sheet with Non Glare/Glossy Finish.				
		Plastic End Cap : High Quality ABS End Caps with Screws which can be fastened into the extrusion.				
		Graphics : Photo paper Insert				
		Hanging cable and Fastening Element to be made of SS 304				
		Size : 900MM X 300MM	No.	28.00	1,377.00	38,556.00
123	N.S	<b>Floor Directory</b>				
		Suspended-Aluminium Modular Signage using Aluminium Alloy 6063 extrusion with Anodizing (The thickness of the anodization is typically 30 microns. The integrity of the anodize coating is tested to meet the international specifications ISO 2143-1981.) With 10 year Warranty in normal working condition.				
		Clear Cover : Clear UV protected 1mm thick Poly carbonate Sheet with Non Glare/Glossy Finish.				
		Plastic End Cap : High Quality ABS End Caps with Screws which can be fastened into the extrusion.				
		Graphics : Photo paper Insert				
		Hanging cable and Fastening Element to be made of SS 304				
		Size : 600MM X 1020MM	No.	27.00	3121.2	84,272.40
124	N.S	6MM thick Acrylics letter cut letters (Colour as per Engineer). With 10 year Warranty in normal working condition.				
		Size : 4" X 4"	No.	18.00	2,464.00	44,352.00
125	N.S	Photo luminescent rigid plastic, 2 mm thickness, Printed on High Quality gloss paint with UV resistance, Material Used - Non Radioactive, non-phosphorous, non toxic and lead free Time after removing the light source (in minutes) : 60 minutes, Luminescent intensity. With 10 year Warranty in normal working condition.				
		Size : 4.5" X 4"	No.	18.00	516.375	9,294.75
126	N.S	<b>Fire Exit</b>				
		Photo luminescent rigid plastic, 2 mm thickness, Printed on High Quality gloss paint with UV resistance, Material Used - Non Radioactive, non-phosphorous, non				

		toxic and lead free Time after removing the light source (in minutes) : 60 minutes, Luminescent intensity. With 10 year Warranty in normal working condition.				
		Size : 16" X 6"	No.	20.00	2,754.00	55,080.00
127	N.S	<b>Fire Evacuation Plan</b>				
		Supply of imported cast Sandwiched Transparent Acrylic boards (4mm+4mm ) with 10mm dia 2 inch length SS studs fixed on 4 sides - Content printed on 3M Clear with 3M Photo luminescent Film as installed between two Acrylics. With 10 year Warranty in normal working condition.				
		Size : 23.5" X 33"	No.	20.00	23,462.00	4,69,240.00
		<b>TOTAL OF SIGNAGES WORK (C)</b>				<b>11,31,796.15</b>
		<b>TOTAL FOR INTERIOR WORKS (NON-SCHEDULE ITEMS) (A + B+ C )</b>				<b>31,78,53,262.06</b>
		<b>TOTAL FOR INTERIOR &amp; FURNISHING WORKS "SCHEDULE-I" [(SCHEDULE (i) + NON SCHEDULE ITEMS(ii)] –</b>				<b>42,95,75,305.00</b>

**Explanatory Notes for BOQ:**

- i) The quantities shown in above Schedules are approximate and are as a guide to give the tenderer(s) an idea of quantum of work involved. The DFCCIL reserves the right to increase/ decrease and/or delete or include any of the quantities given above as per site conditions.
- ii) All efforts have been made to make the document/BOQ complete in all respect for successful commissioning of the works, however, if any minor item has not been specifically mentioned or being omitted, the same shall be executed without any extra cost by the agency, so as to ensure successful and satisfactory commissioning of the item / work to the full satisfaction of Engineer/DFCCIL. The item supplied should meet its desired purpose to the satisfaction of Engineer/DFCCIL. In this regard, decision of Engineer/DFCCIL shall be final & binding.

BOQ Item No.	DSR 2018 Item No.	Item Description	Unit	Qty	Rate	Amount
		<b>SCHEDULE-II</b>				
		<b>SUBHEAD-1: CORPORATE BUILDING FURNITURE</b>				
		<b>FURNITURE SHOULD BE BIFMA GOLD RATED SCS GLOBAL CERTIFIED FOR IN-HOUSE AIR QUALITY AND WITH 10 YEARS REPLACEMENT WARRANTY.</b>				
		<b>ALL HARDWARE USED IN FURNITURE SHALL BE FROM ONE OF THE FOLLOWING MAKES: BLUM/HETTICH/STRONEL HAFELE</b>				
1	N.S	<b>Manufacturing, providing and Placing MD Cabin Table of following dimension and specifications.</b>				
		Providing and placing in position MD Cabin Table, Main Table is Size : 3300mm (L) x 1200mm (D) x 750mm(H), return storage of size 1500mm(L) x 600mm(D) x 550mm(H) and Back storage of size: 3600mm (W) x 480mm (D) x 2050mm(H). Main Table: Table is made up of BW grade BB/E1 grade MDF/Particle Board with 0.45 mm natural veneer, 5mm solid wood edge banding for protection. Desktop thickness is 75-80 mm with leather pad and leather flip wire box. BW grade BB/E1 grade MDF/Particle Board with 0.45 mm natural veneer, 5mm solid wood edge banding for protection. Wiring management system is introduced from floor and side table to wire box. Including 3 cabinet with pulling doors and 1 CPU cabinet. L shape design, Main desk on right or left hand return cabinet. Including multi-functional wire box. (2 power, 1 HDMI, 1 Internet, 1 Phone, 1 VGA). Waterborne Paint Technology decrease 95% of VOC to create more friendly environmental space for health. The Product should be of Zero formaldehyde Release to Create Friendly Environmental Space. With 3 drawer mobile pedestal with matching to table finish.				
		<b>Back Storage :</b> BW grade BB/E1 grade MDF/Particle Board with 0.45mm natural veneer, 5mm solid wood edge banding for protection. Doors constructed with 0.45mm natural veneered MDF /BB with solid wood handles and Italy FGV soft damping hinge, The door is soft close. Including sliding cloth hook to keep cloth. Solid wood handles. Italy FGV soft damping hinge, The door is soft close. Waterborne Paint Technology decrease 95% of VOC to create more friendly environmental space for health. The Product	Each	1.00	6,40,969.00	6,40,969.00

		should be of Zero formaldehyde Release to Create Friendly Environmental Space.				
		All hardware shall be of reputed make. Product should be BIFMA gold rated SCS global certified for in-house air quality and with 10 years warranty. All hardware shall be of reputed Product should be BIFMA gold rated SCSglobal certified for in house air quality and with 10 years warranty Make <b>Rockworth Zen Series/Haworth -Xi Collection / Steelcase Impact.</b>				
1.1	N.S	<b>Meeting table in Natural Veneer</b> in MD Cabin - Size - 2100mm (W) x 1050mm (D) x 750mm (H) (With Veneer Finish), Providing and placing Rectangular shape 8 Seater meeting table of Size 2100mm(L) x 1050mm(W) x 750mm(H). Table top and legs are made of 60-70 mm thick BW grade BB/E1 grade MDF/Particle Board, veneer finish with matched 2 mm ABS edge-banding. E1/good grade in veneer finish with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house quality. This should comply with (EN 120-1992). It has Netbox axial comfort 4 gang (UNIVERSAL Version). The Modesty is BW grade BB/E1 grade MDF/Particle Board thickness 25 mm in veneer finish Edge-Banding(ABS) 2 mm. Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty. <b>Rockworth Zen Series/Haworth -Xi Collection / Steelcase Impact.</b>	Each	1.00	1,60,246.00	1,60,246.00
2	N.S	<b>Chairman Cabin (With Natural Veneer )</b>				
		Providing and placing in position Chairman Cabin Table, The Main Table Size: 2700mm(L) x 1150mm(D) x 750mm(H), Return Storage of size 1500mm(L) x 480mm(D) x 550mm(H) and Back storage of size: 5000mm (W) x 480mm(D) x 2050 mm(H) & Free standing swing door storage of size: 2100mm(W) 450mm(D) 750mm(H). Main Table: Table is made up of BW grade BB/E1 grade MDF/Particle Board with 0.45 mm natural veneer, 5mm solid wood edge banding for protection. Desktop thickness is 75-80 mm with leather pad and leather flip wire box. BW grade BB/E1 grade MDF/Particle Board with 0.45mm natural veneer, 5mm solid wood edge banding for protection. Wiring management system is introduced from floor and side table to wire box. Including 3 cabinet with pulling doors and 1 CPU cabinet. L shape design, Main desk on right or left hand return cabinet. Including multi-functional wire box. (2 power, 1 HDMI, 1 Internet, 1 Phone, 1 VGA). Waterborne Paint Technology decrease 95% of VOC to create more friendly				

		environmental space for health. The Product should be of Zero formaldehyde Release to Create Friendly Environmental Space. With 3 drawer mobile pedestal with matching to table finish.				
		<b>Back Storage</b> : BW grade BB/E1 grade MDF/Particle Board with 0.45mm natural veneer, 5mm solid wood edge banding for protection. Doors constructed 0.6mm natural veneered MDF/BB with solid wood handles and Italy FGV soft damping hinge, the door is soft close. Including sliding cloth hook can keep cloth. Solid wood handles. Italy FGV soft damping hinge, the door is soft close. Waterborne Paint Technology decrease 95% of VOC to create more friendly environmental space for health. The Product should be of Zero formaldehyde Release to Create Friendly Environmental Space.	Each	1.00	5,50,627.00	5,50,627.00
		All hardware shall be of reputed make/brand as per sample finally approved by the Enginner.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make <b>Rockworth Zen Series/Haworth - Xi Collection / Steelcase Impact.</b>				
3	N.S	<b>Manufacturing, providing and Placing CVO/Director Cabin Table of following dimensions with the following specifications.</b>				
		Providing and placing in position Chairman Cabin Table, The Main Table is Size: 2700mm(L) x 1150mm(D) x 750mm(H), Return Storage of size 1500mm(L) x 480mm(D) x 550mm(H) and Back storage of size:5000mm (W) x 480mm(D) x 2050 mm(H) & Free standing swing door storage of size: 2100mm(W) 450mm(D) 750mm(H). Main Table: Table is made up of BW grade BB/E1 grade MDF/Particle Board with 0.45 mm natural veneer, 5mm solid wood edge banding for protection. Desktop thickness is 75-80 mm with leather pad and leather flip wire box. BW grade BB/E1 grade MDF/Particle Board with 0.45mm natural veneer, 5mm solid wood edge banding for protection. Wiring management system is introduced from floor and side table to wire box. Including 3 cabinet with pulling doors and 1 CPU cabinet. L shape design, Main desk on right or left hand return cabinet. Including multi-functional wire box. (2 power, 1 HDMI, 1 Internet, 1 Phone, 1 VGA). Waterborne Paint Technology decrease 95% of VOC to create more friendly environmental space for health. The Product should be of Zero formaldehyde Release to Create Friendly Environmental Space. With 3 drawer mobile pedestal with matching to table finish.				

		Back Storage : BW grade BB/E1 grade MDF/Particle Board with 0.45mm natural veneer, 5mm solid wood edge banding for protection. Doors constructed 0.6mm natural veneered MDF/BB with solid wood handles and Italy FGV soft damping hinge, the door is soft close. Including sliding cloth hook can keep cloth. Solid wood handles. Italy FGV soft damping hinge, the door is soft close. Waterborne Paint Technology decrease 95% of VOC to create more friendly environmental space for health. The Product should be of Zero formaldehyde Release to Create Friendly Environmental Space.	Each	5.00	3,84,758.00	19,23,790.00
		All hardware shall be of reputed make/brand .Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make <b>Rockworth Zen Series/Haworth -Xi Collection / Steelcase Impact</b>				
4	N.S	<b>Manufacturing, providing and Placing ED Cabin Table of following dimensions with the following specifications.</b>				
		Providing and placing ED CABIN of Size : 2400mm(W) x 1050mm(D) x 750mm(H), Side table Size: 1200mm(W) x 450mm(D) X 750mm(H) and Back storage: 4300W x 450D X 750H mm. Side free standing storage - 2400W X 400D X 750H mm. Table is made up of BW grade BB/E1 grade MDF/Particle Board with 0.45 mm natural veneer, 5mm solid wood edge banding for protection. Desktop thickness is 45-55mm with leather pad and leather flip wire box. BW grade BB/E1 grade MDF/Particle Board with 0.45mm natural veneer, 5mm solid wood edge banding for protection. Wiring management system is introduced from floor and side table to wire box. Including 3 cabinet with pulling doors and 1 CPU cabinet. L shape design, Main desk on right or left hand return cabinet. Including multi-functional wire box. (2 power, 1 HDMI, 1 Internet, 1 Phone, 1 VGA). Waterborne Paint Technology decrease 95% of VOC to create more friendly environmental space for health. The Product should be of Zero formaldehyde Release to Create Friendly Environmental Space. With 3 drawer mobile pedestal with matching to table finish.	Each	4.00	3,46,193.00	13,84,772.00
		Back Storage : BW grade BB/E1 grade MDF/Particle Board with 0.45mm natural veneer, 5mm solid wood edge banding for protection. Doors constructed 0.6mm natural veneered BW grade BB/E1 grade MDF/Particle Board with solid wood handles and Italy FGV soft damping hinge, the door is soft close. Including sliding cloth hook can keep cloth. Waterborne Paint Technology decrease 95% of VOC				

		to create more friendly environmental space for health. The Product should be of Zero formaldehyde Release to Create Friendly Environmental Space.				
		All hardware shall be of reputed make/brand .Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make <b>Rockworth Zen Series/Haworth -Xi Collection / Steelcase Impact.</b>				
5	N.S	<b>Manufacturing, providing and Placing GM/Obudman Cabin Table of following dimensions with the following specifications.</b>				
		Providing and placing GM CABIN, Main table of Size : 2100(W) x 1050(D) x 750(H) Return table of Size: 1000W x 450D X 750H mm and Back storage of Size: 3600W x 450D X 750H and Side storage of size: 1650W X 400D X 750MH mm. Table is made up of BW grade BB/E1 grade MDF/Particle Board with min 0.45 mm natural veneer, 5mm solid wood edge banding for protection. Desktop thickness is 45-55mm with leather pad and leather flip wire box. BW grade BB/E1 grade MDF/Particle Board with 0.45mm natural veneer, 5mm solid wood edge banding for protection. Wiring management system is introduced from floor and side table to wire box. Including 3 cabinet with pulling doors and 1 CPU cabinet. L shape design, Main desk on right or left hand return cabinet. Including multi-functional wire box. (2 power, 1 HDMI, 1 Internet, 1 Phone, 1 VGA). Waterborne Paint Technology decrease 95% of VOC to create more friendly environmental space for health. The Product should be of Zero formaldehyde Release to Create Friendly Environmental Space. With 3 drawer mobile pedestal with matching to table finish.	Each	42.00	2,25,313.00	94,63,146.00
		Back Storage : BW grade BB/E1 grade MDF/Particle Board with 0.45mm natural veneer, 5mm solid wood edge banding for protection. Doors constructed 0.6mm natural veneered BW grade BB/E1 grade MDF/Particle Board with solid wood handles and Italy FGV soft damping hinge, the door is soft close. Including sliding cloth hook can keep cloth. Solid wood handles. Italy FGV soft damping hinge, the door is soft close. Waterborne Paint Technology decrease 95% of VOC to create more friendly environmental space for health. The Product should be of Zero formaldehyde Release to Create Friendly Environmental Space.				
		All hardware shall be of reputed make/brand .Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of				

		make <b>Rockworth Zen Series/Haworth -Xi Collection / Steelcase Impact</b>				
6	N.S	<b>Manufacturing, providing and Placing Conference Table of make of following dimensions with the following specifications.</b>				
		<p>Providing and placing Conference room table in Veneer finishes, where table top and legs are made of 60-70 mm thick BW grade BB/E1 grade MDF/Particle Board, veneer finishes(Minimum thickness of 0.45) with matched 2 mm thick ABS edge-banding. The BW grade BB/E1 grade MDF/Particle Board should be used with zero urea formaldehyde emissions (<math>\leq 8\text{mg}/100\text{ g}</math> oven dry board-perforated method) for better in-house quality. This should comply with (EN 120-1992). The height of worktop shall be 740mm from ground level. Veneer Flipper with wiring tray made of 1.5-2 mm thick CRCA duly powder coated of 60-70 micron with housing supported Veneer legs made of minimum 36-45mm thick with approved shade of natural Veneer(minimum thickness of 0.5-0.6 mm). An intelligent wiring system shall be hidden underneath the work surface, to deliver all wires and cables from wiring tray to floor, which make the working atmosphere looks more neat, harmony and aesthetic.</p> <p>The wiring tray shall be made of steel sheet thickness 1.2mm Epoxy powder coated spray color, baked at temperature 200 C°coated of 80-90 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method). Raceways contain the horizontal cable channel that fitted with a modesty panel tidily and effectively.</p>				
		The Modesty shall be Particle board wood Grade E-1/good (Environmental Friendly) thickness 25 mm. ,cover with Veneer Edge-Banding(ABS) 2 mm. Complete as per the direction of Engineer.Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make <b>Rockworth Zen Series/Haworth -Xi Collection/Steelcase Impact</b> .				
6.1	NS	40/24 Pax U Shape Conference Table : 6500L x3700W x750Hmm	Each	1.00	6,96,894.00	6,96,894.00
7	N.S	<b>Manufacturing, providing and Placing Meeting Table of make of following dimensions with the following specifications.</b>				

		Providing and placing Meeting/ Conference tables : Worktop: Worktop shall be made out of 25mm thick BW grade BB/E1 grade MDF/Particle Board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5-2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions ( $\leq 8\text{mg}/100\text{ g}$ oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992). The height of Worktop shall be 750 mm from ground level. Understructure: MS understructure with 50mm x 50mm C type square Straight leg, well supported with MS beams under table top to supported top & connected to leg to leg				
		Wire management: Access Flap and Switch Mounting Tray is provided in the table. It is Made from Matt silver Anodized Aluminium extrusion and plastic moulded components to facilitate access of Electrical/Data/Voice sockets access from Top. Powder coated switch mounting tray made from 0.8mm and 1.2mm MS sheet(IS:513) which is powder coated 80-90micron. Switches to be mounted on tray as per requirement. Provision for mounting 8 Module Switch plate on switch mounting tray shall be provided. Electrical/Data/Voice wire and IO to be paid separately. The product should be complete and as per approved sample and as per the direction of Engineer. Completely consoled wire management with vertical wire uptake from floor via middle leg having removable cover one side and wire separator for data and wire separation, segregates to horizontal cable tray below Access Flap.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of amke <b>Rockworth Platform Series/Haworth -Plane Series / Navi Team Island.</b>				
7.1		5 Pax Round Meeting table : 1050mm dia x750Hmm	Each	6.00	29,338.00	1,76,028.00
7.2		4 Pax Round Meeting table : 500mm dia x750Hmm	Each	2.00	17,010.00	34,020.00
7.3		6 Pax Round Meeting table : 1500mm dia x750Hmm	Each	2.00	44,273.00	88,546.00
7.4		6 Pax Rect Meeting table : 1850W x1200D x750Hmm	Each	1.00	41,012.00	41,012.00
7.5		10 Pax Rect Meeting table : 3250W x1200D x750Hmm	Each	1.00	71,079.00	71,079.00
7.6		10 pax Rectangular Meeting table : 6600W x2400D x750Hmm	Each	1.00	2,62,422.00	2,62,422.00
7.7		14 Pax Rect Meeting table : 3600W x1350D x750Hmm	Each	1.00	89,145.00	89,145.00
7.8		12 Pax Rect Meeting table : 3250W x1500D x750Hmm	Each	1.00	79,109.00	79,109.00
7.9		18 Pax Rect Meeting table 5000W x1350D x750Hmm	Each	1.00	1,14,688.00	1,14,688.00

**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

7.10		34/20 Pax Rect Meeting table 5200W x2100D x750Hmm	Each	2.00	1,60,382.00	3,20,764.00
7.11		16 Pax Rect Meeting table 4200W x1350D x750Hmm	Each	2.00	98,567.00	1,97,134.00
7.12		20 Pax Rect Meeting table : 5700W x1350D x750Hmm	Each	1.00	1,16,511.00	1,16,511.00
7.13		28/16 Pax Rect Meeting table : 4600W x1700D x750Hmm	Each	2.00	1,11,171.00	2,22,342.00
7.14		17 pax Triangular Meeting Table : 5400W x 2400D x 750Hmm	Each	1.00	2,38,887.00	2,38,887.00
8	N.S	<b>Manufacturing, providing and Placing DGM Cubicals Table of following dimensions with the following specifications.</b>				
		Providing and placing DGM CUBICLE SIZE - 2400mm X 3500mm X 1200-1250mm H. Workstations- Size of Main table - 1500mm X 600mm X 750mm H. size of return table with extended top- 1450W1 x 2400(W2) x450(D1) x450(D2), Swing door storage made of Prelaminated finish - 1200W x450D x 725H mm below the back worktable . Worktop shall be made out of 25mm thick BW grade BB/E1 grade MDF/Particle Board. All the open edges of work surface shall be provided with machine pressed 2 mm thick ABS lipping glued with hot melt EVA glue. The work surface shall be provided with circular cutout of Dia. 65mm as per the requirement, for passing of wires. These cut outs shall be provided with ABS covers. Work surfaces are fitted to the panels by work surface brackets, wooden legs & wooden modesty. Brackets are made of 2.0 mm thick CRCA grade D steel as per IS : 513. Brackets are slide in between end trim and vertical extrusions.	Each	21.00	1,47,244.00	30,92,124.00
		Panel: Frame work shall consist of main spine and return spine of aluminium extruded section of minimum thickness of 1.2 mm. The thickness of main & return Panel is 60-70 mm . The panel will be hollow inside to accommodate wiring for electrical/data and outer frame of panel should be made of extruded aluminium, cladding with 3mm thick MDF both sides of the panel to create the hollow for the wire management. Panels could be shared or isolated as per layout. MDF 0.5-0.6 mm covered by fabric / Steel CR 0.5.06 mm EPC/ EPF Foam 3-4 mm for pin up/ magnetic as an option based on the requirement and as per approved by Architect/Engineer. For the glass panel different aluminium profile (Top and bottom of the frame) with 60-70 mm thick which should accommodate the glass of thickness 4-6 mm.				

		Finishes of panel: Above the top fabric pinup & Glass writable board with raceway in main spine (return table) & fabric pinup (Main table) & balance fabric finish for aisle side & return panel, below the top should be metal with MDF tile with one raceway at skirting level and etc. whichever required.				
		<b>Drawer Unit :</b> 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm (H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron. Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability. Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of <b>make Rockworth Rubix Series/Haworth-Unigroup/Steelcase - Laxicon</b>				
		<b>Key Board Pullout Tray :</b>				
		Supplying and Fixing of sliding computer key board tray of 550-570mm (L) X 280mm (D) X 40mm(H) made out of CRCA steel of thickness 1-1.2 mm, duly Powder Coated of 60-70 Micron.				
		<b>CPU Trolley :</b>				
		Supplying and Fixing of CPU Trolley of Size - 345mm(W) x 226(D) x 180mm(H) is made of 1.0 mm thick MS CRCA Sheet and Side support is made of 0.8 mm thick MS CRCA Sheet. It consists of 4Nos Non- lockable twin wheel castors made of injection moulded in Black Nylon.				
9	N.S	<b>Manufacturing, providing and Placing Manager Cubicals Table of following dimensions with the following specifications.</b>				
		Providing and placing Manager Cubical , Overall size: 2100 W1x 3000(W2) x1200-1250H mm L shape Workstations of Size : 2100 (W1) x1800(W2) x600 (D1) x 500 (D2) x 1200-1250 (H). L Shape Workstations of size: 1800W 1050W & rectangular worktop 1050W x 600D x750H mm,Side Swing door storage made of Prelaminated finish - 1200W X 500W X 750H mm . Worktop shall be made out of 25mm thick BW grade BB/E1 grade MDF/Particle Board. All the open edges of work surface shall be provided with machine pressed 2 mm thick ABS lipping glued with hot melt EVA glue. The work surface shall be provided with circular cutout of Dia.65mm as per the requirement, for passing of wires. These cut outs shall be provided with ABS	Each	40.00	1,42,237.00	56,89,480.00

		covers. Work surfaces are fitted to the panels by work surface brackets, wooden legs & wooden modesty. Brackets are made of 2.0 mm thick CRCA grade D steel as per IS : 513. Brackets are slide in between end trim and vertical extrusions. Panel: Frame work shall consist of main spine and return spine of aluminium extruded section of minimum thickness of 1.2 mm.				
		The thickness of main & return Panel is 60-70 mm . The panel will be hollow inside to accommodate wiring for electrical/data and outer frame of panel should be made of extruded aluminium, cladding with 3mm thick MDF both sides of the panel to create the hollow for the wire management. Panels could be shared or isolated as per layout. MDF 0.5-0.6 mm fabric / Steel CR 0.5.06 mm EPC/ EPF Foam 3-4 mm for pin up/ magnetic as an option based on the requirement and as per approved by Enginner. For the glass panel different aluminium profile (Top and bottom of the frame) with 60-70 mm thick which should accommodate the glass of thickness 4-6 mm. Finishes of panel: Above the top fabric pinup & Glass writable board with raceway in main spine & fabric pinup (Return Spine) & balance fabric finish for aisle side & return panel, below the top should be metal with MDF tile with one raceway at skirting level and etc. whichever required.				
		Finishes of panel: Above the top fabric pinup & Glass writable board with raceway in main spine (return table) & fabric pinup (Main table) & balance fabric finish for aisle side & return panel, below the top should be metal with MDF tile with one raceway at skirting level and etc. whichever required.				
		Drawer Unit : 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm ( H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron. Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability. Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty and make of <b>Rockworth Rubix Series/Haworth-Unigroup/Steelcase - Laxicon</b>				
		<b>Key Board Pullout Tray :</b>				
		Supplying and Fixing of sliding computer key board tray of 550-570mm (L) X 280mm (D) X 40mm(H) made out of CRCA steel of thickness 1-1.2 mm, duly Powder Coated of 60-70 Micron.				
		<b>CPU Trolley :</b>				

		Supplying and Fixing of CPU Trolley of Size - 345mm(W) x 226(D) x 180mm(H) is made of 1.0 mm thick MS CRCA Sheet and Side support is made of 0.8 mm thick MS CRCA Sheet. It consists of 4Nos Non- lockable twin wheel castors made of injection moulded in Black Nylon.				
10	N.S	<b>Manufacturing, providing and Placing L Shape Workstations of following dimensions with the following specifications.</b>				
		Frame Work, Partition and Cable management : Frame work shall consist of main spine and return spine of aluminium extruded section of minimum thickness of 1.2 mm. The overall thickness of Panel base System should be 60-70 mm. The panel will be hollow inside to accommodate wiring for electrical/data and outer frame of panel should be made of extruded aluminium. The panel shall be made up of 3 mm thick MDF both sides of the wooden frame to create the hollow for the wire management. Panels could be shared or isolated as per layout. Finishes of panel above the worktop: Above the top fabric pinup with raceway on main spine between workstation. The hollow panel made of MDF and 3mm thick foam which is upholstered with 0.5mm thick fabric with half fabric pinup + half glass marker board. The thickness of partition panel should be 60-70 mm for main & return spine.				
		Finishes of panel below the worktop: Below the top the hollow panel should be made of MDF tile and 0.5mm thick steel sheet pasted on MDF which is powder coated with EPC finish 80-90 microns for durability on the inside as well on the outside. The thickness of partition panel should be 60-70 mm for main spine & 25mm thick return spine .				
		The panel outer aluminium frame is designed such a way that it can be easily slide in to the columns/ Connectors by means of stacking one over the other. Horizontal race way should be 150-170 mm height aluminium profile. There shall be complete cable management arrangement with openable raceway below worktop with provision for fitting electrical/data switches and holes for passing cables.				
		Connectors/ Post Description:				
		End Post: Aluminium 60-70 mm width – 1200-1250 mm height.				
		One way post: Aluminium 60-70 mm width – 1200-1250 mm height.				
		Two way post: Aluminium 60-70 mm width – 1200-1250 mm height.				

		Three way post: Aluminium 80-120 mm width – 1200-1250 mm height.				
		Four way post: Aluminium 80-120 mm width – 1200-1250 mm height.				
		Brackets:				
		Table top support: 50-60mm width steel bracket.				
		Worktop: Worktop shall be made out of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5-2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions ( $\leq 8\text{mg}/100\text{ g}$ oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992), The work surface shall be provided with circular cutout of Dia.65mm as per the requirement. with 3 drawer metal mobile pedestal with side recess handle(400W 450D 600H mm)				
		<b>Drawer Unit :</b> 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm (H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron. Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability. Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make <b>Rockworth Rubix Series /Haworth-Unigroup/Steelcase - Laxicon</b>				
		<b>Key Board Pullout Tray :</b>				
		Supplying and Fixing of sliding computer key board tray of 550-570mm (L) X 280mm (D) X 40mm(H) made out of CRCA steel of thickness 1-1.2 mm, duly Powder Coated of 60-70 Micron.				
		<b>CPU Trolley :</b>				
		Supplying and Fixing of CPU Trolley of Size - 345mm(W) x 226(D) x 180mm(H) is made of 1.0 mm thick MS CRCA Sheet and Side support is made of 0.8 mm thick MS CRCA Sheet. It consists of 4 Nos Non- lockable twin wheel castors made of injection moulded in Black Nylon.				
10.1	N.S	Providing and placing L shape Workstations of Size: 1500(W1) x 1500(W2) x 600 (D1) x 600(D2) x 1200-1250 (H). Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.	Each	195.00	40,300.00	78,58,500.00

10.2	N.S	Providing and placing L shape Workstations of Size: 1380(W1) x 1070(W2) x 600 (D1) x 600(D2) x 1200-1250 (H). Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.	Each	6.00	37,076.00	2,22,456.00
10.3	N.S	Providing and placing Linear Workstations of Size: 1380(W) x 600 (D) x 1200-1250 (H). Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.	Each	12.00	37,734.00	4,52,808.00
11	N.S	<b>Manufacturing, providing and Placing PA Table(ED) of following dimensions with the following specifications.</b>				
		Providing and fixing tables for PA to ED, Main Table: 1800(W) x 750(D) x 750(H) & Side Table: 1000W x 450D X 750H, Worktop: Worktop shall be made out of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5-2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992). The wiring tray is made of steel sheet thickness 1.2mm. Epoxy powder coated spray color, baked at temperature 200 C°. Raceways contain the horizontal cable channel that fitted with a modesty panel tidily and effectively.	Each	4.00	78,874.00	3,15,496.00
		The understructure is made of 2mm thick Steel square pipe dimension 50 X 50 mm with Epoxy powder coated spray paint, baked at temperature 200 C° coated of 70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method). The wooden access flap (400x150mm) is made from 16mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate with 0.45mm thick ABS Edge banding.				
		The modesty panel (wherever required) is made of 16mm thick E-1/good grade (Environmental Friendly) particle board cover with 1mm thick laminate with 2mm thick ABS and Brackets used are 3.2 mm Powder Coated Steel of 80-90 microns. All hardware shall be of reputed make/brand .				
		<b>Drawer Unit :</b> 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm ( H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron.				

		Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability. Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make <b>Rockworth Platform Series/Haworth -Plane Series / Navi Team Island.</b>				
12	N.S	<b>Manufacturing, providing and Placing PA Table(GM) of following dimensions with the following specifications.</b>				
		Providing and placing tables for P.A.Table of GM Cabin of size 1800(W) x 600(D) x 750(H) & Side Table:1000W x 450D X750H & Back Storage : 1800W x 450D x 750H mm, Worktop: Worktop shall be made of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5 - 2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992).The wiring tray is made of steel sheet thickness 1.2mm. Epoxy powder coated spray color, baked at temperature 200 C°. Raceways contain the horizontal cable channel that fitted with a modesty panel tidily and effectively.	Each	42.00	81,766.00	34,34,172.00
		The understructure is made of 2mm thick Steel square pipe dimension 50 X 50 mm with Epoxy powder coated spray paint, baked at temperature 200 C° coated of 70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method).The wooden access flap (400x150mm) is made from 16mm thick E-1/good grade (Environmental Friendly particle board cover with laminate with 0.45 mm thick ABS Edge banding. The modesty panel(wherever required) is made of 16mm thick E-1/good grade (Environmental Friendly) particle board cover with 1mm thick laminate with 2mm thick ABS and Brackets used are 3.2 mm Powder Coated Steel of 80-90 microns.				
		Back Storage : The storages should be made out of particle board of 25mm thick top and doors, sides and shelves should be made out of 16-19 mm thick particle board in approved finished. E-1/good grade particle board finished with 2mm ABS edge banding. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality.				

		This should comply with (EN 120-1992). The exposed edge of worktop shall be secured with 1.5mm-2mm thick ABS edge banding. Storages should be fitted with soft closing hardwares and anti-shock hinges. All hardware shall be of reputed make/brand .				
		<b>Drawer Unit :</b> 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm ( H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron. Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty. <b>Make Rockworth Platform Series /Haworth- Plane Series/Steelcase -Navi TeamIsland</b>				
13	N.S	<b>Manufacturing, providing and Placing JGM Table of R of following dimensions with the following specifications.</b>				
		Providing and placing tables for JGM Cabin, Main Table: 1650(W) x 600(D) x 750(H) & Side Table:1000W x 450D X750H & Back Storage: 1650W x 450D x 750Hmm. Worktop: Worktop shall be made out of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5 -2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992).The wiring tray is made of steel sheet thickness 1.2mm. Epoxy powder coated spray color, baked at temperature 200 C°. Raceways contain the horizontal cable channel that fitted with a modesty panel tidily and effectively.	Each	24.00	79,285.00	19,02,840.00
		The understructure is made of 2mm thick Steel square pipe dimension 50X50 mm with Epoxy powder coated spray paint, baked at temperature 200 C° coated of 70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method).The wooden access flap (400x150mm) is made from 16mm thick E-1/good grade (Environmental Friendly particle board cover with laminate with 0.45mm thick ABS Edge banding. The modesty panel (wherever required) is made of 16mm				

		thick E-1/good grade (Environmental Friendly) particle board cover with 1mm thick laminate with 2mm thick ABS and Brackets used are 3.2 mm Powder Coated Steel of 80-90 microns.				
		Back Storage : The storages should be made out of particle board of 25mm thick top and doors, sides and shelves should be made out of 16-19mm thick particle board in approved finished. E-1/good grade particle board finished with 2mm ABS edge banding. E1/good grade laminate with zero urea formaldehyde emissions ( $\leq 8\text{mg}/100\text{ g oven dry board-perforated method}$ ) for better in-house air quality. This should comply with (EN 120-1992). The exposed edge of worktop shall be secured with 1.5mm-2mm thick ABS edge banding. Storages should be fitted with soft closing hardware and anti-shock hinges. All hardware shall be of reputed make/brand .				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
		<b>Drawer Unit :</b> 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm (H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron. Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty. Make <b>Rockworth Platform Series/Haworth- Plane Series/Steelcase -Navi TeamIsland</b>				
14	N.S	<b>Manufacturing, providing and Placing AGM Table of make of following dimensions with the following specifications.</b>				
		Providing and placing tables for AGM Cabin, Main Table 1800(W) x 600(D) x 750(H) & Side Table:1000W x 450D X750H & Swing shutter Back Storage : 1800W x 450D x 750Hmm, Worktop: Worktop shall be made out of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5-2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions ( $\leq 8\text{mg}/100\text{ g oven dry board-perforated method}$ ) for better in-house air quality.	Each	20.00	86,379.00	17,27,580.00

		This should comply with (EN 120-1992).The wiring tray is made of steel sheet thickness 1.2mm. Epoxy powder coated spray color, baked at temperature 200 C°. Raceways contain the horizontal cable channel that fitted with a modesty panel tidily and effectively.				
		The understructure is made of 2mm thick Steel square pipe dimension 50 X 50 mm with Epoxy powder coated spray paint, baked at temperature 200 C° coated of 70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method).The wooden access flap (400x150mm) is made from 16mm thick E-1/good grade (Environmental Friendly particle board cover with laminate with 0.45mm thick ABS Edge banding. The modesty panel(wherever required) is made of 16mm thick E-1/good grade (Environmental Friendly) particle board cover with 1mm thick laminate with 2mm thick ABS and Brackets used are 3.2 mm Powder Coated Steel of 80-90 microns.				
		Back Storage : The storages should be made out of particle board of 25mm thick top and doors, sides and shelves should be made out of 16-19mm thick particle board in approved finished. E-1/good grade particle board finished with 2mm ABS edge banding. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992). The exposed edge of worktop shall be secured with 1.5mm-2mm thick ABS edge banding. Storages should be fitted with soft closing hardware and anti-shock hinges. All hardware shall be of reputed make/brand .Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
		<b>Drawer Unit</b> : 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm ( H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron. Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability. Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability.				

		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warrantyof make <b>Rockworth Platform Series/Haworth- Plane Series/Steelcase -Navi TeamIsland</b>				
15	N.S	<b>Manufacturing, providing and Placing Waiting Cabin Table of following dimensions with the following specifications.</b>				
		Providing and fixing tables for Waiting Cabin of size 1800(W) x 750(D) x 750(H) & Side Table:1400W x 450D X750H & free standing Swing shutter with laminated finish of size: 1800W 450D 750Hmm Worktop: Worktop shall be made out of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5-2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992).The wiring tray is made of steel sheet thickness 1.2mm. Epoxy powder coated spray color, baked at temperature 200 C°.Raceways contain the horizontal cable channel that fitted with a modesty panel tidily and effectively. The understructure is made of 2mm thick Steel square pipe dimension 50 X 50 mm with Epoxy powder coated spray paint, baked at temperature 200 C° coated of 70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method).The wooden access flap (400x150mm) is made from 16mm thick E-1/good grade (Environmental Friendly particle board cover with laminate with 0.45mm thick ABS Edge banding.	Each	1.00	81,150.00	81,150.00
		The modesty panel(whenever required) is made of 16mm thick E-1/good grade (Environmental Friendly) particle board cover with 1mm thick laminate with 2mm thick ABS and Brackets used are 3.2 mm Powder Coated Steel of 80-90 microns. Back Storage : The storages should be made out of particle board of 25mm thick top and doors, sides and shelves should be made out of 16-19mm thick particle board in approved finished. E-1/good grade particle board finished with 2mm ABS edge banding. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992). The exposed edge of worktop shall be secured with 1.5mm-2mm thick ABS edge banding. Storages should be fitted with soft closing hardwares and anti-shock hinges. All hardware shall				

		be of reputed make/brand . Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make <b>Rockworth Platform Series/Haworth- Plane Series/Steelcase - Navi TeamIsland</b>				
16	N.S	<b>Manufacturing, providing and Placing Security &amp; BMS Control Room Table of following dimensions with the following specifications.</b>				
		Providing and placing tables for Security & BMS Control Room of size 1800(W) x 750(D) x 750(H) & Side Table:1000W x 450D X750H, With Running desk of size: 3000W x 600D x 750Hmm.Worktop: Worktop shall be made out of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5-2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992).The wiring tray is made of steel sheet thickness 1.2mm. Epoxy powder coated spray color, baked at temperature 200 C°. Raceways contain the horizontal cable channel that fitted with a modesty panel tidily and effectively.	Each	2.00	83,579.00	1,67,158.00
		The understructure is made of 2mm thick Steel square pipe dimension 50X50 mm with Epoxy powder coated spray paint, baked at temperature 200 C° coated of 70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method).The wooden access flap (400x150mm) is made from 16mm thick E-1/good grade (Environmental Friendly particle board cover with laminate with 0.45mm thick ABS Edge banding. The modesty panel(wherever required) is made of 16mm thick E-1/good grade (Environmental Friendly) particle board cover with 1mm thick laminate with 2mm thick ABS and Brackets used are 3.2 mm Powder Coated Steel of 80-90 microns. All hardware shall be of reputed make/brand .				
		<b>Drawer Unit :</b> 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm ( H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron. Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability.				

		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make <b>Rockworth Platform Series/Haworth -Plane Series / Steelcase Navi Team Island.</b>				
17	N.S	<b>Manufacturing, providing and Placing Controller Room Table of following dimensions with the following specifications.</b>				
		Providing and placing tables for Control Room, Main Table: 1800(W) x 750(D) x 750(H) & Side Table:1000W x 450D X750H & Back Storage : 4050W x 450D x 750Hmm, Worktop: Worktop shall be made out of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5-2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992).	Each	1.00	90,177.00	90,177.00
		The wiring tray is made of steel sheet thickness 1.2mm. Epoxy powder coated spray color, baked at temperature 200 C°. Raceways contain the horizontal cable channel that fitted with a modesty panel tidily and effectively. The understructure is made of 2mm thick Steel square pipe dimension 50 X 50 mm with Epoxy powder coated spray paint, baked at temperature 200 C° coated of 70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method).The wooden access flap (400x150mm) is made from 16mm thick E-1/good grade (Environmental Friendly particle board cover with laminate with 0.45mm thick ABS Edge banding. The modesty panel(whenever required) is made of 16mm thick E-1/good grade (Environmental Friendly) particle board cover with 1mm thick laminate with 2mm thick ABS and Brackets used are 3.2 mm Powder Coated Steel of 80-90 microns.				
		Back Storage : The storages should be made out of particle board of 25mm thick top and doors, sides and shelves should be made out of 16-19mm thick particle board in approved finished. E-1/good grade particle board finished with 2mm ABS edge banding. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992). The exposed edge of worktop shall be secured with 1.5mm-2mm thick ABS edge banding. Storages should be fitted with soft closing hardwares and anti-				

		shock hinges. All hardware shall be of reputed make/brand .				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
		<b>Drawer Unit :</b> 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm ( H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron. Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make <b>Rockworth Platform Series/Haworth- Plane Series/Steelcase -Navi TeamIsland</b>				
18	N.S	<b>Manufacturing, providing and Placing PA Table(MD/Chairman) of following dimensions with the following specifications.</b>				
		Providing and placing tables for Waiting/P.A./ Doctor Room of size 1800(W) x 600(D) x 750(H) & Side Table:1000W x 450D X750H & Swing shutter Back Storage with laminated finish of size: 1800W x 450D x 750Hmm,Worktop: Worktop shall be made out of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5-2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992).	Each	9.00	58,840.00	5,29,560.00
		The wiring tray is made of steel sheet thickness 1.2mm. Epoxy powder coated spray color, baked at temperature 200 C°.Raceways contain the horizontal cable channel that fitted with a modesty panel tidily and effectively. The understructure is made of 2mm thick Steel square pipe dimension 50 X 50 mm with Epoxy powder coated spray paint, baked at temperature 200 C° coated of 70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method).The wooden access flap (400x150mm) is made from 16mm thick E-1/good grade (Environmental Friendly particle board cover with laminate with 0.45mm thick ABS Edge banding. The modesty panel(whenever required) is made of 16mm thick E-1/good grade (Environmental				

		Friendly) particle board cover with 1mm thick laminate with 2mm thick ABS and Brackets used are 3.2 mm Powder Coated Steel of 80-90 microns.				
		Back Storage : The storages should be made out of particle board of 25mm thick top and doors, sides and shelves should be made out of 16-19mm thick particle board in approved finished. E-1/good grade particle board finished with 2mm ABS edge banding. E1/good grade laminate with zero urea formaldehyde emissions ( $\leq 8\text{mg}/100\text{ g}$ oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992). The exposed edge of worktop shall be secured with 1.5mm-2mm thick ABS edge banding. Storages should be fitted with soft closing hardware and anti-shock hinges. All hardware shall be of reputed make/brand .Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
		<b>Drawer Unit</b> : 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm ( H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron. Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability.				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make <b>Rockworth Platform Series/Haworth- Plane Series/Steelcase -Navi TeamIsland</b>				
19	N.S	<b>Manufacturing, providing and Placing Help desk Table of following dimensions with the following specifications.</b>				
		Providing and placing tables for Helping Desk of size 1500(W) x 600(D) x 750(H),Worktop :Worktop shall be made out of 25mm thick E-1/good Grade Pre-Laminated particle board. All the open edges of work surface shall be provided with machine pressed 2 mm thick ABS lipping glued with hot melt EVA glue. This should comply with (EN 120-1992). The understructure is made of Steel square pipe dimension 38 X 38mm. Thickness 2mm. Epoxy powder coated spray paint, baked at temperature 200 C° coated of	Each	2.00	25,955.00	51,910.00

		70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method).				
		The modesty panel(whenever required) is made of 16 mm thick Particle Board (E-1/good grade), Coated of Laminated ABS edge-banding with 2mm and Brackets used are 3.2 mm Powder Coated Steel of 80-90 microns. Complete as per the direction of Engineer.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty of make of <b>Rockworth Platform Series /Haworth- Plane Series/Steelcase -Navi TeamIsland.</b>				
20	N.S	<b>Manufacturing, providing and Placing Sofa For MD/Chairman/Director Cabin/CVO of make of Rockworth Soft Seating Series -Orange/Haworth-John/Steelcase special of following dimensions with the following specifications.</b>				
		Providing & placing sofa for Other Cabin . wooden structure of sofa to be fabricated using good quality hardwood duly seasoned and applying anti-termite paint of approved brand & manufacture to ensure stability of the frame, On the wooden base frame of the sofa to be provided with M>S> helical spring, sides & back with jute strips, with polyfill covered with jute & finished with thick marking cloth before doing fine finished with leatherite have basic cost not less than 1000/- Pet Mt. Seat - 30-32Kg/cum density PU Foam, 100mm thick, Back - 32Kg/cum density PU foam, 60mm thick, Sides (inside) - 32 Kg/cum density PU Foam, 45 mm thick Sides (outside) & back (back side) - 32 Kgcum density PU foam, 25mm thick.				
		Seat shall rest on SS square frame of size 25mm x 25mm supported be legs made of 25mm x 25mm square SS section of height 225mm. All SS work should be in grade 304. Base of sofa should be infilled with suitable wood sections so as to give proper support to the seat. Height of the base of sofa shall be 200-250mm(approx.). Finished width of arm shall be 100mm after upholstery work. Sofa to be fully upholstered using approved fabric (stitch) of A grade of desired shade duly embossed including providing & fixing of all other related materials including hardwares etc. complete as directed by the Architect/Engineer.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
20.1		3 seater sofa overall dimension - 1930mm W x 750mm D x 670mm H	Each	13.00	76,722.00	9,97,386.00

**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

20.2		2 seater sofa overall dimension - 1480mm W x 750mm D x 670mm H	Each	7.00	45,637.00	3,19,459.00
20.3		1 seater sofa overall dimension - 800mm W x 750mm D x 670mm H	Each	14.00	24,755.00	3,46,570.00
20.4		Providing and fixing tables of size - 600mm x 600mm 400mm h for whose top is made of Particle board wood Grade E-1/good(Environmental Friendly), thickness 25mm cover with Melamine, Edge banding (PVC) 2mm.E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house quality. This should comply with (EN 120-1992).The understructure is made of SS.	Each	20.00	16,439.00	3,28,780.00
20.5		Providing and fixing tables of size - 1200mm x 600mm x 400mmh for whose top is made of Particle board /BB E-1/good(Environmental Friendly), thickness 25mm cover with Veneer finish, Edge banding (ABS) 2mm.E1/good grade Veneer with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house quality. This should comply with (EN 120-1992).The understructure is made of SS.	Each	18.00	26,536.00	4,77,648.00
21	N.S	<b>Manufacturing, providing and Placing Sofa For Other Cabins of Rockworth Soft Seating Series - Walker/Haworth- John/Steelcase Special of following dimensions with the following specifications.</b>				
		Providing & placing sofa for Other Cabin . wooden structure of sofa to be fabricated using good quality hardwood duly seasoned and applying anti-termite paint of approved brand & manufacture to ensure stability of the frame, On the wooden base frame of the sofa to be provided with M>S> helical spring, sides & back with jute strips, with polyfill covered with jute & finished with thick marking cloth before doing fine finished with leatherite have basic cost not less than 1000/- Pet Mt. Seat - 30-32Kg/cum density PU Foam, 100mm thick, Back - 32Kg/cum density PU foam, 60mm thick, Sides (inside) - 32 Kg/cum density PU Foam, 45 mm thick Sides (outside) & back (back side) - 32 Kgcum density PU foam, 25mm thick. Seat shall rest on SS square frame of size 25mm x 25mm supported be legs made of 25mm x 25mm square SS section of height 225mm.				
		All SS work should be in grade 304. Base of sofa should be infilled with suitable wood sections so as to give proper support to the seat. Height of the base of sofa shall be 200-250mm(approx.). Finished width of arm shall be 100mm after upholstery work. Sofa to be fully upholstered using approved fabric (stitch) of A grade of desired shade duly embossed including				

		providing & fixing of all other related materials including hardwares etc. complete as directed by the Architect/Engineer.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
21.1		3 seater sofa overall dimension - 1930mm W x 750mm D x 670mm H	Each	46.00	63,876.00	29,38,296.00
21.2		2 seater sofa overall dimension - 1480mm W x 750mm D x 670mm H	Each	9.00	35,487.00	3,19,383.00
21.3		1 seater sofa overall dimension - 800mm W x 750mm D x 670mm H	Each	100.00	23,787.00	23,78,700.00
21.4		Providing and fixing tables of size - 600mm x 600mm 400mm h for whose top is made of Particle board wood Grade E-1/good(Environmental Friendly), thickness 25mm cover with Melamine, Edge banding (PVC) 2mm.E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house quality. This should comply with (EN 120-1992).The understructure is made of SS.	Each	42.00	12,209.00	5,12,778.00
21.5		Providing and fixing tables of size - 1200mm x 600mm x 400mmh for whose top is made of Particle board/BB , thickness 25mm cover with Veneer finish, Edge banding (ABS) 2mm.E1/good grade Veneer with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house quality. This should comply with (EN 120-1992).The understructure is made of SS.	Each	4.00	26,923.00	1,07,692.00
22	N.S	<b>Manufacturing, providing and Placing Sofa For Lounge /Waiting Area of Rockworth Soft Seating Series -Walker/Haworth- John/Steelcase special of following dimensions with the following specifications.</b>				
		Providing & placing sofa for Lounge & open area . wooden structure of sofa to be fabricated using good quality hardwood duly seasoned and applying anti-termite paint of approved brand & manufacture to ensure stability of the frame, On the wooden base frame of the sofa to be provided with M>S> helical spring, sides & back with jute strips, with polyfill covered with jute & finished with thick marking cloth before doing fine finished with leatherite have basic cost not less than 1000/- Pet Mt. Seat - 30-32Kg/cum density PU Foam, 100mm thick, Back - 32Kg/cum density PU foam, 60mm thick, Sides (inside) - 32 Kg/cum density PU Foam, 45 mm thick Sides (outside) & back (back side) - 32 Kgcum density PU foam, 25mm thick. Seat shall rest on SS square frame of size 25mm x 25mm supported be legs made of				

		25mm x 25mm square SS section of height 225mm. All SS work should be in grade 304. Base of sofa should be infilled with suitable wood sections so as to give proper support to the seat. Height of the base of sofa shall be 200-250mm(approx.).				
		Finished width of arm shall be 100mm after upholstery work. Sofa to be fully upholstered using approved fabric (stitch) of A grade of desired shade duly embossed including providing & fixing of all other related materials including hardwares etc. complete as directed by the Architect/Engineer, Product should be BIFMA gold rated SCS global certified for in-house air quality and with 10 years warranty.				
22.1		3 seater sofa overall dimension - 2050mm W x 860mm D x 780mm H	Each	30.00	64,782.00	19,43,460.00
22.2		2 seater sofa overall dimension - 1580mm W x 860mm D x 780mm H	Each	28.00	46,816.00	13,10,848.00
22.3		1 seater sofa overall dimension - 820mm W x 860mm D x 780mm H	Each	28.00	23,062.00	6,45,736.00
22.4		Providing and fixing tables of size - 600mm x 600mm 400mm h for whose top is made of Particle board wood Grade E-1/good(Environmental Friendly), thickness 25mm cover with Melamine, Edge banding (PVC) 2mm.E1/good grade laminate with zero urea formaldehyde emissions ( $\leq 8\text{mg}/100\text{ g oven dry board-perforated method}$ ) for better in-house quality. This should comply with (EN 120-1992).The understructure is made of SS.	Each	34.00	12,345.00	4,19,730.00
22.5		Providing and fixing tables of size - 1200mm x 600mm x 400mmh for whose top is made of Particle board/BB , thickness 25mm cover with Veneer finish, Edge banding (ABS) 2mm.E1/good grade Veneer with zero urea formaldehyde emissions ( $\leq 8\text{mg}/100\text{ g oven dry board-perforated method}$ ) for better in-house quality. This should comply with (EN 120-1992).The understructure is made of SS.	Each	24.00	17,728.00	4,25,472.00
23	N.S	<b>Manufacturing, providing and Placing Medium Height Storage of Rockworth Ersa Series - /Haworth-M Serier/Steelcase-storage of following dimensions with the following specifications.</b>				
		Providing and fixing Medium height storages H. Body of storages made out 25 mm thick Particle/B Board (E-1/good Grade), melamine finishes with 2 mm PVC edge-banding. E1/good grade laminate to be used which provide no urea formaldehyde emission and formaldehyde should be phenol base with emission of not more than ( $\leq 8\text{mg}/100\text{ g oven dry board-perforated method}$ ) for better in-house quality. This should comply with (EN 120-1992).front of				

		medium height Storages should be made out of metal or 16 mm. thick Particle Board (E-1/good Grade),melamine finishes with 2 mm. PVC edge-banding fitted with extruded aluminum handle, as per requirement. Storages should be provided with adjustable levelers. Door Lock should be of three-way lock mechanism, the hinged doors can be locked at once. Door should be provided with Hinge-damping mechanism to enable soft closing of doors.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
23.1		1500mm W x 450mm D x 1200mm	Each	131.00	29,553.00	38,71,443.00
23.2		900mm W x 450mm D x 1200mm	Each	36.00	17,644.00	6,35,184.00
23.3		1200mm W x 450mm D x 1200mm	Each	127.00	22,408.00	28,45,816.00
23.4		1350mm W x 450mm D x 1200mm	Each	27.00	26,102.00	7,04,754.00
24	N.S	<b>Manufacturing, providing and Placing Compactor of make of Rockworth Ersas Series -/Haworth-M Serier/Steelcase-storage of following dimensions with the following specifications.</b>				
		Supplying and fixing in position Compactor Single Static Bay Push Pull Type of following specifications: Overall Dimensions of SS1 - Single Static 1 Bay Push Pull Type (U/C + Fittings) shall be 915mm(W) x 460mm(D) x 2080mm (H) (Height with undercarriage and rails in mm: 1980+65+35=2080). The Construction shall be Welded Construction sheet thickness is 0.8 mm for back & shelves and 0.9 mm for sides & top . Finish shall be Epoxy polyester powder coated thickness of 40 microns . Shelf construction shall be made from CRCA steel 0.8 mm thick IS :513 .Uniformly distributed load capacity of 80 Kg . Undercarriage shall have construction in welded frame made of HR sheet 3.15 mm thick conforming to IS : 10748 . Finish shall be epoxy polyester powder coat of approved color & shade with a dry film thickness of minimum 40 microns . The movements of the system shall be Push pull configuration (TYPE-P1/TYP E-P2) : Movement of units achieved by pushing or pulling chrome plated 'C' Handle fitted onto 1.6 mm thick plate (mounted on each double & single movable units) & rigidly fixed at suitable height on body side .	Nos	192.00	34,595.00	66,42,240.00
		Each movable undercarriage has 4 nos. of antifriction ball bearings for rolling onto channels & 4 no. of antifriction ball bearings for guiding between channels & 'J' section . Fittings shall be centralized locking arrangement through locking stiffener mounted onto back of single last unit so that it gets				

		locked on channels when all the units are brought together .				
		The Recess handle lock is of make & placed at suitable height . This arrangement occupies a space of 90.0 mm . When the last unit is twin movable , hinged doors are provided for the end bodies, so in this case locking stiffener is mounted onto drive unit cover ; and with tile fascia option , it will be mounted in the recess of vertical trim . Each Drive Type units shall have Locking Knob near the drive wheel for manual locking of individual units when a person is using those units . Knob shall be rotated to unlock position when units are to be moved . End stoppers shall be provided to prevent derailment . Door locking shall be having hinged doors of recessed die cast handle cum lock giving 3 way locking through a lever & shooting bolts . Guide channels shall have 'J' section 2 mm thick HR & 25 mm Square bright bar . Fasteners shall be galvanized/blackodized/Zn plated .The label holder shall be made from 2 mm thick clear transparent acrylic sheet. Also total no. of loading levels per understructure shall be 5 for SS1.				
25	N.S	<b>Manufacturing, providing and Placing Cafe Table of make Rockworth Multitask Series spine / haworth TT color of following dimensions with the following specifications.</b>				
		Providing and fixing tables for whose top is made of Particle board wood Grade E-1/good(Environmental Friendly), thickness 25mm cover with laminate, Edge banding (PVC) 2mm.E1/good grade laminate with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house quality. This should comply with (EN 120-1992).The understructure is made of Stainless Steel square pipe dimension 38 X 38mm.				
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
25.1		SQUARE TABLE, SIZE - 1000MM X 1000MM X 750MM H	Each	14.00	16,300.00	2,28,200.00
25.2		RECTANGULAR TABLE SIZE - 900MM X 750MM X 750MM	Each	3.00	13,854.00	41,562.00
25.3		RECTANGULAR TABLE SIZE - 2400MM X 1200MM X 750MM	Each	2.00	58,656.00	1,17,312.00
25.4		CIRCULAR TABLE SIZE - 1500MM DIA X 750MM	Each	2.00	34,935.00	69,870.00
25.5		CIRCULAR TABLE SIZE - 900MM DIA X 750MM	Each	7.00	12,881.00	90,167.00
25.6		RECTANGULAR TABLE SIZE - 2100MM X 1200MM X 750MM	Each	2.00	51,992.00	1,03,984.00

26	N.S	<b>Manufacturing, providing and Placing Library Cabin Table of make of Rockworth Platform Series/Haworth- Plane Series/Steelcase -Navi TeamIsland of following dimensions with the following specifications.</b>				
		Providing and placing Library table of size 1350(W) x 900(D) x 750(H) Worktop: Worktop shall be made out of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5-2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions ( $\leq 8\text{mg}/100\text{ g}$ oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992).The understructure is made of 2mm thick Steel square pipe dimension 50 X 50 mm with Epoxy powder coated spray paint, baked at temperature 200 C° coated of 70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method).	Each	4.00	16,323.00	65,292.00
		Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
27	N.S	<b>Manufacturing, providing and Placing Library Chair of make of Rockworth City Chair/Haworth-X99/Steelcase -Think Visitor of following dimensions with the following specifications.</b>				
		Providing & supplying Library chair. Chair Seat made up of insert moulded polyurethane foam upholstered with foam laminated mesh fabric, insert moulded foam assembled over a load bearing plastic seat cover, back made up of two piece injection moulded frame, inner frame upholstered with mesh fabric and mounted on the main assembly, back adjustable lumbar support for achieving comfortable seating posture, seat size 52.5 cm width (approx.), 54.0 cm depth (approx.), sub assembly back size 48.5 cm max. width, 62.0 cm height.(approx.), effective back height from Seat 57.0 cm. (approx.), polyurethane foam for seat moulded with density $65\pm 4\text{ kg/m}^3$ , sled base leg frame welded assembly made of MS ERW round tube having outer dia 24mm (approx.) and thickness 2mm. including powder coating, based shoes on frame etc. all complete as per manufacturers specification.Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.	Each	16.00	15,513.00	2,48,208.00

28	N.S	<b>Manufacturing, providing and Placing Library Book Racks double sided of Rockworth Ersa Series -/Haworth-M Serier/Steelcase-storage (as per finally approved sample by department) of following dimensions with the following specifications.</b>				
		Providing, supplying and placing double side steel Library Racks in perfectly upright and straight position. The overall size of the rack shall be 940mm (W) X 600mm (D) X 2110mm (H). The rack shall be supplied with 4 nos. of adjustable shelves on both side i.e. 10 loading levels. Rack, side panel, skirting shall be made of 0.8mm thick high yield strength CRCA sheet of grade 'D' confirming to IS: 513. Side and top shall be covered with 18mm thick Pre-laminated particle board of grade II of IS 12823. The edges of the board shall be sealed with 2mm thick PVC edge banding. The add-on units can be stacked width wise to form a bank of racks having common side panel. The shelves shall be folded constructions which have intrinsic rigidity and high load carrying capacity. Uniformly Distributed load capacity per each shelf shall be 80kg maximum. Each shelf shall be provided with stiffener at bottom for strength and back stiffener for separator between front and rear shelf. All steel components shall be epoxy polyester powder coated to the thickness of 60-80micron. Adjustable leveler shall be provided with metal insert to resist scratches on the floor and also level & support structure. Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
28.1	N.S	940 (W) X 600 (D) X 2110 (H)	Each	8.00	41,349.00	3,30,792.00
29	N.S	<b>Manufacturing, providing and Placing Library Book Racks Single Sided of Rockworth Ersa Series -/Haworth-M Serier/Steelcase-storage of following dimensions with the following specifications.</b>				
		Providing, supplying and placing an open display book racks. The overall size of the rack shall be 925mm (W) X 300mm (D) X 1800mm (H). The rack shall be supplied with 4 nos. of adjustable shelves i.e. 5 loading levels. Rack, side panel, skirting shall be made of 0.8mm thick high yield strength CRCA sheet of grade 'D' confirming to IS: 513. Side and top shall be covered with 18mm thick Pre-laminated particle board of grade II of IS 12823. The edges of the board shall be sealed with 2mm thick PVC edge banding. The add-on units can be stacked width wise to form a bank of racks having common panel. Back panel up to the bottom of third rack shall have additional rigidity. The shelves shall have folded constructions				

		which have intrinsic rigidity and high load carrying capacity. Uniformly distributed load capacity per each shelf shall be 80 kg maximum. Each rack shall be provided with stiffener at bottom for strength. Label holder & range indicators on each main unit for inserting labels. All steel components shall be epoxy polyester powder coated to the thickness of 60-80 micron. Adjustable leveler shall be provided with metal insert to resist scratches on the floor and also level & support structure. Product should be BIFMA gold rated SCS global certified for in-house air quality and with 10 years warranty.				
29.1	N.S	925 (W) X 300 (D) X 1800 (H)	Each	12.00	29,326.00	3,51,912.00
30	N.S	Providing & Placing Wooden reading stand with wooden base and inclined newspaper placement base with metal rod for inserting newspaper in base. Height of stand to be 1200mm - 1400mm finished complete with dimensions and design as per Architect drawings. <b>Rockworth Ers Series -/Haworth-M Serier/Steelcase-storage.</b>	Each	1.00	52,438.00	52,438.00
31	N.S	<b>Manufacturing, providing and Placing Magazine Rack of make of Rockworth Ers Series -/Haworth-M Serier/Steelcase-storage of following dimensions with the following specifications.</b>	Each	2.00	19,685.00	39,370.00
		Providing and placing single face magazine rack and display of Stainless Steel in high gloss. The rack to have three rows for inserting magazines for display complete with a height of 900-1200mm and width of 600mm. The design and exact dimensions of the magazine rack to be as per the Architect drawings.				
32	N.S	<b>Manufacturing, providing and Placing Librarian Cabin Table of Rockworth Platform Series/Haworth- Plane Series/Steelcase -Navi TeamIsland of following dimensions with the following specifications.</b>				
		Providing and placing Librarian table of Size: 1800(W) x 750(D) x 750(H) & back storage of size 1800W x 450D x 750H Worktop: Worktop shall be made out of 25mm thick E-1/good grade (Environmental Friendly) particle board cover with laminate and all the edges of worktop shall be provided with machine pressed 1.5-2 mm thick ABS edge banding glued with hot melt EVA glue. E1/good grade laminate with zero urea formaldehyde emissions ( $\leq 8\text{mg}/100\text{g}$ oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992). The wiring	Each	1.00	64,511.00	64,511.00

		tray is made of steel sheet thickness 1.2mm. Epoxy powder coated spray color, baked at temperature 200 C°. Raceways contain the horizontal cable channel that fitted with a modesty panel tidily and effectively.				
		The understructure is made of 2mm thick Steel square pipe dimension 50 X 50 mm with Epoxy powder coated spray paint, baked at temperature 200 C° coated of 70-80 micron thickness. Powder coating should be scratch resistance (cross hatch test 6x6 grid method). The wooden access flap (400x150mm) is made from 16mm thick E-1/good grade (Environmental Friendly particle board cover with laminate with 0.45mm thick ABS Edge banding. The modesty panel (wherever required) is made of 16mm thick E-1/good grade (Environmental Friendly) particle board cover with 1mm thick laminate with 2mm thick ABS and Brackets used are 3.2 mm Powder Coated Steel of 80-90 microns.				
		Back Storage : The storages should be made out of particle board of 25mm thick top and doors, sides and shelves should be made out of 16-19mm thick particle board in approved finished. E-1/good grade particle board finished with 2mm ABS edge banding. E1/good grade laminate with zero urea formaldehyde emissions ( $\leq 8\text{mg}/100\text{ g}$ oven dry board-perforated method) for better in-house air quality. This should comply with (EN 120-1992). The exposed edge of worktop shall be secured with 1.5mm-2mm thick ABS edge banding. Storages should be fitted with soft closing hardware and anti-shock hinges. All hardware shall be of reputed make/brands per sample finally approved by the Architect/Engineer. Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
		<b>Drawer Unit :</b> 3 drawer Metal pedestal of overall dimensions internal and external dimensions 380-430 mm (W) x 430-480 mm (D) x 600-620 mm (H). Drawer body should be made of CRCA of thickness 0.7-0.8 mm duly powder coated with 70-80 micron. Each pedestal should be provided with pencil tray of 40-45 mm(H) x 110-120 mm (D) x 300-310 mm (W).				
		Each pedestal should have 5 Nos castor fitted to it where in one castor will be fitted to lower most drawer to provide extra stability. Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
33		<b>Manufacturing, providing and Placing VIP Dining Table of Rockworth Platform Series/Haworth-Plane Series/Steelcase of following dimensions with the following specifications.</b>				

		<b>Dining table in Natural Veneer</b> in MD Cabin - Size - 6000mm (W) x 1500mm (D) x 750mm (H) (With Veneer Finish), Providing and placing 20 Seater Table top and legs are made of 60-70 mm thick Particle Board (E-1/good Grade), veneer finish with matched 2 mm ABS edge-banding. E1/good grade in veneer finish with zero urea formaldehyde emissions (<or= 8mg/100 g oven dry board-perforated method) for better in-house quality. This should comply with (EN 120-1992).	Each	1.00	8,44,643.00	8,44,643.00
34		<b>Manufacturing, providing and Placing Single bed (Ante Room) of make Rockworth Multitask Series /Haworth/Steelcase of following dimensions with the following specifications.</b>				
		Providing and fixing of Single Bed of Size 950(W)X2050(L)X750(H) with Head board and foot board. Head Board & Foot Board made up of 18 mm thick MDF/BB with 0.4 mm membrane foil . Head board size: 900x600 mm and foot board of size: 990x300 mm Support structure of Bed made up of M.S. Pipe 75x25x1mm thick and 40x40x1.2mm thick duly powder coated through seven tank process of Powder Coating. Side Panel: - The side panels are made up of 18mm thick MDF /Board with both side decorative laminate. All exposed edges are sealed with 2mm thick PVC edge Banding/5MM solid wood. Bed Base: - The Bed Base shall be made up of 12mm thick MDF/B Board with both side White laminate.				
		All Exposed edges of MDF/BB to be sealed with 2mm thick PVC edge band and 0.8mm thick PVC edge-band to be applied on Non-exposed edges with the help of hot-melt glue through fit edge-banding machines. The Edge-banding of exposed area to be done in the way that there should not be any sharp edge or corner left after processing. All the exposed edges should have buffing radius of 1.5 to 2mm without affecting aesthetic value of the panel. Mattress- Providing quilted mattress 4" with coir, Thickness of 100mm, density 80 GM/dcm3, piled foam quilting (one side) 14 mm thickness, piled foam density 18 GM/d cm3, PU foam thickness 5 mm, Fabric 85 GSM poly cotton material. Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.				
		All Exposed edges of MDF/BB to be sealed with 2mm thick PVC edge band and 0.8mm thick PVC edge-band to be applied on Non-exposed edges with the help of hot-melt glue through fit edge-banding machines. The Edge-banding of exposed area to be done in the way that there should not be any sharp	Each	6.00	32,441.00	1,94,646.00

		edge or corner left after processing. All the exposed edges should have buffing radius of 1.5 to 2mm without affecting aesthetic value of the panel. Mattress- Providing quilted mattress 4" with coir, Thickness of 100mm, density 80 GM/dcm3, piled foam quilting (one side) 14 mm thickness, piled foam density 18 GM/d cm3, PU foam thickness 5 mm, Fabric 85 GSM poly cotton material.				
35	N.S	<b>Manufacturing, providing and Placing Lounge Chair of make of Rockworth Multitask Series/Haworth- Poppy Lounge/Steelcase of following dimensions with the following specifications.</b>				
		Lounge Chair, Providing & placing Lounge chair. Chair seat & back made up of insert moulded Polyurethane Foam upholstered with foam laminated mesh fabric, insert moulded foam assembled over a load bearing ply seat cover, fixed and seats.Base: wooden structure of chair with pvc glides, On the wooden leg of the chair to be provided with M.S. brackets,Product should be BIFMA gold rated SCSglobal certified for in-house air quality and with 10 years warranty.	Each	6.00	23,993.00	1,43,958.00
36	N.S	<b>Manufacturing, providing and Placing Dining Chair of make of Rockworth Multitask Series/Haworth- Maari/Steelcase of following dimensions with the following specifications.</b>				
		Providing and placing in position Dining chair: SEAT AND BACKREST :Upholstered with fabric or leather with poured foam that ensures a long-term resistance to deformation and provides optimal comfort. The upholstery to be stitched from fabric pieces and the stitching lines are made with a thick thread to ensure design and asthetic requirements.. The upholstery is available in various colours of the same fabric or as a combination of fabric and leather. BASE :Solid ash/ oak/ teak wood legs as per design requirement.Product should be BIFMA gold rated SCSglobal certified for inhouse air quality.	Each	20.00	31,438.00	6,28,760.00
37	N.S	<b>Manufacturing, providing and Placing Reception Table of make Rockworth Luna Series/Haworth-/Steelcase of following dimensions with the following specifications.</b>				
		Custom made Reception Table.				
		Providing and fixing of Reception Table and – Providing and fixing reception counter clad with 122mm thick solid surface. This include reception				

		counter . The shape desired to be achieved through 19mm Marine Mdf BB carcass, clad with italian marble, stainless steel and 12mm thick Acrylic Solid Surfaces sheets thermoformed by using dyes and molds and pasted and seamlessly finished over. MS pipe framework to be used for strengthening the structure. The item includes cost of 12mm Acrylic Solid Surfaces. 19mm Marine Mdf/BB & MS square pipe, hardware, drawer units, shutter doors with laminated mica or veneers, locking mechanism, foot rest etc. as per Architect's drawing and finished as per guidelines of site in charge.				
37.1	N.S	4000W x900D x900H	Each	1.00	5,50,844.00	5,50,844.00
		<b>TOTAL FOR FURNITURE FOR CORPORATE BUILDING</b>				<b>7,48,25,386.00</b>
		<b>SUBHEAD 2: Chairs for VVIP seatings, senior officers, visitors, conference rooms, junior visitors and staff</b>				
		<b>ALL CHAIRS TO HAVE AN ON SITE REPLACEMENT WARRANTY FOR A PERIOD OF 12 YEARS FOR EACH AND EVERY COMPONENT AND CHAIR FOR 24X7X 365 USAGE OF CHAIR.</b>				
38	N.S	<b>Chairs for VVIP Seating</b>				
	a	Executive Task Chair with Seat Ht range 17"-22" with adjustable seat depth ranging 15"-18" inches with overall back height 45". The tilt mechanism should be 2 fiberglass leaf springs, a gear-driven tension adjustment, and stamped-steel housing. A 2-piece ABS cover shall enclose the tilt mechanism. Chairs shall have a nominal 18° of body weight-controlled recline. The tilt limiter, located at left rear corner below the seat, lets users limit the amount of recline in 3 incremental adjustments: upright, 42%, 77%, and full recline. The back & seat should have a pixelated engineering with textile cover should consist of a 3D knit fabric top layer of breathable, 100% virgin polyester bonded to an underlying 100% polyester clear monofilament spacer construction that allows for a visual transfer of color through the chair back. Chairs should have 10.4"-by-4.5" arm pads of self-skinning urethane foam molded in place to a glass-filled nylon insert. Arm pads should be flexible with a lightly textured surface. Base should be 5-star base with casters, should be die-cast aluminum, with a textured or smooth-coat powder-coat epoxy finish. The chair should swivel 360°. Chairs should be furnished with interchangeable casters. Chair should be Greenguard certified. Should have a weight bearing capacity of 300 pounds or under. Warranty:	Nos	7.00	92,559.00	6,47,913.00

		The chair should carry a 12year 3 shift warranty. Chair should meet or exceed (ANSI/ BIFMA) performance requirements per ANSI X5.1-2002. <b>HM EMBODY / HS FREEDOM ERGONOMIC/ VITRA HEADLINE</b>				
	b	Visitor Chairs as stated above <b>HERMAN MILLER SETU /HUMAN SCALE FREEDOM VELLUM / VITRA PACIFIC</b>	Nos	33.00	58,421.00	19,27,893.00
39	N.S	<b>GM/ GGM Chairs</b>				
		Task Chair with sizes Height : 15.7"-20.4",Depth: 15.0",Width: 18.9". Seat and Back: The seat and back surfaces should be constructed from a single sheet of mesh material, Lyris, the should be constructed from Hytrel® monofilaments in the horizontal direction and polyester fibers in the vertical direction. Arms : Chairs shall have 9"-by-2.5" arm pads with a lightly textured surface. The arm pad should be made from thermoplastic elastomer material and should be attached to the loop arm through an over molding process. Tilt the tilt mechanism should be Silver Alloy aluminum yoke, front link, and a glass filled nylon rear link. The tilt should contain Kinematic Spine that should flex as body weight applied. Base: 5-star bases with casters should be a corrosion resistant Silver Alloy aluminum, with a bead blasted textured surface. The chair should swivel 360° and should be furnished with interchangeable casters. Chair should be certified ANSI/ BIFMA as per ANSI X5.1- 2002. Chair should support weight of 300 pounds or under. <b>HERMAN MILLER MIRRA-2 / VITRA PHYSIX DTUDIO</b>	Nos	54.00	45,376	24,50,304.00
40	N.S	<b>JGM/ AGM Chairs/ Board Room</b>				
		Task Chair that should have sizes of: Overall Height: 37 ¾",Seat Depth :16-18" (adjustable) Overall Width : 26.75" . Seat :The contoured seat should be constructed of molded polypropylene insert with molded polyurethane foam. The foam should have a nominal ½' - 1 ½" thickness and have waterfall edges. Back : the suspension back should be constructed of thermoplastic urethane (TPU), stretched and fastened onto a structural frame (Arc Span) on the bottom and fastened at the top by a Y-Tower made of an injection molded glass-filled nylon. Lumbar Pad :the lumbar pad should be constructed of unfilled nylon and should attach to and slides up and down on an acetal lumbar bow. Arms : Each arm should have an arm support stem of glass-filled nylon with self-skinning polyurethane arm pads. Arms should be height adjustable. Tilt : the tilt mechanism should be made of 2 fiberglass leaf springs, a lead-screw-driven	Nos	619.00	35,311.00	2,18,57,509.00

		tension adjustment, and a stamped steel housing. The tilt mechanism should also be in a 4-piece, snap-together polypropylene cover. The tilt tension adjustment should have 18 full revolution turns. Base :the chair base should house a unitized pneumatic cylinder seat height adjustment mechanism contained in 2 steel tubes, the inner tube should slide and rotate in a bushing within an outer tube. Warranty:12 years 3 shift warranty. Chair should be certified with BIFMA/CMD-1-2002. The should have a weight bearing capacity of 350 pounds or under. <b>HERMAN MILLER SAYL / HUMAN SCALE DIFFERENT WORLD / VITRA AM TASK</b>				
41	N.S	<b>ED Chairs</b>				
		Task chair ht size seat height 16–20.5” seat depth 16.25" and seat width 19.25". The tilt mechanism should be 2 fiberglass leaf springs, a gear-driven tension adjustment, and a cast aluminum housing. A 3-piece, polycarbonate ABS blend cover shall snap together to enclose the tilt mechanism. The back-to seat tilt ratio shall be 2° to 1° when the chair is reclined from a neutral angle. The molded back should be a durable polypropylene attached to a loop-shaped support spine made from glass-filled Nylon 6. It should support and distribute the user’s weight evenly over the entire back of the chair and shall retain its original shape when the chair is unoccupied. The seat should be a durable, breathable AireWeave material stretched within a carrier ring and fitted into an outer frame. The AireWeave material should be a woven blend and a solution-dyed polyester yarn. It should support and distribute the user’s weight evenly over the seat of the chair and shall retain its original shape when the chair is unoccupied. Adjustable Lumbar pad should be a molded polypropylene thermoplastic secured to a bow-shaped attachment. The bow-shaped attachment (a.k.a. lumbar bow) shall be molded-in nylon. The pad should be approximately .130" thick. The handles of the lumbar support should be made from glass filled nylon (GFPA). The chair base should be 5 star with casters should house a unitized single-stage pneumatic seat height adjustment mechanism contained in 2 steel tubes; an inner tube shall slide and rotate in a bushing within an outer tube. The outer tube shall be coated black and shall have a tapered end that shall be pressed into the base, and an upper end that shall be pressed into the tilt mechanism. Chair should be tested and warranted for use by persons 350 pounds and under. Warranty: the chair should carry a 12 year 3 shift warranty. The chair should meet the California Technical Bulletin	Nos	4.00	58,797.00	2,35,188.00

		117-2013 fire safety standard and ANSI/BIFMA X5.1-2017. <b>HERMAN MILLER AERON / HUMAN SCALE LIBERTY / VITRA DIRECTION</b>				
42	NS	<b>DGM/ Manager/ Astd. Manager Chair</b>	Nos	129.00	23,996.00	30,95,484.00
		Providing HIGH back revolving chairs, Chair seat made up of insert moulded Polyurethane Foam upholstered with foam laminated mesh fabric, insert moulded foam assembled over a load bearing plastic seat cover, back is made up of two piece injection moulded frame, inner frame upholstered with mesh fabric and mounted on the main assembly, back adjustable lumbar support for achieving comfortable seating posture, seat size 44.5 - 52.5 cm depth (approx.), 46.4 - 51.0 cm width (approx.), sub assembly back size 55.5 cm- 62 cm height. (approx.), effective back height from Seat - 57 cm (approx.), polyurethane foam for seat having density 65±4 kg/m <sup>3</sup> , armrest top injection moulded in polyurethane and mounted on the injection moulded height adjustable type armrest, armrest height adjustable up to 4.5 cm (approx.) in 3 steps & width movement adjustable, 360 degree revolving type. mechanism, single point control for seat and back adjustment, front pivot for tilt, tilt adjustment for back in 3 position locking with antishock feature, pneumatic height adjustment of 8.5 cm spine bracket made of aluminum die cast piece connecting to back with mechanism, pedestal made of die cast aluminium fitted with 5 nos. twin wheel castors (castor wheel dia. 6.0 cm approx.), base pedestal dia 65.0cm (approx.) and pitch center dia. 71.0 cm with castors, twin wheel castors injection moulded in Nylon etc. all complete as per manufacturers specification, approved sample and direction of Engineer-in-Charge. <b>HERMAN MILLER OFFICE TASK / HUMAN SCALE WORLD ONE / VITRA ROOKIE</b>				
43	NS	<b>Manufacturing, providing and Placing Medium Back revolving chairs of Rockworth Senses Premium, Haworth-Zody midback ,Steelcase - Think midback of following dimensions with the following specifications.</b>	Nos	381.00	18,148.00	69,14,388.00
		Providing and placing medium Back chairs . Chair seat made up of insert moulded Polyurethane Foam upholstered with foam laminated mesh fabric, insert moulded foam assembled over a load bearing plastic seat cover, back is made up of two piece injection moulded frame, inner frame upholstered with mesh fabric and mounted on the main assembly, back				

		adjustable lumbar support for achieving comfortable seating posture, seat size 44.5 - 52.5 cm depth (approx.), 46.4 - 51.0 cm width (approx.), sub assembly back size 55.5 cm- 62 cm height. (approx.), effective back height from Seat - 57 cm (approx.), polyurethane foam for seat having density 65±4 kg/m <sup>3</sup> , armrest top injection moulded in polyurethane and mounted on the injection moulded height adjustable type armrest, armrest height adjustable up to 4.5 cm (approx.) in 3 steps, 360 degree revolving type. mechanism, single point control for seat and back adjustment, front pivot for tilt, tilt adjustment for back in 3 position locking with antishock feature, pneumatic height adjustment of 8.5 cm spine bracket made of aluminum die cast piece connecting to back with mechanism, pedestal made of die cast aluminium fitted with 5 nos. twin wheel castors (castor wheel dia. 6.0 cm approx.), base pedestal dia 65.0cm (approx.) and pitch center dia. 71.0 cm with castors, twin wheel castors injection moulded in Nylon etc. all complete as per manufacturers specification, approved sample and direction of Engineer-in-Charge				
		<b>TOTAL CHAIRS FOR VVIP SEATINGS, SENIOR OFFICER'S CHAIR, VISITOR CHAIR, CONFERENCE ROOM CHAIR AND JUNIOR VISITOR CHAIR AND STAFF CHAIR</b>				<b>3,65,85,169.00</b>
		<b>TOTAL OF CORPORATE BUILDING FURNITURE</b>				<b>11,19,54,065.00</b>

**Explanatory Notes for BOQ:**

- i) The quantities shown in above Schedules are approximate and are as a guide to give the tenderer(s) an idea of quantum of work involved. The DFCCIL reserves the right to increase/ decrease and/or delete or include any of the quantities given above as per site conditions.
- ii) All efforts have been made to make the document/BOQ complete in all respect for successful commissioning of the works, however, if any minor item has not been specifically mentioned or being omitted, the same shall be executed without any extra cost by the agency, so as to ensure successful and satisfactory commissioning of the item / work to the full satisfaction of Engineer/DFCCIL. In this regard, decision of Engineer/DFCCIL shall be final & binding.

<b>SCHEDULED - A : BILL OF QUANTITIES OF INTERIOR &amp; M.E.P. WORKS</b>						
<b>BOQ Item No.</b>	<b>CPWD-E&amp;M-2018</b>	<b>Item Description</b>	<b>Unit</b>	<b>Qty</b>	<b>Rate</b>	<b>Amount</b>
		<b>E &amp; M WORKS</b>				
		<b>Schedule -III</b>				
<b>A</b>		<b>SCHEDULE WORKS</b>				
<b>1.0</b>		<b>SUB-HEAD : INTERNAL WIRING</b>				
		<b>Note :</b>				
		<b>Rates of only ISI marked steel conduit, FRLS PVC insulated multi strand copper conductor single core cables, moulded plate type switches in passivated box and FRLS PVC insulated earth wire have been taken in the following items unless otherwise specified and as per specification.</b>				
1.1	1.3	Wiring for Light point / Fan point / Exhaust Fan point / Call Bell point with 1.5 sq.mm FRLS PVC insulated multi strand copper conductor single core cable in surface / recessed steel. conduit , with modular switch ,modular plate ,suitable GI box of 1.2 mm thickness (min.) and earthing the point with 1.5 sq.mm FR PVC insulated multi strand copper conductor single core cable etc. as required.				
a	1.3.3	Group - C	Point	700	1,083.00	7,58,100.00
1.2	1.54	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point (without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated multi strand copper conductor single core cable in surface/ recessed steel conduit and earthing the point with 1.5 sq. mm FRLS PVC insulated multi strand copper conductor single core cable etc. as required.				

a	1.54.3	Group C	Point	2400	631.00	15,14,400.00
1.3		Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated multi strand copper conductor, single core cable in surface/ recessed steel conduit as required.				
a	1.7.1	2 X 1.5 sq.mm + 1 X 1.5 sq.mm earth wire	Metre	15000	186.00	27,90,000.00
b	1.7.2	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	Metre	4500	204.00	9,18,000.00
c	1.7.3	2 X 4 sq.mm + 1 X 4 sq.mm earth wire	Metre	100	235.00	23,500.00
d	1.7.4	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	Metre	700	318.00	2,22,600.00
e	1.7.7	4 X 2.5 sq.mm + 2 X 2.5 sq.mm earth wire	Metre	700	303.00	2,12,100.00
f	1.7.9	4 X 6sq.mm + 2X 6 sq.mm earth wire	Metre	380	472.00	1,79,360.00
g	1.7.10	4 X 10 sq.mm + 2X 6 sq.mm earth wire	Metre	60	598.00	35,880.00
h	1.7.11	4 X 16 sq.mm + 2X 6 sq.mm earth wire	Metre	20	845.00	16,900.00
1.4		Supplying and drawing following sizes of FRLS PVC insulated multi strand copper conductor, single core cable in the existing surface/recessed steel conduit/Raceway as required.				
a	1.17.12	3 x 2.5 sq. mm	Metre	18500	67.00	12,39,500.00
1.5	1.5	Wiring for light / power plug point with 2 x 4 sq.mm FRLS PVC insulated multi strand copper conductor single core cable in surface / recessed steel conduit along with 1 No. 4 sq.mm FRLS PVC insulated multi strand copper conductor single core cable for loop earthing as required.	Metre	6000	237.00	14,22,000.00
1.6	1.6	Wiring for light / power plug point with 4 x 4 sq.mm FRLS PVC insulated multi strand copper conductor single core cable in surface / recessed steel conduit along with 2 No. 4 sq.mm FRLS PVC insulated multi strand copper conductor single core cable for loop earthing as required.	Metre	572	350.00	2,00,200.00

1.7	1.31	Supplying and fixing suitable size GI box of 1.2 mm thickness (min.) with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	Each	909	358.00	3,25,422.00
1.8	1.32	Supplying and fixing suitable size GI box of 1.2 mm thickness (min.) with modular plate and cover in front on surface or in recess ,including providing and fixing 6 pin 15 / 16 & 5 / 6 amps modular socket outlet and 15 / 16 amps modular switch, connection, etc.as required.	Each	218	442.00	96,356.00
1.9	1.24.4+ 1.27.1= 97.31+2 12.98=3 10.29	Supplying and fixing suitable size GI box of 1.2 mm thickness (min.) with modular plate and cover in front on surface or in recess ,including providing and fixing 3 pin 5 / 6 amps modular socket outlet without modular switch,connection,painting etc.as required.	Each	200	316.00	63,200.00
1.10	1.24.3+ 1.27.1= 115.47+ 212.98= 328.45	Supplying and fixing suitable size GI box of 1.2 mm thickness (min.) with modular plate and cover in front on surface or in recess, including providing and fixing 15 / 16 amps modular switch, connection, painting etc.as required.	Each	26	335.00	8,710.00
1.11	1.24.5+ 1.27.1= 175+24 3=418	Supplying and fixing suitable size GI box of 1.2 mm thickness (min.) with modular plate and cover in front on surface or in recess ,including providing and fixing 15 / 16 amps modular socket ,connection,painting etc.as required.	Each	208	373.00	77,584.00
1.12	1.56	Supplying and fixing suitable size GI box of 1.2 mm thickness (min.) with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings). UPS & TV SOCKET	Each	596	520.00	3,09,920.00

1.13	1.20	Supplying and fixing of following sizes of steel conduit along, with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.				
a	1.20.2	25 mm	Metre	1200	147.00	1,76,400.00
b	1.20.3	32 mm	Metre	55	181.00	9,955.00
c	1.20.4	40 mm	Metre	55	261.00	14,355.00
d	1.20.5	50 mm	Metre	55	329.00	18,095.00
1.14	2.18	Supplying and fixing 30A, 240V, SPN industrial type socket outlet with 2 pole and earth, metal enclosed plug top along with 30A "C" curve, SP, MCB in sheet steel enclosure on surface or in recess with chained metal cover for the socket outlet and complete with connection, testing and commissioning etc. as required.	Each	20	1,100.00	22,000.00
1.15	2.20	Supplying and fixing 30A, 415V, TPN industrial type socket outlet with 4 pole and earth, metal enclosed plug top along with 30A "C" curve, TP, MCB in sheet steel enclosure on surface or in recess with chained metal cover for the socket outlet and complete with connection, testing and commissioning etc. as required.	Each	20	2,721.00	54,420.00
		<b>TOTAL OF INTERNAL WIRING</b>				<b>1,07,08,957.00</b>
<b>2.0</b>		<b>SUB-HEAD : ERRECTION OF FANS &amp; LIGHT FIXTURES</b>				
2.1	DSR (E&M) Item 1	Supply, Installation, Testing and Commissioning of 1200 mm sweep, BEE 5 star rated, ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. blades, suitable long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, Power Factor not less than 0.9, Service Value (CMM/W) minimum 6.85, Air	Each	88	2,688.00	2,36,544.00

		delivery minimum 215 CMM, 350 RPM (tolerance as per IS : 374-2019), THD less than 10%, remote regulator unit for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Supply, earthing etc. complete as required.				
2.2	1.45	Installation, testing and commissioning of ceiling fans/bracket fan of all sizes including wiring the down rod .of standard length (up to 30 cm ) with 3x1.5 sq.mm FR PVC insulated multi strand copper conductor single core cable including providing and fixing phenolic laminated sheet cover on the fan box etc. as required.	Each	47	178.00	8,366.00
2.3	1.50.1+ 1.51	Installation of exhaust fans up to 450 mm sweep & in the existing opening, including making the hole to suit the size of the above fan, making good the damage, connection, testing, commissioning etc. as required including fixing of louvers/shutters complete	Each	60	474.00	28,440.00
		<b>TOTAL OF ERRECTION OF FANS &amp; LIGHT FIXTURES</b>				<b>2,73,350.00</b>
<b>3.0</b>		<b>SUB-HEAD : EARTHING</b>				
3.1	5.6	Earthing with copper earth plate 600 mm X 600 mm X 3 mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 metre long etc. with charcoal/ coke and salt as required.	Set	6	10,530.00	63,180.00
3.2	5.15*2= 181*2= 362	Providing and laying G.I. tape 50 mm X 6 mm from earth electrode directly in ground as required	Metre	180	368.00	66,240.00
3.3	5.15	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	Metre	1130	184.00	2,07,920.00

3.4	5.14	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as required.	Metre	120	901.00	1,08,120.00
3.5	5.16	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing as required.	Metre	300	51.00	15,300.00
		<b>TOTAL OF EARTHING</b>				<b>4,60,760.00</b>
<b>4.0</b>		<b>SUB-HEAD: LIGHTNING PROTECTION</b>				
4.1	6.2	Providing and fixing of lightning conductor finial, made of 25 mm dia 300 mm long, G.I. tube, having single prong at top, with 85 mm dia 6 mm thick G.I. base plate including holes etc. complete as required.	Each	9	400.00	3,600.00
4.2	6.7	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or surface of wall for lightning conductor complete as required.(For horizontal run)	RM	400	93.00	37,200.00
4.3	6.8	Providing and fixing G.I. tape 20 mm X 3 mm thick on parapet or surface of wall for lightning conductor complete as required.(For vertical run)	RM	740	146.00	1,08,040.00
4.4	6.12	Providing and fixing testing joint, made of 20 mm X 3 mm thick G.I. strip, 125 mm long, with 4 nos. of G.I. bolts, nuts, chuck nuts and spring washers etc. complete as required	Each	25	91.00	2,275.00
4.5	6.14	Providing and laying G.I. tape 32 mm X 6 mm from earth electrode directly in ground as required.	RM	336	157.00	52,752.00
		<b>TOTAL OF LIGHTNING PROTECTION</b>				<b>2,03,867.00</b>
<b>5.0</b>		<b>SUB-HEAD : DISTRIBUTION BOARD</b>				
5.1	2.3	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess complete with tinned copper bus bar, neutral bus bar, earth				

		bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)				
a	2.3.1	6 way, Double door	Each	40	1,483.00	59,320.00
b	2.3.2	8 way, Double door	Each	3	1,571.00	4,713.00
5.2	2.4	Supplying and fixing following way prewired triple pole and neutral, sheet steel for 415 volts on surface/recess complete with loose wire box, terminal connector for all incoming and outgoing circuits, duly prewired with suitable size FRLS PVC insulated multi strand copper conductor upto terminal blocks, tinned copper busbar, neutral link, earth bar, din bar, detachable gland plate, interconnections, powder painted including earthing etc. as required. (But without MCB / RCCB / Isolator)				
a	2.4.1	4 way (4 + 12), Double door	Each	15	2,739.00	41,085.00
b	2.4.2	6 way (4 + 18), Double door	Each	28	3,297.00	92,316.00
c	2.4.3	8 way (4 + 24), Double door	Each	29	4,108.00	1,19,132.00
5.3	2.10	Supplying and fixing <b>5 amps. to 32 amps.</b> rating, 240/415 V, 10 KA, 'C' series, <b>Miniature circuit breaker (MCB)</b> suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required.				
a	2.10.1	Single pole	Each	2756	178.00	4,90,568.00
b	2.10.3	Double pole	Each	20	496.00	9,920.00
5.4	2.24	Supply and fixing cable end box (loose wire box) suitable for following triple pole and neutral, sheet metal, MCB distribution board, 415V on surface/recess complete with testing and commissioning etc. as required.				
a	2.24.1	For 4 way, double door, TPN MCBDB	Each	15	807.00	12,105.00
b	2.24.2	For 6 way, double door, TPN MCBDB	Each	28	948.00	26,544.00

c	2.24.3	For 8 way, double door, TPN MCBDB	Each	29	1,106.00	32,074.00
5.5	2.2	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminal spreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections, etc. as required.				
a	2.2.12	800 A, 50 KA,TPN MCCB	Each	2	30,228.00	60,456.00
b	2.2.13	100 A,30KA,FPMCCB	Each	9	6,587.00	59,283.00
5.6	2.11	Supply and fixing single pole blanking plate in existing MCB DB complete as required.	Each	106	7.00	742.00
		<b>TOTAL OF DISTRIBUTION BOARD</b>				<b>10,08,258.00</b>
<b>6.0</b>		<b>SUB-HEAD : L.T CABLES</b>				
6.1		Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required				
a	7.1.3	Above 95 sq. mm and upto 185 sq. mm	Metre	10	314.00	3,140.00
b	7.1.2	Above 35 sq. mm and upto 95 sq. mm	Metre	76	302.00	22,952.00
c	7.1.1	Upto 35 sq. mm	Metre	431	288.00	1,24,128.00
6.2	7.5	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC / HUME / METAL pipe as required				
a	7.5.1	Upto 35 sq. mm	Metre	3950	28.00	1,10,600.00
b	7.5.2	Above 35 sq. mm and upto 95 sq. mm	Metre	681	42.00	28,602.00
c	7.5.3	Above 95 sq. mm and upto 185 sq. mm	Metre	189	57.00	10,773.00
6.3	9.1	Supplying and making end termination of following sizes with brass double compression gland including providing and crimping solderless plugs/ferrules of sizes PVC				

		insulated PVC sheathed aluminum conductor armoured cable 1.1 KV grade.				
a	9.1.36	4 X 50 sq. mm (35mm)	Set	2	296.00	592.00
b	9.1.34	4 X 25 sq. mm (28mm)	Set	10	223.00	2,230.00
c	9.1.33	4 X 16 sq. mm (28mm)	Set	100	223.00	22,300.00
d	9.1.32	4 X 10 sq. mm (25mm)	Set	54	196.00	10,584.00
e	9.1.2	2 X 10 sq. mm /4x6mm (19mm)/4x6sqmm	Set	2	177.00	354.00
f	9.1.2	2 X 10 sq. mm /4x6mm (19mm)/2x6sqmm	Set	12	177.00	2,124.00
6.4	4.6	Supplying and installing following size of perforated Hot Dipped Galvanized Iron cable tray (Galvanization thickness not less than 50 microns) with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with G.I. suspenders including G.I. bolts & nuts, etc. as required				
a	4.6.10	450 mm width X 62.5 mm depth X 2.0 mm thickness	Metre	400	1,286.00	5,14,400.00
		<b>TOTAL OF L.T CABLES</b>				<b>8,52,779.00</b>
<b>7.0</b>		<b>FAÇADE LIGHTING</b>				
7.1	DSR Façade	Supply, Installation, Testing and Commissioning of LED RGBW Floodlight Luminaire for Façade lighting with die cast aluminium housing, with powder coating of following wattage. Luminaire shall be capable of producing dynamic color changing light with 16 million colors by DMX/Ethernet based control. The beam angle of the fixture shall be 30 deg as per the requirement. The luminaire shall have high optical efficiency, anti aging and anti UV PMMA/PC lenses. Luminaire shall be complete with driver and capable of operating at line voltage without any separate power supply from 120 to 270 V AC, 50 Hz, power factor > 0.9. High power				

		LED's shall be SMD type and fixture shall have system efficacy at System level (Not Chip Level) $\geq 40$ LPW, Life of fixture (Including Driver): 50K Hrs. @ L70 Lumen maintenance at 35 °C Ambient Temperature. CRI $\geq 70$ , PF $>0.90$ & THD $<20\%$ , minimum Internal Surge Protection 3KV, 10 kV external surge protector, must be having IP66 & IK $\geq 06$ Impact rating & Approbation-CE along with IEC Classification Class I, RoHS. Cables Connectors in fixture to be of IP67 for Male/Female connectors for DMX through wiring. Fixture shall be suitable to operate at ambient temperature range of -10°C to +50°C. The offered fixture shall conform to the LED Floodlight Specifications mentioned in the tender.				
a	1.4	140 W	Nos.	9	66,979.00	6,02,811.00
7.2	DSR Façade	Supply, Installation, Testing and Commissioning of LED RGBW Linear Wall Washer luminaire for Façade lighting with aluminium extruded housing with die cast aluminium end caps, with powder coating of following wattage. Luminaire shall be capable of producing dynamic color changing light with 16 million colors by DMX/Ethernet based control. The fixture to be with adjustable tilting angle $\pm 95$ deg with beam angle of the fitting 15X45 deg/25X40 deg asymmetric as per the requirement. The luminaire shall have high optical efficiency, anti aging and anti UV PMMA/PC lenses with Clear tempered glass. Luminaire shall be complete with driver and capable of operating at line voltage without any separate power supply from 120 to 270 V AC, 50 Hz, power factor $> 0.9$ . High power LED's shall be SMD type and fixture shall have system efficacy at System level (Not Chip Level) $\geq 40$ LPW, Life of fixture (Including Driver): 50K Hrs. @ L70 Lumen maintenance at 35 °C Ambient Temperature. CRI $\geq 70$ , PF $>0.90$ & THD $<20\%$ , minimum Internal Surge Protection 3KV, 10 kV external surge protector, must be having IP66 & IK $\geq 06$				

		Impact rating & Approbation-CE along with IEC Classification Class I, RoHS. Cables Connectors in fixture to be of IP67 for Male/Female connectors for DMX through wiring. Fixture shall be suitable to operate at ambient temperature range of -10°C to +50°C. The offered fixture shall conform to the LED Wall Washer Specifications mentioned in the tender.				
a	2.4	40 W, 4 Feet	Nos.	780	34,866.00	2,71,95,480.00
b	2.5	25 W, 2 Feet	Nos.	56	20,652.00	11,56,512.00
		<b>TOTAL OF FAÇADE LIGHTING</b>				<b>2,89,54,803.00</b>
<b>8.0</b>	<b>DSR (E&amp;M)</b>	<b>FIRE ALARM SYSTEM</b>				
<b>8.1</b>	17.2.1	Supply, Installation, Testing and Commissioning of microprocessor based intelligent addressable fire alarm control panel and central processing unit capable of supporting not less than 240 devices (including detectors) and minimum 120 detectors per loop, loop length upto 2 km, network communication card, minimum 640 character LCD display (6-7 inch) with touch screen, minimum 4000 events history log in non-volatile memory (EPROM), power supply unit (230+/- 5% V, 50 Hz), 48 hrs back-up with 24V sealed maintenance free batteries with automatic charger. The panel shall have facility to connect printer to printout log and facility to have seamless integration with analog/digital voice evacuation system and shall be complete with all accessories . The panel shall be compatible for IBMS system with open protocol BACnet/ Modbus over IP complete as per specifications. The number of loops should be calculated to accommodate all detector and devices with 20% spare. The Panel shall be VDS-EN 54/UL-FM approved.				
<b>a</b>	17.2.1.1	10 Loops Panel	No.	1	4,06,157.00	4,06,157.00

<b>b</b>	17.2.1.2	2 Loops Panel	Nos.	32	13,310.00	6,39,930.00
<b>8.2</b>	17.2.2	Supplying, installation, testing & commissioning of central graphical fire alarm management system to centrally monitor and operate the fire alarm system complete as required.	Nos.	1	1,78,704.00	1,78,704.00
<b>8.3</b>	17.2.4	Supply, Installation, Testing and Commissioning of intelligent addressable Multicriteria detector (Smoke + thermal). Detector should have inbuilt isolators as per NFPA 72 style 7 wiring requirements and have an option of soft addressing. Detector should monitor Electromagnetic interference and report to the panel - current and average values. The detector shall have tri/dual color LED, Green for Normal and Red for alarm. Shall have pre-programmed sensitivity parameter sets Sensitive, Standard, Robust. Shall be Polarity Insensitive. It Shall be EN54/ VDs/ UL certification. (Detectors without Inbuilt Isolators may be considered with an additional Isolator Module per detector)	Nos.	1340	2,541.00	34,04,940.00
<b>8.4</b>	17.2.9	Supply, Installation, Testing and Commissioning of intelligent addressable Heat detector with rate of rise cum fixed temperature thermistor. Detector should have inbuilt isolators as per NFPA 72 style 7 wiring requirements and have an option of both soft & hard addressing. Detector should monitor Electromagnetic interference and report to the panel - current and average values. Provides seven (7) field-selectable settings in the 135° – 174°F (57.2° – 78.9°F) temperature range and can be configured to provide a low-temperature warning signal at 40°F (4.4°C). Tri/Dual color LED, Green for Normal and Red for alarm. Shall be Polarity Insensitive. It Shall be EN54/ VDs/ UL certification. (Detectors without Inbuilt Isolators may be considered with an additional Isolator Module per detector)	Nos.	83	2,422.00	2,01,026.00

<b>8.5</b>	17.2.10	Supply, Installation, Testing and Commissioning of Addressable Fire/Phone/Monitor Control Relay Module with inbuilt isolators as per NFPA 72 style 7 wiring requirements & with flexible network. Shall have multi-color light-emitting diode (LED) which indicates system status Green, Amber and Red. It Shall be Polarity Insensitive. It Shall be EN54/ Vds Certification/UL.	Nos.	45	2,670.00	1,20,150.00
<b>8.6</b>	17.2.5	Supply, Installation, Testing & Commissioning of Response Indicator with matching screws complete with GI Junction box, Cable lugs at cable end and ferruling. Response indicator shall be of same make as main Panel.	Nos.	940	235.00	2,20,900.00
<b>8.7</b>	17.2.14	Supply, Installation, Testing and Commissioning of addressable Manual Pull Station. Shock and Vibration Resistant, Pull Down Lever Remains Down Until Reset with inbuilt isolators as per NFPA 72 style 7 wiring requirements, with flexible network structures & necessary fixing arrangements with key complete as required. Shall be EN 54 / Vds/UL Certification. It Shall be Polarity Insensitive .	Nos.	59	3,446.00	2,03,314.00
<b>8.8</b>	17.2.6	Supply, Installation, Testing and Commissioning of sounder as per NFPA 72 style 7 wiring requirements & with 20 different tone variants selection options & adjustable sound pressure by 5 levels, the sound pressure 92 dB(A), should be programmed from the panel. Shall be EN54 / Vds/UL Certification.	Nos.	59	2,355.00	1,38,945.00
<b>8.9</b>	17.2.16	Supply, Installation, Testing and Commissioning of red strobe with field selectable 15/30/75/110 candelas. Shall be EN54 / Vds/UL Certification.	Nos.	59	2,995.00	1,76,705.00
<b>8.10</b>	17.2.13	Supply, Installation, Testing and Commissioning of Addressable Duct detector with Housing of same make, Shall have inbuilt isolators as per NFPA 72 style 7 wiring	Nos.	17	6,965.00	1,18,405.00

		requirements, should be programmed from the panel. Shall be EN54 / Vds/UL Certification.				
<b>8.11</b>	17.2.12	Supply, Installation, Testing and Commissioning of Beam Detector with range of 10 - 100 mtr, with addressable interface module with inbuilt isolators as per NFPA 72 style 7 wiring requirements, should be programmed from the panel. Shall be EN54 / Vds/UL Certification.	Nos.	666,766.00		4,00,596.00
<b>8.12</b>	17.5.1	Supply, Installation, Testing & Commissioning of LPCB certified 2 C x 1.5 sq.mm Fire Survival Armoured cable, clamped directly on wall/Ceiling /structural member with the use of GI clamps/saddle etc. Cable shall be 600/1000V rated, twisted with Class-2 annealed stranded copper conductor having special cross-linkable Low Smoke Zero Halogen Ceramified Silicon insulation as per BS EN 50363, galvanized steel wire armour and Low Smoke Zero Halogen inner & outer sheath. Should comply to EN 61034-2 & EN 60754-1. Should meet fire performance circuit integrity test as per BS EN 50200 & BS 6387 CWZ (950 Deg. C for 180 mins). Outer sheath will be in Red colour	RM	28500	293.00	83,50,500.00
		<b>TOTAL OF FIRE ALARM SYSTEM</b>				<b>1,45,60,272.00</b>
<b>9.0</b>		<b>SUB HEAD-A (PIPING &amp; VALVES)</b>				
9.1	DSR Wet Riser	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :				
a	7.1	25 mm dia.	RM	3106	421.00	13,07,626.00
b	7.2	32 mm dia.	RM	141	471.00	66,411.00

c	7.3	40 mm dia.	RM	806	581.00	4,68,286.00
d	7.4	50 mm dia.	RM	678	703.00	4,76,634.00
e	7.5	65 mm dia.	RM	551	896.00	4,93,696.00
f	7.6	80 mm dia.	RM	231	1002.00	2,31,462.00
g	7.7	100mm dia	RM	413	1338.00	5,52,594.00
h	7.8	150mm dia	RM	818	1843.00	15,07,574.00
9.2		Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :				
a	11.6	150 mm dia	Set	33	7767.00	2,56,311.00
9.3	13	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm2 complete as required.	Each	36	1153.00	41,508.00
9.4		Providing, installation, testing and commissioning of non-return valve of following sizes confirming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc.as required :				
a	14.7	150 mm dia	Set	6	15693.00	94,158.00
9.5		Providing, installation, testing and commissioning of stainless steel Y-strainer fabricated out of 1.6 mm thick stainless steel, Grade 304, sheet with 3 mm dia holes with stainless steel flange.				
a	15.3	150mm dia	No.	1	9517.00	9,517.00

9.6		Supplying, installation, testing & commissioning of sprinkler flexible pipe (UL Listed) of stainless steel complete with 15 NPT on reducer thread with maximum working pressure of 175 PSI test pressure of 875 PSI (Burst) with branch line (Inlet) 25mm NPT male thread to sprinkler head (Outlet) 15mm NPT female thread with reducer, nipple, 2 side brackets, center bracket, stockbar of following sizes complete as required.				
a	25.1	700mm	Set	970	1197.00	11,61,090.00
b	25.2	1000mm	Set	975	1375.00	13,40,625.00
9.7	4290	Providing and fixing gunmetal single acting air release valve with screwed inlet 25 mm dia..	Nos	4	1,205.00	4,820.00
9.8		Providing & fixing flow switch in following sizes M.S. pipe including connection etc as required.				
a	23.2	150mm dia	Each	27	7919.00	2,13,813.00
		<b>TOTAL SUB HEAD-A (PIPING &amp; VALVES)</b>				<b>82,26,125.00</b>
<b>10.0</b>		<b>SUB HEAD-B (FIRE HYDRANT ACCESSORIES)</b>				
10.1		Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type-A) with blank Gunmetal/Stainless Steel cap and chain as required :				
	9.1	Single headed gun metal	Nos	27	6691.00	1,80,657.00
10.2		Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire,				

		rivets etc. conforming to IS 636 (type-A) as required :				
	16.1	Gun Metal	Set	54	4632.00	2,50,128.00
10.3		Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.				
		20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585				
		20 mm nominal internal dia gun metal globe valve & nozzle.				
		Drum and brackets for fixing the equipments on wall.				
		Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.				
	17.1	30 m	Nos	27	7512.00	2,02,824.00
10.4		Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required:				
	18.1	Gun metal	Nos	27	2145.00	57,915.00
10.5	4.0	Supplying, installation, testing and commissioning of electric driven terrace pump suitable for automatic operation and consisting of following, complete in all respects, as required: (Terrace Pump)				
		Horizontal type, multistage, centrifugal, split casing pump of cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS : 1520				
		Suitable HP squirrel cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of				

		protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.				
		M.S.fabricated common base plate, coupling, coupling guard, foundation bolts etc.as required.				
		Suitable cement concrete foundation duly plastered and with anti vibration pads.				
	4.1	900 LPM at 35 m Head	Set	2	90130.00	1,80,260.00
		<b>TOTAL SUB HEAD-B (FIRE HYDRANT ACCESSORIES)</b>				<b>8,71,784.00</b>
<b>11.0</b>		<b>SUB HEAD-C (SPRINKLERS ACCESSORIES)</b>				
11.1		Providing, fixing, testing & commissioning of 15mm dia quartzoid bulb type sprinklers of rating 68 degree centigrade with required accessories :				
a	21.1	Pendent Sprinkler	Nos	1050	432.00	4,53,600.00
b	21.2	Upright Sprinkler	Nos	1650	432.00	7,12,800.00
c	21.3	Horizontal side wall sprinkler	Nos	27	517.00	13,959.00
d	21.4	Concealed Sprinkler	Nos.	954	1247.00	11,89,638.00
11.2	29	Providing, installation, testing & commissioning of adjustable rosette plate for 15mm dia in white finish UL Listed or FM approved complete as required.	Each	2004	185.00	3,70,740.00
		<b>TOTAL SUB HEAD-C (SPRINKLERS ACCESSORIES)</b>				<b>27,40,737.00</b>
		<b>TOTAL OF SCHEDULE ITEMS</b>				<b>6,84,00,932.00</b>

**Explanatory Notes for BOQ:**

- (i) All DSR items contain item nos. and, if any discrepancy is found in nomenclature, then scheduled nomenclature of CPWD DSR 2018/2019 will prevail.
- (ii) The rates of all CPWD DSR Items are already exclusive of GST. However, the rates of all items of DSR 2018 & 2019 are evaluated excluding GST component on DAR basis.
- (iii) The quantity mentioned in the Schedules is approximate and the DFCCIL reserves the right to increase / decrease the same as per site requirement.

B		NON SCHEDULE WORKS (E&M)				
1.0		SUB-HEAD : SUPPLY OF FANS & LIGHT FIXTURES				
1.1		LIGHT FIXTURES				
A		SITC of Recessed tuneable & dimmable LED linear channel fitting with max width of 60mm (cut out), length of 1200 mm, made of extrusion aluminum housing with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture shall have minimum efficacy at System level (Not Chip Level) $\geq 100$ lumens/watt and a minimum system lumen output of 2300 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT change from 3000-6500K (SDCM $\leq 4$ ), CRI $\geq 80$ , THD $\leq 10\%$ , PF $\geq 0.90$ , R9 $\geq 20$ , IP20, UGR $\leq 19$ , IK $\geq 04$ , Operating working temp range - $0^{\circ}\text{C} < T_a < 45^{\circ}\text{C}$ and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV having DALI Dual channel Tuneable, wireless system ready driver. The internal wiring to be done with LSZH wires. The fixture should comply with the parameters as per IS10322. The LED driver should comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.	Nos.	26	8,990.00	2,33,740.00
B		SITC of wall/surface LED batten with in-built/external PIR sensor capable	Nos.	133	2,927.00	3,89,291.00

		<p>of diming light output to 50% in case of non occupancy. Fixture to be made of extrusion/anodised aluminum housing with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) <math>\geq 120</math> lumens/watt and a minimum system lumen output of 4000 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700/6500K (SDCM<math>\leq 4</math>), CRI <math>\geq 80</math>, THD<math>\leq 10\%</math>, PF <math>\geq 0.90</math>, R9<math>\geq 20</math>, IP20, IK<math>\geq 04</math>, Operating working temp range - <math>0^{\circ}\text{C} &lt; T_a &lt; 45^{\circ}\text{C}</math> and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple <math>\leq 5\%</math>, comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.</p>				
C		<p>SITC of recessed LED downlighter, made of pressure die cast aluminum housing including flange with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) <math>\geq 110</math> lumens/watt and a minimum system lumen output of 1200 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700/6500K (SDCM<math>\leq 4</math>), CRI <math>\geq 80</math>, PF <math>\geq 0.90</math>, THD<math>\leq 10\%</math>, R9<math>\geq 20</math>, IP20,</p>	Nos.	1307	1,317.00	17,21,319.00

		UGR<19, IK>=04, Operating working temp range - 0°C < Ta < 45°C and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple <5%, comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.				
D		SITC of recessed LED downlighter with Zig bee/ Bluetooth enabled dimmable control gear, made of pressure die cast aluminum housing including flange with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) >=100lumens/watt and a minimum system lumen output of 2000 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700/6500K (SDCM<4), CRI >80, PF >0.90, THD<10%, R9>20, IP20, UGR<19, IK>=04, Operating working temp range - 0°C < Ta < 45°C and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple <5%, comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and	Nos.	1338	4,569.00	61,13,322.00

		IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.				
E		SITC of surface mounted LED downlighter, made of pressure die cast aluminum housing including flange with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) $\geq 100$ lumens/watt and a minimum system lumen output of 1200 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700/6500K (SDCM $\leq 4$ ), CRI $\geq 80$ , PF $\geq 0.90$ , THD $\leq 10\%$ , R9 $\geq 20$ , IP20, IK $\geq 04$ , Operating working temp range - $0^{\circ}\text{C} < T_a < 45^{\circ}\text{C}$ and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple $\leq 5\%$ , comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.	Nos.	276	1,411.00	3,89,436.00

F		SITC of LED bulkhead with integral electronic control gear, made of pressure die cast aluminum housing with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) $\geq 110$ lumens/watt and a minimum system lumen output of 1100 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700/6500K (SDCM $\leq 4$ ), CRI $\geq 80$ , PF $\geq 0.90$ , THD $\leq 10\%$ , R9 $\geq 20$ , IP66, IK $\geq 08$ , Operating working temp range - $0^{\circ}\text{C} < T_a < 45^{\circ}\text{C}$ and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.	Nos.	62	1,202.00	74,524.00
G		SITC of recessed LED downlighter with DALI dual channel/ Bluetooth enabled tuneable & dimmable control gear, made of pressure die cast aluminum housing including flange with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) $\geq 100$ lumens/watt and a minimum system lumen output of 1200 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 3000-6500K (SDCM $\leq 4$ ), CRI $\geq 80$ , PF $\geq 0.90$ , THD $\leq 10\%$ , R9 $\geq 20$ , IP20, UGR $\leq 19$ , IK $\geq 04$ , Operating working temp range - $0^{\circ}\text{C} < T_a < 45^{\circ}\text{C}$ and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple $\leq 5\%$ , comply to IEC61000-3-2 ed.3.2, 2009 for	Nos.	72	5,436.00	3,91,392.00

		<p>Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.</p>				
H		<p>SITC of recessed 3-4W LED step light with integral electronic control gear, made of pressure die cast aluminum housing with high efficiency PC/PMMA diffuser for homogeneous light distribution. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 3000K, CRI &gt;80, PF &gt;0.90, THD&lt;15%, IP65, IK&gt;=08, Operating working temp range - 0°C &lt; Ta &lt; 45°C and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV.</p>	Nos.	104	5,384.00	5,59,936.00

I	SITC of recess mounted LED luminaire (2X2) with Zig bee/ Bluetooth enabled dimmable control gear, made of extrusion Aluminium having powder coating with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) $\geq 120$ lumens/watt and a minimum system lumen output of 3600 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700/6500K (SDCM $\leq 4$ ), CRI $> 80$ , PF $> 0.90$ , THD $< 10\%$ , R9 $> 20$ , IP20, UGR $< 19$ , IK $\geq 04$ , Operating working temp range - $0^{\circ}\text{C} < T_a < 45^{\circ}\text{C}$ and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. The luminaire shall be integrated with daylight harvesting and PIR compatible sensor. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple $< 5\%$ , comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.	Nos.	319	7,108.00	22,67,452.00
J	SITC of dimmable recessed LED downlighter with $78 \pm 6$ mm cut out, made of pressure die cast aluminum housing including flange with high efficiency lens on LED. The downlighter can also be supplied with PC/PMMA diffuser depending upon the suitability. Fixture should have minimum efficacy at System level	Nos.	819	2,822.00	23,11,218.00

		(Not Chip Level) $\geq 70$ lumens/watt and a minimum system lumen output of 770 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700/6500K (SDCM $\leq 4$ ), CRI $\geq 90$ , PF $\geq 0.90$ , THD $\leq 10\%$ , R9 $\geq 20$ , 50°-60 deg beam angle, IP20, UGR $\leq 19$ , IK $\geq 04$ , Operating working temp range - 0°C $< T_a < 45^\circ\text{C}$ and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple $\leq 5\%$ , comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.				
K		SITC of surface/suspended high efficiency LED channel, 60 mm width (cut out), 1200 mm length with Zig bee/ Bluetooth enabled dimmable control gear, made of extrusion/anodised aluminium with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) $\geq 100$ lumens/watt and a minimum system lumen output of 2200 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700/6500K (SDCM $\leq 4$ ), CRI $\geq 80$ , PF $\geq 0.90$ , THD $\leq 10\%$ , R9 $\geq 20$ , IP20, UGR $\leq 19$ , IK $\geq 04$ , Operating working temp range - 0°C $< T_a < 45^\circ\text{C}$ and an operating Voltage Range	Nos.	119	8,990.00	10,69,810.00

		of 140 - 270V. Internal Surge Protection 2.5KV. The luminaire shall be integrated with daylight harvesting and PIR compatible sensor. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple <5%, comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.				
L		SITC of Mirrior mounted 2 Ft LED Batten, fixture to be made of extrusion/anodised aluminium housing with high efficiency polycarbonate diffuser, LED Used shall be SMD type and fixture should have minimum efficacy at System level $\geq 100$ lumens/watt with Minimum system Lumens 1000, Life of fixture: 25000 burning Hrs. @ L70 Lumen maintenance, CCT of 5700/6500K (SDCM $\leq 3$ ), CRI >80, PF >0.90, Operating working temp range - 0°C < Ta < 45°C & Voltage Range of 140 - 270 VAC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.	Nos.	211	418.00	88,198.00

M	<p>SITC of deep recessed LED downlighter, made of pressure die cast aluminum housing including flange with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) <math>\geq 100</math> lumens/watt and a minimum system lumen output of 2000 lumens with beam angle of 36/40 Deg. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5000/5700K (SDCM<math>\leq 4</math>), CRI <math>\geq 80</math>, PF <math>\geq 0.90</math>, THD<math>\leq 10\%</math>, R9<math>\geq 20</math>, IP20, UGR<math>\leq 19</math>, IK<math>\geq 04</math>, Operating working temp range - <math>0^{\circ}\text{C} &lt; T_a &lt; 45^{\circ}\text{C}</math> and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple <math>\leq 5\%</math>, comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.</p>	Nos.	29	3,188.00	92,452.00
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N		SITC of recess mounted energy efficient LED channel, width 60 mm (cut out), 1200 mm length with Zig bee/ Bluetooth enabled dimmable control gear, made of extruded/anodised aluminium with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) $\geq 100$ lumens/watt and a minimum system lumen output of 2200 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700/6500K (SDCM $\leq 4$ ), CRI $\geq 80$ , PF $\geq 0.90$ , THD $\leq 10\%$ , R9 $\geq 20$ , IP20, UGR $\leq 19$ , IK $\geq 04$ , Operating working temp range - $0^{\circ}\text{C} < T_a < 45^{\circ}\text{C}$ and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. The luminaire shall be integrated with daylight harvesting and PIR compatible sensor. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple $\leq 5\%$ , comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.	Nos.	217	10,506.00	22,79,802.00
O		SITC of recess mounted energy efficient LED downlighter with Zig bee/ Bluetooth enabled dimmable control gear, made of pressure die cast aluminium housing including flange with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have	Nos.	112	5,749.00	6,43,888.00

		<p>minimum efficacy at System level (Not Chip Level) <math>\geq 100</math> lumens/watt and a minimum system lumen output of 2000 lumens with beam angle of 36/40 Deg. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 5700/6500K (SDCM<math>\leq 4</math>), CRI <math>&gt; 80</math>, PF <math>&gt; 0.90</math>, THD<math>\leq 10\%</math>, R9<math>&gt; 20</math>, IP20, UGR<math>\leq 19</math>, IK<math>\geq 04</math>, Operating working temp range - <math>0^{\circ}\text{C} &lt; T_a &lt; 45^{\circ}\text{C}</math> and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.5KV. The luminaire shall be integrated with daylight harvesting and PIR compatible sensor. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple <math>\leq 5\%</math>, comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.</p>				
P		<p>SITC of recess mounted energy efficient LED downlighter with Zig bee/ Bluetooth enabled tuneable &amp; dimmable control gear, made of pressure die cast aluminium housing including flange with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) <math>\geq 75</math> lumens/watt and a minimum system lumen output of 900 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 3000-6500K (SDCM<math>\leq 4</math>), CRI <math>&gt; 80</math>, PF <math>&gt; 0.90</math>, THD<math>\leq 10\%</math>, R9<math>&gt; 20</math>, IP20,</p>	Nos.	38	4,495.00	1,70,810.00

		UGR<19, IK>=04, Operating working temp range - 0°C < Ta < 45°C and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.0KV. The luminaire shall be integrated with daylight harvesting and PIR compatible sensor. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple <5%, comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.				
Q		SITC of surface mounted/suspended energy efficient LED round luminaire with Zig bee/ Bluetooth enabled tuneable & dimmable control gear, made of extruded/anodised aluminium with high efficiency PC/PMMA diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) >=75 lumens/watt and a minimum system lumen output of 2200 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 3000-6500K (SDCM<4), CRI >80, PF >0.90, THD<10%, R9>20, IP20, UGR<19, IK>=04, Operating working temp range - 0°C < Ta < 45°C and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.0KV. The luminaire shall be integrated with daylight harvesting and PIR compatible sensor. The fixture design should comply with EMC / EMI compliance	Nos.	40	20,959.00	8,38,360.00

		with flicker free operations ripple <5%, comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.				
R		SITC of recessed energy efficient LED with Zig bee/ Bluetooth enabled dimmable control gear, made of powder coated aluminium with high efficiency satin diffuser for homogeneous light distribution. Fixture should have minimum efficacy at System level (Not Chip Level) $\geq 100$ lumens/watt and a minimum system lumen output of 3000 lumens. Luminaire should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 3000-6500K, CRI $>80$ , PF $>0.90$ , THD $<10\%$ , R9 $>20$ , IP40, UGR $<19$ , IK $\geq 04$ , Operating working temp range - $0^{\circ}\text{C} < T_a < 45^{\circ}\text{C}$ and an operating Voltage Range of 140 - 270V. Internal Surge Protection 2.0KV. The luminaire shall be integrated with daylight harvesting and PIR compatible sensor. The fixture design should comply with EMC / EMI compliance with flicker free operations ripple <5%, comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. The internal wiring to be done with LSZH wires. Manufacturer shall have inhouse lab	Nos.	650	4,809.00	31,25,850.00

		approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval. L=800-1000 mm, B=60-65 mm, H=60-65 mm, B(ET)=50-55 mm				
S		SITC of LED strip light with high efficiency diffused cover for homogeneous light distribution with thermal tape of thermal convection factor. Strip should have minimum efficacy at System level (Not Chip Level) $\geq 100$ lumens/watt and a minimum system lumen output of $\geq 12$ Watt per meter. Strip should have 70% of luminous flux after 50,000 operating hours (L70), CCT of 3000-6500K, PF $> 0.90$ , IP20. Operating working temp range - $0^{\circ}\text{C} < T_a < 45^{\circ}\text{C}$ and an operating Voltage Range of 140 - 270V. Internal Surge Protection 4.0KV and aluminium profile. The fixture design should comply with EMC / EMI compliance, comply to IEC61000-3-2 ed.3.2, 2009 for Harmonics, IEC61347 -2 -13, 2006 in Conjunction with IEC61347-1 ed.2.0, 2007 for Electrical Safety, IEC62384 ed.1.1, 2011 for performance and IEC61547 ed.2.0, 2009, CISPR-15 for EMI/EMC. Manufacturer shall have inhouse lab approved by NABL or Ministry of Science, Govt of India or reports to be verified at NABL approved labs for parameters by firm. LM79 and LM80 reports need to be submitted from a NABL/UL accredited lab to verify above parameters. Both the fixture and Driver should have BIS approval.	RM	290	1,359.00	3,94,110.00
		<b>TOTAL OF LIGHT FIXTURES</b>				<b>2,31,54,910.00</b>
<b>1.2</b>		<b>LIGHTING CONTROL</b>				
	a	Various types of lighting fixtures are provided in the various buildings/floors/rooms.				

	b	Some luminaires are Tuneable and Dimmable, some are only Dimmable and rest are plain luminaires.				
	c	Luminaires with control feature shall provide day light harvesting as well as occupancy sensor. Normal luminaires shall provide occupancy sensor facility, if required depending upon the location of luminaires.				
	d	Sensor may be integrated with luminaire or can be external for group of luminaires. If power supply required for the external sensors, it is covered under this item.				
	e	LMS shall be from the OEM of Luminaires and no third party application is allowed. Some components like network devices, cables etc can from other agency.				
	f	Control of the luminaires are desired to be on wireless architecture with communication to LMS as well as BMS.				
	g	Network devices employed as per requirement need to be wired with luminaires and power supply for these devices to be arranged by the Contractor.				
	h	Detailed specification and architecture shall be submitted prior to commence the work of lighting.				
	i	Lighting Management Software (LMS) to be installed to integrate all luminaires employed in buildings. LMS must provide standard data, control and management of luminaires. LMS shall be suitable to provide seamless integration with BMS. LMS shall be preferably stand alone type system installed on multiple PCs, but cloud hosted system can also be employed with free hosting for 5 years.				
	j	Lighting control shall be able to provide seamless integration with BMS and provide all relevant data, control and management facility to BMS for integration.				
	k	The cost of the lighting control hardware and LMS software shall not vary due to change in quantity of luminaires.				

A		SITC and Training of Lighting Control hardware along with Lighting Management System (LMS) software. The system shall work on wireless technology (Bluetooth/Zigbee/Wi-fi). The LMS software shall be installed in a server grade PC/cloud (with 5 years hosting) and must provide full functionality like control, scheduling, reporting, usage charting, energy measurement and other required functionality. The system shall be able to accomplish the switching, day light harvesting as well as occupancy & vacancy based control. The LMS shall provide seamless integration of the system with BMS. The system shall be able to control variety of luminaires as per description below. The system shall meet the requirements as per technical specification and include following control and network devices to accomplish the task.	Lot	1	97,51,770.00	97,51,770.00
		Day light harvesting controller with manual remote over-riding, Dimmable feature and Wireless Tuneable Controllers for dimming and changing the CCT of the luminaires for about 200 luminaires				
		Only Day light harvesting controller with manual remote over-riding, Dimmable feature for dimming of the luminaires for about 2000 luminaires				
		Day light harvesting controller with manual remote over-riding, Dimmable feature and PIR sensor for motion detection for about 1800 luminaires				
		Remaining Luminaires to be controlled for switching On & Off only in Group or Individual manner.				
		Network devices like Bridges, Gateways, Switches etc to integrate the luminaires with the LMS server				
		Inter wiring of the Bridges/Gateways/any other devices within a building				
B		SITC of Wireless switch for room and scene control. The switch shall be able to on/off, dim and tune the luminaires. It shall have LCD display	Nos.	25	9,108.00	2,27,700.00

		to display light status and temperature & Humidity. Separate control shall be available for tuning and dimming. The switch shall have minimum 4 programmable presets for scene control. The switch may be wall/table mounted type.				
C		SITC of Wireless remote to control the luminaires with on/off and dim up/down buttons	Nos.	150	4,554.00	6,83,100.00
		<b>TOTAL OF LIGHTING CONTROL</b>				<b>1,06,62,570.00</b>
<b>1.3</b>		<b>EXHAUST FANS</b>				
a	NS	Supply and Fixing of 750 mm sweep air circulator fan, oscillatory type, 3 speed control, heavy duty type as required.	Nos.	6	12,901.00	77,406.00
		Supply and fixing of 400 mm sweep wall bracket fan, oscillator type, 3 speed control heavy duty type	Nos.	46	2,611.00	1,20,106.00
b	NS	Supply and Fixing of heavy duty type exhaust fans of following size sweep with gravity louvers shutters including all accessories/installation materials required make				
		381 mm sweep 1400 rpm	Nos.	4	4,118.00	16,472.00
i		305 mm sweep 900 rpm	Nos.	20	3,433.00	68,660.00
ii		230mm sweep 900 rpm	Nos.	20	1,927.00	38,540.00
		<b>TOTAL OF EXHAUST FANS</b>				<b>3,21,184.00</b>
		<b>TOTAL OF SUPPLY OF FANS &amp; LIGHT FIXTURES WITH CONTROL</b>				<b>3,41,38,664.00</b>
<b>2.0</b>		<b>FAÇADE LIGHTING</b>				
2.1	NS	SITC of surface 10W LED Planter Luminaire, made of pressure die cast aluminium alloy housing with corrosion resistant powder coating, PMMA secondary lens with beam angle options in 10 deg, 30 deg & 40 deg, high efficiency encapsulated integrated driver with safety protections, capable of operating at line voltage without any separate power supply from 140 to 270 V. CRI ≥ 70, CCT - 5700K/3000K, PF>0.90, IP 65, Life of LED @ L70 - 50,000	Nos.	40	7918	3,16,720.00

		hrs, 3 kV internal surge protection including 10 kV external SPD. Luminaire shall be conforming to BIS and shall be complete with all necessary accessories required for proper working of fixture including weather proof connection cables, water proof connectors etc. as required.				
2.2	NS	SITC of ground recessed 20W LED Luminaire, 270 mm dia, made of pressure die cast aluminium alloy housing with corrosion resistant powder coating, toughened glass with stainless steel front cover with beam angle options in 15 deg & 30 deg asymmetric. Luminaire shall be complete with high efficiency encapsulated isolated driver with safety protections, which should be maintainable from the base and capable of operating at line voltage without any separate power supply from 140 to 270 VAC,50Hz. CRI $\geq$ 70, CCT - 5700K/3000K, PF>0.90, IP 66, Life of LED @ L70 - 50,000 hrs, 3 kV internal surge protection including 10 kV external SPD. Luminaire shall be conforming to BIS and shall be complete with all necessary accessories required for proper working of fixture including weather proof connection cables, water proof connectors etc. as required.	Nos.	40	20493	8,19,720.00
2.3	NS	SITC of landscape application 10W LED Luminaire (Bollards), made of pressure die cast aluminium alloy and extruded aluminium base with corrosion resistant powder coating, 600 mm, square top of 100 mm X 100 mm, UV stabilized PC/PMMA diffuser, high efficiency encapsulated integrated driver with safety protections, capable of operating at line voltage without any separate power supply from 100 to 270 VAC,50Hz. CRI $\geq$ 70, CCT - 5700K/3000K, PF>0.90, IP 66, Life of LED @ L70 - 50,000 hrs, 3 kV internal surge protection including 10 kV external SPD. Luminaire shall be	Nos.	75	7918	5,93,850.00

		conforming to BIS and shall be complete with all necessary accessories required for proper working of fixture including weather proof connection cables, waterproof connectors etc. as required.				
2.4	NS	SITC of 3072 Channel Stand alone DMX Controller. (Incl. 6 V Power supply unit), Powerful StandAlone Engine. Upto 2000 Scenes in 20 Zones, Compact DIN Rail mount enclosure, Astronomical Clock Triggers, for Sunset/Sunrise, Time based ON/OFF, Scene/Color change, Dimming etc. I/O ports for 3rd party triggering like sensors, UDP, Serial Ports, dedicated RS232 Input port, Audio inputs etc. On-Board buttons to change scenes. DMX Controller shall be capable of interfacing with standard BMS systems via UDP, RS232, SERIAL COM PORTS etc. Controller shall be capable of receiving triggers for scene changes from BMS systems.	Nos.	1	349313	3,49,313.00
2.5	NS	SITC of 6 Output compact DIN Rail Mount DMX Splitter, Fully isolated Outputs to Split/Boost DMX Input. Terminal Block Connectors for easy solderless termination, Incl. External Power supply with built-in protection for Short circuit / Overload / Over voltage / Over temperature. UL508 & EN50082-2 certified	Nos.	7	69863	4,89,041.00
2.6	NS	Supply, laying, testing and commissioning of Power Cable, 3 core, 2.5 sq. mm Cu flexible	RM	1000	70	70,000.00
2.7	NS	DMX Cable, 120 Ohm Impedence, Single Pair Shielded copper cable, Worldwide Standard for DMX applications, 2 core 0.75 sq mm Wire	RM	1000	145	1,45,000.00
2.8	NS	Supply, Installation, Testing and commissioning of 20mm PVC conduit.	RM	1500	48	72,000.00
		<b>TOTAL OF FAÇADE LIGHTING</b>				<b>28,55,644.00</b>
<b>3.0</b>		<b>MAINTENANCE FREE EARTHING</b>				

3.1	NS	Supply, Installation, Testing & Commissioning of Maintenance free Conductive Concrete Earthing electrode - having copper bonded MS rod of Dia 17.2 mm x 3000 mm length x 80 mm Dia. of Earth Enhancing Material, including Boring & filling and Supply of 10" HDPE earth chamber with Heavy Duty cover (One chamber per electrode)	Nos.	39	13584	5,29,776.00
3.2		Supply, Installation, Testing & Commissioning of Advance Maintenance Free electrolytic grade Copper Electrode Earthing based on pipe in pipe technology consisting with outer dia 80mm dia 2mm thick and 3 meter length & inner dia 40mm of 3mts long & filled with Crystalline Conductive Mixture (CCM) having anti corrosive and conductive property and exothermically welded Cu Busbar of 65X10X200mm. Along with earth enhancement compound tested by RoHs complying IEC 62561-7 in a sealed bag of minimum 50 kg (25 kg Bag x 2) resistivity is less than 0.12 ohm meter. The earthing shall be with Suitable Poly-plastic Pit and heavy duty Cover.	Nos.	2	25794	51,588.00
3.3		Supply, Installation, Testing & Commissioning of Advance Maintenance Free Hot dip Galvanized 80-100 MICRON GI Electrode Earthing based on pipe in pipe technology consisting with outer dia 80 mm dia 2 mm thick and 3 meter length & inner dia 40mm of 3 mts long & filled with Crystalline Conductive Mixture (CCM) having anti corrosive and conductive property with & exothermically welded GI Busbar of 75X10X200mm. Along with earth enhancement compound tested by RoHs complying IEC 62561-7 in a sealed bag of minimum 50 kg (25 kg Bag x 2) resistivity is less than 0.12 ohm meter. The earthing shall be with Suitable heavy duty Poly-plastic Pit Cover.	Nos.	4	10647	42,588.00
		<b>TOTAL OF MAINTENANCE FREE EARTHING</b>				<b>6,23,952.00</b>

<b>4.0</b>		<b>SUB-HEAD : DISTRIBUTION BOARD</b>				
4.1		Supplying and fixing following way prewired triple pole and neutral, sheet steel for 415 volts on surface/recess complete with loose wire box, terminal connector for all incoming and outgoing circuits, duly prewired with suitable size FRLS PVC insulated multi strand copper conductor upto terminal blocks, tinned copper busbar, neutral link, earth bar, din bar, detachable gland plate, interconnections, powder painted including earthing etc. as required. (But without MCB / RCCB / Isolator)				
a	NS	12 way (4 + 36), Double door	Each	37	7,519.00	2,78,203.00
4.2	NS	Supplying and fixing of following ways surface/ recess mounting, vertical type, 415 V, TPN MCB distribution board of sheet steel, dust protected, duly powder painted, inclusive of 200 A tinned copper bus bar, common neutral link, earth bar din bar for mounting MCBs & incomer MCCB (but without MCBs and Incomer ) as required . (Note : Vertical type MCB TPDB is normally used where 3 phase outlets are required.)				
a		12 way (4 + 36), Double door	Each	3	33,355.00	1,00,065.00
b		6 way (4 + 18), Double door	Each	4	23,760.00	95,040.00
c		8 way (4 + 24), Double door	Each	5	24,838.00	1,24,190.00
4.3	NS	Supplying and fixing following rating, four / two pole, 415 / 240 volts, Residual Current Device (RCBO) having earth leakage, over load and short circuit protection at the incomer of existing Distribution Boards or in separate enclosure, having a sensitivity current of 30/100 mA complete with connections, testing and commissioning etc. as required :				
a		25 Amp DP RCBO (30 mA)	Each	4	2,905.00	11,620.00
b		40/32 Amp DP RCBO (30 mA)	Each	50	4,201.00	2,10,050.00
c		40 Amp 4P RCBO (30 mA)	Each	49	4,288.00	2,10,112.00
d		63 Amp 4P RCBO (30 mA)	Each	62	5,076.00	3,14,712.00

4.4	NS	Providing and fixing following rating and breaking capacity and pole MCCB with thermomagnetic release and terminal spreaders in existing cubicle panel board including drilling holes in cubicle panel, making connections, etc. as required.				
a		125 A, 25 KA,TPN MCCB	Each	8	9,032.00	72,256.00
b		160 A, 25 KA,TPN MCCB	Each	18	11,603.00	2,08,854.00
4.5	NS	Supply, fixing, connecting, testing and commissioning of following rating, ISI marked (IS:8828) 240/415V, 10 kA MCB of single/double/triple/four poles in the existing MCB DB or in existing MS enclosure complete in all respects.				
		32A, 3P MCB	Each	33	1,635.00	53,955.00
		40A, 3P MCB	Each	33	1,635.00	53,955.00
		50/63A, 3P MCB	Each	25	1,731.00	43,275.00
		<b>TOTAL OF DISTRIBUTION BOARD</b>				<b>17,76,287.00</b>
<b>5.0</b>		<b>SUB-HEAD : L.T CABLES</b>				
5.1	NS	Supplying of following 1100 volt grade XLPE insulated PVC sheathed aluminium conductor armoured cables as per specification as required.				
a		4 core 120 sq. mm	RM	199	549.00	1,09,251.00
b		4 core 95 sq. mm	RM	307	437.00	1,34,159.00
c		4 core 70 sq. mm.	RM	395	355.00	1,40,225.00
d		4 core 50 sq. mm.	RM	55	269.00	14,795.00
e		4 core 25 sq. mm.	RM	187	166.00	31,042.00
f		4 core 16 sq. mm.	RM	2638	121.00	3,19,198.00
g		4 core 10 sq. mm.	RM	1150	107.00	1,23,050.00
h		4 core 6 sq. mm.	RM	331	85.00	28,135.00
i		2 core 6 sq. mm.	RM	75	69.00	5,175.00
5.2		Supplying and making end termination of following sizes with brass double compression gland including providing and crimping solderless plugs/ferrules of sizes XLPE insulated PVC sheathed aluminum conductor armoured cable 1.1 KV grade.				
a		4 X 120 sq. mm (45mm)	Set	6	883.00	5,298.00
b	NS	4 X 95 sq. mm (45mm)	Set	18	868.00	15,624.00
c	NS	4 X 70 sq. mm (38mm)	Set	28	592.00	16,576.00

5.3	NS	Supplying of following 1100 volt grade XLPE insulated PVC sheathed Cu. conductor armoured cables as per specification as required.				
a		3 core 2.5sq. mm Cu. Armoured Cable	RM	2000	123.00	2,46,000.00
b		4 core 6sq. Mm Cu. Armoured Cable	RM	500	288.00	1,44,000.00
5.4		Supplying and making end termination of following sizes with brass double compression gland including providing and crimping solderless plugs/ferrules of sizes PVC insulated PVC sheathed coupper conductor armoured cable 1.1 KV grade.				
a	NS	3 core 2.5sq. mm Cu. Armoured Cable	Set	474	466.00	2,20,884.00
b	NS	4 core 6sq. mm Cu. Armoured Cable	Set	24	537.00	12,888.00
		<b>TOTAL OF L.T CABLES</b>				<b>15,66,300.00</b>
<b>6.0</b>		<b>SUB-HEAD : RACEWAYS</b>				
6.1	NS	Supply and fixing of following size of under floor <b>GI raceways</b> for distributing cabling in screed floor installations. Raceway should be made up of Pre galvanized sheet with minimum thickness of 1.5 mm consist of body and cover. It should have average of 275GSM zinc coating. Raceway should be supplied with required accessories such as fixing brackets and coupling plates as required. Raceway should be confirmed with the standard EN 50085-2-2 including all accessories complete as required.				
a		50 mm wide x 38 mm deep raceway (1 compartment)	Meter	50	640.00	32,000.00
b		100 mm wide x 38 mm deep raceway (1 compartment)	Meter	600	989.00	5,93,400.00
c		150 mm wide x 38 mm deep raceway (1 compartment)	Meter	800	1,298.00	10,38,400.00
d		225 mm wide x 38 mm deep raceway (3 compartment)	Meter	1100	1,930.00	21,23,000.00
e		300 mm wide x 38 mm deep raceway (3 compartment)	Meter	1500	2,350.00	35,25,000.00
6.2	NS	Supply and fixing of following size of Height <b>adjustable under floor /crossover Junction box</b> with flyover for Raceways for direct access to cables at the intersection of				

		Raceways supplied completely with base and cover plate(lid). Junction box should be made of Pre galvanized sheet consist of body and cover. Height of the junction box should be adjustable from minimum 65mm. Junction box should be supplied with the metal cover for protecting the junction box during constructions at site. It should be confirmed with the standard EN 50085-2-2s including all accessories complete as required:				
a		150 x 150 x 65 mm-90mm	Each	40	1,675.00	67,000.00
b		225 x 225 x 65 mm -90mm	Each	26	2,291.00	59,566.00
c		300 x 300 x 65 mm-90mm	Each	95	3,052.00	2,89,940.00
d		400 x 400 x 65 mm-90mm	Each	120	4,577.00	5,49,240.00
6.3	NS	Supply and fixing of following size of <b>under floor Vertical access unit ( riser)</b> for Raceways from floor tracks to wall for connection of floor raceways to Distribution boards/ for vertical raceways. Riser box should be made of Pre galvanized sheet consist of body and cover. Riser box should be supplied with the metal cover for protecting the junction box during constructions at site. It should be confirmed with the standard EN 50085-2-2s including all accessories complete as required:				
a		225 x 200 x 60 mm	Each	21	1,509.00	31,689.00
b		300 x 200 x 60 mm	Each	18	1,737.00	31,266.00
		<b>TOTAL OF RACEWAYS</b>				<b>83,40,501.00</b>
<b>7.0</b>		<b>SUB HEAD : MAIN L.T. PANEL</b>				
7.1	NS	<b>UPS PANEL (COPORATE TOWER)</b>				
		Design, manufacturing, supplying installation, testing and commissioning of the following front operated modular compartmentalised construction cubicle type, 4b form separation, front access, dead back, 2mm thick steel enclosed free standing, dust and vermin proof, switchboard with IP54 protection with hinged and lockable doors duly powder coated complete with incoming & outgoing MCCB's, Copper Busbars, interconnections, tinned copper crimping lugs, bonding				

		to earth, suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system, and suitable for a fault level of 25 MVA (35 KA) symmetrical at 415 volts as per IEC 60439-2.				
		2 Nos. 400 Amp, 35KA, 4P with MCCB complete with microprocessor based release having overcurrent, short circuit & earth fault protection with 500A 4Pole power contactor				
		1 set cast resin current transformer of 250/5 ratio class 1.0 for metering, 15 VA Burden.				
		1 set of three R Y B indicating lamps.				
		Red / green / amber ON / OFF / Trip indicating lamps. -1set				
		Digital Multi Function Meter, 3 Ph, 4W, Class 1 with RS485 port				
		Digital Voltmeter & Ammeter				
		<b>BUSBAR</b>				
		Electrolytic high conductivity <b>Copper three phase and neutral bus bars</b> rated at 500 Amp throughout having a maximum current density of <b>1.6 amp per sq. mm</b> suitable to withstand symmetrical fault level of 25 MVA at 415 volts. The neutral busbar is to be of 50% capacity.				
		<b>OUTGOING</b>				
		1 No. 32Amp, 25KA, DP MCCB complete with thermal magnetic release having overcurrent, short circuit protection				
		10 Nos. 160 Amp, 25KA, 4P MCCB complete with thermal magnetic release having overcurrent, short circuit protection	Set	2	726070.00	14,52,140.00
7.2	NS	<b>COMMON AREA PANEL (COPORATE TOWER)</b>				
		Design, manufacturing, supplying installation, testing and commissioning of the following front operated modular compartmentalised construction cubicle type, 4b form separation, front access, dead back, 2mm thick steel enclosed free standing, dust and vermin proof, switchboard with IP54 protection with hinged and lockable doors duly				

		powder coated complete with incoming & outgoing MCCB's, Copper Busbars, interconnections, tinned copper crimping lugs, bonding to earth, suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system, and suitable for a fault level of 25 MVA (35 KA) symmetrical at 415 volts as per IEC 60439-2.				
		1 Nos.250 Amp 25 KA, 4P MCCB complete with thermal magnetic release having over current, short circuit protection with. Incomer shall be complete with following.				
		Digital Multi Function Meter, 3 Ph, 4W, Class 1 with RS485 port				
		3 Nos. Cast resin current transformers of 250/5 ratio Class 1.0, 15 VA for metering.				
		Three phase indicating lamps (LED type) with control MCB.				
		Digital Voltmeter & Ammeter				
		<b>BUSBAR</b>				
		Electrolytic high conductivity Copper <b>three phase and neutral bus bars</b> rated at 250 Amp having a maximum current density of <b>1.6 amp per sq.mm</b> suitable to withstand symmetrical fault level of 25 MVA at 415 volts. The neutral Busbar is to be of 50% capacity.				
		<b>OUTGOING UNITS</b>				
		1 No.160 Amp, 25 KA, TPN MCCB complete with Thermal-magnetic release having overcurrent, short circuit protection.				
		6 Nos.100/40/63 Amp, 25 KA, TPN MCCB complete with Thermal-magnetic release having overcurrent, short circuit protection.				
		The Lift panel shall be complete with all interconnections, risers, internal wiring, labels etc. complete as required.	Set	1	117973.00	1,17,973.00
7.3	NS	<b>Lift Panel 2 -COPORATE TOWER</b>				
		Design, manufacturing, supplying installation, testing and commissioning of the following front operated modular compartmentalised construction cubicle type, 4b form				

		separation, front access, dead back, 2mm thick steel enclosed free standing, dust and vermin proof, switchboard with IP54 protection with hinged and lockable doors duly powder coated complete with incoming & outgoing MCCB's, Copper Busbars, interconnections, tinned copper crimping lugs, bonding to earth, suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system, and suitable for a fault level of 25 MVA (35 KA) symmetrical at 415 volts as per IEC 60439-2.				
		1 No.160 Amp, 25 KA, 4P MCCB complete with thermal magnetic release having over current, short circuit protection. Incomer shall be complete with following.				
		Digital Multi Function Meter, 3 Ph, 4W, Class 1 with RS485 port				
		3 Nos. Cast resin current transformers of 160/5 ratio Class 1.0, 15 VA for metering.				
		Three phase indicating lamps (LED type) with control MCB.				
		Digital Voltmeter & Ammeter				
		<b>BUSBAR</b>				
		Electrolytic high conductivity Copper <b>three phase and neutral bus bars</b> rated at 160 Amp having a maximum current density of <b>1.6 amp per sq.mm</b> suitable to withstand symmetrical fault level of 25 MVA at 415 volts. The neutral Busbar is to be of 50% capacity.				
		<b>OUTGOING UNITS</b>				
		6 Nos. 100/40/63 Amp, 25 KA, TPN MCCB complete with Thermal-magnetic release having overcurrent, short circuit protection.				
		1 Nos. 40 Amp, 10 KA, TPN MCB complete having controlled of 27 nos 6-20 amps SP MCB				
		The Lift panel shall be complete with all interconnections, risers, internal wiring, labels etc. complete as required.	Set	1	109883.00	1,09,883.00
7.4	NS	<b>Lift Panel 1 -COPORATE TOWER</b>				

		Design, manufacturing, supplying installation, testing and commissioning of the following front operated modular compartmentalised construction cubicle type, 4b form separation, front access, dead back, 2mm thick steel enclosed free standing, dust and vermin proof, switchboard with IP54 protection with hinged and lockable doors duly powder coated complete with incoming & outgoing MCCB's, Copper Busbars, interconnections, tinned copper crimping lugs, bonding to earth, suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system, and suitable for a fault level of 25 MVA (35 KA) symmetrical at 415 volts as per IEC 60439-2.				
		1 Nos.100/40 Amp 25 KA 4P MCCB complete with thermal magnetic release having over current, short circuit protection. Incomer shall be complete with following.				
		Digital Multi Function Meter, 3 Ph, 4W, Class 1 with RS485 port				
		3 Nos. Cast resin current transformers of 160/5 ratio Class 1.0, 15 VA for metering.				
		Three phase indicating lamps (LED type) with control MCB.				
		Digital Voltmeter & Ammeter				
		<b>BUSBAR</b>				
		Electrolytic high conductivity Copper <b>three phase and neutral bus bars</b> rated at 100 Amp having a maximum current density of <b>1.25 amp per sq.mm</b> suitable to withstand symmetrical fault level of 25 MVA at 415 volts. The neutral busbar is to be of 50% capacity.				
		<b>OUTGOING UNITS</b>				
		2 Nos 40 Amp, 25 KA, TPN MCCB complete with Thermal-magnetic release having overcurrent, short circuit protection				
		1 Nos. 32 Amp, 10 KA, TPN MCB complete having controlled of 12 nos 6-20 amps SP MCB				
		The Lift panel shall be complete with all interconnections, risers, internal	Set	2	67258.00	1,34,516.00

		wiring, labels etc. complete as required.				
7.5	NS	<b>PRESSURIZATION PANEL AT TERRACE COPORATE TOWER</b>				
		Design, manufacturing, supplying installation, testing and commissioning of the following front operated modular compartmentalised construction cubicle type, 4b form separation, front access, dead back, 2mm thick steel enclosed free standing, dust and vermin proof, switchboard with IP54 protection with hinged and lockable doors duly powder coated complete with incoming & outgoing MCCB's, Copper Busbars, interconnections, tinned copper crimping lugs, bonding to earth, suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system, and suitable for a fault level of 25 MVA (35 KA) symmetrical at 415 volts as per IEC 60439-2.				
		1 No. 200 Amp 25 KA, 4P, MCCB complete with thermal magnetic release having over current, short circuit protection. Incomer shall be complete with following.				
		Digital Multi Function Meter, 3 Ph, 4W, Class 1 with RS485 port				
		3 Nos. Cast resin current transformers of 200/5 ratio Class 1.0, 15 VA for metering.				
		Three phase indicating lamps (LED type) with control MCB.				
		Digital Voltmeter & Ammeter				
		<b>BUSBAR</b>				
		Electrolytic high conductivity Copper <b>three phase and neutral bus bars rated</b> at 200 Amp having a maximum current density of <b>1.6 amp per sq.mm</b> suitable to withstand symmetrical fault level of 25 MVA at 415 volts. The neutral Busbar is to be of 50% capacity.				
		<b>OUTGOING UNITS</b>				
		9 Nos. 100/63/32/20 Amp, 25 KA, TPN MCCB complete with Thermal-magnetic release having overcurrent, short circuit protection.				

		The panel shall be complete with all interconnections, risers, internal wiring, labels etc. complete as required.	Set	1	153836.00	1,53,836.00
7.6		Design, manufacturing, supplying installation, testing and commissioning of the following front operated modular compartmentalised construction cubicle type, 4b form separation, front access, dead back, 2mm thick steel enclosed free standing, dust and vermin proof, switchboard with IP54 protection with hinged and lockable doors duly powder coated complete with incoming & outgoing MCCB's, Copper Busbars, interconnections, tinned copper crimping lugs, bonding to earth, suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system, and suitable for a fault level of 25 MVA (35 KA) symmetrical at 415 volts as per IEC 60439-2.				
		Floor panels (Ground, 1st, 2nd , 3rd , 4th , 5th , 6th , 7th , 8th Floor)				
		Normal supply incoming (1 no.) equipped with				
		1 No. 160 Amp, 35KA, 4P MCCB complete with Microprocessor based release having over current, short circuit and earth fault protection.				
		1-CT epoxy cast 600/5A, 15 VA, Class 1				
		Digital Multi Function Meter, 3 Ph, 4W, Class 1 with RS485 port				
		Digital Voltmeter & Ammeter				
		1 set of R/Y/B LED Indicating lamps with control MCB for Incomers				
		Terminal to receive 160Amp 1No.-x3.5x120 sqmm Al -XLPE-cable				
		BUSBAR-				
		Electrolytic high conductivity <b>Copper three phase and neutral bus bars</b> rated at 160 Amp throughout having a maximum current density of <b>1.6 amp per sq. mm</b> suitable to withstand symmetrical fault level of 25 MVA at 415 volts. The neutral bus bar is to be of 50% capacity.				
		OUTGOING UNITS				

		1 No. 125 Amp, 25KA, 4P MCCB complete with thermal magnetic release having over current, short circuit protection.				
		4 No. 63 Amp, 25KA, 4P MCCB complete with thermal magnetic release having over current, short circuit protection.				
		4 No. 40 Amp, 25KA, 4P MCCB complete with thermal magnetic release having over current, short circuit protection.	Set	9	185593.00	16,70,337.00
		The panel shall be complete with all interconnections, risers, internal wiring, labels etc. complete as required.				
7.7	NS	<b>TERRACE PUMP PANEL AT TERRACE COPORATE TOWER</b>				
		Design, manufacturing, supplying installation, testing and commissioning of the following front operated modular compartmentalised construction cubicle type, 4b form separation, front access, dead back, 2mm thick steel enclosed free standing, dust and vermin proof, switchboard with IP54 protection with hinged and lockable doors duly powder coated complete with incoming & outgoing MCCB's, Copper Busbars, interconnections, tinned copper crimping lugs, bonding to earth, suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system, and suitable for a fault level of 25 MVA (35 KA) symmetrical at 415 volts as per IEC 60439-2.				
		1 No. 100 Amp 25 KA, 4P, MCCB complete with thermal magnetic release having over current, short circuit protection. Incomer shall be complete with following.				
		Digital Multi Function Meter, 3 Ph, 4W, Class 1 with RS485 port				
		Digital Voltmeter & Ammeter				
		3 Nos. Cast resin current transformers of 200/5 ratio Class 1.0, 15 VA for metering.				
		Three phase indicating lamps (LED type) with control MCB.				
		<b>BUSBAR</b>				

		Electrolytic high conductivity Copper <b>three phase and neutral bus bars rated</b> at 100 Amp having a maximum current density of <b>1.6 amp per sq.mm</b> suitable to withstand symmetrical fault level of 25 MVA at 415 volts. The neutral Busbar is to be of 50% capacity.				
		<b>OUTGOING UNITS</b>				
		Must consist of MPCB, Star/Delta starter of suitable rating, selector switch for Auto/Manual, SPP complete with earthing of panels and motors.	Set	2	34500.00	69,000.00
		The panel shall be complete with all interconnections, risers, internal wiring, labels etc. complete as required.				
		<b>TOTAL OF MAIN L.T. PANEL</b>				<b>37,07,685.00</b>
<b>8.0</b>		<b>SANDWICH TYPE RISING MAIN</b>				
8.1	NS	SITC of following capacity Sandwich Type Rising Mains for use on 3 phase 4 wire 415 volts, 50Hz A.C. supply with metal clad enclosure having IP-54 rating after fixing the tap off boxes and all accessories, made of 1.6mm thick steel sheet duly powder coated in convenient sections complete with 4 Nos Coupper bus bars having current density of 130 A/ sq cm at nominal current rating, necessary joints, elbow joints & expansion joints and bends, fire barrier at Each floor, provision of tapping at every metre, adopter box and copper flexible for joints, continuous earthing with 2 Nos aluminium strip of suitable size (one on Each side) including, G.I. clamping brackets, suspenders, angle iron bracket, steel fasteners,necting to earthing system etc. as required				
		800 A Isc = 50kA	Rm	68	24125.00	16,40,500.00
8.2	NS	SITC of following capacity End Feed Unit as per IEC 61439 for the existing Sandwich Type bus trunking/ rising mains for use on 3 phase 4 wire 415				

		volts, 50Hz A.C. supply, made with 1.6mm thick steel sheet enclosure (IP54) duly powder coated with provision of MCCB/ACB (but without MCCB/ACB) complete with necessary joints including clamping brackets, angle iron bracket, steel fasteners, connecting to earthing system etc. as required				
		1000 A 50kA SC for 1 sec	Nos.	4	51419.00	2,05,676.00
8.3	NS	SITC of following capacity 4P Tapp Off Unit as per IEC 61439 for the existing Sandwich Type bus trunking/ rising mains for use on 3 phase 4 wire 415 volts, 50Hz A.C. supply, made with 1.6mm thick steel sheet enclosure (IP54) duly powder coated with provision of MCCB/ACB (but without MCCB/ACB) complete with necessary joints including clamping brackets, angle iron bracket, steel fasteners, connecting to earthing system etc. as required				
	NS	125-250A, 50kA for 1 Sec	Nos.	14	15610.00	2,18,540.00
8.4	NS	Plugin Hole	Nos.	64	2169.00	1,38,816.00
8.5	NS	Flange End	Nos.	4	18385.00	73,540.00
8.6	NS	Spring Hanger	Nos.	24	930.00	22,320.00
8.7	NS	End Cover	Nos.	4	592.00	2,368.00
		<b>TOTAL OF SANDWICH TYPE RISING MAIN</b>				<b>23,01,760.00</b>
<b>9.0</b>	<b>N.S.</b>	<b>LIFT FOR CORPORATE BUILDING</b>				
9.1		<b>SCHEDULE OF WORK FOR PASSENGER LIFTS</b>				
		Supplying, Installation, Testing and Commissioning of 20 passenger (1360 Kg), Gearless & Machine Room Less lifts for Office Building having contract speed of 1.5-1.75 Mps with compatibility for seamless integration with BMS as per enclosed technical specifications and details given as under:				
		<b>CIVIL REQUIREMENTS</b>				
		Shaft Walls- Concrete				
		Clear Inside Shaft (available) - 2550 mm Width x 2450 mm Depth				
		Pit Depth - 1600 mm				

		Minimum Floor to floor height (required) - 2600 mm				
		Travel Height - 36.5 m				
		Headroom Height - 4700 mm				
		Lockable storage room (required) - 250 Sq. feet				
		Stilt area under roof (required) - 200 Sq. feet				
		<b>ELEVATOR SPECIFICATIONS</b>				
		Power Supply: TN-S (3L+PE+N)				
		Number of Persons: 20				
		Rated Load: 1360 kg				
		Number of Stops & Openings: 9 Stops & 9 Openings				
		Number of Access sides: 1 on all floors				
		Drive System: Alternating Current Variable Voltage Variable Frequency (ACVVVF)				
		Type of controller: Triplex Collective Selective Control				
		Speed of travel: 1.5 - 1.75 m/s				
		Light power supply voltage - 230 V				
		Power supply needed: 400/415 V				
		<b>CAR DESIGN</b>				
		Car Finish - Stainless Steel (Hairline)				
		Car Door Finish - Stainless Steel (Hairline)				
		Landing Door Finish - Stainless Steel (Hairline)				
		Mirror finish SS Handrail				
		Mirror on rear car panel				
		Granite/Marble Flooring				
		Car Operating Panel (COP): Full height, flush mounted				
		Landing Operating Panel (LOP): Individual LOP for Each elevator				
		Door Opening Direction - Center Opening 2 panels				
		Aluminium Sill				
		<b>STANDARD FEATURES</b>				
		Automatic Rescue Device (ARD) in case of power failure				
		Alarm button in COP				
		Automatic operation for car fan				
		Adjustable door opening time				
		Emergency Light				

		Full load by pass				
		Infra Red screen for car door				
		Intercom				
		Motor overheat protection				
		Attendant control				
		Fireman control				
		Fireman emergency return				
		Floor Annunciator				
		Visual and acoustic confirmation of call				
		Position indicator				
		Overload detection				
		Call acceptance (visual)	<b>Each</b>	3	28,06,780.00	84,20,340.00
<b>9.2</b>	<b>N.S.</b>	<b>SCHEDULE OF WORK FOR GOODS LIFT</b>				
		Supplying, Installation, Testing and Commissioning of Goods Lift (1500 Kg), Gearless & Machine Room Less/Machine Room lifts for Office Building having contract speed of 1.0 Mps with compatibility for seamless integration with BMS as per enclosed technical specifications and details given as under:				
		<b>Speed :</b> 1.0-1.5 MPS				
		<b>Floors :</b> Ground + 1st to 8th Floors+Terrace (10 Floors).				
		<b>Travel :</b> 40 Meters (approx.)				
		<b>Stops and Opening :</b> 10 Stops & 10 Opening				
		<b>Controller:</b> Gearless drive with VVVF(Variable Voltage Variable Frequency) Closed loop				
		Automatic Rescue Device complete with dry maintenance free batteries as required				
		<b>Operation:</b> Microprocessor based single automatic push button / duplex collective selective with / without attendant.				
		<b>Power -</b> 415 V, 3 Phase, 50 Hz, 4 wires system				
		Type of Doors				
		<b>Car:</b> Wall finish in Stainless Steel Moonrock finish with 6 mm Aluminium Composite Panel 0.8 thick stainless steel Cladding.				

		<b>Landing doors :</b> Landing door finish in Stainless Steel Moonrock with thickness: 1.2mm				
		SS hand rail not less than 600 mm long at 900 mm above floor level to be fixed adjacent to control panel in the lift car.				
		Voice announcement system in the car to announce the position of the elevator in the hoist way as the car passes or stops at a floor served by the elevator.	No.	1	28,94,492.00	28,94,492.00
9.3	NS	<b>LIFT FOR EMS OFFICE</b>				
		Supplying, Installation, Testing and Commissioning of 6 passenger (408 Kg), Gearless & Machine Room Less lifts for EMS Office Building having contract speed of 1.0-1.5 Mps with compatibility for seamless integration with BMS as per enclosed technical specifications and details given as under:				
		<b>CIVIL REQUIREMENTS</b>				
		Shaft Walls - Concrete				
		Clear Inside Shaft (available) - 1650 mm Width x 1575 mm Depth				
		Pit Depth - 1600 mm				
		Minimum Floor to floor height (required) - 2600 mm				
		Travel Height - 25 m (APPROX.)				
		Headroom Height - 4700 mm				
		Lockable storage room (required) - 250 Sq. feet				
		Stilt area under roof (required) - 200 Sq. feet				
		<b>ELEVATOR SPECIFICATIONS</b>				
		Power Supply: TN-S (3L+PE+N)				
		Number of Persons: 6				
		Rated Load: 408 kg				
		Number of Stops & Openings: 3 Stops & 3 Openings				
		Number of Access sides: 1 on all floors				
		Drive System: Alternating Current Variable Voltage Variable Frequency (ACVVVF)				
		Type of controller: Full Collective Control				
		Speed of travel: 1.0 - 1.5 m/s				
		Light power supply voltage - 230 V				

		Power supply needed: 400/415 V				
		<b>CAR DESIGN</b>				
		Car Finish - Stainless Steel (Hairline)				
		Car Door Finish - Stainless Steel (Hairline)				
		Landing Door Finish - Stainless Steel (Hairline)				
		Mirror finish SS Handrail				
		Mirror on rear car panel				
		Granite/Marble Flooring				
		Car Operating Panel (COP): Full height, flush mounted				
		Landing Operating Panel (LOP): Individual LOP for each elevator				
		Door Opening Direction - Center Opening 2 panels				
		Aluminium Sill				
		<b>STANDARD FEATURES</b>				
		Automatic Rescue Device (ARD) in case of power failure				
		Alarm button in COP				
		Automatic operation for car fan				
		Adjustable door opening time				
		Emergency Light				
		Full load by pass				
		Infra Red screen for car door				
		Intercom				
		Motor overheat protection				
		Attendant control				
		Fireman control				
		Fireman emergency return				
		Floor Annunciator				
		Visual and acoustic confirmation of call				
		Position indicator				
		Overload detection				
		Call acceptance (visual)	No.	1	11,38,500.00	11,38,500.00
		<b>TOTAL FOR LIFTS</b>				<b>1,24,53,332.00</b>
<b>10.0</b>		<b>UPS</b>				
10.1	NS	Supply, Installation, testing and commissioning of following sizes of Three Phase Modular True Online UPS in N+1 parallel redundant configuration confirming to IEC EN 62010 (All parts) compatible for				

		seamless integration to BMS with following specifications complete:				
		Fully rated IGBT rectifier, charger and inverter integrated in Each UPS module				
		Each module to be in range of 25-50 KVA				
		Each power module shall be having Decentralized Parallel Architecture				
		3 phase input voltage (380-415V) and frequency 50 Hz including phase sequence corrector				
		One extra UPS module to be provided beyond the rated capacity of the UPS				
		UPS cabinet must have spare space for future UPS module				
		Fully rated hot scalable/swapable with power module				
		UPS shall be capable of adding or removing UPS module as well as static bypass without going to bypass mode				
		UPS full load efficiency shall not be less than 95%				
		Sealed maintenance free 12V batteries shall be provided to provide minimum 30 minutes backup at full load.				
		Input Power Factor : >0.95				
		Output Power Factor : Unity				
		Input Distortiojn THDi : $\leq 5\%$ at 100%				
		Overall Efficiency : Upto 95%				
		Hot Sync paralleling : Inbuilt				
		In built ABM : Inbuilt				
		Communication Ports : USB, RS232, SNMP, Ethernet				
		Satnadard : IEC/EN 62040				
		IP Rating : IP20				
a		160 KVA UPS	Nos.	2	27,53,100.00	55,06,200.00
10.2	NS	True Online, Double Conversion, Dual Source 10 KVA UPS System with new energy efficient IGBT Rectifier & IGBT Invertor along with Battery Circuit Breaker (BCB), Battery Rack, Exide/Quanta Batteries, Interlinks & DC-DC Cable with complete accessories with below				

		mentioned key features along with Accessories for 30 min backup on 10 KVA load				
		Fully rated IGBT rectifier, charger and inverter integrated in UPS				
		3 phase input voltage (380-415V) and frequency 50 Hz including phase sequence corrector				
		UPS full load efficiency shall not be less than 95%				
		Sealed maintenance free 12V batteries shall be provided to provide minimum 30 minutes backup at full load.				
		Input Power Factor : >0.95				
		Output Power Factor : Unity				
		Input THDi : < 5%				
		AC-AC Efficiency : Upto 94%				
		Hot Sync paralleling : Inbuilt				
		Communication Ports : USB, RS232, SNMP, Ethernet				
		IP Rating : IP20				
		In built ABM : Inbuilt				
		SNMP : Inbuilt	Nos.	1	3,20,850.00	3,20,850.00
10.3	NS	True Online, Double Conversion, Dual Source 40 KVA UPS System with new energy efficient IGBT Rectifier & IGBT Inverter along with Battery Circuit Breaker (BCB), Battery Rack, Exide/Quanta Batteries, Interlinks & DC-DC Cable with complete accessories with below mentioned key features along with Accessories for 30 min backup on 40 KVA load				
		Fully rated IGBT rectifier, charger and inverter integrated in UPS				
		3 phase input voltage (380-415V) and frequency 50 Hz including phase sequence corrector				
		UPS full load efficiency shall not be less than 95%				
		Sealed maintenance free 12V batteries shall be provided to provide minimum 30 minutes backup at full load.				
		Input Power Factor : >0.95				
		Output Power Factor : Unity				

		Input THDi : < 5%				
		AC-AC Efficiency : Upto 94%				
		Hot Sync paralleling : Inbuilt				
		In built ABM : Inbuilt				
		SNMP : Inbuilt				
		Communication Ports : USB, RS232, SNMP, Ethernet				
		IP Rating : IP20				
		40 kVA UPS	Nos.	2	7,46,096.00	14,92,192.00
		<b>Total for UPS</b>				<b>73,19,242.00</b>
<b>11.0</b>		<b>SUB-HEAD: PA SYSTEM</b>				
		<b>PA SYSTEM</b>				
11.1		SITC of EN-54 Certified IP based EVAC PA controller capable of adding 12 zones in the system and expandable upto 150 zones with 14x 4 Audio matrix with full DSP functionality. 8 audio inputs, 4 audio outputs, 4 channel output matrix. Shall support amplifier redundancy, 12 speaker line outputs. 8000 fault, warning and event conditions log. Built in message manager for 100 emergency/business calls up to 85 minutes. 18 control inputs and 19 control outputs. Impedance measurement and Pilot Tone supervision for speaker line monitoring. The controllers shall be able to exchange audio signals over the network without the need of a running PC/server, software dependent solutions shall not be accepted. Multiple controllers can be networked over IP using Dante audio up to 16 digital audio input signals and 16 digital audio output channels with low latency. Audio flows Up to 16 × 16 simultaneous audio streams@48kHz.Frequency response (ref. 1 kHz) 20 Hz to 20 kHz (-0.5 dB), Signal-to-noise ratio (A-weighted): Line in to line out: 106 dB typical, THD+N < 0.05%, Sample rate 48 kHz, DSP processing resolution 24-bit linear A/D and D/A conversion, 48-bit processing.	Nos.	1	2,02,605.00	2,02,605.00

11.2		SITC of EN54 Certified EVAC Router for adding 24 zones in the system, 2-in-6 matrix. 20 Control Inputs, 26 Control Outputs. Shall support amplifier redundancy. Impedance measurement and Pilot Tone supervision for speaker line monitoring.	Nos.	2	1,59,673.00	3,19,346.00
11.3		SITC of EN-54 certified 2x 500W Class D, high efficiency amplifier. 70/100V loudspeaker output voltages, 4 automatic selectable audio inputs, local input for audio source. THD ≤1%. Frequency response, ref. 1 kHz, rated load, -3 dB : 50 Hz to 25 kHz. Signal-to-noise ratio (A-weighted) > 104 dB. Audio input level limiter, RMS output power limiter, high temperature, DC, short circuit, mains under voltage protection, DC supply under voltage protection, inrush current limiter, ground fault	Nos.	3	2,03,967.00	6,11,901.00
11.4		SITC of EN-54 certified Call Station for 15 zone selection keys for Zone selection, source selection, level control, emergency on/off, message on/off, failure acknowledge/reset, Switching output trigger on/off or 0 to 10V, select scheduled events, scheduled event on/off. Multilanguage LC display(122 × 32) pixel, Five menu/function keys, gooseneck microphone with supervised electret microphone, pop shield and permanent monitoring, integrated loudspeaker for system sounds. The call station should have the provision to be configured as a numeric keypad.	Nos.	3	88,119.00	2,64,357.00
11.5		SITC of 6W wall mount speaker with excellent speech & music reproduction		31	5,947.00	1,84,357.00
		- Max Power: 9W, Rated Power: 6Watts, Power Tapping: 6/3/1.5W				
		- Effective frequency range(-10 dB) : 180 Hz to 20KHz				
		- SPL at Sound pressure level at 6 W / 1 W (4 kHz, 1 m)100 dB / 92 dB (SPL)				
		- Opening Angle 1 KHz / 4 KHz (-6 dB): horizontal 165° / 95° , vertical				

		158° / 73° Dimensions (H x W x D) 243 x 151 x 141/119 mm Safety acc. to EN60065				
11.6		SITC of 6W ceiling mount EN 54 certified speaker with suitable fire dome having the following specification:	Nos.	286	3,789.00	10,83,654.00
		- Max Power: 9W, Rated Power: 6Watts, Power Tapping: 6/3/1.5W				
		- Effective frequency range(-10 dB) :90 Hz to 20KHz				
		- SPL at rated power (1Khz at 1 m) 98 dB				
		- Opening Angle 1 KHz / 4 KHz (-6 dB): 180/50				
		- Diameter 216 mm (8.5 in) Maximum depth 90 mm (3.54 in)				
11.7		<b>Accessories</b>				
a		Supply, Installation of CD/DVD Player	Nos.	1	6,243.00	6,243.00
b		Supply, Installation of Volume control units 12,36,100W	Nos.	1	5,942.00	5,942.00
c		Supply, Installation of 19" Equipment Rack, 32U Made of MS for housing of all above equipment , front lockable glass door, Fan tray fro Colling, Caster wheel base , Main Panel with Spike Buster, Individual FUSE power supply unit, including all internal wiring/ interconnection as required	Nos.	2	5,199.00	10,398.00
d		Supply, Installation of Brackets for Mounting Speakers	Nos.	311	743.00	2,31,073.00
e		SITC of workstation i-7 PC with 8 GB RAM and 1 TB HDD, 10/100 Mbps Ethernet card, USB connection and internal modem, Microsoft(R) Windows(R) 10 OS Professional Enterprise or latest, Web Server Software, DVD-ROM Drive (with RAM), 100/1000 Mbps NIC for Network connection and antivirus software with 24" colour graphics monitor as per Tender Specifications. (Accessories included Wireless Optical Mouse and Key Pad.)	Nos.	1	1,08,167.00	1,08,167.00
		<b>TOTAL OF PA SYSTEM</b>				<b>30,28,043.00</b>
<b>12.0</b>		<b>SUB HEAD-FIRE FIGHTING</b>				
12.1		<b>SUB HEAD: PIPING &amp; VALVES</b>				

a	NS	Providing and fixing brass ball valve (full bore type) with plastic coated lever and screwed female ends tested to 20 Kg/ cm <sup>2</sup> of approved quality as specified.				
		25 mm dia.	Nos	27	713.00	19,251.00
		50 mm dia.	Nos	27	1,601.00	43,227.00
b	NS	Providing & fixing 25mm dia. UL listed gunmetal inspector test and drain valve with integral sight glass connected to drain line complete in all respects.	Nos	27	237.00	6,399.00
		Providing and fixing gunmetal single acting air release valve with screwed inlet 25 mm dia..	Nos	4	970.00	3,880.00
c	NS	Providing and fixing dial type pressure gauge with isolation cock and copper pipe at hydrant station.				
		Dial diameter 100 mm calibration 0-15 kg/ sq.cm.	Nos	27	924.00	24,948.00
d	N.S.	Providing and fixing blank flanges as per table 'E' with asbestos gasket, nut, bolts, washers complete				
		150 mm dia.	Nos	6	643.00	3,858.00
		<b>TOTAL SUB HEAD PIPING &amp; VALVES</b>				<b>1,01,563.00</b>
<b>12.2</b>		<b>SUB HEAD: FIRE HYDRANT ACCESSORIES</b>				
	N.S.	Providing and fixing door with frame for all internal fire hydrants fabricated from 20x20x3 mm and 40x20x3 mm aluminium hollow box sections mounted with 3 no. of 100 mm Aluminium butt hinge on Aluminium angle frame of 45x45x5 mm size with hold fasts fixed to wall with P.C.C. (1:2:4) blocks 100x100x100 mm including 2 nos allen key lock for locking along with padlock arrangement & fully glazed with 4 mm thick float glass approved by local Fire Authority, powder coated fire red finish with " fire hose' written on front suitable to house 15 mm long two length of canvas hose with couplings, one no of branch pipe, one fire mans axe and two numbers of portable extinguishers, first aid fire	Nos	27	7,498.00	2,02,446.00

		hose and supports for hoses, branch pipes, Axe and hose reel. Size 2100x 900 mm complete as per approved design including necessary fixing arrangement for hoses & axe and branch pipe.)				
		<b>TOTAL SUB HEAD FIRE HYDRANT ACCESSORIES</b>				<b>2,02,446.00</b>
<b>12.3</b>		<b>SUB HEAD: FIRE EXTINGUISHERS &amp; MISC. ITEMS</b>				
a	N.S.	Providing and fixing Portable Fire Extinguishers as per BS EN, suitable for fire rating of 13A/55B with suitability for electric fire. System shall consist of HDPE with Aramid Winding, non corrosive type vessel of 2 Kg filling capacity, 10 years corrosion guarantee for vessel, service pressure 12 Bar, 2 pressure gauge, nylon nozzle and safety lock device, extinguishing media ABC powder, SS lever and nickel plated brass valve expellant medium N2 based, filled weight of system 3.2 +/- 0.150 Kg and EN 3 approved. (Contractor should submit test certificate from manufacturer along with serial number of every extinguishers supplied.)	Nos	80	12,896.00	10,31,680.00
b	N.S.	SITC of Fixed clean agent gas based cylinderless fire suppression system, 1 meter, Blazecut T series or equivalent	Nos	40	21,140.00	8,45,600.00
c	N.S.	Providing and fixing of self illuminated / auto glow "EXIT" signs printed on photoluminescent sheet containing self illuminated base chemical, of appropriate size not less than 400 x 150 mm, suspended from ceiling or fixed to the walls with accessories as required and as directed at site.	Nos	54	1,917.00	1,03,518.00
		<b>TOTAL SUB HEAD FIRE EXTINGUISHERS &amp; MISC. ITEMS</b>				<b>19,80,798.00</b>
		<b>TOTAL FOR FIRE FIGHTING SYSTEM</b>				<b>22,84,807.00</b>
<b>13.0</b>		<b>EV CHARGER</b>				
13.1	N.S.	SITC of Type 2, Mode 3. AC modular slow charger for 2/3/4 wheelers,	Nos.	12	91,494.00	10,97,928.00

		conductive energy transfer mode as IEC -61851-22, 1 phase, 3 wire or 3 Phase 5 wire AC system, IP55, Graphical User Interface, Communication interface, Visual indicator, billing solutions and with protection and safety requirements.				
13.2	N.S.	SITC of DC Fast charger for 4 wheelers, Input 3P+N+PE 400V AC ,Output 2 (30KW X2), 100A, connector CCS2 +CCS2, IP 55, Graphical User Interface, Communication interface, visual indicators, billing solutions and with protection and safety requirements.	Nos.	1	16,68,420.00	16,68,420.00
		<b>TOTAL OF EV CHARGER</b>				<b>27,66,348.00</b>
		<b>TOTAL OF NON-SCHEDULE ITEMS</b>				<b>8,31,62,565.00</b>
		<b>TOTAL OF SCHEDULE AND NON-SCHEDULE ITEMS</b>				<b>15,15,63,497.00</b>

**Explanatory Notes for BOQ:**

- i) The quantities shown in above Schedules are approximate and are as a guide to give the tenderer(s) an idea of quantum of work involved. The DFCCIL reserves the right to increase/ decrease and/or delete or include any of the quantities given above as per site conditions.
- ii) All efforts have been made to make the document/BOQ complete in all respect for successful commissioning of the works, however, if any minor item has not been specifically mentioned or being omitted, the same shall be executed without any extra cost by the agency, so as to ensure successful and satisfactory commissioning of the item / work to the full satisfaction of Engineer/DFCCIL. In this regard, decision of Engineer/DFCCIL shall be final & binding.

<b>PROPOSED DFCCIL INTEGRATED OFFICE CUM RESIDENTIAL COMPLEX SECTOR-145, VILLAGE JHATTA, NOIDA (UTTAR PRADESH)</b>						
<b>Sr. No.</b>	<b>DSR-2018/2019</b>	<b>Description of item</b>	<b>Unit</b>	<b>Total Qty.</b>	<b>Unit Rate</b>	<b>Total Amount</b>
<b>1.0</b>		<b>AIR DISTRIBUTION SYSTEM</b>				
1.1		<b>Site Fabricated Duct - GI Sheet Metal duct</b>				
		Supplying, installation, balancing and commissioning of fabricated at site GSS sheet metal rectangular/round ducting complete with neoprene rubber gasket, elbows, splitter dampers, supports, flexible hangers with isolators, flexible connections, nut bolts, fastner, and vanes, volume control dampers etc as per approved drawings and specifications of following sheet thickness complete as required.				
a	D.S.R.-16.12.2.1	0.63mm (24 gauge) GSS	Sqm	2150	841	18,08,150.00
b	D.S.R.-16.12.2.2	0.8 mm (22 gauge) GSS	Sqm	200	986	1,97,200.00
c	D.S.R.-16.12.2.3	1.0mm (20 gauge) GSS	Sqm	70	1,302	91,140.00
d	D.S.R.-16.12.2.4	1.25mm (18 gauge) GSS	Sqm	70	1,442	1,00,940.00
<b>1.2</b>		<b>Factory Fabricated Duct - GI duct</b>				
		Supply,Installation,balancing and commissioning of factory fabricated GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, splitter,vanes, hangers, supports etc. in accordance with the approved drawings and specifications of following sheet thickness complete as required.				
<b>a</b>	16.12.1.1	0.63mm (24 gauge) GSS	Sqm	2100	878	18,43,125.00
<b>b</b>	16.12.1.2	0.8 mm (22 gauge) GSS	Sqm	750	1,030	7,72,767.86
<b>c</b>	16.12.1.3	1.0mm (20 gauge) GSS	Sqm	40	1,137	45,464.29
<b>d</b>	16.12.1.4	1.25mm (18 gauge) GSS	Sqm	30	1,497	44,919.64
<b>1.3</b>		Supplying, installing, testing and balancing of aluminium supply/return air grills of various sizes. Each grill shall be with fixed horizontal front bar at Zero/15 Deg deflection through the collar and register.				

a	D.S.R.- 16.15	Supply air grills with VCD.	Sqm	33	7,571	2,49,857.14
b	D.S.R.- 16.16	Exh./Return air grill without VCD.	Sqm	23	4,917	1,13,090.18
c	16.17	Supplying, fixing, testing and commissioning of supply air diffusers of powder coating of 50 micron on aluminium with alluminium volume control dampers with anti smudge ring and removable core.	Sqm	40	10,146	4,05,821.43
d	16.18	Supplying, fixing, testing and commissioning of return air diffusers of powder coated aluminium without alluminium volume control dampers with anti smudge ring and removable core.	Sqm	40	6,749	2,69,964.29
<b>1.4</b>		<b>MOTORIZED FIRE AND SMOKE DAMPERS</b>				
		Supply, Installation, Testing and commissioning of motorized combination fire and smoke damper (spring return type) of approved make of atleast 120 minute fire rating and as per the specifications as detailed earlier in the relevant sections. The fire damper shall be complete with electronic temperature sensor and electrically operated actuator. The fire dampers shall be located in the supply/return air ducts, at all fire rated crossovers (shafts/walls etc.) The control panel will be such located that the reset can be easily done These combination smoke and fire dampers shall be interlocked with the building management system for fire detection / HVAC and shall trip/close in the event of fire / smoke in the respective zone.				
a	D.S.R.- 16.20.1	Bare Fire Dampers with 400 mm sleeve	SqM	14	8,824	1,23,536.00
b	D.S.R.- 16.20.2	Control panel actuator, including Electrical, spring type actuator, remote indication of the fire damper position.	No	28	8,225	2,30,300.00
1.5	D.S.R.- 16.13	Supply, Installation, Testing and commissioning of GI volume control duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc as per specifications	SqM	71	5,804	4,12,084.00
		<b>TOTAL OF AIR DISTRIBUTION SYSTEM</b>				<b>67,08,359.82</b>

2.0		<b>INSULATION WORKS</b>				
2.1		<b>Exposed Roof Insulation</b>				
		Supply and installation of cross linked closed cell Oxide Acetate (Thermo Isolate) Foam Thermal insulation on ducts having density of $30 \pm 3$ Kg/ M <sup>3</sup> , having K value 0.029 W/m ° K at 0°C Deg temp and temp range of -70°C to +100°C and fire rating Class O as per BS 476 Part 6 from CBRI, Roorkee and CFC/HCFC free as per US EPA 5021 A(2014 ). • Smoke & Toxicity index of material shall be passed as per IMO MSC 307 ( 88 ) 2010 Annex 1 Pt 2 and as per the approved specifications of following thickness.				
a	D.S.R.-16.23.1	19 mm	Sqm	1800	622	11,19,600.00
		<b>TOTAL OF INSULATION WORKS</b>				<b>11,19,600.00</b>
3.0		<b>ASSOCIATED ELECTRICAL WORKS</b>				
3.1		Supply, installation, testing & commissioning of cable termination of above cables with copper lugs & flameproof brass compression glands on both the ends with inhibiting compound etc. complete as required.				
a	DSR-9.1.1	2Cx04 Sqmm	Set	6	177	1,062.00
b	DSR-9.1.7	3Cx04 Sqmm	Set	26	188	4,888.00
c	DSR-9.1.7	3Cx06 Sqmm	Set	16	188	3,008.00
d	DSR-9.1.8	3Cx16 Sqmm	Set	40	198	7,920.00
e	DSR-9.1.32	4Cx06 Sqmm	Set	108	196	21,168.00
f	DSR-9.1.32	4Cx04 Sqmm	Set	12	196	2,352.00
3.2		Supplying and installing following size of perforated G.I. cable trays, G.I. bends with perforation not more than 17.5%, joined with connectors, suspended from the ceiling with suitable suspenders including G.I. bolts & nuts, painting of suspenders etc. complete as required.				
a	DSR-4.6.1	100 mm. Width x 50mm. Depth x 1.6mm. Thickness.	Rmt	85	535	45,475.00
b	DSR-4.6.2	150 mm. Width x 50mm. Depth x 1.6mm. Thickness.	Rmt	90	575	51,750.00
c	DSR-4.6.3	225 mm. Width x 50mm. Depth x 1.6mm. Thickness.	Rmt	100	724	72,400.00

d	DSR-4.6.4	300 mm. Width x 50mm. Depth x 1.6mm. Thickness.	Rmt	70	781	54,670.00
3.3		Providing and fixing following size of G.I. strip / G.I. wire on surface or in recess for loop earthing alongwith the existing surface/ recessed conduit/ submain wiring / on cable tray/ on surface including G.I. clamps etc. complete as required.(For Equipment and Panels)				
a	DSR-5.9	6 SWG G.I. wire	Rmt	380	117	44,460.00
		<b>TOTAL OF ELECTRICAL WORKS</b>				<b>3,09,153.00</b>
<b>4.0</b>		<b>VRF SYSTEM</b>				
		<b>AIR COOLED VRF UNITS</b>				
4.1	DSR-2019, Item-01	<b>OUTDOOR UNITS (HEAT PUMP TYPE)</b>				
		Supply, Installing, Testing and Commissioning of modular type Variable Refrigerant Flow / Variable Refrigerant Volume air cooled Outdoor units suitable for cooling and heating, having all hermetically sealed inverter type scroll compressor (s), minimum two compressors for and above 14HP modules, microprocessor beased Controller, top discharge type condensing unit(s), with R410 A Refrigerant, vibration isolators, with suitable foundation etc. complete as required. The unit shall deliver the rated capacity at AHRI Conditions and work even at 50 degree C. ambient temperature without tripping. The unit shall be suitable to work on 400V+/- 10%, 3 Phase, 50Hz AC power supply. The unit shall be filled with first charge of the refrigerant and ready for use as required. The COP at AHRI conditions shall not be less than 3.1 and IEER not less than 6.5.				
		The ODU shall have low noise condenser fans with external static pressure of the outdoor unit shall be more than 75 Pa to avoid hot air recirculation, auto address setting, auto check function for connection error and complete with indoor and outdoor units with individual controller and with fittings etc. Aluminum fins within				

		the ODU (condensing) unit shall be coated with polysiloxane based coating. The compressor and VRV/VRF Outdoor make should be same. For enhanced energy savings the COP of Each refrigerant circuit system mentioned below shall be 7.50 minimum at 50% load, at Outdoor Condition 35 Deg C DBT and Indoor condition: 27 deg C DBT and 19 Deg C WBT in cooling mode. The unit shall also have feature to automatically modulate the evaporative temperature between 6 deg C to 11 deg C with respect to load for better comfort and energy efficiency. (Unit shall deliver atleast 87% of mentioned nominal capacity @43 Deg C). The Unit should have free phase technology so that unit can work in case of phase reversal also without tripping of units. HP rating of ODU will depend upon circuit and as per client requirement.				
		823HP	HP	823	14,656	1,20,61,888.00
4.2	DSR-2019,Item-02	<b>INDOOR UNITS</b>				
4.2.1		Supply, installation, testing and commissioning of following minimum capacity 4-way flow VRV/VRF Cassette Type Indoor ceiling mounted unit equipped with synthetic washable media pre-filter, fan section with low noise fan/ dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve outer cabinet, drain pump, grill, necessary supports, vibration isolation, cord less remote control etc. , suitable for operation on single phase 230V +/- 10% 50Hz AC supply, complete as required. Aluminum fins within the IDU (evaporator unit) shall be coated with polysiloxane based coating, The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of Indoor Unit will be at Air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature.				
		<b>4-Way Cassette Unit</b>				

a.	<b>2.1</b>	440-450 CFM/0.8 TR	NOS.	15	24,447	3,66,705.00
b.	<b>2.2</b>	440-450 CFM/1.0 TR	NOS.	21	26,015	5,46,315.00
c.	<b>2.3</b>	500 CFM/1.2-1.3 TR	NOS.	61	26,328	16,06,008.00
d.	<b>2.4</b>	565 CFM/1.6 TR	NOS.	4	26,968	1,07,872.00
e.	<b>2.5</b>	635 CFM/2.0 TR	NOS.	9	27,501	2,47,509.00
f.	<b>2.8</b>	1165 CFM/3.18 TR	NOS.	2	29,274	58,548.00
g.	<b>2.10</b>	1218 CFM/4.0 TR	NOS.	2	30,340	60,680.00
4.2.2		Supply, installation, testing and commissioning of following minimum capacity VRV/VRF High Wall Type Indoor unit equipped with synthetic washable media pre-filter, fan section with low noise fan/ dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve outer cabinet, cord less remote control, drain pan, necessary accessories, etc. , suitable for operation on single phase 230V +/- 10% 50Hz AC supply, complete as required. Aluminum fins within the IDU (evaporator unit) shall be coated with polysiloxane based coating, The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of Indoor Unit will be at Air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature.				
		<b>Wall Mounted</b>				
a.	<b>3.3</b>	300-330 CFM/1.0-1.02 TR	NOS.	1	17,589	17,589.00
b.	<b>3.7</b>	475-500 CFM/1.98-2.01 TR	NOS.	26	19,732	5,13,032.00
4.2.3		Supply, installation, testing and commissioning of following minimum capacity and External static pressure VRV/VRF ceiling mounted ductable type indoor unit equipped with synthetic washable media pre-filter, fan section with low noise fan/ dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve, corded remote control, outer cabinet, vibration isolators, drain pan, other necessary supports etc. , suitable for operation on single phase 230V +/- 10% 50Hz AC supply, complete as required. Aluminum fins within the IDU (evaporator unit) shall be coated				

		with polysiloxane based coating, The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of Indoor Unit will be at Air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature.				
		<b>Ceiling Mounted HSP Ductable Unit</b>				
a	<b>4.9</b>	565-635 CFM / 1.5-1.60 TR	No.	1	31,481	31,481.00
b	<b>4.11</b>	650-740 CFM / 1.7-2.0 TR	No.	1	34,744	34,744.00
c	<b>4.13</b>	875-883 CFM / 2.5-2.60 TR	No.	6	37,812	2,26,872.00
d	<b>4.15</b>	1130 -1150 CFM / 3.0-3.40 TR	No.	19	42,546	8,08,374.00
e	<b>4.16</b>	1200-1377 CFM/3.95-4.0 TR	No.	10	43,510	4,35,100.00
f	<b>4.17</b>	1975-2047 CFM / 5.45-5.50 TR	No.	3	76,577	2,29,731.00
g	<b>4.19</b>	2542-2825 CFM /7.95- 8.0 TR	No.	7	79,992	5,59,944.00
		<b>TOTAL OF VRV SYSTEM</b>				<b>1,79,12,392</b>
<b>4.3</b>	<b>DSR-2019</b>	<b>REFRIGERANT PIPING</b>				
	Item-05	Supply, Installation, testing and commissioning including vaccumiazation and Nitrogen testing of following nominal sizes of soft/hard drawn copper refrigerant piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/Class-O closed cell elastometric nitrile rubber tubular sleeves sections of specified thickness with polysiloxane based coating running in cable tray as given below for Suction and Liquid lines, all accessories as per specifications etc. as required:				
a	5.1	6.4 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 13 mm thick insulation	RM	1025	219.00	2,24,475.00
b	5.2	9.5 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 13 mm thick insulation	RM	590	296.00	1,74,640.00
c	5.3	12.7 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 13 mm thick insulation	RM	1350	416.00	5,61,600.00
d	5.4	15.86 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 13 mm thick insulation	RM	685	525.00	3,59,625.00

e	5.5	19 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 13 mm thick insulation	RM	980	631.00	6,18,380.00
f	5.6	22.2 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	RM	580	772.00	4,47,760.00
g	5.8	28.58 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	RM	400	989.00	3,95,600.00
h	5.10	34.9 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	RM	410	1,098.00	4,50,180.00
i	5.12	41.27 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	RM	340	1,169.00	3,97,460.00
		<b>TOTAL OF REFRIGERANT PIPING</b>				<b>36,29,720</b>
		<b>TOTAL OF SCHEDULE ITEMS</b>				<b>2,96,79,225</b>

**Explanatory Notes for BOQ:**

- (i) All DSR items contain item nos. and, if any discrepancy is found in nomenclature, then scheduled nomenclature of CPWD DSR 2018/2019 will prevail.
- (ii) The rates of all CPWD DSR Items are already exclusive of GST. However, the rates of all items of DSR 2018 & 2019 are evaluated excluding GST component on DAR basis.
- (iii) The Quantity mentioned in the Schedules is approximate and the DFCCIL reserves the right to increase / decrease the same as per site requirement.

B		NON SCHEDULE ITEMS				
1.0		<b>AIR DISTRIBUTION SYSTEM</b>				
1.1	NS	Supply, Fabrication, Installation and testing of Insulated Al. Flexible ducts in accordance with the approved shop floor drawings and specifications and shall also confirm to the BIS specifications.				
a		150 mm Dia.	Rmt	80	797	63,760.00
b		100 mm Dia.	Rmt	400	703	2,81,200.00
1.2	NS	Supplying, installing, testing and balancing of aluminium supply/return air grills of various sizes. Each grill shall be with fixed horizontal front bar at Zero/15 Deg deflection through the collar and register.				
a		Cont. 150mm wide S/R air Grille	Rmt	750	803	6,02,250.00
b		Al. Constructed collar damper for supply collar	Sqm	2	4,320	8,640.00
c		Jet Diffusers (315mm Dia.)	Nos.	15	7,891	1,18,365.00
d		AI Volume control dampers for ducts	Sqm.	19	6,412	1,21,828.00
e		Aluminium return/exhaust air Valve circular/squirell diffuser without damper.	Sqm.	44	6,320	2,78,080.00
1.3	NS	<b>FRESH/EXH. AIR LOUVERS:</b>				
		Supply, Installation, Testing and Commissioning of extruded aluminium louvres with frame bird screen, mounting arrangement etc. as per specifications and drawings.				
a		Fresh Air/Exhaust Louvers	Sqm	8	5,215	41,720.00
1.4	NS	<b>MOTORIZED FIRE AND SMOKE DAMPERS</b>				
		Supply, Installation, Testing and commissioning of motorized combination fire and smoke damper (spring return type) of approved make of atleast 120 minute fire rating and as per the specifications as detailed earlier in the relevant sections. The fire damper shall be complete with electronic temperature sensor and electrically operated actuator. The fire dampers shall be located in the supply/return air ducts, at all fire rated crossovers (shafts/walls etc.) The control panel will be such located that the reset can be easily done These combination smoke and fire dampers shall be interlocked with the building management system for fire detection / HVAC and shall trip/close in the event of fire / smoke in the respective zone. Interconnecting wiring for the fire alarm system with the AHU and the smoke dampers. Sealing the openings around the sleeve of the fire dampers with approved fire sealant, as per the recommendations of the manufacturer and specifications.	Lot	2	1,07,525	2,15,050.00
		<b>TOTAL OF AIR DISTRIBUTION SYSTEM</b>				<b>17,30,893</b>

<b>2.0</b>		<b>INSULATION WORKS</b>				
2.1	NS	<b>THERMAL INSULATION:</b>				
		Supply and installation of cross linked closed cell Oxide Acetate ( Thermo Isolate) Foam Thermal insulation on ducts having density Of $30 \pm 3$ Kg/ M <sup>3</sup> ,having K value $0.029 \text{ W/m}^\circ \text{K}$ at $0^\circ\text{C}$ Deg temp and temp range of $-70^\circ\text{C}$ to $+100^\circ\text{C}$ and fire rating Class O as per BS 476 Part 6 from CBRI,Roorkee and CFC/HCFC free as per US EPA 5021 A(2014 ). • Smoke & Toxicity index of material shall be passed as per IMO MSC 307 ( 88 ) 2010 Annex 1 Pt 2 and as per the approved specifications.				
a		32 mm thick insulation oxide acetate foam with 2 layesr coat 7 mile cloth insulation or starbond insulation(for exposed duct)	Sqm	350	914	3,19,900.00
b		13mm thick insulation oxide acetate foam laminated with aluminium foil supply air duct	Sqm	400	473	1,89,200.00
c		9mm thick insulation oxide acetate foam laminated with aluminium foil supply air duct	Sqm	1700	339	5,76,300.00
2.2	NS	<b>ACOUSTIC LINING IN THE SUPPLY/RETURN DUCTS</b>				
		Supply and installation of cross linked open cell Oxide Acetate ( Acco Isolate) Foam Acoustic insulation on ducts having density of 30 to 60 Kg/ M <sup>3</sup> ,having K value $0.029 \text{ W/m}^\circ \text{K}$ at $0^\circ\text{C}$ Deg temp and temp range of $-70^\circ\text{C}$ to $+100^\circ\text{C}$ and fire rating Class O as per BS 476 Part 6 from CBRI,Roorkee and CFC/HCFC free as per US EPA 5021 A(2014 ). • Smoke & Toxicity index of material shall be passed as per IMO MSC 307 ( 88 ) 2010 Annex 1 Pt 2 and as per the approved specifications.				
a		15mm thick Oxice Acetate Acco Isolate Acoustic open cell insulation on one side for Duct acoustic insulation	Sqm	900	833	7,49,700.00
b		25mm thick Oxice Acetate Acco Isolate Acoustic open cell insulation on one side for AHU Room acoustic insulation	Sqm	400	1,144	4,57,600.00
		<b>TOTAL OF INSULATION WORKS</b>				<b>22,92,700</b>
<b>3.0</b>		<b>ASSOCIATED ELECTRICAL WORKS</b>				
		The rates for the distribution boards from the Breakers and instruments shall also include the following :				
A		Panels shall be TTA type only. Internal wiring for panel shall be carried out with suitable size multi strand copper conductor, 1100V grade stranded flexible FRLS wire of approved make.				

B		TPN ACB's / MCCB's shall mean 3 pole ACB's / MCCB's with adequate size of neutral link.				
C		All MCB's shall be of minimum 10 KA breaking capacity and MCCB's shall be not less than 25KA				
D		The breaking capacity of MCCB's are mentioned panel wise. All MCCBs shall be ICS rated. All MCCB's shall be with microprocessor release for above 100A and as per BOQ.				
E		All MCB's used for protection of resistive and lightly inductive load shall be type "B" characteristic and inductive (motor) load shall be of type "C" characteristic.				
F		Panel construction shall be 4b type. Degree of protection for following type of distribution panel enclosure shall be as per IS:13947-1993.				
		i. IP 42 for indoor panels.				
		ii. IP 55 for ODU panel.				
G		All MCCB's shall be provided with operating mechanism for door interlock.				
H		All hinged door shall be earthed through 2.5 sq mm tinned braided copper wire.				
I		Providing cable clamps / supports within distribution boards cable alley.				
J		Current density of Copper shall be 1.6 sq mm for 1.0 Amps for rated current of bus bars. All bus bars shall be copper only.				
K		Model, current capacity, location, drawing and frame size of switchgear shall be written inside of the panel doors as approved shop drawings / site requirement. Panel name along with its rating and purpose shall be provided in from side of the panel.				
L		All meters shall be MFM type and all starter shall be as per Type-2 Coordination chart. All indication lamps shall be LED type. Control MCBs shall be used. Digital Voltmeter and Ammeter shall also be used for clear visibility.				
M		Current Transformer shall be resin cast.				
N		All Panel Shall be BMS Compatible.				
4.1	NS	<b>AHU/Fan Panel</b>				
		Design, fabrication, assembling, wiring, supply, installation, testing and commissioning of following LT panels fabricated out of 14 gauge CRCA sheet steel in cubical formation with reinforcement of suitable size angle iron and channel T iron flats. All steel material used in the construction of panels shall be powder coated of minimum 30 micron. A solid busbar shall be provided at the bottom of the panel with two connecting eyes for termination. The boards shall be suitable for 415 volts, 50 Hz, 3 phase				

		, 4 wire supply system. All the hardware used in the fabrication of the panel shall be galvanized with zinc passivation. The panel shall be compartmentalized to accommodate one feeder in Each compartment. A vertical cable alley of suitable width shall be provided to serve on or two vertical feeder sections. Also the opening between the busbar chamber and the feeder section shall be shrouded with bakelite / hylam sheet with min.3 mm thickness.				
		The panel drawing shall be approved before taking up the fabrication and compitable BMS if in future required.				
		In All panel Each starter should have remote control and interlocking facilities including auto manual switch, NO/NC contacts for control and must have auto manual operation suitable to take signal from fire alarm panel for automatic operation of fan in case of fire. All smoke /vent. fan panel the starters shall have suitable facility to operate with fire sensing control modules.				
a		<b>HVAC AHU/Fan Panel MCC-01</b>				
		1 no. 13-18 A, TP MPCB (without VSD, VSD With AHU Plug Fan)				
		Phase indicating lights with control MCB.				
		Breaker ON/OFF/TRIP indicating lights.				
		Panel shall be supplied as per requirement and Specifications.	No.	5	19,992	99,960.00
b		<b>HVAC AHU/Fan Panel MCC-02 (2 Nos.)</b>				
		1 no. 9-14 A, TP MPCB (without VSD, VSD With AHU Plug Fan )				
		Phase indicating lights with control MCB.				
		Breaker ON/OFF/TRIP indicating lights.				
		Panel shall be supplied as per requirement and Specifications.	No.	2	17,432	34,864.00
c		<b>HVAC AHU/Fan Panel MCC-05</b>				
		<b>Incoming</b>				
		1 No. 80 A TP, 25 kA MCCB with TM release for O/C + S/C, Aux + Alarm contact.				
		Phase indicating lights with control MCB.				
		Breaker ON/OFF/TRIP indicating lights.				
		125 amp TPN <b>Copper Bus Bar</b> with heat shrinkable insulation colored sleeves.				
		<b>Outgoings</b>				
		1 nos. 25-40 A,TP MPCB (with Star Delta starter )				
		1 nos.25-40 A,TP MPCB (with VSD Space Provision )				
		1 nos. 6 A, MCB				
		Panel shall be supplied as per requirement and Specifications.	No.	2	47,175	94,350.00
d		<b>HVAC AHU/Fan Panel MCC-04</b>				
		<b>Incoming</b>				

		1 no. 50 amp FP MCB with Aux + Alarm Contact				
		Phase indicating lights with control MCB.				
		Breaker ON/OFF/TRIP indicating lights.				
		80 amp TPN Copper Bus Bar with heat shrinkable insulation colored sleeves.				
		<b>Outgoings</b>				
		2 nos. 4-6.3 A,TP MPCB (with DOL starter )				
		2 nos. 9-14 A,TP MPCB (with DOL starter )				
		Panel shall be supplied as per requirement and Specifications.	No.	1	74,237	74,237.00
e		<b>HVAC AHU/Fan Panel MCC-07</b>				
		<b>Incoming</b>				
		1 No. 63 A TP, 25 kA MCCB with TM release for O/C + S/C, Aux + Alarm contact.				
		Phase indicating lights with control MCB.				
		Breaker ON/OFF/TRIP indicating lights.				
		Bus Bars				
		100 amp TPN Copper Bus Bar with heat shrinkable insulation colored sleeves.				
		<b>Outgoings</b>				
		2 nos. 6-10 A,TP MPCB (with DOL starter )				
		1 nos. 9-14 A,TP MPCB (with DOL starter )				
		Panel shall be supplied as per requirement and Specifications.	No.	2	64,851	1,29,702.00
f		<b>HVAC AHU/Fan Panel MCC-08</b>				
		<b>Incoming</b>				
		1 No. 100 A TP, 25 kA MCCB with TM release for O/C + S/C, Aux + Alarm contact.				
		Phase indicating lights with control MCB.				
		Breaker ON/OFF/TRIP indicating lights.				
		125 amp TPN Copper Bus Bar with heat shrinkable insulation colored sleeves.				
		<b>Outgoings</b>				
		3 nos. 6-10 A,TP MPCB (with DOL starter )				
		2 nos. 20-25 A,TP MPCB (with Star Delta starter )				
		Panel shall be supplied as per requirement and Specifications.	No.	2	1,13,123	2,26,246.00
g		<b>HVAC AHU/Fan Panel MCC-09</b>				
		<b>Incoming</b>				
		1 No. 100 A TP, 25 kA MCCB with TM release for O/C + S/C, Aux + Alarm contact.				
		Phase indicating lights with control MCB.				
		Breaker ON/OFF/TRIP indicating lights.				

		125 amp TPN Copper Bus Bar with heat shrinkable insulation colored sleeves.				
		<b>Outgoings</b>				
		2 nos. 25-40 A,TP MPCB (with Star Delta starter )				
		Panel shall be supplied as per requirement and Specifications.	No.	2	1,06,419	2,12,838.00
4.2	NS	<b>METER BOARD / SUB PANEL'S</b>				
		Supplying, Installation, Testing and Commissioning of dust, damp and vermin proof free floor standing / wall mounted factory built sheet steel enclosed modular construction extendable panel, suitable for operation on 415 + 10% volts, 50 Hz AC 3 phase 4 wire system fabricated out of suitable sized square tubular section and covered with 2.0mm thick CRCA sheet, hinged doors of 2mm thick CRCA sheet, duly painted complete with aluminium bus bars, interconnection with solid copper conductor wires / aluminium strips, neutral links, earth bus etc. necessary metering protections & indications and mounted with the following as per drawing and technical specifications attached etc. complete as required. MFM with Ethernet port, equivalent to Schneider PowerLogic PM5000 series on Each outgoing circuit for Each ODU module to be provided (Total ODU modules are 33 Nos.)				
a		<b>ODU's Panel-01-Terrace</b>				
		Same as above item but outdoor Panel with following accessories.				
		<b>INCOMING:</b>				
		1 No. 800 Amps, 42 kA, 415V 4P EDO ACB with microprocessor release for overcurrent, short circuit, and earth fault protection and Ethernet port for communication				
		Coloured (Red, Yellow, Blue) phase indicating lamp - 1 set				
		CT operated MFM of accuracy class 1.0 with RS 485 port				
		<b>BUSBAR:</b>				
		1000 Amp. TPN, 35 kA Cu. Bus Bar				
		<b>OUTGOINGS:</b>				
		80A, TPN RCCB with 100mA - 20 Nos. (Incl. 1No. Spare)				
		40A, TPN RCCB with 100mA - 05 Nos. (Incl. 1No. Spare)				
		MFM with Ethernet port, equivalent to Schneider PowerLogic PM5000 series on Each outgoing circuit				
		<b>ODU Panel</b> Described as above/As per Manufacturer ODU Configuration.	No.	1	3,63,018	3,63,018.00

b		<b>ODU's Panel-02-Terrace</b>				
		Same as above item but outdoor Panel with following accessories.				
		<b>INCOMING:</b>				
		1 No. 800 Amps, 42 kA, 415V 4P EDO ACB with microprocessor release for overcurrent, short circuit, and earth fault protection and Ethernet port for communication				
		Coloured (Red, Yellow, Blue) phase indicating lamp - 1 set				
		CT operated MFM of accuracy class 1.0 with RS 485 port				
		<b>BUSBAR:</b>				
		1000 Amp. TPN, 35 kA Cu. Bus Bar				
		<b>OUTGOINGS:</b>				
		80A, TPN RCCB with 100mA - 20 Nos. (Incl. 1No. Spare)				
		40A, TPN RCCB with 100mA - 03 Nos. (Incl. 1No. Spare)				
		MFM with Ethernet port, equivalent to Schneider PowerLogic PM5000 series on Each outgoing circuit				
		<b>ODU Panel</b> Described as above/As per Manufacturer ODU Configuration.	No.	1	3,49,975	3,49,975.00
4.3	NS	<b>CABLING (POWER )</b>				
		<b>Power Cabling and Earthing:</b>				
		Supply, installation, testing & commissioning of multi strand Cu conductor cables PVC sheathed, armoured cables of 1.1 KV grade with termination glands and GI earthing, identification tags, clamps and saddles etc.				
a		2Cx04 Sqmm	Rmt	50	262	13,100.00
b		3Cx04 Sqmm	Rmt	280	299	83,720.00
c		3Cx06 Sqmm	Rmt	195	321	62,595.00
d		3Cx16 Sqmm	Rmt	450	523	2,35,350.00
e		4Cx06 Sqmm	Rmt	1170	486	5,68,620.00
f		4Cx04 Sqmm	Rmt	120	464	55,680.00
4.4	NS	<b>Control Cabling</b>				
		Supply, installation, testing & commissioning of multi strand Copper conductor, PVC insulated, PVC sheathed armoured cable of 1.1 KV grade (Which is Interconnecting wiring for the fire alarm system with the AHU and the smoke dampers & Touch screen controller ).				
a		8C x 1.5 Sqmm	RM	990	386	3,82,140.00
		<b>TOTAL OF ELECTRICAL WORKS</b>				<b>29,86,395</b>

<b>5.0</b>		<b>VRF SYSTEM</b>				
5.1	NS	<b>INDOOR UNITS</b>				
		<b>4-Way Compact Cassette Unit</b>				
5.1.1		Supply, installation, testing and commissioning of following minimum capacity 4-way flow VRV/VRF Compact Cassette Type Indoor ceiling mounted unit equipped with synthetic washable media pre-filter, fan section with low noise fan/ dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve outer cabinet, drain pump, grill, necessary supports, vibration isolation, cord less remote control etc. , suitable for operation on single phase 230V +/- 10% 50Hz AC supply, complete as required. Aluminum fins within the IDU (evaporator unit) shall be coated with polysiloxane based coating, The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of Indoor Unit will be at Air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature.				
a		315-320 CFM/0.63-0.80 TR	NOS	18	31,085	5,59,530.00
		<b>Ceiling Mounted HSP Ductable Unit</b>				
5.1.2		Supply, installation, testing and commissioning of following minimum capacity VRV/VRF High Wall Type Indoor unit equipped with synthetic washable media pre-filter, fan section with low noise fan/ dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve outer cabinet, cord less remote control, drain pan, necessary accessories, etc. , suitable for operation on single phase 230V +/- 10% 50Hz AC supply, complete as required. Aluminum fins within the IDU (evaporator unit) shall be coated with polysiloxane based coating, The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of Indoor Unit will be at Air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature.				
a		1270-1624 CFM /4.55- 4.75 TR	No.	4	57,603	2,30,412.00
b		2047-2295 CFM / 6.35-6.5 TR	No.	3	73,690	2,21,070.00
5.1.3		<b>Floor Mounted Horizontal Air Handling Units With Exh. Blower and Enthalpy Recovery Wheel (FM AHU)</b>				

	Supply, Installation Testing and Commissioning of factory assembled, modular EUROVENT certified double skin, floor mounted AHU's complete with double skin 50 mm thick insulated with CFC free polyurethane foam (PUF) panels of 38±2 Kg/cum density sandwiched between 0.8 mm thick Alu Zinc inner and 0.8 mm precoated GI outer sheet. The AHU casing shall comply to Eurovent standard EN 1886 for casing strength D1, casing air leakage L1, thermal bridging factor TB2, thermal transmittance T2 and filter by-pass leakage F9. The control wiring and power wiring shall be in the scope of manufacturer and to be carried out at factory with terminations to Marshelling box.				
	AHUs shall be supplied with exhaust air blower with Enthalpy Recovery Wheel (ERW/HRW) with minimum efficiency of ERW/HRW being 75% and suitable to deliver undergiven CFM and static.				
	AHU shall be supplied with AHU blower fans with wall mounted EC Plug Fan with IE-5 motor complete with external rotor BLDC motor and integrated electronic controller and potentiometer for speed control. The fan shall be suitable for BMS connectivity. Single or multiple fans shall be considered depending upon capacity of AHU. AHU manufacturer shall supply cover plate for fans in sufficient quantity for maintenance purpose. EC fan incoming supply to be terminated with MCB and shall be included in the power terminal box for electrical connection of EC fan. Potentiometer shall be provided in the Marshelling box for manual operation of EC fans. Relay for Auto/Manual operation shall be a part of Marshelling box.				
	Pre-filter section with 50 mm thick MERV-8 (90% down to 10 micron) filter according to EN 779. Fine filter section with 300 mm thick MERV-13 (99% down to 3 micron) filter according to EN 779.				
	Food grade self adhesive coated EDPM gaskets shall be provided between panles and structure of the AHU to ensure the entire housing air-tight. 100 mm heavy duty GSS base frame shall be powder coated of minimum 30 micron for better aesthetics, cleaning and maintenance. Drain pan for AHUs shall be of stainless steel. They shall be suitable for indoor/outdoor installation. AHUs shall include VI pads.				
	DX cooling coils shall be of 8 row deep. Face velocity across coils shall not exceed 500 FPM. Cooling coils shall be constructed from premium quality seamless copper tubes of 12.5 mm dia and Aluminium fins of 12 FPI. Aluminum fins within the IDU (evaporator unit) shall be Anticorrosive coating.				

		AHU shall have marine lamps including adequately rated LED light inside the AHU cabinet. AHU inspection door shall have view window with perfectly sealed gaskets. All AHUs shall be provided with door limit switch and door safety GI guard. All internals shall be powder coated of minimum 30 micron for corrosion resistance.				
		All AHU shall include Supply/Return/Fresh Air Damper & Thermal Break Profile and Aluminum fins within the IDU (evaporator unit) shall be coated with polysiloxane based coating				
		Each AHU shall be equipped with Controller having appropriate processor and sufficient memory for file storage. Controller shall have ports for BMS connectivity using Modbus/Bacnet protocol. Controller must be compatible to connect to touch display unit and laptop for configuring or viewing unit performance parameters. Controller shall be feasible to accept Temperature/RH/Pressure/CO2 sensors, password protection, auto-restart, accept signal from sensors to regulate fan speed/valve opening/fresh air damper control. DP switch across shall be provided across filters for filter clogging indication. SMPS shall be used for powering Controller. All common alarms shall be displayed on Controller.				
		Supply, installation, commissioning, and testing of AHU coil mounted UVGI system for maintaining Indoor Air Quality & Deep Coil Cleaning. The system must include UV modules with dish antenna shaped parabolic reflectors to ensure that no stray UV-C radiation is leaked. Manufacturer should provide BMS compatibility and scientifically proven CFD design software report to ensure minimum UV intensity on coil. 3. Calculated lamp watts per square foot of coil shall demonstrate greater than 7.5 watts per square foot of coil. UVGI system supplied must be in strict conformity with the specifications.				
a		Double skin <b>floor mounted</b> Horizontal 8-Row Depth DX Cooling Coil (1 Coil) with Supply Fan 16000 CFM with pre, fine filter (MERV-13), S.P. is 80 mm & Exhaust fan 14000 CFM with Pre Filter, S.P. 55 mm, Heat Recovery Wheel (Enthalpy Wheel) AHU Coil is 50.0 TR, with mixing box, with Plug fan with VSD & motor & Weather Proof Canopy.	No.	1	23,09,396	23,09,396.00
b		Double skin <b>floor mounted</b> Horizontal 8-Row Depth DX Cooling Coil (1 Coil) with Supply Fan 16000 CFM with pre, fine filter, S.P. is 80 mm & Exhaust fan 10000 CFM with Pre Filter, S.P. 55 mm, Heat Recovery Wheel (Enthalpy Wheel) AHU Coil	No.	1	22,10,657	22,10,657.00

		is 50.0 TR, with mixing box, with Plug fan with VSD & motor & Weather Proof Canopy.				
5.1.4		<b>Floor Mounted Horizontal Air Handling Units (FM AHU)</b>				
		Supply, Installation Testing and Commissioning of factory assembled, modular EUROVENT certified double skin, floor mounted AHU's complete with double skin 50 mm thick insulated with CFC free polyurethane foam (PUF) panels of 38±2 Kg/cum density sandwiched between 0.8 mm thick Alu Zinc inner and 0.8 mm pre-coated GI outer sheet. The AHU casing shall comply to Eurovent standard EN 1886 for casing strength D1, casing air leakage L1, thermal bridging factor TB2, thermal transmittance T2 and filter by-pass leakage F9. The control wiring and power wiring shall be in the scope of manufacturer and to be carried out at factory with terminations to Marshalling box.				
		AHU shall be supplied with AHU blower fans with wall mounted EC Plug Fan with IE-5 motor complete with external rotor BLDC motor and integrated electronic controller and potentiometer for speed control. The fan shall be suitable for BMS connectivity. Single or multiple fans shall be considered depending upon capacity of AHU. AHU manufacturer shall supply cover plate for fans in sufficient quantity for maintenance purpose. EC fan incoming supply to be terminated with MCB and shall be included in the power terminal box for electrical connection of EC fan. Potentiometer shall be provided in the Marshalling box for manual operation of EC fans. Relay for Auto/Manual operation shall be a part of Marshalling box.				
		Pre-filter section with 50 mm thick MERV-8 (90% down to 10 micron) filter according to EN 779. Fine filter section with 300 mm thick MERV-13 (99% down to 3 micron) filter according to EN 779.				
		Food grade self adhesive coated EDPM gaskets shall be provided between panels and structure of the AHU to ensure the entire housing air-tight. 100 mm heavy duty GSS base frame shall be powder coated of minimum 30 micron for better aesthetics, cleaning and maintenance. Drain pan for AHUs shall be of stainless steel. They shall be suitable for indoor/outdoor installation. AHUs shall include VI pads.				
		DX cooling coils shall be of 8 row deep. Face velocity across coils shall not exceed 500 FPM. Cooling coils shall be constructed from premium quality seamless copper tubes of 12.5 mm dia and Aluminium fins of 12 FPI. Aluminium fins within the IDU (evaporator unit) shall be Anticorrosive coating.				

		AHU shall have marine lamps including adequately rated LED light inside the AHU cabinet. AHU inspection door shall have view window with perfectly sealed gaskets. All AHUs shall be provided with door limit switch and door safety GI guard. All internals shall be powder coated for corrosion resistance.				
		All AHU shall include Supply/Return/Fresh Air Damper & Thermal Break Profile and Aluminum fins within the IDU (evaporator unit) shall be coated with polysiloxane based coating				
		Each AHU shall be equipped with Controller having appropriate processor and sufficient memory for file storage. Controller shall have ports for BMS connectivity using Modbus/Bacnet protocol. Controller must be compatible to connect to touch display unit and laptop for configuring or viewing unit performance parameters. Controller shall be feasible to accept Temperature/RH/Pressure/CO2 sensors, password protection, auto-restart, accept signal from sensors to regulate fan speed/valve opening/fresh air damper control. DP switch across shall be provided across filters for filter clogging indication. SMPS shall be used for powering Controller. All common alarms shall be displayed on Controller.				
		Supply, installation, commissioning, and testing of AHU coil mounted UVGI system for maintaining Indoor Air Quality & Deep Coil Cleaning. The system must include UV modules with dish antenna shaped parabolic reflectors to ensure that no stray UV-C radiation is leaked. Manufacturer should provide BMS compatibility and scientifically proven CFD design software report to ensure minimum UV intensity on coil. 3. Calculated lamp watts per square foot of coil shall demonstrate greater than 7.5 watts per square foot of coil. UVGI system supplied must be in strict conformity with the specifications.				
a		9500 CFM, 16.0 TR, Floor Mounted (Horizontal/Vertical) 6- Row Deep DX cooling coil , 80 mm Static Pressure, with Pre & Fine Filter (MERV-13),thermal Break Profile and with Plug fan with VSD & motor	No.	1	4,57,491	4,57,491.00
b		8000 CFM, 13.0 TR, Floor Mounted (Horizontal/Vertical) 6- Row Deep DX cooling coil , 80 mm Static Pressure, with Pre & Fine Filter (MERV-13),thermal Break Profile and with Plug fan with VSD & motor	No.	2	3,77,402	7,54,804.00
c		10000 CFM, 16.5 TR, Floor Mounted (Horizontal/Vertical) 6- Row Deep DX cooling coil , 80 mm Static Pressure, with Pre & Fine Filter	No.	2	4,57,491	9,14,982.00

		(MERV-13),thermal Break Profile and with Plug fan with VSD & motor				
d		4000 CFM, 7.0 TR,Floor Mounted (Horizontal/Vertical) 6- Row Deep DX cooling coil , 80 mm Static Pressure, with Pre & Fine Filter (MERV-13),thermal Break Profile and with Plug fan with VSD & motor	No.	1	2,72,081	2,72,081.00
e		12000 CFM, 20.0 TR, Floor Mounted (Horizontal/Vertical) 6- Row Deep DX cooling coil , 80 mm Static Pressure, with Pre & Fine Filter (MERV-13), thermal Break Profile and with Plug fan with VSD & moter	No.	1	7,52,611	7,52,611.00
5.2	NS	<b>Accessories</b>				
a		SITC of Expansion Kit Required for the above AHU to make the system complete	Nos	18	31,085	5,59,530.00
b		SITC of Control Kit Required for the above AHU to make the system complete	Nos	18	25,904	4,66,272.00
5.3	NS	<b>REMOTE CONTROLLERS</b>				
a		Supply, installation, tesing and commissioning of High quality Remote controllers (Corded) for operation of AHU's.	Nos	9	4,388	39,492.00
b		Supply, installation, tesing and commissioning of High quality Remote controllers (Cordless) for operation of High wall /Cassette/ Ceiling Concealed indoor units.	Nos	30	3,840	1,15,200.00
5.4	NS	<b>Touch screen controller for indoor units controller - VRV</b>				
a		Supply, installation, testing and commissioning of touch screen controller for control of minimum 320 nos. indoor units in terms of ON/Off Status, temp. Status, Fan Speed, ODU On/Off Status etc. with all accessories and controls.	Nos	1	1,59,080	1,59,080.00
b		Supply, installation, testing and commissioning of touch screen controller (Which is controlled 100 nos. indoor units in terms of ON/Off Status, temp. Status, Fan Speed, ODU On/Off Status etc.) with all accessories and controls.	Nos	1	98,739	98,739.00
		Supply, installation, testing and commissioning of touch screen controller for control of minimum 100 nos. indoor units in terms of ON/Off Status, temp. Status, Fan Speed, ODU On/Off Status etc. with all accessories and controls.	Nos	2	93,254	1,86,508.00

5.5	NS	<b>REFNETS / Y-JOINTS</b>				
		Supply, installation, tesing and commissioning of Imported fittings Y-joints insulated, distributor and headers for all Indoor units at both the ends floors layout as per layout drawings.All interconnecting joints, Y Joints with polysiloxane based coating	Nos	350	3,627	12,69,450.00
5.6	NS	<b>TRANSMISSION &amp; CONTROL WIRING</b>				
		Supply, installation, testing, termination and commissioning of control cum transimission wiring (should be shielded cable in PVC Pipe) of 2C x 1.5 Sqmm Cu between indoor unit and out door unit and indoor units and its remote controller.				
a		2C x 1.5 Sqmm Cu Cable or as specified by OEM	RM	3650	234	8,54,100.00
b		Perforated GI Tray with hangers & supports for copper piping (250 mm wide)	RM	1200	351	4,21,200.00
5.7	NS	<b>Refrigerant-410a</b>				
a		Supply , charging & Leackage testing of refrigerant -410a in additional copper piping circuit.	Kgs.	370	1,036	3,83,320.00
5.8	NS	<b>Air Purifier (UVGI) for AHU/Ductable Units</b>				
		Supply, Installation , testing , commissioning and handing over of the coil mounted HYBRID Ultra Violet Germicidal Irradiations (UVGI) System for maintaining indoor Air Quality in indoor units. The system should be capable of reducing the airborne as well as surface bacteria, virus, mold, etc. The system should be designed to achive kill rate of not less than 90% per pass. The HYBRID UV system shall be designed to provide UV dosage of 2000 micro W/cm2 and should produce equal amount of positive & negative reactive oxygen species based on bi-polar plasma ionization to actively reduce the airborne & surface borne pathogens and other chemical gasses such as VOCs. The lamp shall have minimum 9000 working hrs life, ballasts shall be electronic type, life rated grater than 15000 starts. The lamp used should be T5 type, quartz glass, bi-pin type with ceramic ends and produce UV-C @253.7nm Wavelength . High quality aluminium reflector should be the part of the system. An run hour meter shall be provided to indicate remaining life of the Lamp in the form timer of digital display. Minimum UV intensity should be 500 microwatts at all the corners of the cooling coil.Should follow IEC 61347-2-3, IEC 61000-3-2, IEC 61547, safety standards. Should follow IEC 60929, IEC68-2-6 Fc, IEC 68-2-29 Eb				

		The lamps should be ISO Certified and plasma ionizers should be UL listed. The vendor should conduct bacteria test or bio test in any 2 locations to be done before and after installation.				
a		Upto 2.6 TR Ductable Indoors		72	14,484	10,42,848
b		Above 2.6 TR Ductable Indoors		56	23,776	13,31,456
5.9		SITC of indoor air quality monitor to measure and monitor PM2.5, PM10, CO2, VOC, temperature and humidity. The monitor shall have quality sensor calibrated with high accuracy and shall be compatible Intelligent BMS system on RS485. The system shall have capability to store data in the inbuilt sim card, shall send the data to cloud based server, also shall have digital display screen to show the data. The display shall be user friendly to understand with color indication.	Nos.	8	67,350	5,38,800
5.10	NS	<b>DRAIN PIPING</b>				
		Providing & fixing rigid PVC piping complete with fittings, supports as per specifications and pre insulated with 6mm thick closed cell elastomeric nitrile rubber tubular insulation.				
a		25 mm dia	RM	1680	218	3,66,240.00
b		32 mm dia	RM	500	259	1,29,500.00
c		40 mm dia	RM	380	311	1,18,180.00
d		50 mm dia	RM	210	389	81,690.00
5.11	NS	<b>CANVASS CONNECTION</b>				
a		Supply,Installation,Testing and commissioning of doble layer canvas connection with fire rating.	Nos.	201	2,072	4,16,472.00
		<b>TOTAL OF VRF SYSTEM</b>				<b>1,72,61,111</b>
<b>6.0</b>		<b>VENTILATION SYSTEM</b>				
6.1	NS	<b>Propeller fan</b>				
		Supply,installation,testing and commissioning of <b>Propeller fan</b> of the following capacity of approved make and specification. Fan shall be supplied with aluminum gravity louver & bird screen.				
a		150 mm dia propeller fan, with single phase motor	Nos.	16	3,471	55,536.00
b		300 mm dia propeller fan, with single phase motor	Nos.	10	3,782	37,820.00
c		450 mm dia propeller fan , with single phase motor	Nos.	14	5,486	76,804.00
6.2	NS	<b>Inline fan</b>				
		Supply, installation, testing and commissioning of <b>AMCA Certified circular type Inline fan</b> of the following capacity of approved make and specification. (Cost to be inclusive of Speed				

		Regulator) Fan shall be supplied with aluminum gravity louver & bird screen.				
a		100-400 CFM, 5-7mm SP WG with Single phase motor with three speed	Nos.	4	7,512	30,048.00
b		500-750 CFM, 12-15mm SP WG with Single phase motor with three speed	Nos.	3	16,060	48,180.00
6.3	NS	<b>Tube Axial Flow fans</b>				
		SITC of Long case Tube axial flow fans, as per specifications and approved makes suitable for three phase operation at 960/1450 RPM respectively Normal/Smoke case.				
6.3.1		AMCA Certified Long case tube axial flow fans complete with all accessories, suitable for wall mounted /Floor Mounted/ ceiling suspended installation. The fan shall be supplied with suitable 3PH/4P motor at 1450 RPM , and shall be selected for 25 mm static pressure (WG), For 2hrs fire rated (H Class motor insulation) All fan with fire retardent Canvas connection,bird screen and Gravity dampers . <b>(For Smoke Extract fan)</b> Fans capacity as per below mentioned as:(As per Vent. Fan Schedule)				
a		18000 CFM smoke extract	Nos.	1	1,29,519	1,29,519.00
b		31000 CFM smoke extract	Nos.	2	2,27,953	4,55,906.00
c		40000 CFM smoke extract	Nos.	2	3,07,188	6,14,376.00
6.3.2		AMCA Certified Long case tube axial flow fans complete with all accessories, suitable for wall mounted /Floor Mounted/ ceiling suspended installation. The fan shall be supplied with suitable 3PH/4P motor at 1450 RPM , and shall be selected for 40 mm static pressure (WG), (F Class motor insulation) All fan with fire retardent Canvas connection,bird screen and Gravity dampers . <b>(For Smoke make up air or pressurization fan)</b> Fans capacity as per below mentioned as:(As per Vent. Fan Schedule)				
a		6000 CFM (for Liftwell pressurization)	Nos.	4	57,598	2,30,392.00
b		9500 CFM (For Liftwell Pressurization)	Nos.	4	71,312	2,85,248.00
c		23500 CFM (For Lift lobby Pressurization)	Nos.	1	1,75,536	1,75,536.00
d		24500 CFM (For Stairwell Pressurization)	Nos.	2	1,86,507	3,73,014.00
6.4	NS	<b>Evaporative air cooler(Air Washer)</b>				
		Supply, Install, test and commission <b>double skin Evaporative air washer</b> as per specifications , suitable for the following capacity given below at 90% efficiency of evaporative medium. The fan shall be of DIDW centrifugal construction. Packaged Type				

a		5500 CFM, 40 mm (WG) static pressure, Floor/ceiling mounted (For Kitchen Vent.), Cost to be inclusive of unit isolator	Nos.	1	98,739	98,739.00
6.5	NS	<b>Air Scrubber (DRY Type)</b>				
6.5.1		<b>DIDW FAN : CSSD/Laundry/Kitchen Exhaust</b>				
		Supply, installation, testing and commissioning of DIDW Backward curved horizontal floor mounted fan unit comprising of accurately cut scroll & side plates, heavy gauge with all welded construction, sheet steel fabricated impeller, drive with blower pulley, motor pulley, V-belts, squirrel cage motor complete as per specification (fan-motor efficiency exceeding ASHRAE 90.1-2007 Criteria). (The bidder shall submit fan performance curves for all fans).				
a		6000 CFM / 75 mm WG SP (For Kitchen Vent.), Cost to be inclusive of unit isolator	No.	1	1,08,064	1,08,064.00
6.5.2		<b>DRY SCRUBBER : Kitchen Exhaust</b>				
		Supply, Installation, Testing and Commissioning of Dry Scrubber comprising of extract air intake section, electrostatic precipitation technology, dry type air cleaner to remove odour, smoke and fumes from exhaust air.				
		Electrostatic section shall be made of 16 gauge galvanised sheet, high bake epoxy powder coated of minimum 30 micron, washable type aluminium mesh filters, stainless steel spiked ionizers to create high voltage DC field, Stainless Steel 316 collector plates which should be alternatively charged positive and negative with large collecting area with 14" deep cell, to work as magnet for charged smoke and oil particles. Average efficiency of 95% and more in single pass as per DOP test method. Electrostatic Precipitator should be able to charge particles from 0.01 micron to 10 microns through solid state power supply. The system should be fitted with interlock switch for safety. The system should allow connection to a fan section to achieve 500 FPM velocity across the air cleaner.				
a		6000 CFM / 75 mm WG SP (For Kitchen Vent.), Cost to be inclusive of unit isolator	No.	1	1,97,478	1,97,478.00
6.6	NS	<b>AIR CURTAIN</b>				
		Supply, installation testing and commissioning of AIR CURTAIN of following size as per approved make. (At ground entrance)				
a		1800 mm long (High flow type)	Nos.	4	24,868	99,472.00
c		2100 mm long (High flow type)	Nos.	4	29,530	1,18,120.00
		<b>TOTAL OF VENTILATION SYSTEM</b>				<b>31,34,252.00</b>

<b>7</b>		<b>SERVER ROOM PAC WORKS</b>				
7.1		<b>DX UNIT For Server Room</b>				
a		Floor Mounted, Bottom discharge, Air Cooled Variable Capacity compressor (Digital Scroll Compressor) (From 20% to 100%), DX type Precision Air conditioners of cooling capacity 9.5 TR and with R-410a/407C Refrigerant Gas and infloor EC fan. Return Temp 26 Deg C & 50 ± 5% RH at 44 Deg C ambient. Each machine should be able to deliver 4500-5000 CFM or more. Cooling coil should be designed in such a way so that face velocity does not exceed 2.5 m/s.				
		<b>The Indoor unit shall comprise of Variable capacity Digital Scroll Compressor, Infloor Evaporator Fan complete with Backward curved type with EC motor, Blue fin Evaporator DX Cooling Coil,</b> Microprocessor controllers, Thermostatic Expansion valves, Driers, G4 Filter, Suction and Discharge piping, Internal power and Control wiring, Crankcase heaters, Infrared Humidifiers/steam electrode humidifiers, Heaters, HP/LP Cutouts, Power and Control contactors and Other Electrical accessories.				
		The Outdoor Condenser unit ( <b>Coated with corrosion resistant</b> ) shall comprise of Condenser fans & motor, Condenser cooling coil (Copper coil with aluminium fins), Fan Speed Controller (Variex), Isolator switch.				
		The unit shall be suitable for operation on 415 Volts, 50 Hz, 3 Phase, 4 Wire AC supply. Each unit should be having individual display panel, which shall display date, time, actual & set values, operating conditions, signal faults, collective faults, limiting values and PAC wellness alarm / service alarm to reduce the down time and unit memory shall hold the minimum 200 most recent events with ID number, time and date stamp for Each event.				
		Basic Unit Price of Each Unit includes items as Digital Scroll Compressor, Infloor EC Backward curved Fan, Evaporator Cooling Coil, Air cooled condenser, Fan Speed Controller (Variex), Microprocessor (ICOM), Heater, IR Humidifier/Steam Electrode Humidifier, Power Panel & starter for all drives, Filter, Card for BMS/Web, Water leak detector sensor, Team Mode feature for PAC units controller for synchronising the Multiple No. of units to work as single system for all above units, Load sharing mode feature, Cascading Effect, Sequencing of above Units.				

		Supply of Unit, as per above specification. (9 Working + 3 Standby)	Nos	12	7,70,661	92,47,932.00
b		<b>DX UNIT For Server Room</b>				
		Supply, installation, testing and commissioning of floor mounted standalone vertical type air treatment recirculation unit, having adjustable flange type/ louvered grilles of suitable size on inlet at the lower end and discharge grilles at the upper side of the unit or vice versa based on the site requirements. The unit's open-able sections should have heavy duty hinges and handles with gasket and should be designed for proper sealing within the unit's compartment once the door is closed to prevent any bypass of the air. The fan should be a direct driven EC fan that can maintain constant flow rate selected to operate at optimum capacity and be capable to deliver the required air flow regardless of the pressure drop generated by partly / heavily choked (40 -80 % ) filters.				
		500 CFM	Nos	4	1,41,666	5,66,664.00
7.2		<b>Lowside accessories and Installation &amp; Commissioning:</b>				
i		Installation & commissioning of Precision AC units comprising of:				
ii		Lifting, shifting & positioning of units to site without use of crane				
iii		Pressure testing, vacuumizing and Commissioning of the system.	Nos.	12	34,000	4,08,000.00
iv		Interconnecting <b>epoxy coated Copper piping</b> between indoor & outdoor unit. @ 25 RMT Copper piping will be duly insulated with in the AC space.				
a		Hot gas line	Rmt	410	986	4,04,260.00
b		Liquid line	Rmt	410	759	3,11,190.00
iii		Interconnecting copper cabling between indoor & outdoor unit (3 Core x 2.5 Sqmm) on suitable GI tray	Rmt	450	312	1,40,400.00
iv		Incoming Copper Cabling from Incoming Isolator to CRAC Unit @ 25 mtr per machine	Rmt	300	334	1,00,200.00
v		Condensate drain piping with 40NB GI- B class pipes.	Rmt	60	408	24,480.00
vi		Humidifier water piping with 25NB GI-B class pipes.	Rmt	40	329	13,160.00
vii		IDU & ODU Stand	Nos.	24	2,267	54,408.00
viii		Refrigerant R-410a/407c	Kgs.	110	1,036	1,13,960.00
ix		EXTENDED PIPING KIT in case piping length increases more than 30 mtr/ckt.	Nos.	6	39,666	2,37,996.00
x		Installation, Testing and commissioning of extended piping kit complete with supply of check valves, solenoid valves, "U" trap, additional oil charge cabling etc. as required	Lot	2	28,333	56,666.00

		Incase of single/multiple circuits the measure will be considered one Kit per unit. Hence supplier should quote rate accordingly.				
		<b>AIR DISTRIBUTION</b>				
xi		Supply, Installation , testing and Balancing of double louvered supply air grilles in accordance with the approved shop drawings along with VCD	Sqm.	12	7,571	90,852.00
xii		Supply and installation of Air Powder coated of 50 micron extruded aluminium grilles with dampers of approved colour & shade. Size 600 x 600 mm	Nos.	60	2,267	1,36,020.00
		<b>INSULATION</b>				
xiii		Supply and Application of 13mm thick UV laminated Cross Linked Polyethylene for floor of Server Room as per drawings.	Sqm.	120	595	71,400.00
		<b>TOTAL CARRIED TO SUMMARY (Server PAC Works)</b>				<b>1,19,77,588.00</b>
<b>7.3</b>		<b>MISCELLENEOUS ITEMS</b>				
7.3.1		<b>FIRE RATED DOOR</b>				
		Providing and fixing of 2 Hrs fire rated metal doors for Server Room as per BS:476 Part- 20 & 22 & IS 3614 part-2 for stability, integrity and thermal insulation including all fittings. Door confirming to IS 277 with the following specification. Recommended fire door shall have doors prior tested at CBRI for maximum rating of 2hrs tested either with or without vision panel. Individual Test certificates should be available for glass used in vision lites confirming the required fire ratings. Any deviation in specification other than what is mentioned in the test certificates are not allowed. Proper label confirming the type of door and the hourly rating is mandatory. Approved manufacturer should be ISO Certified company. Size 2000 X 2400mm with panic bar (Double Hung)	Nos	1	63,006.00	63,006.00
7.3.2		<b>VESDA</b>				
		<b>SERVER ROOM</b>				
a		Supply installation, testing & Commissioning of Early warning smoke detection system control Panel with Display, Single Zone, Power supply (To be supplied by the Panel Manufacturer) & all required accessories. The panel should have the capability to be integrated to the Intelligent Fire Alarm System.	Nos	1	2,78,819.00	2,78,819.00
b		Supply, installation, testing & Commissioning of Aspiration sampling nozzles / Sampling tubes/Hooter complete with required stickers & necessities elbows & joints.	Set	1	38,655.00	38,655.00
7.3.3		<b>Rodent Repellent</b>				
		<b>SERVER ROOM</b>				
a		Supply, Installation, testing & Commissioning of Master Console Capable of connecting to 12 satellites complete as required and as per specifications.	Nos	2	22,893.00	45,786.00

b		Supply Installation, testing & Commissioning of Satellite units complete as required and as per specifications.	Nos	12	1,595.00	19,140.00
c		Supply, installation, testing & Commissioning of Wire Bundles (2C x 1.5 sqmm armoured cable.	Mtrs	100	142	14,200.00
7.3.4		<b>Water Leak Detection</b>				
a		Supply, Installation, testing & Commissioning of Water leak Detection Panel/Hooter/Sensing cable	Lot	1	25,226.00	25,226.00
b		Supply, installation, testing & Commissioning of Wire Bundles (2C x 1.5 sqmm armoured cable.	Mtrs	50	142	7,100.00
7.3.5		<b>GAS SUPPRESSION</b>				
a		Supply, installation, testing and commissioning of Seamless Cylinder 120 Ltrs CCOE approved complete with valve. The System should be Nitrogen Pressurised at 42 Bar and VDS Approved. The fill density of cylinder should not be more than 80%.	SET	4	247268	9,89,072.00
b		Supply, installation, testing & commissioning of Novec 1230 based Gas by 3M complete as required	KG	332	4911	16,30,452.00
c		Supply, installation, testing & commissioning of VDS Listed Master Kit for Multi Cylinder System Comprising of Pr. Gauge + Low Pr. Supervisory Switch, Electromagnetic Actuator, Manual Actuator, Pneumatic Actuator, Flexible Discharge Hose, Flexible Actuation Hose	KIT	1	105958	1,05,958.00
d		Supply, installation, testing & commissioning of VDS Listed Slave Kit for Multi Cylinder System Comprising of Pr. Gauge + Low Pr. Supervisory Switch, Pneumatic Actuator, Flexible Discharge Hose, Flexible Actuation Hose + 1,*Tee + 1,* Elbow 7/16 JIC - 1/8 NPT	KIT	3	77703	2,33,109.00
e		Supply, installation, testing & commissioning of VDS listed Manifold Check Valve for Multiple Bank Cylinders Nominal diameter 32 mm Thread EN 10226 Rp 1"1/4 Operating pressure max 42 bar Opening pressure 1 bar	Nos	4	27973	1,11,892.00
f		Supply, installation, testing & commissioning of Manifold pressure switch with Operating pressure 42 bar Release pressure min 3 bar Contact 2 NO/NC Ingress protection rate IP54 (EN60529)	NOS	1	28256	28,256.00
g		Supply, installation, testing & commissioning of Nozzles, 360 Deg / 180 Deg Throw, selection as per approved hydraulic flow calculations.	NOS	4	4592	18,368.00
h		Supply, installation, testing & commissioning of Cylinder mounting straps to hold the cylinders at wall	NOS	8	4945	39,560.00

i		Supply, installation, testing & commissioning of piping and manifold complete as per site requirement. Sch 40; ASTM A106 Gr B, as per flow calculations for the specific hazard volume and stand to hold, position and support the manifold and piping properly.	lot per cylinder	4	77703	3,10,812.00
j		Supply, installation, testing & commissioning of manual abort stations, shall be fitted with transparent hinged covers to avoid the possibility of accidental operations.	Each	1	3532	3,532.00
k		Supply, installation, testing & commissioning of manual release stations, shall be fitted with transparent hinged covers to avoid the possibility of accidental operations.	Each	1	3532	3,532.00
l		Supply, installation, testing & commissioning of warning board with marking Gas discharge do not enter". Shall operate on 24V DC. Driven through gas release panel (For use inside room and wherever installation)	Each	1	12009	12,009.00
m		Supply, installation, testing & commissioning of conventional photoelectric detector with mounting base complete as required	Each	4	2402	9,608.00
n		Supply, installation, testing & commissioning of Gas release Panel with Inbuilt Battery Backup complete as required.	Each	1	205256	2,05,256.00
o		SITC of PVC insulated FRLS armured copper conductor cable	Rmt	100	205	20,500.00
		<b>TOTAL for MISC.</b>				<b>42,13,848.00</b>
		<b>TOTAL FOR PAC IN SERVER ROOM</b>				<b>1,61,91,436.00</b>
<b>8.0</b>		<b>BUILDING MANAGEMENT SYSTEM</b>				
8.1	NS	<b>CENTRAL CONTROL STATION</b>				
a		SITC of BMS Computer System: i7 Processor or Equivalet Server PC, Intel(R) Xeon(R) Processor, 2.93GHz, 4MB Cache with 16 GB RAM, 256 GB SDD, 1 TB HDD, 2 GB Graphics Card, 10/100 Mbps Ethernet card, USB connection & internal modem, Web server software, DVD-ROM Drive (with RAM), 100/1000 Mbps NIC for Network connection and anti virus software as per Tender Specifications. Accessories included Wireless Optical Mouse & Key Pad, with the above BMS System configuration. MS Windows 10 Enterprise or latest Licensed software compatible with the BMS platform etc. complete as required. Makes (Dell/HP/Lenovo)	Nos	2	1,52,270	3,04,540.00
b		Laserjet A3 Color Printer	Nos.	1	2,25,197	2,25,197.00

8.2	NS	APPLICATION SOFTWARE				
a		SITC of the following window based graphical software for IBMS system with 1 No. Client for Operator workstation. The Software shall have 3D & HD vector dynamic graphics with Autocad import of plan with Zoom In & Zoom Out facility, Native 64 Bit System, Multi-Monitor Support-( Max 4 Nos), Multi-language support, BTL, UL, EN Certified System, BACnet Profile B-AWS (Advanced workstation) as per the BTL Listing, dot net platform, Certified OPC DA Server by OPC Foundation, Web-Based Server software shall permit use of Standard Web-Browsers such as Microsoft Internet Explorer, Netscape Navigator, etc. The Software shall comply to international standards and strive to deliver products that meet security standards such as ISA/IEC 62443, UL2900, ISO/IEC 27001, ISO/IEC62443 and OWASP. Cybersecurity audit trail, 4-eye principle, Seamless integration of certificates within customer IT infrastructure, Microsoft's active directory-based authentication, Use of network infrastructure that supports physical network or VLAN segmentation, Placing the web server in a "demilitarized zone" (DMZ), End-to-end encryption, from client to server, End-to-end encryption between servers, Certificate-based data exchange, Encrypted backups. The software shall have the capability to integrate with Lighting and other services as per technical specification. The software license shall have 5000 points.	Nos.	1	19,59,619	19,59,619.00
b		Client License for Engineer workstation	Nos.	1	91,455	91,455.00
c		SITC of High-quality CAPACTIVE touch 7.0" panels for technical on-site operation of plants as well as room operation. The Touch Panel shall have integrated web server and a BACnet/ IP web interface to connect a HTML5 browser to a device on the network. Generic operation and monitoring of plant functions (alarms, schedulers, calendars, set point changes, display of actual values, etc.)	Nos.	2	75,076	1,50,152.00
d		Design, Supply, installation, testing and commissioning of Automation Station and related Field devices for STP Plant with a capacity of STP-400 KLD. The controller shall have a capacity of 600 IO points with integration port. It should store trend logs and event buffer for a typical duration of upto 30 days, DDC controller shall have a resident real time clock with a battery backup DDC must support trending & scheduling at controller level . All trend data must be created and saved to the automation station to achieve gap-free trend documentation during communication failure for Modular DDC	Nos.	1	7,41,614	7,41,614.00

		analog IO Modules should local override facility with LCD display (LO/ID to ISO 16 484-2) & relay modules should have override as per ISO 16 484-2 . The controller shall be housed in a vandal proof lockable & secure MS cabinets along with all necessary switchgear protections as required. The same shall included the following.				
e		3 Phase starter Panel with VFD drive for 11 KW with category C1 Filter as per EN61800-3 and inbuilt choke with all communication protocol required for integration	Nos.	1	1,33,395	1,33,395.00
f		Electro-magnetic flow meter at the sewage inlet and outlet of membrane suction pump of suitable size	Nos.	2	1,90,412	3,80,824.00
g		PN16 Motorised Butterfly Valve with On/Off Actuator DN Size 150 mm	Nos.	2	1,45,229	2,90,458.00
h		pH Meter at membrane suction pump outlet for measurement of pH	Nos.	1	97,895	97,895.00
i		Differential pressure Switch Water	Nos.	4	8,928	35,712.00
j		Water Flow Switch	Nos.	2	9,898	19,796.00
k		Level Transmitter	Nos.	1	54,219	54,219.00
8.3	NS	<b>INTEGRATORS</b>				
		SITC of True IP Based BTL & UL Listed for third party integration. The controller shall have 2- port Ethernet switch and WLAN interface. It should have BTL label (BACnet communications passed the BTL test) and consisting of Dual microprocessor with Storage capacity of 1 GByte RAM. It should support Real Time clock upto 7 Days. It should Support of the major communication protocols: BACnet/IP, BACnet MS/TP, Modbus IP and Modbus RTU upto 500 points. Integrator shall be of same make only.				
a		For VRF System on Bacnet/IP - 6000 Points	Nos.	1	16,11,745	16,11,745.00
b		For Fire ALARM System on Bacnet/IP - 1500 Points	Nos.	1	4,67,509	4,67,509.00
c		For HT/LT/Transformer on Bacnet/IP or Modbus RS485 - 500 Points	Nos.	1	1,47,416	1,47,416.00
d		For AHU/TFA VFDs on Modbus/RS485 - 120 Points	Nos.	1	1,47,416	1,47,416.00
e		For DG Sets on Modbus RS485 - 60 Points	Nos.	1	1,47,416	1,47,416.00
f		For Multifunctional energy meters Modbus/RS485 - 300 Points	Nos.	1	1,47,416	1,47,416.00
g		For PAC Units on Modbus/RS485 - 60 Points	Nos.	1	1,47,416	1,47,416.00
h		For Lifts on Modbus/RS485 - 54 Points	Nos.	1	1,47,416	1,47,416.00
i		For UPS on Modbus/RS485 - 45 Points	Nos.	1	1,47,416	1,47,416.00
j		For Solar Panel on Modbus/TCIP - 50 Points	Nos.	1	42,803	42,803.00
8.4	NS	<b>DDC CONTROLLERS</b>				
		SITC of Standalone BTL & UL listed BACNet I/P field DDC controller having universal input/ output ports. Controller shall have 2 10/100 ethernet port &				

		can communicate in Star, Daisy chain, RSTP topology & offer path redundancy for communication. DDC controller shall be DHCP enabled to ensure VPN network . All DDC Controllers shall be provided with hinged doors with locking facility. Apart from the controllers, the enclosures shall house the terminal blocks, load relays and associated equipment. The internal wiring in the enclosure shall be factory wired. The packaging shall be such that complete installation of the field equipment and field wiring can be done prior to the installation of the electronics. The controller shall be independent in operation and the failure of any other device / controller or the operator workstations, shall not cause any disruption to the function of the rest of the system. The DDC controllers shall have the facility to implement user modifiable time schedules as daily, weekly, monthly annual temporary schedules. The DDC Controllers Shall have integration facility with at least 1 ports of integration.				
		The above shall be housed in vandal proof, lockable & secure MS Cabinets to be supplied along with all necessary switchgear protections as required. Number of controllers shall have spare capacity of 15% for future expansion.				
a		Controller for Common indication	Nos.	2	1,49,668	2,99,336.00
b		Controller for AHU system (1 AHU per DDC)	Nos.	9	1,13,811	10,24,299.00
c		Controller for TFA (1 TFA per DDC)	Nos.	3	1,13,811	3,41,433.00
d		Controller for Air Washer Units	Nos.	1	1,13,811	1,13,811.00
e		Controller for Ventilation Fans ( 4 Fans in 1 DDC)	Nos.	2	1,13,811	2,27,622.00
f		Controller for Pressurisation Fans ( 4 Fans in 1 DDC)	Nos.	4	1,13,811	4,55,244.00
g		Controller for DG Sets	Nos.	1	1,31,739	1,31,739.00
h		Controller for Lifts	Nos.	2	1,31,739	2,63,478.00
i		Controller Lighting System (Max 8 in 1 DDC per floor)	Nos.	5	1,27,797	6,38,985.00
j		Controller for Fire Fighting system	Nos.	1	1,13,811	1,13,811.00
k		Controller for Tanks	Nos.	2	1,13,811	2,27,622.00
l		Controller for Plumbing System	Nos.	1	1,13,811	1,13,811.00
8.5	NS	<b>FIELD INSTRUMENTS</b>				
		Supplying, installing, testing and commissioning of the following sensors / transducers / transmitters. The DDC shall support sensor with DC 0...20 mA or 4...20 mA, DC 0 ... 10 V, LGNi 1000, 2x LG-Ni1000, Pt 1000 , NTC 10k, NTC 100k, 1000 Ohm.				
a		Combined Ambient air temperature + humidity, CO2 sensors with Display.	Nos	6	45,185	2,71,110.00
b		Combined PM2.5, PM10 Sensor with Display	Nos	6	24,768	1,48,608.00
c		Differential pressure switch Air	Nos	32	4,860	1,55,520.00

d		Temperature sensor	Nos	12	2,648	31,776.00
e		Space type CO2 sensor	Nos	12	19,379	2,32,548.00
f		CO Sensor	Nos	5	9,899	49,495.00
g		Flameproof Level Switch	Nos	4	16,725	66,900.00
h		Voltage Transducer	Nos	4	13,312	53,248.00
i		Current Relay	Nos	19	3,669	69,711.00
j		Water pressure sensor	Nos	2	18,032	36,064.00
k		Bi Level Switch	Nos	3	12,459	37,377.00
l		Occupancy Sensor	Nos.	40	3,513	1,40,520.00
	NS	<b>Cable, Conduit and Cable Tray</b>				
l		Supply, Installation, Testing & Commissioning of the following cables, conduit and cable tray as per the specifications:				
		2 Core 1.5 Sqmm Annealed Tinned Copper, Twisted pair , Shielded armoured cable for signal and power as per specifications	RM	2800	139.00	3,89,200.00
8.6		4 Core 1.5 Sqmm Annealed Tinned Copper, Twisted pair , Shielded armoured cable for signal and power as per specifications	RM	1500	204.00	3,06,000.00
		Cat-6 unarmoured cable with required jacks and points	RM	1860	48.00	89,280.00
a		<b>HOT DIP GALVANISED GALVANISED PERFORATED TYPE CABLE TRAY</b>				
b		150X50X1.6MM	RM	300	748.00	2,24,400.00
c		GI Flexible 25 mm	RM	800	87.00	69,600.00
		<b>NETWORK SWITCHES</b>				
e		Supply, installation, testing and commissioning of Layer 2 unmanaged switch with 16/24 ports (RJ-45) port rack mountable, SMPS power supply. The switch to switch distance shall not exceed beyond 80 meters	Nos.	5	43,519.00	2,17,595.00
		<b>TOTAL OF BMS</b>				<b>1,41,78,988.00</b>
<b>9.0</b>		<b>AMC WORKS</b>				
9.1		Comprehensive AMC for seven (7) years of complete VRF based HVAC system of capacity 850 HP* including BMS as per scope mentioned in technical specification after completion of 12 months Maintenance Period.				
		Maintenance period	HP	850*	Free	
a		1st Year	HP	850*	3,240.00	27,54,000.00
b		2nd Year	HP	850*	3,402.00	28,91,700.00
c		3rd Year	HP	850*	3,572.00	30,36,200.00
d		4th Year	HP	850*	3,750.00	31,87,500.00
e		5th Year	HP	850*	3,938.00	33,47,300.00

f		6th Year	HP	850*	4,135.00	35,14,750.00
g		7th Year	HP	850*	4,342.00	36,90,700.00
		<b>Note: *The final capacity shall be decided as per the final installation and the total value shall change accordingly on pro-rata basis.</b>				
		<b>TOTAL CARRIED TO SUMMARY (AMC Works)</b>				<b>2,24,22,150</b>
		<b>TOTAL OF NON-SCHEDULE ITEMS</b>				<b>8,01,97,925</b>
		<b>TOTAL OF SCHEDULE AND NON-SCHEDULE ITEMS (A+B)</b>				<b>10,98,77,150</b>

**Explanatory Notes for BOQ:**

- i) The quantities shown in above Schedules are approximate and are as a guide to give the tenderer(s) an idea of quantum of work involved. The DFCCIL reserves the right to increase/ decrease and/or delete or include any of the quantities given above as per site conditions.
- ii) All efforts have been made to make the document/BOQ complete in all respect for successful commissioning of the works, however, if any minor item has not been specifically mentioned or being omitted, the same shall be executed without any extra cost by the agency, so as to ensure successful and satisfactory commissioning of the item / work to the full satisfaction of Engineer/DFCCIL. In this regard, decision of Engineer/DFCCIL shall be final & binding.

**SCHEDULE-V**  
**LOW VOLTAGE WORKS**  
**NON-SCHEDULE ITEMS**

<b>IV</b>		<b>SCHEDULE-IV</b>				
		<b>LOW VOLTAGE WORKS</b>				
<b>(ii)</b>		<b>NON-SCHEDULE ITEMS</b>				
<b>I</b>		<b>CCTV SYSTEM</b>				
1		<p>SITC of HD Outdoor IR IP dome camera with 1/3-inch CMOS, Sensor pixels 4 MP 2688 x 1520, Sensitivity-0.4 lx (color) 0.05 lx (mono), IR range 30 mtrs, Dynamic range 100 db, True day/night, Automatic Electronic Shutter, Video compression H.265 MP ; M-JPEG, White balance, BLC, quad-streaming, Video Analysis with minimum 4 analytics run simultaneously ( Object removal , Loitering , Enter or Exit from the Field , Object Classification etc.), Privacy Mask, Auto Varifocal Lens (zoom / focus) 2.7mm to 13.5 mm lens, Two-way, full duplex Audio, Audio compression AAC, G.711, L16 (live and recording), 5s pre-alarm recording Memory card slot support upto 512 GB , IP66 , ONVIF Profile S, CE, UL, FCC Certified. IP66 , IK 10 Interface</p> <p>Communication Interface : 1 RJ45 10M/100M Ethernet interface</p> <p>General</p> <p>Regulatory : CE, FCC, UL</p> <p>Operating Conditions : -30 °C – 60 °C (-22 °F – 140 °F) Humidity 95% or less (non-condensing)</p> <p>Power Supply : 12 V DC ± 10% PoE (802.3af)</p> <p>Power Consumption : Max. 5W</p> <p>Ingress Protection level : IP66</p> <p>IR Range : 30 meters</p> <p>Impact Protection : IEC60068-2-75Eh, 20J; EN50102, up to IK10</p>	Nos.	138	49,500.00	68,31,000.00
2		<p>SITC of HD Outdoor IR IP Bullet camera with 1/3-inch CMOS, Sensor pixels 4 MP 2688 x 1520, Sensitivity-0.4 lx (color) 0.05 lx (mono), IR range 30 mtrs, Dynamic range 100 db, True day/night, Automatic Electronic Shutter, Video compression H.265 MP ; M-JPEG, White balance, BLC, quad-streaming, Video Analysis with minimum 4 analytics run simultaneously ( Object removal , Loitering , Enter or Exit from the Field , ObJect Classification etc.), Privacy Mask, Auto Varifocal Lens (zoom /</p>	Nos.	22	53,640.00	11,80,080.00

	<p>focus) 2.7mm to 13.5 mm lens, Two-way, full duplex Audio, Audio compression AAC, G.711, L16 (live and recording), 5s pre-alarm recording Memory card slot support upto 512 GB , IP66 , ONVIF Profile S, CE, UL, FCC Certified. IP66 , IK 10 IR Range :Minimum 30Mtr Storage :On Board Micro SD/SDHC/SDXC slot, Support up to 128 GB</p> <p>Reset :yes</p> <p>DNR :3D</p> <p>Face Detection :Supported</p> <p>Region of interest :Support 1 Region of interest per stream</p> <p>Analytic :Object removal, Line crossing, intrusion, unattended baggage</p> <p>Regulatory :UL, CE, FCC</p> <p>Temperature/ Humidity :-30 °C to +60 °C / 95% or less</p> <p>Protection :IP66, IK10 Rated, Lightning Protection, Surge Protection and Voltage Transient Protection</p> <p>Power Consumption :12 VDC, 1.2A, 14.5W PoE (802.3at), 0.5A to 0.1Amax. 16.5W</p>				
3	<p>SITC of 4U Rack mount single chassis Network Video Recorder with dual Gb NIC, 1 DVI-I + HDMI + 1 Display Port, max 2 simultaneous monitors, RS-232/485 serial port, DVD, Server Operating System- Windows 10,Ubuntu Linux 16.04, Gen 4 Intel Core i7, Local Client Display Rate (FPS)Windows – 700 FPS (HD)Linux – 900 FPS (HD),High Performance, High Reliability IP Recorder. — Continuously records 400Mbps (Windows) &amp; 800 Mbps (Linux)of video while hosting a local client, multiple remote clients and the web server on a single server,RAM-8 GB, 16 GB (Optional)solid-state operating system drive,USB-6 x USB 2.0, 2 x USB 3.0 high air flow cooling and hardware monitoring features ensure maximum uptime. keyboard and mouse, Professional Grade client and server software pre-installed and software updates. Access live and recorded video on multiple client PCs with free Windows, Mac or Linux client application. web server application is pre-installed on the server to access video through a web browser or free Mobile iPhone / iPad and Android apps. 90 days storage of camera feeds is required. Storage Capacity be catered accordingly.</p> <p>NVR must support duplex audio between</p>	Lot.	2	20,43,480.00	40,86,960.00

		control room and camera location  NVR must be OEM agnostic  NVR must be configured in HA mode and NVR must be scalable to support upto 256 video inputs.  All associated racks, patch panel, patch cords, face plates and cabling requirements of all kinds will be provided from day 1. All applicable licenses will be provided for the entire warranty duration or minimum 3 years whichever is later.				
4		SITC of Outdoor IR HD PTZ Camera with 1/3" 4 Mega pixel progressive scan Exmor CMOS, Effective pixels 2688x1520, 30x Optical Zoom 4.5mm - 135 mm;°, Minimum Illumination- Sense up on- Color: 0.05 lux , B/W: 0.01 lux, With infrared (IR) 0 lux, WDR 120dB, Video Analysis ( Object removal , Loitering , Enter or Exit from the Field , Object Classification etc.) Intelligent Dynamic Noise Reduction, BLC, White Balance, Mechanical switchable IR filter, Pan Range 360° continuous, Tilt Range 0°– 90°, Pan/Tilt Modes - Pan: 0.1°/s - 240°/s; Tilt: 0.1°/s - 120°/s, Presets 256 , Tours, IR distance 100 mtrs, IR can be internal or external with full 360 deg PAN coverage; White Led 60m; Audio- 1/1 Channel In/Out, Memory card slot (support upto 1TB) , 24 individually configurable privacy masks, Simple single cable installation with POE+ support for Outdoor application, wiper, Defog, IP66 , ONVIF Profiles S & G, CE, UL Certified. Imaging: Sensor type : 1/3-inch CMOS Total sensor pixels : 2688 x 1520 (4 MP) Sensitivity : 0.05 lux, Mono, 0.01 lux High Dynamic Range : 120 db or better True Day/Night : Auto, Color, Monochrome Noise reduction : iDNR / 3DNR with separate temporal and spatial adjustments Shutter Speed : 1/30 s to 1/10000 s Intelligent defog : Intelligent Defog automatically adjusts parameters for best picture in foggy or misty scenes (switchable) Video resolution : 1440p, 1080P, 720P, D1 No. of Streams : Multiple	Nos.	10	2,95,500.00	29,55,000.00

		configuration streams Video compression : H.265 MP, H.264, M-JPEG Max. frame rate : 60 fps Optical and Digital zoom : 30x Optical 16X digital Lens type : 30x motorized zoom   6.6 mm - 198 mm (F1.5 – F4.8) White LED : Require white LEDs to see Images in color upto 60 Mtr in no Ambient light IR Range : 100 Mtr or better Lens adjustment : Motorized zoom/focus Pan angle : 360 ° Continuous Tilt angle : -90° to 0° (Auto-flip 180°) Pre set Position : 256				
		Guard Tour : 2 ( Maximum Total duration of 15 minutes for each Tour) and 2 Pre position tour. Sector/Blanking : 16 Independent sectors with 20 characters on each title Pre position speed : Pan : 240 °/s , Tilt : 100 °/s Audio communication : Two-way, full duplex Audio Line In/Out : 1/1 Alarm In/Out : 1/2 Ethernet : 10/100 Base-T, auto-sensing, half/full duplex Ethernet connector : RJ45 Connectivity : ONVIF Profile S, ONVIF Profile G Analysis Type : Edge Based Analytics Alarm rules : Rule based alarms and tracking, Line crossing, Enter / leave field, Follow route, Loitering, Idle / removed object, People counting, Crowd density estimation. Object filters:- Colour , Speed , direction Other functions : Sharpness, Backlight compensation, Contrast enhancement, Display stamping (Name/logo/Time), Pixel counter Memory card slot : Min. 512 GB support SD card health monitoring : Extreme lifetime and health monitoring support that provides early service indication Hardware for data security : Unique Crypto-processor / TPM Dual Power Supply for redundancy : POE+( IEEE802.3bt) and 24VAC Operating temperature : -40 °C to +60 °C (-40 °F to +140 °F)				

		Humidity : 0 to 90% ( NON condensing) Ingress protection : IP 66 IK Rating : IK10 Wiper : Require rain sensing Wiper. Privacy Masking : 32 Individual configurable				
5		Supplying, Installation, Testing & Commissioning of Intelligent Insights software & Hardware for People Counting Visualization dashboard	Per Camera	10	29,500.00	2,95,000.00
6		SITC of 8 TB SATA Surveillance HDD	Nos.	22	25,500.00	5,61,000.00
7		Supply, installation, testing and commissioning of Video Management System (VMS) software shall be used to view live and recorded video from capture cards and IP devices connected to local and wide area networks. The VMS software shall have a client/server-based architecture that can be configured as a standalone VMS system with the client software running on the server hardware and/or the client running on any network-connected TCP/IP workstation. Multiple client workstations shall be capable of simultaneously viewing live and/or recorded video from one or more servers. Multiple servers shall also be able to simultaneously provide live and/or recorded video to one or more workstations. The VMS server software shall also have the ability to be installed on an IP edge device—such as an IP camera or encoder that allows for 3rd party applications—allowing the device to serve as both a server and IP video recording device. The VMS shall not charge for the number of concurrent clients (min. 50 thick clients and 16 mobile clients to be provided along with VMS)  VMS must be OEM agnostic and also support third party cameras.  All hardware including servers, storage etc and software as per latest specifications required for seamless working of the application for next 3+5 years will be provided as part of the solution.	Nos.	180	12,850.00	23,13,000.00
8		SITC of workstation ( i-7 PC, with 8 GB RAM and 1 TB HDD, 10/100 Mbps Ethernet card, USB connection and internal modem, Microsoft(R) Windows(R) 7 OS Professional Enterprise, Web Server Software, DVD-ROM Drive (with RAM), 100/1000 Mbps NIC for Network connection and antivirus software with 22" colour graphics monitor as per Tender	Nos.	3	1,08,172.00	3,24,516.00

		Specifications. Accessories included (Optical Mouse, Key Pad.)				
		<b>TOTAL</b>				<b>1,85,46,556.00</b>
<b>II</b>		<b>Displays</b>				
1		<p>SITC of 55 Inches Display with 4K UHD LED backlight including stand/ wall bracket/ ceiling mounting brackets as per site requirement/ instruction of Engineer/ DFCCIL.</p> <p>Brightness : minimum 400 nits  Native Resolution : 4K UHD 3840 x 2160  Contrast Ratio : 3000:1  Bezel Width : 0.5" or less  Display Depth : 2.5 " or less  Heat load :383 BTU per hour or less</p>	Nos	29	88,506.00	25,66,674.00
		<p>Power consumption : 112 watts or less  Display Resolution : 3840 x 2160  Aspect ratio : 16:09  Display technology : Direct/Edge LED  Full Viewing Angle : 178 Degree or better  External Connectors: HDMI 2.0 x 2, DVI-D, VGA  CEC - Display must be able to support CEC commands  HDCP 2.2 Compliance USB playback support  Embedded browser with scheduling capabilities  Support for 4K @60 Hz content</p>				
		<p>Diagnostic LED's : the display must incorporate diagnostic and status LED's that is with setup and troubleshooting.  Scaling Capabilities : the display must be capable of accepting input resolutions of VGA (640 x 480) to UHD (3840 x 2160)  Display Control : IR, Rs232, LAN, HDMI-CEC, Keypad  Backlight Life - 30000 hrs or better  Speakers: 10W x 2 built in  Auto Setup Options: the display must be capable to detect automatically and sync to any incoming selected source within the specified operating range without user intervention.  Operating temperature range - 0~ 40 Degree Celsius  Operating Humidity range: 20 ~ 85% RH non condensing  Power Supply Voltage : 100~240VAC, 50 to 60 Hz</p>				
2		SITC OF 65 Inches Display with 4K UHD LED backlight including stand/ wall bracket/ ceiling mounting brackets as per	Nos	21	1,11,736.00	23,46,456.00

		site requirement/ instruction of Engineer/ DFCCIL. Brightness : minimum 400 nits Native Resolution : 4K UHD 3840 x 2160 Contrast Ratio : 3000:1 Bezel Width : 0.5" or less Display Depth : 2.5 " or less Heat load :383 BTU per hour or less				
		Power consumption : 112 watts or less Display Resolution : 3840 x 2160 Aspect ratio : 16:09 Display technology : Direct/Edge LED Full Viewing Angle : 178 Degree or better External Connectors: HDMI 2.0 x 2, DVI-D, VGA, CEC - Display must be able to support CEC commands HDCP 2.2 Compliance USB playback support Embedded browser with scheduling capabilities Support for 4K @60 Hz content				
		Diagnostic LED's : the display must incorporate diagnostic and status LED's that is with setup and troubleshooting. Scaling Capabilities : the display must be capable of accepting input resolutions of VGA (640 x 480) to UHD (3840 x 2160) Display Control : IR, Rs232, LAN, HDMI-CEC, Keypad Backlight Life - 30000 hrs or better Speakers: 10W x 2 built in Auto Setup Options: the display must be capable to detect automatically and sync to any incoming selected source within the specified operating range without user intervention. Operating temperature range - 0~ 40 Degree Celsius Operating Humidity range: 20 ~ 85% RH non condensing Power Supply Voltage : 100~240VAC, 50 to 60 Hz				
3		SITC of 85 Inches Display with 4K UHD LED backlight including stand/ wall bracket/ ceiling mounting brackets as per site requirement/ instruction of Engineer/ DFCCIL. Diagonal Display Size - 85" Response Time: 13 ms or better Contrast ratio : 1200:1 or better Bezel Width : 0.8" or less Display Depth : 2.7 " or less Power consumption : 350 watts or less Display Resolution : 3840 x 2160 Aspect ratio : 16:09 Display technology : Direct/Edge LED	Nos	4	3,62,388.00	14,49,552.00

		<p>Brightness : minimum 350 nits  Full Viewing Angle : 178 Degree or better  External Connectors: HDMI 2.0 x 2, DVI-D, VGA,  CEC - Display must be able to support CEC commands  HDCP 2.2 Compliance  USB playback support  Embedded browser with scheduling capabilities  Support for 4K @60 Hz content</p>				
		<p>Diagnostic LED's : the display must incorporate diagnostic and status LED's that is with setup and troubleshooting.  Scaling Capabilities : the display must be capable of accepting input resolutions of VGA (640 x 480) to UHD (3840 x 2160)  Display Control : IR, Rs232, LAN, HDMI-CEC, Keypad  Backlight Life - 30000 hrs or better  Speakers: 10W x 2 built in  Auto Setup Options: the display must be capable to detect automatically and sync to any incoming selected source within the specified operating range without user intervention.  Operating temperature range - 0~ 40 Degree Celsius  Operating Humidity range: 20 ~ 85% RH non condensing  Power Supply Voltage : 100~240VAC, 50 to 60 Hz</p>				
4		<p>SITC of Direct View LED with 1.27 mm pixel pitch having size of 2440 mm (W) x 1372 mm ( H) complete with universal controller cum video processor having minimum 1 X DVI input and 1 X HDMI input. Offered LED wall should have full HD resolution, each individual cabinet with 610 x 343 mm size, failure of SMPS in any tile/cabinet should not affect the image displayed on that tile/cabinet. Should also be IP60 Rear including stand/ wall bracket/ ceiling mounting brackets as per site requirement/ instruction of Engineer/ DFCCIL.</p>	Nos	4	33,00,000.00	1,32,00,000.00
5		<p>SITC of Projector including stand/ wall bracket/ ceiling mounting brackets as per site requirement/ instruction of Engineer/ DFCCIL.  6000 ISO Lumens, WUXGA resolution, Laser light source, Single Chip DLP Projector - 6000 ISO Lumens, WUXGA resolution, Laser light source, Single Chip DLP projector with HDMI 1.4a X 2, HDMI</p>	Nos	1	2,65,403.00	2,65,403.00

		1.4a+ MHL x 1, VGA IN X 1, 3D Sync Out x 1, Audio IN 3.5 mm jack x 1, Audio in Phono X 2, Audio Out x 1, USB Type A X1, RS232 X 1, LAN X 1, HD Base-T X 1, Standard Zoom lens, 20,000,00 :1 Dynamic Contrast ratio, 20,000 hours light source life.				
6		SITC of 2x2 Videowall including stand/ wall bracket/ ceiling mounting brackets as per site requirement/ instruction of Engineer/ DFCCIL. 110" Diagonal; 0.9 mm or lower B2B; Brightness:500 Nits, Resolution: 1920*1080 (Full HD), Pixel Pitch(mm) 0.63mm(H) * 0.63mm(V), Dynamic Contrast Ratio 500,000:1 Viewing Angle(H/V) 178/178, Response Time(G-to-G) 8ms	Nos	4	8,41,507.00	33,66,028.00
7						
8						
9		SITC of 4K Digital Signage Media Player Android Media Player with 8 GB Storage, LAN based. UHD 4K output digital media player that delivers enterprise performance and seamless playback of UHD 4K content. Software to playback the content of scheduled from Meeting controller/ manager and the content assigned to each Machine Antenna: Two 2.4 GHz / 5 GHz dual-band antenna HDMI: Two HDMI 2.0 ports with screw lock Audio: One 3.5 mm USB: Two USB 3.1 Type A ports, One USB 3.0 Type A port Enclosure: Anodized aluminum case, fanless Dimensions: 300 x 186 x 32 mm / 11.8 x 7.3 x 1.3 in Weight: 2145 g / 4.7 lb Operating Temp: -10° - 45° C / 14° - 113° F Storage Temp: -55° - 75° C / -67° - 167° F Humidity: 5 - 95% Non-condensing	Nos	1	22,813.00	22,813.00
10		SITC of 4K Digital Signage Server Software Signage Content creating software and scheduling Features: Control and customize playlists to deliver the right content to the intended audiences at the right time. Stable and reliable performance 24 hours a day, 7 days a week Superior playback technology delivers smooth sub-pixel motion without distracting	Nos	1	1,56,250.00	1,56,250.00

		choppy Access localized and globalized support Create and deploy content effortlessly Schedule and deploy content to multiple screens with ease Design and customize content from scratch or choose from multiple templates Display live feeds such as news, weather, traffic, financial data and social media, in real time Effective communication through the integration of different information systems Support a wide range of media formats for images, graphics, video, flash and sound. Content Manager Media Player				
		<b>TOTAL</b>				<b>2,33,73,176.00</b>
<b>III</b>		<b>Audio Visual</b>				
		<b>Video Conferencing</b>				
1		SITC of HDBaseT TX/RX for HDMI with USB System Type: HDBaseT TX/RX for HDMI with USB Transmitter : Input Port: 1 x HDMI, Output Port : 1 x HDBT & Data Port : 1 or 2 x USB Hub, 1 x USB Host Receiver : Input Port: 1 x HDBaseT, Output Port : 1 x HDMI & & Data Port : 1 or 2 x USB Hub Signal & Control Extension: Extender for HDMI, power, control, and USB upto 70mtr using CAT6a/7 cable Resolution Support with compatible receiver: 1080p or 1900 x1200 4K/UHD @ 60 Hz with 4:2:0 USB : Signal - 2.0 Maximum Data Rate - 120 Mbps Remote powering over HDBaseT or local powering Chroma Subsampling: 4:4:4, 4:2:2, 4:2:0 Audio Support: Analog In: PCM 2CH HDMI In / HDBaseT Out: LPCM 5.1, LPCM 7.1, Dolby Digital, DTS 5.1, Dolby Digital+, Dolby TrueHD, DTS-HD Master Audio Sample Rate: upto 192kHz Bit Rate: up to 24-bit HDCP 2.2 & CEC pass through Cable Link Monitoring: Integrated HDBaseT link status monitoring Certification: CE , FCC	Nos	8	1,67,555.00	13,40,440.00
2		SITC of Wallplate HDBaseT Transmitter for HDMI and USB-C with USB Hub HDBaseT transmitter for AV and USB	Nos	9	1,85,187.00	16,66,683.00

		Inputs : HDMI, USB-C, USB Type-B & Type-A USB 2.0 interfacing and extension up to 330 feet 4K capability @ 60 Hz with 4:4:4 chroma subsampling HDCP 2.2 compliant USB Signal 2.0 @ 120 mbps Remote powering over HDBaseT Certificate : CE, FCC				
3		SITC of Universal 5X2 Switcher with Built-in or External Wireless Presentation interface Input Port: 2 x HDMI, 1 x USB-C, 1 x DP & Data Port : 2 x USB Hub , 2 x USB Host Output Port: 1 x HDMI with matrix output on 1x HDBaseT, Signal & Control Extension: Over HDBaseT extends AV, Ethernet & Control upto 100mtr using CAT6a/7 cable Resolution Support : 4K @ 60 Hz with 4:4:4 USB : Signal - 2.0 Maximum Data Rate - 120 Mbps Support HDR10, and Dolby® Vision™ @ 60 Hz	Nos	4	5,62,199.00	22,48,796.00
		Provides convenient Wi-Fi connectivity for an iOS, Android, Mac, Chromebook, or Windows-based device USB-C input for AV, data, Auto Switching: Select Active input via Hot Plug & Video Detect Technology Auto Display Control: Automatic Display On / Off control based on switcher. Manual Control: Front Panel Input Selection LED Indicator: To provide power and input selection status information Chroma Subsampling: 4:4:4, 4:2:2, 4:2:0 with Color Depth 8-bit, 10-bit, 12-bit Audio Support: Analog In: PCM 2CH ;Audio Out: De-Embedded Audio Output HTTPS, SSH, IEEE 802.1x, and WebSockets with TLS, WPA2-PSK, and AES-128 encryption Selectable 4K to 1080p downscaling Contact closure for screen or display lift control Control: TCP/IP & RS-232, Configuration: GUI-based configuration using integrated web server HDCP 2.2 & CEC pass through Certification: CE , FCC				
4		SITC of 6x2 Matrix Presentation Switcher with USB System Type: 6x2 Matrix Switcher with USB Input Port: 2 x HDBT, 3 x HDMI, 1 x USB-C & Data Port : 2 x USB Hub , 2 x USB Host	Nos	4	8,11,321.00	32,45,284.00

		<p>Output Port: 1 x HDMI with matrix output on 1x HDBaseT</p> <p>Signal &amp; Control Extension: Over HDBaseT extends AV, Ethernet &amp; Control upto 100mtr using CAT6a/7 cable</p> <p>Resolution Support : 4K @ 60 Hz with 4:4:4</p> <p>USB : Signal 2.0 or better</p> <p>Maximum Data Rate - 120 Mbps</p> <p>Support HDR10, and Dolby® Vision™ @ up to 60Hz; HDMI and USB-C ports only</p>				
		<p>USB-C input for AV, data.</p> <p>Auto Switching: Select Active input via Hot Plug &amp; Video Detect Technology</p> <p>Auto Display Control: Automatic Display On / Off control based on switcher. Control signals to display are transmitted via IP, RS-232 or CEC.</p> <p>Chroma Subsampling: 4:4:4, 4:2:2, 4:2:0 with Color Depth 8-bit, 10-bit, 12-bit</p> <p>Audio Support: HDMI / HDBaseT Inputs support : PCM 2.0, LPCM 5.1, LPCM 7.1, Dolby® Digital, Dolby Digital Plus™, Dolby TrueHD, Dolby Atmos® DTS-HD Master Audio™, and DTS:X®</p> <p>Sample Rate: upto 192kHz with Bit Rate: up to 24-bit</p> <p>Audio Out: De-Embedded Audio Output</p> <p>4K/UHD downscaling and upscaling for HDMI output</p> <p>Control: TCP/IP &amp; RS-232</p> <p>HDCP 2.2 / 1.4 &amp; CEC pass through</p> <p>Configuration: GUI-based configuration using integrated web server</p> <p>Certification: CE , FCC</p>				
5		<p>SITC of 2x1 AV Switcher cum Receiver with Scaler and USB – HDBaseT and HDMI Inputs</p> <p>System Type: HDBaseT Receiver for HDMI with USB</p> <p>Input Port: 1 x HDBT, 1 x HDMI &amp; Data Port : 2 x USB Hub</p> <p>Output Port: 1 x HDMI</p> <p>Signal &amp; Control Extension: Receiver for HDMI, Ethernet, power &amp; control, upto 100mtr using CAT6a/7 cable</p> <p>Resolution Support: 4K @ 60 Hz with 4:4:4</p> <p>Supplies powering over HDBaseT to a transmitter</p> <p>Chroma Subsampling: 4:4:4</p> <p>Color Depth: 8-bit, 10-bit, 12-bit</p> <p>Audio Support:</p> <p>HDMI Pass-Through Formats : PCM 2Ch, LPCM 5.1, LPCM 7.1, Dolby® Digital, DTS® 5.1, Dolby Digital Plus</p> <p>Audio Out: De-Embedded Audio Output</p> <p>4K downscaling and upscaling</p> <p>Dual Ethernet ports and integrated network</p>	Nos	4	2,42,505.00	9,70,020.00

		switch Two relays provide control for motorized screen, shades, or display lift Control : TCP/IP and RS-232 HDCP 2.2 & CEC Pass-through Certification: CE , FCC				
6		SITC of 2x1 AV Switcher cum Receiver with Scaler – HDBaseT and HDMI Inputs System Type: HDBaseT Receiver for HDMI Input Port: 1 x HDBT & 1 x HDMI Output Port: 1 x HDMI Signal & Control Extension: Receiver for HDMI, Ethernet, power & control, upto 100mtr using CAT6a/7 cable Resolution Support: 4K @ 60 Hz with 4:4:4 Supplies powering over HDBaseT to a transmitter Chroma Subsampling: 4:4:4 Color Depth: 8-bit, 10-bit, 12-bit Audio Support: HDMI Pass-Through Formats : PCM 2Ch, LPCM 5.1, LPCM 7.1, Dolby® Digital, DTS® 5.1, Dolby Digital Plus, Dolby TrueHD, DTS-HD, Master Audio, DTS:X Sample Rate: upto 192kHz Bit Rate: up to 24-bit Audio Out: De-Embedded Audio Output 4K downscaling and upscaling Dual Ethernet ports and integrated network switch Two relays provide control for motorized screen, shades, or display lift Control : TCP/IP and RS-232 HDCP 2.2 & CEC Pass-through Certification: CE , FCC	Nos	4	1,85,187.00	7,40,748.00
7		SITC of HDBaseT receiver for HDMI with USB System Type: HDBaseT Receiver for HDMI with USB Input Port: 1 x HDBT Output Port: 1 x HDMI Data Port: 2 x USB Hub Signal & Control Extension: Receiver for HDMI, Ethernet, power, control, and USB upto 100mtr using CAT6a/7 cable Resolution Support: 4K @ 60 Hz with 4:4:4 USB : Signal - 2.0 Maximum Data Rate - 120 Mbps Remote powering over HDBaseT or local powering Chroma Subsampling: 4:4:4 Color Depth: 8-bit, 10-bit, 12-bit "Audio Support: Pass-through: PCM 2Ch, LPCM 5.1, LPCM 7.1, Dolby® Digital, DTS® 5.1, Dolby	Nos	1	1,32,288.00	1,32,288.00

		Digital Plus, Dolby TrueHD, DTS-HD, Master Audio, DTS:X Sample Rate: upto 192kHz Bit Rate: up to 24-bit" TMDS Clock 300 MHz HDCP 2.2 & CEC Pass-through Cable Link Monitoring: Integrated HDBaseT link status monitoring Certification: CE, FCC				
8		SITC of Wireless Presenter module Allows simultaneous present upto 4 or more screens at the same time Allows a user to manage on-screen presenters as well as queued presenters Integrated WI-FI Access Point – can be segregated from the facility LAN for security reasons Shall be having provision for being used as a digital signage media player (additional hardware and software may be added to achieve the same) Shall have functionality to support streaming like YouTube streaming for archival and viewing purpose Dynamic Layout Mode - automatically adapts to incoming or disconnected source content Wireless screen casting through native AirPlay, Google Cast, or Miracast protocols Supports wireless video upto 1080p/30 4:2:0 Local storage for playback of images and video Shall be controllable over IP and RS-232 both Shall have min. 1 x HDMI, 2x USB 2.0/3.0 port Certification : CE, FCC	Nos	4	2,09,438.00	8,37,752.00
9		SITC of of Centralized Management and control software to control all networked AV devices, on-premises installation and Management plus Room Scheduling. Shall have capability to control upto 20 rooms Shall be accessible from a web browser for setup and management of AV assets. Supports industry-standard, network security features and protocols Should support minimum 40 room scheduling panels	Nos	1	23,01,675.00	23,01,675.00
10		SITC of 10" Touch Panel for Room Scheduling Capacitive touch screen with 1280×800 resolution Remotely powered via PoE (Power over Ethernet) – single-cable network connection for data and power Fast, streamlined setup with automatic network discovery and configuration by the	Nos	3	3,98,412.00	11,95,236.00

		centralised monitoring software Supports multi-touch and gesture interactions Color Depth: 8 bit Electro Optical Ambient Light Sensor PoE 802.3af compliant Certification: CE, FCC				
11		SITC of 8" Touch Panel for control 8" touch panel for Audio & Video control Capacitive touch screen with 1280×800 resolution Remotely powered via PoE (Power over Ethernet) – single-cable network connection for data and power Fast, streamlined setup with automatic network discovery and configuration by the AV Control Processor Supports multi-touch and gesture interactions Color Depth: 8 bit Electro Optical Ambient Light Sensor PoE 802.3af compliant Complete with table top mount kit Certification: CE, FCC	Nos	2	3,45,168.00	6,90,336.00
12		SITC of 8-Button Network wall mount control panel Nos. of Buttons : Eight, soft-touch, backlit buttons Easy to configure with either the built-in web server or downloadable templates. Fast installing, single cable integration Remotely powered via PoE	Nos	2	99,221.00	1,98,442.00
13		SITC of Advanced 1080p business webcam with H.264 support Supports 1080p (Full HD) @ 30fps 90° diagonal fixed field of view (dFOV) 4x digital zoom (Full HD) available Built-in HD autofocus ensures you're seen clearly throughout video calls. Supports H.264 Audio : Dual omni-directional mics Connectivity : USB-A 1/4" thread for tripod mounting	Nos	5	19,125.00	95,625.00
14		SITC of 4K Video Conferencing Codec with IP Microphone and Camera VIDEO INPUT: 1x HDCI, 1x HDMI, 3x USB Video Output : 2x HDMI Content Resolution : Input-Upto UHD (3840 x 2160), Output -UptoUHD (3840 x 2160) Content frame rate : 5–60 fps Media Encryption (H.323, SIP): AES-128, AES-256 H.235.6 support Authenticated access to admin menus, web interface and APIs PKI/Certificate Management:	Nos	3	8,56,000.00	25,68,000.00

		remote, NTSC/PAL; Cables: 2 HDMI 1.8m, 1 CAT 5E LAN 3.6m, 1 CAT 5E SHLD 25ft, 1 HDCI 6ft, 1 HDCI Mini 3m, Power: India BIS. Maintenance Contract Required. Partner Premier, One Year				
15		SITC of Cable cubby with 1 x Power , USB Charging 3 X Pass through ports for HDMI, USB 2.0 & LAN	Nos	10	76,311.00	7,63,110.00
16		SITC of Cable cubby with 2 x Power , USB Charging 4 X Pass through ports for HDMI , USB /USB-C and LAN	Nos	25	82,050.00	20,51,250.00
		<b>Video Switching, Distribution and Extension Systems:</b>				
17		<p>SITC of 4K 60 4:4:4 AV over IP via 1Gbps to 20 Gbps Fiber Based with HDMI analog audio, RS-232, IR and USB HID addons; 4K transmitter &amp; receiver with scaling:</p> <ul style="list-style-type: none"> <li>- Should use standard 1 to 10 Gigabit Fiber network for video over IP transmission.</li> <li>- Should use standard SFP+ optical fiber connectivity for signal extension.</li> <li>- Should support 4K 60Hz 4:4:4 resolution, and all resolutions specified under HDMI 2.0 standard.</li> <li>- Should have minimum one standard Gigabit SFP+ connections for signal extension.</li> <li>- Should support extension of minimum two simultaneous video streams</li> <li>- Should have the ability to be configured as transmitter or receiver device</li> <li>- Should support HDCP 2.2 encrypted video content.</li> <li>- Should support scaling and frame rate conversion up to 4K 60Hz 4:4:4 for at least one of the extended video stream.</li> <li>- Should be able to be used with standard 10 Gigabit Ethernet switch as an endpoint in a virtual matrix configuration.</li> <li>- Should support USB KVM for KVM application</li> </ul>	Nos	20	4,41,750.00	88,35,000.00
18		SITC of Under desk mounting for above, AV over IP Video System	Nos	20	3,000.00	60,000.00
19		<p>SITC of Matrix Management Unit for the AV Over IP system.</p> <ul style="list-style-type: none"> <li>- Should have a central management hardware unit for device control and signal management, in case of a virtual matrix configuration.</li> <li>- Central management hardware unit should support central firmware upgrade to all the endpoints in the system at the same time.</li> </ul> <p>Intuitive control software for device configuration Advanced error handling and logging with time code Advanced EDID Management</p>	Nos	2	7,12,500.00	14,25,000.00

		Multiple TCP/IP connections Device control via Ethernet (TCP/IP) Built-in website for device configuration Firmware upgrade through Ethernet				
20		SITC of 96 Port 10G Fiber Network Switch, L3 Managed + LAG Support 10 Gbps non-blocking switch (capable of full bandwidth transmission between all ports. Supports IEEE Std. 802.3ad-2000 Link Aggregation Control Protocol, with Link Aggregation Groups for each endpoint. IPv4 (or Layer 2) Multicast Forwarding based on IGMP v2 snooping, with at least 16 addresses available for each endpoint, e.g. 4096 IPv4 multicast addresses for 256 endpoints Supports Internet Group Management Protocol version 2 (RFC 2236) snooping Supports IEEE Std. 802.1Q VLAN tagging: 1 VLAN reserved for control and media transmission, other(s) available for user traffic. IPv4 (or Layer 2) Multicast Forwarding based on IGMP v2 snooping, with at least 16 addresses available for each endpoint, e.g. 4096 IPv4 multicast addresses for 256 endpoints.	Nos	2	26,21,000.00	52,42,000.00
21		SITC of 2x1 switcher with USB-C, HDMI 2.0 and USB 3.1 / 2.0 ports supporting 4K signal formats (4K UHD @ 60Hz RGB 4:4:4, up to 18 Gbps), secure control Ethernet interface. USB-C connectivity for 4K video, audio. Advanced automated room control features  - Should Support USB-C input connectivity for 4K Video, Audio, Data (Video, Audio, Data over a single USB-C connection) - Should support Multiple USB 3.1 Gen 1 / USB 2.0 connectivity for any type of USB devices (Camera, speakerphone, USB-HID devices etc...) USB 3.1 Gen 1/ USB 2.0 /USB 1.1 compliant - - Should support Dedicated secure corporate and room utility Ethernet connectivity - Should support USB 3.1 Gen 1 / USB 2.0 / USB 1.1 compliant - Should support Occupancy sensor connection <b>or inbuilt</b> (with 24V power supply) - Should support Splash screen for custom corporate logo and on-screen display warning messages - Should support Audio de-embedding - Should Support GPIO control ports	Nos	2	1,47,250.00	2,94,500.00

		- Should support Device control via Ethernet (TCP/IP), RS-232 and USB - Should support Uncompressed video up to 18 Gbps datarate (600 MHz pixel clock)				
22		SITC of Under Desk Mounting for above 2x1 switcher	Nos	2	3,325.00	6,650.00
23		SITC of HDMI1.4, VGA, DP1.1 + Ethernet + RS-232 + bidirectional IR HDBaseT wallplate transmitter for CATx cable. HDCP, 3D and 4K60 4:4:4 support. 100m extension distance or more. US 2-gang wall box size. Compatible with input boards and receivers. Powering not included, external PSU or The power injector from same OEM to be provided separately.	Nos	2	1,29,200.00	2,58,400.00
24		SITC of Single port standalone power injector / Power Supply for above item	Nos	2	24,700.00	49,400.00
25		SITC of HDMI1.4 + Ethernet + RS-232 + bidirectional IR HDBaseT receiver over CATx cable. HDCP, 3D and 4K 60Hz 4:4:4 compliant. 100m extension distance or more.	Nos	2	39,900.00	79,800.00
26		SITC of USB-C to USB-C 2 m (6,56 ft) cable. USB Full-Featured Type-C for USB 3.1 Gen 2	Nos	2	4,500.00	9,000.00
27						
		<b>Codec</b>				
28		SITC of Video conferencing Codec with all necessary accessories Codec support IPv4/IPv6 Resolution 4K Standards H.264 AVC, H.264 High Profile, H.265, H.239 Inputs: 1 x HDMI, 1 x HDCI/HDMI, 3 x USB (3.0), Outputs: 2 x HDMI Content Sharing: Contact App, Airplay/Miracast Media Encryption H.323, SIP Security: AES-128, AES-256 Interoperability: Zoom, Starleaf, GoToMeeting, Bluejeans/All cloud service providers through video made app	Nos	2	13,50,000.00	27,00,000.00
		<b>Camera</b>				
1		SITC of 30x Optical Zoom PTZ Camera with 4K UHD @30/60Hz output - Optical Zoom: 30x - Digital Zoom: 12x - Sensor 1/2.5" 8.57MP CMOS - Video Format: 2160p: 29.97 / 25, 1080p: 59.94 / 50 / 29.97 / 25, 1080i: 59.94 / 50, 720p: 59.94 / 50 / 29.97 / 25 - Video Output: 3G-SDI / HDMI / Ethernet - Horizontal Viewing Angle: 68° or better	Nos	4	5,75,000.00	23,00,000.00

		<ul style="list-style-type: none"> <li>- Vertical Viewing Angle: 38.3° or better</li> <li>- Panning Angle: +170° ~ -170°</li> <li>- Tilting Angle: +90° ~ -30°</li> <li>- Aperture: F1.6 ~ F3.4 or better</li> <li>- Focal Length 4.6mm ~ 135mm or better</li> <li>- Shutter Speed 1/1 ~ 1/10,000 sec</li> <li>- Should support Image Flip</li> <li>- Preset: 256 or more</li> <li>- Control Interface: RS-232 / RS-422 / Ethernet</li> <li>- Control Protocol: VISCA / PELCO D / ONVIF /FreeD</li> <li>- Video Stream: RTSP / RTMP / RTMPS / MPEG-TS / SRT</li> <li>- Video Compression: HEVC(H.265) / H.264</li> <li>- Audio Input: 1 x Line In / MIC In</li> <li>- Audio Output: Ethernet / SDI / HDMI</li> <li>- Power: PoE+ (IEEE802.3at) or DC In 12V +/- 20%</li> </ul>				
2		SITC of Camera Mounting brackets for the above PTZ Camera	Nos	4	22,500.00	90,000.00
3		SITC of Software VC AV Bridge to convert the 4K HDMI to USB 3.0 <ul style="list-style-type: none"> <li>- Should enable software-based video conferencing with Pro AV peripherals</li> <li>- Capture and stream directly to PC (USB) or network (IP)</li> <li>- Should support HD encoding of audio/video sources</li> <li>- Video Input: HDMI up to 3840x2160</li> <li>- Outputs simultaneous USB 3.0 and IP streaming with up to 1080p quality</li> <li>- Audio Inputs: 2 or more x phoenix connector Mic/Line level inputs</li> <li>- Bi-Directional USB Audio</li> <li>- Control: RS232/Telnet</li> <li>- IP streaming: Up to 1080p/30 over RTSP or RTMP</li> <li>- Power: PoE (Builtin/External)</li> <li>- Certifications: CE/FCC/TAA</li> </ul>	Nos	3	4,00,000.00	12,00,000.00
		<b>Control Systems</b>				
1		SITC of Control System: Rack-mountable control system with expandable memory <ul style="list-style-type: none"> <li>- Integrated control ports and optional control card expansion slots.</li> <li>- Bidirectional 6 x RS-232/422/485 or more</li> <li>- IR/Serial: Minimum 8 or more</li> <li>- Relay: Minimum 8 or more, 4 or more LAN</li> <li>- Expandable slots x 3 or more</li> <li>- Support RS-232/IR or I/O with SDRAM 2GB, Flash 8GB</li> </ul>	Nos	4	5,09,000.00	20,36,000.00
		Should support External USB mass storage devices up to 1 TB, as per site requirement A rack-mountable control system processor with expandable memory, integrated control ports and optional control card expansion				

		slots Bidirectional 6 x RS-232/422/485, 8 x IR/Serial, 8 x Relay, 4 or more x LAN/Ethernet Port, 3 x Expandable slots supporting RS-232/IR or I/O with SDRAM 2GB and Flash 8GB Should support External USB mass storage devices up to 1 TB, as per site requirement Shall be accessible from a web browser for setup and management Supports industry-standard, secure data communications through HTTP/2, HTTPS, SSH, SFTP, and WebSocket's with TLS and AES-128 encryption 3 interface device license each for i-Pad and Android touch interface license iPhone, iPad, and Android control app support Flexible scalability for integrating one or several AV systems over a network				
2		SITC of 15.6" HD Capacitive Touch Screen, Tabletop Tilt, Black Smooth - Display Type: TFT active matrix color LCD - Aspect Ratio: 16:9 Full HD - Resolution: 1920 x 1080 pixels - Brightness: 400 nits (cd/m <sup>2</sup> ) - Contrast: 800:1 - Color Depth: 24-bit, 16.7M colors - Viewing Angle: ±80° horizontal, +80°/-65° vertical	Nos	4	4,29,000.00	17,16,000.00
3		SITC of 10.1" Touch Screen, Black Smooth (Side Table) - Display Type: TFT active matrix color LCD - Aspect Ratio: 16:10 WUXGA - Resolution: 1920 x 1080 pixels - Brightness: 400 nits (cd/m <sup>2</sup> ) - Contrast: 1000:1 - Color Depth: 24-bit, 16.7M colors - Viewing Angle: ±80° horizontal, +80°/-65° vertical	Nos	4	2,50,250.00	10,01,000.00
4		SITC of IR Emitter Probe w/Terminal Block Connector	Nos	4	4,550.00	18,200.00
		<b>Audio System</b>				
1		SITC of DSP Processor with 10 input & 6 Line output. DANTE Audio Interface AEC Mic / Line Input: min 10 No's and support 24 AEC channel processing with network audio sources connected to DSP Line Output: min 6 No's USB Audio Interface 24Bit, 48Khz GPIO Contacts: 6 No's Built in Digital Audio DANTE Network with 64 x 64 Channel Frequency Response: 20Hz to 20KHz	Nos	5	1,89,952.00	9,49,760.00

		Ethernet Port: Yes RS232 connector for interfacing with 3rd party control systems Crosstalk (inter-channel @ 1 kHz): < -75 dB Common mode rejection: Typically, -60 dB at 1 kHz Latency: <1.8ms Maximum output level: -31 dBu to +24 dBu THD+N : <0.005%, Dynamic range: > 105 dB Certification: CE , FCC etc. complete required as per specification				
2		SITC of Dual Channel Power amplifier Class D Nos. of Channel : 2 Signal To Noise Ratio: >97 dBA or better Channel separation (Crosstalk) >85 dBA Power Handling : 2 x 120W @ 4/8ohm & 70V/100V High-pass filter 80 Hz HPF Frequency Response : 20 Hz to 20 kHz Input impedance 10 kΩ unbalanced and RCA, 20 kΩ balanced GPI remote volume control using standard RJ-45 connector and Ethernet cable Energy Star Rated Amplifier protection Thermal protection, over current protection, DC protection, high frequency protection Cooling Convection-cooled, fanless etc. complete required as per specifications	Nos	10	90,691.00	9,06,910.00
3		SITC of Dual Channel Power amplifier Class D Nos. of Channel : 2 Signal To Noise Ratio: >97 dBA or better Channel separation (Crosstalk) >85 dBA Power Handling : 2 x 240W @ 4/8ohm & 70V/100V High-pass filter 80 Hz HPF Frequency Response : 20 Hz to 20 kHz Input impedance 10 kΩ unbalanced and RCA, 20 kΩ balanced GPI remote volume control using standard RJ-45 connector and Ethernet cable Energy Star Rated Amplifier protection Thermal protection, over current protection, DC protection, high frequency protection Cooling Convection-cooled, fanless etc. complete required as per specifications	Nos	5	1,00,445.00	5,02,225.00
4		SITC of 4" Ceiling speaker Speaker Type: Two-Way / Coaxial Ceiling Speaker Driver Size : 1 x 4" LF & 0.75" HF Driver Nominal impedance: 8Ohm Sensitivity: 84dB or better RMS Power : 30 W In-built transformer Tap : 100V / 70V upto	Nos	48	21,363.00	10,25,424.00

		<p>25W Maximum SPL : RMS - 99dB , Peak - 105dB Dispersion: 110 Degree Conical @ 1kHz Frequency Range (-10 dB) : 70 Hz-20 kHz Certification: UL 94V-0, EN54-24:2008 certified Type A, UL 1480/UL 2043 Enclosure: Steel Backcan Aluminum, powder coated grill Included Accessories: Metal grille, cable gland, flex conduit, C-ring, tile-bridge kit, paint mask, cutout template, should have option of Black and white colour to choose</p>				
5		<p>SITC of Passive Column Array Loudspeaker with 7 Full Range Drivers and Dispersion Control Speaker Type: Passive Column Array speaker Driver Size : 7 x 3.5" Full range Driver RMS Power : 150 W Built-in transformer Tap : 100V / 70V upto 150W Maximum SPL : Peak - 118dB Sensitivity : 90dB Dispersion: 130 (H) Frequency Range : 110 Hz – 14 KHz Rating : IP65, EN 54-24 Certified Enclosure : Aluminium extrusion Powder coated perforated steel grill Included Accessories: Flying bracket, wall mount bracket, input panel cover plate and gland</p>	Nos	8	1,54,301.00	12,34,408.00
6		<p>SITC of Central Conference Controller with Recording facility Conference Controller with built-in Digital Signal Processing Control upto minimum 50 Discussion Unit and expandable upto 150 Discussion Unit by configuring multiple Controller Unit Controller unit with 4 Bus Connection. 4 Branches. OR 2 Closed Loop for redundancy mechanism Control &amp; Configure the Controller via the Integrated Web Server Two USB Connections to connect USB Storage Device for Direct Recording of the Meeting. The Second USB Storage Device will take over automatically in-scenario the First USB Storage get full. Camera Control Integration Capability Controller with LCD display to implement several Conference Mode: Direct access, Request, Push to talk, FIFO, Vox control Selectable Voice Activation Digital Acoustic , Feedback Reduction With Audio Input &amp; Output for connectivity with external system like amplifier, microphone &amp; audio/video conference</p>	Nos	5	4,13,100.00	20,65,500.00

		system Audio Quality 16Bit digital With Power Saving Mode allows controller to sleep state if it has been left ON Headphone Port Certification: CE				
7		SITC of Flush Mount Chairman Discussion Unit with Gooseneck Microphone of minimum Length 400mm Chairman Discussion Unit with built-in Digital Signal Processing Unit with Priority and Next-in-Line Configuration Priority button silences all delegate microphones and allows only the chairperson to speak Next-in-line button gives the floor to the next speaker in a waiting list of speakers who requested to speak. Shielded microphone, immune to mobile phone interference Loop-through, daisy-chain cabling Different LED Signaling for Mic On/Off OR Request-to-Speak Push Button Audio Quality 16Bit digital Frequency Response: 30Hz-15kHz Microphone with 400 Gooseneck Length Polar Pattern: Unidirectional, Cardioid Max SPL @ 1kHz: 110dB SPL S/N Ratio: 67dB-A Connection: Screw Lock Material: Brass Certification: CE	Nos	5	1,39,327.00	6,96,635.00
8		SITC of Flush Mount Delegate Discussion Unit with Gooseneck Microphone of minimum Length 400mm Delegate Discussion Unit with built-in Digital Signal Processing Unit with Microphone On / Off Button Shielded microphone, immune to mobile phone interference Loop-through, daisy-chain cabling Different LED Signaling for Mic On/Off OR Request-to-Speak Push Button Audio Quality 16Bit digital Frequency Response: 30Hz-15kHz Microphone with 400 Gooseneck Length with Polar Pattern: Unidirectional, Cardioid Max SPL @ 1kHz: 110dB SPL S/N Ratio: 67dB-A Connection: Screw Lock Material: Brass Certification: CE	Nos	47	1,24,829.00	58,66,963.00
9		SITC of Various Patch cords conference system as per site requirements (Set)	Nos	4	1,87,425.00	7,49,700.00
10		SITC of Wired Omnidirectional Condenser Boundary Microphone with USB	Nos	10	6,885.00	68,850.00

		<p>ELEMENT: Condenser  Pick up Pattern: Omnidirectional  Frequency Response: 50 – 15,000 Hz  Open Circuit Sensitivity : -46 dB  Cable: terminated with USB connector</p>				
11		<p>SITC of UHF Wireless Handheld Cardioid Dynamic microphone system  Receiving System : True Diversity  Modulation mode : FM  Frequency Response : 100 Hz to 15000 Hz  RF Sensitivity: 20 dBuV at 60 dB S/N ratio (50 ohms termination)  Total Harmonic Distortion: 1.0 % or less (at 1 kHz, <math>\pm 17.5</math> kHz deviation)  Dynamic Range 110 dB or higher (A-weighted), typical  switch function : Mute/unmute &amp; On/OFF  Automatic frequency scanning to find open channel  Operating range: 100 m  RF Power Output High: 30 mW, Low: 10 mW (switchable)  No. of Channel : 10 channels per band  Built-in Tone Lock™ digital identification system  Antenna Input : BNC type, 50<math>\Omega</math> - BIAS voltage 12V DC 60mA each for powering an antenna booster, active splitters, an antenna combiner or any other active component.  Maximum Output level XLR / Balanced: +9 dBV &amp; 6.3 mm (1/4") / Unbalanced: +4 dBV  Balanced and unbalanced outputs  Balanced audio output attenuator : Two position switch: 0/-12 dB  Accessories Included: detachable Antennas, Rack mount kit</p>	Nos	6	64,200.00	3,85,200.00
12		<p>SITC of UHF Wireless Lavalier Cardioid Condenser Microphonesystem with beltpack transmitter  Receiving System : True Diversity  Modulation mode : FM  Frequency Response : 100 Hz to 15000 Hz  RF Sensitivity: 20 dBuV at 60 dB S/N ratio (50 ohms termination)  Total Harmonic Distortion: 1.0 % or less (at 1 kHz, <math>\pm 17.5</math> kHz deviation)  Dynamic Range 110 dB or higher (A-weighted), typical  switch function : Mute/unmute &amp; On/OFF  Automatic frequency scanning to find open channel  Operating range: 100 m  RF Power Output High: 30 mW, Low: 10 mW (switchable)  No. of Channel : 10 channels per band  Built-in Tone Lock™ digital identification system</p>	Nos	2	64,200.00	1,28,400.00

		Lavalier Terminated with locking 4-pin connector Antenna Input : BNC type, 50Ω - BIAS voltage 12V DC 60mA each for powering an antenna booster, active splitters, an antenna combiner or any other active component. Maximum Output level XLR / Balanced: +9 dBV & 6.3 mm (¼") / Unbalanced: +4 dBV Balanced and unbalanced outputs Balanced audio output attenuator : Two position switch: 0/-12 dB Accessories Included: detachable Antennas, Rack mount kit				
13		SITC of Ceiling microphone tile with 24 or more microphones, with 5 or more static beams and 1 or more dynamic beam,Built-in Smart Mix, AEC, AGC and EQ,Built-in Analog input and output, DANTE Interface, Built-In LED indicator port, Shall be able to Can be used as flush mount, surface mount or hanging type depending on requirements as per site condition, IP control port. etc. and complete as required	Nos.	6	4,25,000.00	25,50,000.00
14		SITC of 6 Channel Digital Processor Mixer Inputs : 4 balanced mic, 2 balanced Mic/Line,1 stereo unbalanced input Inputs equipped with Low-cut filter, phase inversion and 4-band EQ Onboard 6 channel AEC processing 1 stereo and 2 mono outputs Each output channel equipped with adjustable output level, 12-band fully parametric EQ with notch filtering, compressor, limiter, and 8-band feedback suppressor. 2-channel USB audio interface 8 x 3 audio routing matrix Maximum Gain : 64 dB Dynamic Range : 110 dB or better Signal-to-noise ratio:90 dB or better Microphone Phantom Power : +48V DC Front panel Monitoring, Controls and LED indicators Web Remote functionality IP control for third-party CCS administration Cascadable upto 6 units Euroblock connectors Accessories Included : Rack-mount adapters	Nos	8	1,70,977.00	13,67,816.00
15		SITC of DUAL Wireless Lapel Microphone system in UHF band. * IR synchronism between receiver and microphones. * LCD display with AF, RF, gain and frequency information. * Individual and Mix outputs of two channel * RECEIVER Frequency band - True	Nos	2	64,480.00	1,28,960.00

		Diversity * Frequency response - 20 Hz - 20kHz * S/N Ratio >104dB (A) * Dynamic range >99.5dB LAPEL MICROPHONE - * Polar Pattern - Cardioid * RF output power - 30 mW * S/N Ratio >104dB (A)				
16		SITC of DUAL Wireless Handheld Microphone system in UHF band. * IR synchronism between receiver and microphones. * LCD display with AF, RF, gain and frequency information. * Individual and Mix outputs of two channel * RECEIVER Frequency band - True Diversity * Frequency response - 20 Hz - 20kHz * S/N Ratio >104dB (A) * Dynamic range >99.5dB HANDHELD MICROPHONE - * Polar Pattern - Cardioid * RF output power - 30 mW * S/N Ratio >104dB (A)	Nos	2	64,350.00	1,28,700.00
17		SITC of Antenna distribution system	Nos	2	85,620.00	1,71,240.00
18		SITC of UHF wide-band directional LPDA (log periodic dipole array) / Omni antennas. With Antenna Cable of same OEM	Nos	1	1,31,400.00	1,31,400.00
19		SITC of Digital Control unit for minimum 50 nos tabletop conference units with integrated recording capabilities, integrated web server for control.	Nos	1	2,81,138.00	2,81,138.00
20		SITC of Integrated Flush Mount Chairman Discussion unit compete with 400mm Gooseneck microphone	Nos	1	94,710.00	94,710.00
21		SITC of Integrated Flush Mount Delegate Discussion unit compete with 400mm Gooseneck microphone	Nos	28	84,838.00	23,75,464.00
22		SITC of Shielded copper cable, category 6A F/UTP	Nos	300	70.00	21,000.00
23		SITC of 11" Electret condenser gooseneck microphone - * Cardioid polar pattern and slimline profile design. * The microphone is constructed from high quality brass construction semi-rigid shaft with 8mm gooseneck. * Frequency Response 50 Hz - 18 KHz. * Sensitivity -40dB * A Reed switch is fitted to allow pop / click free muting of a microphone. * The microphone is fitted with a phantom power adaptor accepting 9 to 48 volts DC * Including Shock Absorbing Through Table Microphone Mount.	Nos	2	41,990.00	83,980.00

**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

24		SITC of 3-way point source In-Ceiling loudspeaker with asymmetric dispersion angle	Nos	8	98,261.00	7,86,088.00
25		SITC of Boundary Microphone: Retractable Through Table Cardioid Condenser Boundary Layer Microphone. * Cardioid polar pattern. * The Microphone is push activated for both UP and Down positions * Built-in mechanism that will allow the user to make the microphone disappear without having to physically remove it from the table * The Microphone is engineered in high quality brass for long life and smooth act. * Impedance 200 Ohms * Frequency 50Hz - 18KHz * Sensitivity -37 ± 3dB @ 1 KHz (0db = 1V/Pa)	Nos	8	34,593.00	2,76,744.00
26		SITC of Audio DSP: * Audio Format 24 bits, 48 kHz sampling rates * System Latency < 6 ms * Analog I/O Channels 12x8 • Supports adaptive echo cancellation (AEC), adaptive feedback control (AFC), automatic gain control (AGC), automatic mixture control (AMC), automatic noise suppression (ANS), • Built-in USB interface, * GPI/O Port - 8 GPI/O	Nos	2	4,02,259.00	8,04,518.00
27		SITC of Compact Full Range 6" ceiling speaker 50W RMS Power @8Ohm.	Nos	6	18,954.00	1,13,724.00
28		SITC of Audio Amplifier: Class D Multichannel Amplifier - Output Power (100V & 70V line) 2x 115W * Input sensitivity 1V (±0.1V) * Frequency response : 102 Hz - 14.5 kHz * Voltage gain (100V) : 39 dB * THD+N <0.1% * S/N rate >94 dB * Crosstalk >69dB	Nos	3	1,40,010.00	4,20,030.00
		<b>TOTAL</b>				<b>7,26,82,122.00</b>
<b>IV</b>		<b>Access Control System</b>				
1		Supply, Installation, Testing & Commissioning of Surface mounted 2 Reader 2 Door Controller capable of controlling multiple readers (IN/OUT) along with TCP/IP Connectivity complete as per specification control panel housed in MS Powder coated cabinet with tamper switch complete with power supply unit for controller & magnetic locks. including 1a to 1f as follows for 9 units of item 1.	Nos.	9	1,50,000.00	13,50,000.00

**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

a		Supply, Installation, Testing & Commissioning of 17 nos. on Board 4 Reader Expander				
b		Supply, Installation, Testing & Commissioning of 6 nos. on Board 2 Reader Expander				
c		Supply, Installation, Testing & Commissioning of 6 nos. 16 relay board				
d		Supply, Installation, Testing & Commissioning of 6 nos. 16 input board				
e		Supply, Installation, Testing & Commissioning of 4 nos. 16 input board,8 output board				
f		Supply, Installation, Testing & Commissioning of 17 nos. housing for above				
2		Supply, Installation, Testing & Commissioning of Biometric reader	Nos.	4	33,775.00	1,35,100.00
3		SITC of smart card readers as per specifications suitable for mounting on metal surface/metal frames or wooden frames wall or as required based on site conditions including all accessories	Nos.	64	9,800.00	6,27,200.00
4		Supplying and fixing mirror finish Digital Lock without cut-out. Digital door lock to be stand-alone systems with an electronic control mechanism. The lock to be enable to be operated with all three modes with fingerprint + password + IC card from the list of specified make with necessary accessories. Should have a capacity of 10 administrators and more than 300 ordinary users. Should have minimum 2 cards. Cost of two cards included. Locks to operate either on alkaline batteries or rechargeable lithium-ion cell ones. In both cases, an alert or indicator should be there to indicate the level of battery level when batteries need to be replaced. Lock to have Speedy and accurate access with the optical finger print authentication. The fingerprint recognition to be robust against any dust or foreign materials.	Nos	69	25,934.00	17,89,446.00
5		SITC of smart cards as per specifications	Nos	1000	125.00	1,25,000.00
6		SITC of emergency door open break glass unit as per specifications	Nos	64	1,062.00	67,968.00
7		SITC of Magnetic Door Contact	Nos	147	366.00	53,802.00
8		SITC of Buzzer	Nos	108	366.00	39,528.00
9		SITC of walk through door frame metal detectors as per specifications	Nos	5	3,55,000.00	17,75,000.00
10		SITC of panic bar with electric latch retraction. Constructed from heavy gauge rolled steel section with heavy duty touch bar mechanism that has been used successfully in all architectural grade touch bar devices.	Nos	30	52,500.00	15,75,000.00

		The panic bar exit device for all types of single and double doors with mullion and the hardware. Panic Bar should be is for panic exit hardware. It should be specifically designed for use in areas where frequent usage can be expected.				
11		Supply and installation of hand held metal detector	Nos	4	10,125.00	40,500.00
12		SITC of workstation ( i-7 PC, with 8 GB RAM and 1 TB HDD, 10/100 Mbps Ethernet card, USB connection and internal modem, Microsoft(R) Windows(R) 7 OS Professional Enterprise, Web Server Software, DVD-ROM Drive (with RAM), 100/1000 Mbps NIC for Network connection and antivirus software with 22" colour graphics monitor as per Tender Specifications. Accessories included Optical Mouse, Key Pad.)	Nos	3	1,08,172.00	3,24,516.00
13		SITC of Access Control Software, Software shall be based on a standard Client-Server architecture, Capacity for 128 reader capacity and 20,000 card holder capacity Basic GUI ,TA Module, Alarm Module 5Nos client Module for usion SQL DB and multi site Module. The server connects to the database the clients draw the information from the server: Clients connect to the server using a LAN remote communication :The server runs as a Windows service by default.	Nos	3	2,75,209.00	8,25,627.00
14		Supply, laying, termination, testing and commissioning of 8 core 1.5 sq.mm shielded cable for reader	RM	3000	125.00	3,75,000.00
15		Supply, laying, termination, testing and commissioning of 2 core 1.5 sq.mm power cable.	RM	3000	47.00	1,41,000.00
16		Supply, laying, termination, testing and commissioning of 4 core 1.5 sq.mm cable for EM Lock, EDR & Push Button.	RM	247.96875	77.00	19,093.59
17		Supply, laying, termination, testing and commissioning of 4 core 1.5 sq.mm communication cable from controller to controller.	RM	1000	77.00	77,000.00
18		Supply,Installation,Testing and commissioning of 25mm PVC conduit.	RM	4000	41.00	1,64,000.00
19		SITC of Hardwired Piezoelectric Siren and Strobe	Nos	24	3,500.00	84,000.00
20		Supply, installation of Metal enclosure of Expansion board	Nos	7	12,000.00	84,000.00
		<b>BOLLARDS AND BARRIERS</b>				
1		SITC of K4 crash rated boom barrier 5 meter hydraulic barrier with opening/Closing time Between 5 to 6 seconds/100% duty cycle. Hydraulics' Drive Mechanisms with internal	Nos	2	5,43,001.00	10,86,002.00

		locking feature circuit controller for Auto off in fully raised & lowered position with limit switches and manual operation in case of Power failure. PCB Electronic to automatically switch off motor in case of fault.				
		Technical Parameters: • Blocking height - 110 cm • Blocking dimensions - 125 mm x 75 mm • Opening /Closing time - 5-8 sec • Steel Structure – Complied - K4, K8 & K12 • Corrosion Protection - Galvanized • Ingress Protection - IP 54 • Duty Cycle - 100% • Operating temperature - 15 + 55 deg C • Operating Humidity - 98% • Power Consumption - 1300 W • Power Supply - 3 Phase, 400-440 V, AC 50-60 Hz • Absorbed Current - 3-5 A				
2		SITC of K4 crash rated boom barrier 2.5 meter hydraulic barrier with opening/Closing time Between 5 to 6 seconds/100% duty cycle. Hydraulics' Drive Mechanisms with internal locking feature circuit controller for Auto off in fully raised & lowered position with limit switches and manual operation in case of Power failure. PCB Electronic to automatically switch off motor in case of fault.	Nos	2	4,06,525.00	8,13,050.00
		Technical Parameters: • Blocking height - 110 cm • Blocking dimensions - 125 mm x 75 mm • Opening /Closing time - 5-8 sec • Steel Structure – Complied - K4, K8 & K12 • Corrosion Protection - Galvanized • Ingress Protection - IP 54 • Duty Cycle - 100% • Operating temperature - 15 + 55 deg C • Operating Humidity - 98% • Power Consumption - 1300 W • Power Supply - 3 Phase, 400-440 V, AC 50-60 Hz • Absorbed Current - 3-5 A				
		<b>BAGGAGE SCANNER</b>				
1		SITC of Baggage X-Ray Scanner (Medium 550 mm X 350 mm Tunnel Size or Equivalent), 1. Tunnel Sizes :- 530 mm X 320 mm, 530 mm X 350 mm and 550 mm X 350 mm 2. Penetration :- Greater Than or Equal to 10 mm 3. Resolution Wire Detectability :- Standard / Guaranteed :- Greater Than or Equal to 38 AWG Typical :- Greater Than or Equal to 39	Nos	1	19,52,000.00	19,52,000.00

		AWG. 4. Generator :- Greater Than or Equal to 90 kV 5. Beam Direction :- Vertically Upward / Diagonal / Dual 6. Duty Cycle :- 100% 7. Operating Temperature :- 0 Degree to 50 Degree 8. Operating Humidity :- Up to 95% Non-Condensing 9. Entry and Exit Rollers Tables :- Yes Required in 0.5 meter or 1 meter or 1.5 meter length as per space requirement. 10. Barriers for Rollers :- Yes Required 11. Certifications :- US, CE and AERB (India) 12. Standards Features :- All Required as Stated in the Data Sheets 13. Tropical Kit/Power Conditioner etc. :- Required 14. Mandatory Features Required along with Standard Features :- X-ACT / Screener Assist Threat Detection / Target, Threat Image Projection / HI-TIP, OTP / X-TRAIN, Density Threat Alert (DTA) / High Density Alert (HAD), Advance Image Archiving 100, 000 Images				
		<b>TOTAL</b>				<b>1,35,23,832.59</b>
<b>V</b>		<b>IT Network</b>				
		<b>PASSIVE NETWORKING COMPONENTS</b>				
1		Supply,drawing & testing of UTP 4 pair 23 AWG CAT 6A LSZH Cable in the existing surface/ recessed steel/ PVC conduit as required conforming to the following standards like ANSI/TIA 568 C.2, IEC 60332-1, IEC 60754-1. Cable Dia 8.0 mm with bending radius -4 X Cable Diameter Operates at frequency of 500 Mhz Construction Conductor 23 AWG solid bare copper Insulation High Density Polyethylene Pairs 2 insulated conductors twisted together Sheath LSZH Cable Diameter 8.0 mm Nominal Electrical Properties Conductor Resistance $\leq 9.3 \text{ Ohm}/100\text{m}$ Mutual Capacitance $< 5.6\text{nF}/100\text{m}$ Resistance Unbalance 5% Max Capacitance Unbalance 330pF/100m Delay Skew $< 45\text{nS}$ Mechanical Properties Bending Radius 4 x Cable Diameter at -20°C $\pm 1^\circ\text{C}$ Pulling Force 11.5 Kg Temperature Range -20°C to +70° C	Mtr.	250000	58.00	1,45,00,000.00

		<p>Flame Properties Flammability Test IEC 60332-1 Acid Gas Emission Test IEC 60754-1 Smoke Density Test ASTM 2843</p>				
2		<p>Supply &amp; Installation of 24 Port Patch panels CAT6A (1U with rear wire manager) 24° silver-plated IDCs (insulation displacement connection) for secure, reliable gas-tight connections</p>	Nos	250	12,503.00	31,25,750.00
3a		<p>SITC of Dual port Face Plate : Polycarbonate Hi-Grade Plastic FR Grade &amp; UV Resistant 850 degree C/ Glow Wire Test. The face plate should be compatible for Cat5e, Cat6 &amp; Cat6A range of RJ45 .The face plate Size should be of minimum 86x86mm</p>	Nos	1200	275.00	3,30,000.00
3b		<p>SITC of Quad port Face Plate : Polycarbonate Hi-Grade Plastic FR Grade &amp; UV Resistant 850 degree C/ Glow Wire Test. The face plate should be compatible for Cat5e, Cat6 &amp; Cat6A range of RJ45 .The face plate Size should be of minimum 86x86mm</p>	Nos	350	225.00	78,750.00
4		<p>Supply &amp; installation of CAT6A RJ45 tool less I/O with a separator to eliminate crosstalk, on concealed wall mounted boxes, impacting of I/O's (CAT6 RJ45 I/O) &amp; installation /impacting of surface mount boxes (includes labelling) Should Accept RJ11 (4 contacts), RJ12 (6 contacts), RJ45 (9 contacts).Double colour code EIA – TIA 568 A and B on terminals:- STP 9 contacts 360° screen Double-wire: 0.5 to 0.65 mm, AWG 22 to 25 Multiple-wire: AWG 26 Polyethylene conductor insulation: max Ø with insulation 1.58 mm</p>	Nos	3800	522.00	19,83,600.00
		<p>Information outlet should have transparent shutter for protection against dust when not used. The information outlet termination should be of built in self crimping type without use of 110 punching tool requirement Contacts : gold/nickel, minimum thickness of gold &gt; 0.8 µm Metal parts : bronze, nickel, platinum, gold The information outlet shall be made of high impact PBT Polycarbonate plastic material Greater than or equal to 1000V Less than or equal to 20mOhms Greater than or equal to 500 M Ohm at 100 V DC Connector should be tested and guaranteed under PoE restrictions, IEEE 802.3af standard and PoE+, standard 802.3at, up to 2500 on-load connections / disconnections.</p>				

		Tested with 2 simultaneous PoE+ circuits for a minimum total power of 50W 2500 mating cycles (plug insertion/withdrawal). IK03 ISO 11801 Second edition EN 50173 Second edition EIA/TIA-568-C.2 NF C 20730 Standard 8877 - 603.7 3P, UL, ETL and RoHS 25 years warranty -40 Deg C to +70 Deg C				
		Terminates 8 conductors at the same time reducing installation time				
		45° silver-plated IDCs provide secure, reliable gas-tight connections				
5		Supply, Installation, testing and commissioning of CAT6A UTP 24 AWG Patch Cord - 1 mtr with cross separator , Manufactured from stranded wires for longer flex-life , Minimum length of 1m, and maximum length of 5m Conforming to the following standards like EN 50173, ISO/IEC 60603-7 & 11801/IEC 60332-1, UL VW-1  Performance at 500 MHz IEC 61935-2 - Ed. 3.0 / ISO/IEC 11801 Usage Temperature - 20 to + 60°C Jacket PVC / LSZH Technical and Mechanical Features Diameter over Insulation (mm): 1.03 Operating temperature range: -10°C to +60° C Cable Diameter (mm): 6.5 No of Twists: 500 No of insertions: 750 AWG gauge: 26 Tensile Strength of the cord: $\geq 50$ N Electrical Features Contact Resistance: Less than 20 m Ohm Total Resistance of the cord: Less than 5 Ohms Resistance per 100m of cable with cord: Less than 14 Ohm DC Dielectric Strength: 1 KV/ 1 min	Nos	3800	580.00	22,04,000.00
		Over-molded boot at each end provide strain relief and maintains minimum bend radius of the cable. Assembled with RJ45 50μ" gold plated contacts according to IEC 603.7/class A.				
6		Supply, Installation, testing and commissioning of CAT6A UTP 24 AWG Patch Cord - 2 mtr with cross separator , Manufactured from stranded wires for longer flex-life , Minimum length of 1m, and maximum length of 5m Conforming to the following standards like EN 50173,	Nos.	4200	648.00	27,21,600.00

		ISO/IEC 60603-7 & 11801/IEC 60332-1, UL VW-1  Performance at 500 MHz IEC 61935-2 - Ed. 3.0 / ISO/IEC 11801 Usage Temperature – 20 to + 60°C Jacket PVC / LSZH Technical and Mechanical Features Diameter over Insulation (mm): 1.03 Operating temperature range: -10°C to +60°C Cable Diameter (mm): 6.5 No of Twists: 500 No of insertions: 750 AWG gauge: 26 Tensile Strength of the cord: ≥ 50 N Electrical Features Contact Resistance: Less than 20 m Ohm Total Resistance of the cord: Less than 5 Ohms Resistance per 100m of cable with cord: Less than 14 Ohm DC Dielectric Strength: 1 KV/ 1 min				
7		Supply & Installation/ Laying & testing of Fiber Cable Multimode (06 core OM4) outdoor in Meters (Armoured) 50/125 μm – OM4 (supporting upto 300m) Tight buffered	Mtr.	7600	172.00	13,07,200.00
8		Supply & Installation of 12 Port LIU (fiber optic interconnecting unit) Rack Mount 19" housing with front modules/ Couplers with blank adapter panel & Fully loaded with 24 Pigtails, Splice tray & Cable Management accessories	Nos.	60	27,000.00	16,20,000.00
9		Supply & Installation of 24 Port LIU (fiber optic interconnecting unit) Rack Mount 19" housing with front modules/ Couplers with blank adapter panel & Fully loaded with 24 Pigtails, Splice tray & Cable Management accessories	Nos.	30	54,000.00	16,20,000.00
10		Supply of Duplex Fiber optic patch cords Multimode (LC to LC) 3m - OM3 50/125	Nos.	275	2,219.00	6,10,225.00
		Factor SFP Connector				
		SC - Standard Connector (“Shove & Click”)				
		SC stands for Subscriber Connector- a general purpose push/pull style connector developed by NTT				
11		Supply & Fixing of OM3 50/125μ Type Pigtails of ISO/IEC-11801-OM3 Pigtails with LC Type Connectors, pigtails for terminating fibers on the FOPP complete in all respect.	Nos	400	390.00	1,56,000.00
12		SITC of 1U Wire Manager	Nos.	250	980.00	2,45,000.00
		<b>NETWORK RACKS</b>				
1		Supplying & Fixing of Floor Standing Network Rack - 24U / 600w / 600d, with Heavy Duty Extruded Aluminium Frame for	Nos.	2	52,000.00	1,04,000.00

		rigidity. Top cover with FHU provision. Top & Bottom cover with cable entry gland plates. Two pairs of 19" mounting angles with 'U' marking. Depth support channels - 3 pairs. With a Overall Weight Carrying Capacity of 500Kgs. Side Panels - 24U/600d Front Glass Door p 24U/600w Rear MS Door (Fully Perforated - Mesh) 22U/600w Fan 90CFM 230V AC, 4" dia Castors with Brake (set of 4) Cable manager 1U MS with Loops Shelf, Stationery 475mm N/W PDU 7Sockets 5Amps with MCB Mounting Hardware (Pkt. Of 20) Vertical Cable Channel 50mmW 22U complete in all respect.				
		Front Door S12C 19" / 24U				
		AC Distribution Box + H/W (02 Nos. of 6 Points of 5/15 AMP sockets - (Horizontal)				
		19" 1U Cable Manager PVC with duct fingers x 2				
		Fan housing unit 4 Fan POSN				
		Fans 90 CFM 230 VAC				
		Mounting Hardware (Pack of 10) x 5				
2		Supplying & Fixing of Floor Standing Network Rack - 42U / 800w / 1000d, with Heavy Duty Extruded Aluminium Frame for rigidity. Top cover with FHU provision. Top & Bottom cover with cable entry gland plates. Two pairs of 19" mounting angles with 'U' marking. Depth support channels - 3 pairs. With a Overall Weight Carrying Capacity of 500Kgs. Side Panels - 42U/1000d Front Glass Door 36U/800w Rear MS Door Split Perforated honeycomb 42U/800wFan 90CFM 230V AC, 4" dia Castors with Brake (set of 4) Vertical Cable manager 80mmW 42U Shelf, Stationery 700mm N/W PDU 12Sockets 5/15Amps with MCB Mounting Hardware (Pkt. Of 20) earthing Kit 150mmH Cable manager 1U MS with Loops complete in all respect. Enclosure Type: 42 U Floor Standing Rack Compliance with standards: UL, IEC Degree of Protection: The unit should have a minimum of IP 20 Earthing: All cabinet components (doors, side panels, top panels, 19" rails, pdu brackets) shall be grounded directly to the frame using Dual Copper plated earth stud of suitable rating on main Metal parts for better electrical continuity. Weight Capacity: Load Capacity of minimum 1200 Kg Coating: Powder coated black with fine texture – 60 to 80 uM	Nos.	20	99,535.00	19,90,700.00

		Material & Features: a. Enclosure: Modular Construction of the rack made of 4 vertical, 4 horizontal & 4 depth aluminum/MS bolted and joined together with Links . and Corner Block. Enough support channel to equate the load evenly and castor provision at bottom side. b. Top and Bottom: Top cover consist of Fire Retardant Brushes and Fire retardant ABS plastic / MS frame for cable and fiber entry to rack from fiber runner and copper cable pathway system. This consists of Brush with 2 line of brush system UL Certified Fire Retardant Brushes and Fire. c. Mounting Angle: 19"Upright adjustable in depth, equipment mounting angles with square slots to accommodate M6 cage nuts, powder coated texture finish. It contains U printing pattern which can be read from down to up and vice versa.				
		Dimensions should be minimum of 800mm (W) x 1000mm (D), All mounting / cable management accessories & Castors). - Not exceeding 2200mm in height (For Server room - Servers, Voice & IP Surveillance)				
		2 Nos. of 1U power distribution box, with 10 x IEC - C13 sockets & with 32Amp MCB-terminating on a IP56 power sockets - Vertical in each rack				
		1 No. Horizontal PDU with 5/15Amp Universal Sockets with 32Amp MCB Grounding / Bonding kit 42U in each rack				
		Mounting Hardware (Pack of 10) x 10				
		Cantilever tray & Keyboard Tray				
		Stationary Shelf - full depth (2Nos.)				
3	NS	Supply & Installation of Closed Network Rack 36U- with Side panel, Perforated Doors,	Nos.	1	70,000.00	70,000.00
		Dimensions should be minimum of 800mm (W) x 800mm (D), All mounting /				
		cable management accessories & Castors). - Not exceeding 2200mm in height (For Server room - Servers, Voice & IP Surveillance)				
		2 Nos. of 1U power distribution box, with 10 x IEC - C13 sockets & with 32Amp MCB-terminating on a IP56 power sockets - Vertical in each rack				
		1 No. Horizontal PDU with 5/15Amp Universal Sockets with 32Amp MCB Grounding / Bonding kit 42U in each rack				
		Mounting Hardware (Pack of 10) x 10				
		Cantilever tray & Keyboard Tray				
		Stationary Shelf - full depth (2Nos.)				

**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

4	NS	Supply & Installation of 9U (W 600mm / D 600mm) Close rack 19" Floor mount :	Nos.	1	13,000.00	13,000.00
		AC Distribution Box + H/W (5 Points of 5/15 AMP sockets - (Horizontal)				
		19" 1U Cable Manager PVC with duct fingers x 5				
		Fan housing unit 4 Fan POSN				
		Fans 90 CFM 230 VAC				
		Castor Set Normal/ Brake				
		Bar, Earthing 9U				
		Mounting Hardware (Pack of 10) x 5				
5	NS	Supply & Installation of 15U (W 600mm / D 600mm) Close rack 19" Wall mount :	Nos.	1	37,027.00	37,027.00
		Front Door S12C 19" / 15U				
		AC Distribution Box + H/W (5 Points of 5/15 AMP sockets - (Horizontal)				
		19" 1U Cable Manager PVC with duct fingers x 5				
		Fan housing unit 4 Fan POSN				
		Fans 90 CFM 230 VAC				
		Mounting Hardware (Pack of 10) x 5				
6	NS	Supply & Installation of 27U (W 600mm / D 650mm) Close rack 19" Floor mount :	Nos.	1	62,000.00	62,000.00
		Front Door S12C 19" / 24U				
		Rear Door S12C 19" / 24U				
		Side Panels S12C 24U / 800mmD				
		AC Mains Channel (10 Points of 5/15 AMP sockets - (Vertical)				
		AC Distribution Box + H/W (5 Points of 5/15 AMP sockets - (Horizontal)				
		19" 1U Cable Manager PVC with duct fingers x 5				
		Fan housing unit 4 Fan POSN				
		Fans 90 CFM 230 VAC				
		Castor Set Normal/ Brake				
		Bar, Earthing 36U				
		Mounting Hardware (Pack of 10) x 5				
		Accessories: a. Castor: Set of 4 castors with levelling feet, 2 brakes on front side and 2 without brakes. b. Mounting Hardware: Mounting Hardware Packets with set of M 6 screw, Cage Nuts and Washer set of 10 or 20 c. Characteristics value Indicated (Hx W x D): Server Rack: 42U 600 W x 1200D (Height x Width x Depth) Network Rack: 42U 800W x 1200D (Height x Width x				

		Depth) Door pattern for 42U network and server rack: Single Honeycomb/ Perforated door (Front Side), Double Honeycomb/ Perforated door (Rear Side). PDU should have minimum 24 Ports out of which minimum 15 ports for IEC C13 and Minimum 3 Ports for IEC C19 high retention sockets for single phase 230V, 32A. Remaining 6 Sockets may be of any combination of IEC13 and IEC 19. 32A, single phase 3 pin industrial socket for input power to IPDU. The PDU shall have the provision for tool less mounting for OU mounting capability in the rack.				
		<b>ACTIVE NETWORKING COMPONENTS</b>				
1(a)		Supply, installation, testing & commissioning of Router: complete in all respect 5 Year OEM NBD warranty and 24x7 TAC support. Router should be modular in architecture with 4 x 1G interfaces plus 2x 10G interface. Minimum 1 slot should be free for future expansion. The router should support minimum of 10 Gbps of SD-WAN IPsec throughput Should have redundant Internal hotswappable power supplies. Should support minimum 6000 IPsec tunnels Should support min 8GB DRAM (upgradable to 16GB or higher) and 8 GB flash/SSD memory Router should be provided with SD-WAN features from day 1 Shall support Routing protocols like RIP ver1 & 2 OSPF ver2. Multicast routing protocols support: IGMPv1, v2, PIM-SM and PIM-DM. Shall support IPv6 features: DHCPv6, IPv6 QoS, and OSPFv3 for IPv6. Shall support IP Accounting features Shall support QoS, Class-based Weighted Fair Queuing, Weighted Random Early Detection, PBR, FEC, CoS Marking Shall support the following AAA support using Radius and/or TACACS GRE IPSec Multiple privilege level authentication for console and telnet access The device should work in SD-WAN Mode managed by controller. However if required it should work as standalone routing platform without controller. Shall have support for management thru	Nos.	2	16,97,439.00	33,94,878.00

		Telnet, SSH, Secure Web based management thru HTTPS and SNMPv3 and Out of band management through Console and external modem for remote management				
		Should provide a provision to analyse IP service levels for IP applications and services by using active traffic monitoring (the generation of traffic in a continuous, reliable, and predictable manner) for measuring network performance. Should support flow-based traffic analysis of applications, hosts, performance-based measurements on application and network latency, quality of experience metrics for network-based services such as voice over IP (VoIP) / video. Should have the ability to monitor events and take informational, corrective, action when the monitored events occur or when a threshold is reached. The router shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment. The router shall conform to EN 55022/32 Class A/B or CISPR22/32 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements. All associated racks, patch panel, patch cords, face plates and cabling requirements of all kinds will be provided from day 1. All applicable licenses will be provided for the entire warranty duration or minimum 3 years whichever is later.				
1(b)		Supply, installation, testing & commissioning of Core Switch: 32-port 40G/100G QSFP28 Ports. With advanced L3 features including dual field replaceable Power supplies. 40 Gig connectivity between Core switches and Distribution Switch and 100G Connectivity between Core Switches thru QSFP+ cable for HA mode complete in all respect 3 Year OEM On site NBD warranty. For detailed technical specification, please refer tender.  Switch should be 1U and rack mountable in standard 19" rack. Switch should support Line rate architecture, non-blocking Layer2 switching and layer 3 routing feature from day one. Should have advanced L3 features supporting all required L3 Protocols from day 1.. Switch should support dynamic routing and	Nos.	2	34,99,994.00	69,99,988.00

		<p>Layer 3 features etc. for IPv4 and IPv6 from day 1.</p> <p>Switch shall scalable and modular architecture to provide the enhance performance. Switch should have USB/Ethernet management interfaces. It should support 64K mac address from day one.</p>				
		<p>100 Gig connectivity between Core switches thru QSFP+ cable for HA mode complete in all respect.</p> <p>It should have minimum 8 GB RAM and 8 GB Flash Memory and support 9K MTU</p> <p>It should have minimum switching capacity of 6400 Gbps and throughput performance of 2000 Mpps</p> <p>Minimum No of VLAN and VLAN Id supported should be 4000</p> <p>It should have Console port; Internal, Redundant Power supply; Redundant fan; it should have Operating System.</p> <p>It should support Policy based routing from day one.</p> <p>Should support L3 routing protocol Static Routing, RIPv1, RIPv2, BGP, OSPFv2, OSPFv3, RIPng,PBR, QoS from day one. It should support protocols OSPFv2, OSPFv3, PBR, BGP, BGP4, IS-IS,PIM-SM,PIM-SSM from day one.</p> <p>Should support protocol MPLS, BGP, BGP4, IS-IS, PIM-SM,PIM-SSM,VRF Lite from day one</p> <p>Switch should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment and minimum MACSec (AES-128) in all ports. Switch should support Access control lists (ACLs) provide IP Layer 3 filtering based on source/destination IP address/subnet and source/destination TCP /UDP port number.</p>				
		<p>Switch should support Simple Network Management Protocol (SNMPv2 and SNMPv3).</p> <p>Switch should Support for authentication, authorization, and accounting (AAA) using RADIUS and TACACS+.</p> <p>Switches must be able to deliver 100% of functionalities - licenses and Subscription model must be defined from day1.</p> <p>Switch should support VLAN s support.</p> <p>Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950</p> <p>Standards for Safety requirements of Information Technology Equipment.</p> <p>Switch shall conform to EN 55022 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility)</p>				

		requirements. Switch should be tested for EAL3/NDPP or above under Common Criteria Certification. All associated racks, patch panel, patch cords, face plates and cabling requirements of all kinds will be provided from day 1.				
2		Supplying Installation testing and Commissioning of 24 port 10/100/1000BASE-T PoE ports and four GbE/10GbE SFP/SFP+ uplink ports, Switch should have Management port to manage switch. Switch must support minimum 8 no of stacking with minimum 160 Gbps of stacking bandwidth from day-1. Switch should support Line rate architecture from day one. Proposed switch must be L2 and L3 capable switch. Switch shall scalable and modular architecture to provide the enhance performance Switch should support dynamic routing and features etc. for IPv4 and IPv6 from day 1. Switch shall scalable and modular architecture to provide the enhance performance . Switch should have USB/Ethernet management interfaces. It should support 32K mac address and 4GB DRAM and 4GB Flash from day one. It should have minimum switching capacity of 128 Gbps and throughput/forwarding rate performance of 95 MPSPS	Nos.	35	1,22,652.00	42,92,820.00
		Minimum No of VLAN and VLAN Id supported should be 1000 from day one. It should have Console port; Internal, Redundant Power supply ; Redundant fan; it should have Operating System. It should support Policy based segmentation from day one. Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, minimum MACSec -128 in all ports. For QoS, shall have 802.1p class of service, IP differentiated service code point (DSCP) and IP precedence. Switch should support marking, classification, policing and shaping. Should support strict priority queuing. Switch should support port security. DHCP snooping to allow administrator to ensure consistent mapping of IP to MAC address. Switch should support IPv4 and IPv6 ACLs, VLAN, Port and Time based access list with time ranges				

		<p>Switch should support Simple Network Management Protocol (SNMPv2 and SNMPv3), SSHv2, Configuration and management through CLI, GUI, console, telnet, SSH. Switch should support NTP. Should support LACP within and across switch, DHCP server &amp; client and DHCP relay. Should have LLDP support. Switch should Support for authentication, authorization, and accounting (AAA) using RADIUS and TACACS+. Switches must be able to deliver 100% of functionalities - licenses and Subscription model must be defined from day 1. Switch should support VLAN support. Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment. Switch shall conform to EN 55022/55032 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements.</p> <p>Switch should be tested for EAL3/NDPP or above under Common Criteria Certification.</p> <p>All associated racks, patch panel, patch cords, face plates and cabling requirements of all kinds will be provided from day 1.</p> <p>All applicable licenses will be provided for the entire warranty duration or minimum 3 years whichever is later.</p>				
3		<p>Supply, installation, testing &amp; commissioning of Distribution Switch: 24 1/10GbE SFP+ multi mode ports, 2 nos 40/100GbE QSFP+ fully loaded ports. With advanced L3 features including dual Power supplies. 40 Gig connectivity between Core switches thru QSFP+ cable for HA mode complete in all respect 3 Year OEM On site NBD warranty. For detailed technical specification, please refer tender. Switch should be 1U and rack mountable in standard 19" rack. Switch should support Line rate architecture, non-blocking Layer2 switching and layer 3 routing feature from day one. Should support advanced L3 features supporting all required L3 Protocols from day 1. Switch should support dynamic routing and Layer 3 features etc. for IPv4 and IPv6 from day 1. Switch shall scalable and modular architecture to provide the enhance performance. Switch should have USB/Ethernet management interfaces. It should support minimum 32K mac address</p>	Nos.	20	4,75,000.00	95,00,000.00

		from day one. Switch should have 24 no 1/10GbE SFP+ multi- mode ports, 2 no 40/100 GbE QSFP+ ports fully populated from day one.				
		40 Gig connectivity between Distribution switches thru QSFP+ cable for HA mode complete in all respect. It should have minimum 8 GB RAM and 8 GB Flash Memory and support 9K MTU It should have minimum switching capacity of 800 Gbps and throughput performance of 550 Mpps Minimum No of VLAN and VLAN Id supported should be 4000 It should have Console port; Internal, Redundant Power supply; Redundant fan; it should have Operating System. It should support Policy based routing from day one. Should support L3 routing protocol Static Routing, RIPv1, RIPv2, BGP, OSPFv2, OSPFv3, RIPng,PBR, QoS from day one. It should support protocols OSPFv2, OSPFv3, PBR, BGP, BGP4, IS-IS,PIM-SM,PIM-SSM from day one. Should support protocol MPLS, BGP, BGP4, IS-IS, PIM-SM,PIM-SSM,VRF Lite from day one Switch should support 802.1x authentication and accounting, IPv4 and IPv6 ACLs and Dynamic VLAN assignment and minimum MACSec-128 in all ports. Switch should support Access control lists (ACLs) provide IP Layer 3 filtering based on source/ destination IP address/subnet and source/ destination TCP /UDP port number.				
		Switch should support Simple Network Management Protocol (SNMPv2 and SNMPv3). Switch should Support for authentication, authorization, and accounting (AAA) using RADIUS and TACACS+. Switches must be able to deliver 100% of functionalities - licenses and Subscription model must be defined from day1. Switch should support VLAN s support. Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment. Switch shall conform to EN 55022 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements. Switch should be tested for EAL3/NDPP or above under Common Criteria Certification.				

4	<p><b>SITC Edge Switch:</b> Supplying Installation testing and Commissioning of 24 port 10/100/1000BASE-T ports and four GbE/10GbE SFP/SFP+ uplink ports, Switch should have Management port to manage switch. Switch must support minimum 8 no of stacking with minimum 160 Gbps of stacking bandwidth from day-1. Switch should support Line rate architecture from day one. Proposed switch must be L2 and L3 capable switch. Switch shall scalable and modular architecture to provide the enhance performance</p> <p>Switch should support dynamic routing and features etc. for IPv4 and IPv6 from day 1. Switch shall scalable and modular architecture to provide the enhance performance . Switch should have USB/Ethernet management interfaces. It should support 32K mac address and 4GB DRAM and 4GB Flash from day one. It should have minimum switching capacity of 128 Gbps and throughput/forwarding rate performance of 95 MPPS</p>	Nos.	20	1,40,220.00	28,04,400.00
	<p>Minimum No of VLAN and VLAN Id supported should be 1000 from day one. It should have Console port; Internal, Redundant Power supply ; Redundant fan; it should have Operating System. It should support Policy based segmentation from day one. Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, minumum MACSec -128 in all ports. For QoS, shall have 802.1p class of service, IP differentiated service code point (DSCP) and IP precedence. Switch should support marking, classification, policing and shaping. Should support strict priority queuing. Switch should support port security. DHCP snooping to allow administrator to ensure consistent mapping of IP to MAC address. Switch should support IPv4 and IPv6 ACLs, VLAN, Port and Time based access list with time ranges.</p>				
	<p>Switch should support Simple Network Management Protocol (SNMPv2 and SNMPv3), SSHv2, Configuration and management through CLI, GUI, console, telnet, SSH. Switch should support NTP. Should support LACP within and across switch, DHCP server &amp; client and DHCP relay Should have LLDP support. Switch should Support for authentication,</p>				

		<p>authorization, and accounting (AAA) using RADIUS and TACACS+.</p> <p>Switches must be able to deliver 100% of functionalities - licenses and Subscription model must be defined from day1.</p> <p>Switch should support VLAN s support.</p> <p>Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment.</p> <p>Switch shall conform to EN 55022/55032 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements.</p> <p>Switch should be tested for EAL3/NDPP or above under Common Criteria Certification.</p> <p>All associated racks, patch panel, patch cords, face plates and cabling requirements of all kinds will be provided from day 1.</p> <p>All applicable licenses will be provided for the entire warranty duration or minimum 3 years whichever is later.</p>				
5		<p>Supplying Installation testing and Commissioning of 48 port 10/100/1000BASE-T ports and four GbE/10GbE SFP/SFP+ uplink ports, Switch should have Management port to manage switch.</p> <p>Switch must support minimum 8 no of stacking with minimum 160 Gbps of stacking bandwidth from day-1.</p> <p>Switch should support Line rate architecture from day one. Proposed switch must be L2 and L3 capable switch.</p> <p>Switch shall scalable and modular architecture to provide the enhance performance</p> <p>Switch should support dynamic routing and features etc. for IPv4 and IPv6 from day 1.</p> <p>Switch shall scalable and modular architecture to provide the enhance performance . Switch should have USB/Ethernet management interfaces. It should support 32K mac address and 4GB DRAM and 4GB Flash from day one.</p> <p>It should have minimum switching capacity of 128 Gbps and throughput/forwarding rate performance of 95 MPPS</p>	Nos.	22	1,81,260.00	39,87,720.00
		<p>Minimum No of VLAN and VLAN Id supported should be 1000 from day one.</p> <p>It should have Console port; Internal, Redundant Power supply ; Redundant fan; it should have Operating System.</p> <p>It should support Policy based segmentation from day one.</p> <p>Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x,</p>				

		802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, minimum MACSec -128 in all ports. For QoS, shall have 802.1p class of service, IP differentiated service code point (DSCP) and IP precedence. Switch should support marking, classification, policing and shaping. Should support strict priority queuing. Switch should support port security. DHCP snooping to allow administrator to ensure consistent mapping of IP to MAC address. Switch should support IPv4 and IPv6 ACLs, VLAN, Port and Time based access list with time ranges				
		Switch should support Simple Network Management Protocol (SNMPv2 and SNMPv3), SSHv2, Configuration and management through CLI, GUI, console, telnet, SSH. Switch should support NTP. Should support LACP within and across switch, DHCP server & client and DHCP relay. Should have LLDP support. Switch should Support for authentication, authorization, and accounting (AAA) using RADIUS and TACACS+. Switches must be able to deliver 100% of functionalities - licenses and Subscription model must be defined from day1. Switch should support VLAN s support. Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment. Switch shall conform to EN 55022/55032 Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements. Switch should be tested for EAL3/NDPP or above under Common Criteria Certification. All associated racks, patch panel, patch cords, face plates and cabling requirements of all kinds will be provided from day 1. All applicable licenses will be provided for the entire warranty duration or minimum 5 years whichever is later.				
6		Supplying Installation testing and Commissioning of 48 port 10/100/1000BASE-T ports and four GbE/10GbE SFP/SFP+ uplink ports, Switch should have Management port to manage switch. Switch must support minimum 8 no of stacking with minimum 160 Gbps of stacking bandwidth from day-1. Switch should support Line rate architecture from day one. Proposed switch must be L2	Nos.	41	1,47,600.00	60,51,600.00

		<p>and L3 capable switch. Switch shall scalable and modular architecture to provide the enhance performance</p> <p>Switch should support dynamic routing and features etc. for IPv4 and IPv6 from day 1. Switch shall scalable and modular architecture to provide the enhance performance . Switch should have USB/Ethernet management interfaces. It should support 32K mac address and 4GB DRAM and 4GB Flash from day one. It should have minimum switching capacity of 128 Gbps and throughput/forwarding rate performance of 95 MPPS</p>				
		<p>Minimum No of VLAN and VLAN Id supported should be 1000 from day one. It should have Console port; Internal, Redundant Power supply ; Redundant fan; it should have Operating System. It should support Policy based segmentation from day one. Should support IEEE Standards of Ethernet: IEEE 802.1D, 802.1s, 802.1w, 802.1x, 802.3ad, 802.3x, 802.1p, 802.1Q, 802.3, 802.3u, 802.3ab, minumum MACSec -128 in all ports. For QoS, shall have 802.1p class of service, IP differentiated service code point (DSCP) and IP precedence. Switch should support marking, classification, policing and shaping. Should support strict priority queuing. Switch should support port security. DHCP snooping to allow administrator to ensure consistent mapping of IP to MAC address. Switch should support IPv4 and IPv6 ACLs, VLAN, Port and Time based access list with time ranges.</p>				
		<p>Switch should support Simple Network Management Protocol (SNMPv2 and SNMPv3), SSHv2, Configuration and management through CLI, GUI, console, telnet, SSH. Switch should support NTP. Should support LACP within and across switch, DHCP server &amp; client and DHCP relay Should have LLDP support. Switch should Support for authentication, authorization, and accounting (AAA) using RADIUS and TACACS+. Switches must be able to deliver 100% of functionalities - licenses and Subscription model must be defined from day1. Switch should support VLAN s support. Switch shall conform to UL 60950 or IEC 60950 or CSA 60950 or EN 60950 Standards for Safety requirements of Information Technology Equipment. Switch shall conform to EN 55022/55032</p>				

		Class A/B or CISPR22 Class A/B or CE Class A/B or FCC Class A/B Standards for EMC (Electro Magnetic Compatibility) requirements. Switch should be tested for EAL3/NDPP or above under Common Criteria Certification. All associated racks, patch panel, patch cords, face plates and cabling requirements of all kinds will be provided from day 1. All applicable licenses will be provided for the entire warranty duration or minimum 5 years whichever is later.				
7		SITC of Multi-Gig Switch: 24 RJ-45 ports (8 mGig ports up to 10G, 16 ports up to 1G), 4x10G Ports, POE/POE+/UPOE Power budget 1440 Watt Includes a country specific power cord, 19" rack mount hardware. Field replaceable internal Redundant Power Supply from day 1, 8 number of stacking for upto 320 Gbps with IEEE 802.1AE MACSEC	Nos.	20	2,99,500.00	59,90,000.00
8		Supply, Installation, Testing & Commissioning of Modules 10G Network Modules, <b>10GBASE-SR SFP</b> , MMF, OM4 Cable upto 400 Meter distance, LC connector	Nos.	200	37,400.00	74,80,000.00
9		Supply, Installation, Testing & Commissioning of Modules <b>40G Network Modules</b> , 40GBASE-SR SFP, OM4 Cable upto 400 Meter distance	Nos.	46	40,000.00	18,40,000.00
10		SITC of Wireless Controller: 2 x 10G SFP+ Ports, USB and Rj-45 Console Ports. It should support upto 250 Access Points, 5 Gbps Throughput, 2000 Clients with scalability of supporting of 500APs, 10 Gbps Throughput, 8000 Clients on the same hardware	Nos.	2	19,00,000.00	38,00,000.00
11		SITC of Indoor Access Point: Dual band radio 4x4 on both 2.4GHz and 5GHz 802.11a/b/g/n, .11ac, .11ax MU-MIMO with four spatial stream, WiFi6 AP, integrated antenna, 1 x2.5GbE, 1x USB, BLE radio, 1x Console with mounting Kit	Nos.	175	70,500.00	1,23,37,500.00
12		SITC of outdoor Access Point: Dual band radio 4x4 on both 2.4GHz and 5GHz 802.11a/b/g/n, .11ac, .11ax MU-MIMO with four spatial stream, WiFi6 AP, integrated antenna, 1 x2.5GbE, 1x SFP port, 1x USB, BLE radio, 1x Console with mounting Kit	Nos.	1	1,75,000.00	1,75,000.00
13		SITC of NMS: Network Management System for managing both wired and wireless devices as per the quantity of AP and Switches asked in the RFP	Nos.	1	5,25,000.00	5,25,000.00

		<p>*The proposed solution should be premise based and not cloud based. This should be based on standard server</p> <p>*Redundant solution shall be proposed. The centralized management function shall allow to display the physical topology of the network.</p> <p>*The centralized management function shall be able to handle wired equipment (switches) and wireless (Access Point) management for a “unified management” approach.</p> <p>*The solution shall be able to automatically discover new Switch or APs added to the network.</p> <p>*The solution shall be able to blacklist a client, either manually or automatically after a client attack has been detected.</p> <p>*The centralized management function shall allow per equipment configuration and software backup and restore, and bulk backup and restore.</p> <p>*The centralized management function shall allow access to all wIPS/wIDS features.</p> <p>*The centralized management function shall offer, on the basis of an application signature file, insight at application layer (e.g. facebook.com, youtube.com, salesforce.com...) even if the applications run on top of the HTTP or HTTPs protocols. It shall also allow control of those applications.</p> <p>*The solution should allow the admin to easily provision, manage and maintain a network infrastructure with alarms, unified access security policies</p> <p>*The solution should provide full visibility into wireless, devices and applications, as well as predictive analysis for forward planning</p> <p>*Should support third party network devices for basic SNMP and report</p> <p>*Provides threat mitigation through a secure perimeter against intrusion and malware attacks</p>				
14		SITC of Appliance for NMS: 4 Core Intel Xeon-S 4110 @ 2.10 Ghz , Memory: 32GB, Storage: 6 TB Hardisk minimum, Licensed Operating Server (Latest).	Nos.	3	6,95,000.00	20,85,000.00
15		Internal & External Firewall to be of Different Make				
15(a)		Supply, Installation, Testing & Commissioning of External firewall with the with 5 years of subscription / support . The Firewall should be Hardware based,	Nos.	1	1,75,43,159.00	1,75,43,159.00

	<p>Reliable, purpose-built security appliance with hardened operating system that eliminates the security risks associated with general-purpose operating systems. The proposed vendor must have "AAA" rating with min 97% of block rate for evasions as per CyberRatings Enterprise Firewall Test Report 2021 Firewall appliance should have at least 4 x 1/10Gig TX ports ,14 x 1/10Gig SFP/SFP+ ports with required transceivers , 4X 40 Gig Ports with required transceivers from Day one.</p> <p>Minimum NG Threat prevention throughput in real world/production environment (by enabling and measured with Application-ID/AVC, User-ID/Agent-ID, NGIPS, Anti-Virus, Anti-Spyware, Anti Malware and logging security threat prevention features enabled – 6 GBPS real world/production environment/Application Mix . The bidder shall submit the performance test report reference from public documents or from Global Product Engineering department / Global Testing Department/ Global POC team of OEM certifying the mentioned performance .</p> <p>IPsec VPN throughput – 9 Gbps. New sessions per second – Min 160 K Concurrent sessions – Min 4 Million The NGFW must have GUI based packet capture utility within its management console with capability of creating packet capture filters for IPv4 and IPv6 traffic and ability to define the packet and byte count. It should also support protocols like LLDP, DHCPv6. NAT 64 etc.</p> <p>The Firewall should support virtual System and should be provided with 3 from day-1. The virtual system should have all the features as of physical device. The proposed firewall shall delineate different parts of the application such as allowing Facebook chat but blocking its file-transfer capability inside the chat application base on the content. It should have atleast 3500 application and content based signatures and atleast 16000 IPS signatures.</p> <p>The firewall must have the capability to create DOS prevention policy to prevent against DOS attacks on per zone basis (outbound to inbound, inbound to inbound and inbound to outbound) and ability to create and define DOS policy based on attacks like UDP Flood, ICMP Flood, SYN Flood(Random Early Drop and SYN cookie), IP Address Sweeps, IP Address</p>				
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		Spoofs, port scan, Ping of Death, Teardrop attacks, unknown protocol protection etc				
		<p>All the proposed threat functions like IPS/vulnerability protection, Antivirus, C&amp;C protection etc should work in isolated airgapped environment without any need to connect with Internet.</p> <p>The proposed firewall shall have on box Anti-Virus/Malware, Anti Spyware signatures and should have minimum signatures update window of every one hour.</p> <p>Should be able to perform Anti-virus scans for HTTP,https, smtp, smtps,imap,impas, pop3, pop3s, ftp,, ftps, SMB traffic with configurable AV action such as allow, deny, reset, alert etc</p> <p>Vendor should automatically push dynamic block list with latest threat intelligence data base on malicious IPs, URLs and Domains to the firewall policy as an additional protection service.</p> <p>The NGFW should have native protection against credential theft attacks(without the need of endpoint agents) with ability to prevent the theft and abuse of stolen credentials and the following :</p> <p>Automatically identify and block phishing sites</p> <p>Prevent users from submitting credentials to phishing sites</p> <p>Prevent the use of stolen credential</p>				
		<p>HA : Active/Active and Active/Passive Logs and Report</p> <p>Logs will be stored for 180 days. Storage will be catered accordingly.</p> <p>The Logs and Reporting platform must be a dedicated same OEM appliance and VM/software running on server will not be accepted.</p> <p>The Logs and Reporting platform support running on-demand and scheduled reports</p> <p>Should have f Hard Drive Capacity in RAID-1 for logging and reporting if not please quote separate appliance</p> <p>Real-time display of information allows you to follow real-time trends in network usage such as the source IP address and the destination URL for HTTP traffic or IM message traffic.</p> <p>All log files and messages are searchable and can be filtered to drill down and locate specific information.</p> <p>All associated racks, patch panel, patch cords, face plates and cabling requirements of all kinds will be provided from day 1.</p> <p>All applicable licenses will be provided for</p>				

		the entire warranty duration or minimum 5 years whichever is later.				
		The make model and OEM of the external Firewall will be different from that of the Internal firewall.				
15(b)		<p>The Firewall should be Hardware based, Reliable, purpose-built security appliance with hardened operating system that eliminates the security risks associated with general-purpose operating systems</p> <p>The Proposed Firewall Vendor should be in the Leader in Quadrant of Gartner Magic Quadrant for Enterprise Network Firewall in any one year of last five continue year..</p> <p>Firewall appliance should have at least 8x 1/10GE interface, 4x40G Interface, and 1 GE RJ45 Management ports.</p> <p>The solution should support minimum 30 Gbps of NGFW (FW + IPS + AVC) throughput for Mix / production traffic</p> <p>The solution should support minimum 10 Gbps of Threat Prevention (FW + IPS + AVC + AV) throughput for Mix / production traffic</p> <p>Firewall should support minimum 10 Gbps of VPN throughput</p> <p>Firewall should support 5000 site-to-site &amp; client to site VPN Tunnels.</p> <p>Firewall should support minimum 5,000 concurrent SSL VPN users and should be scalable in future</p> <p>Firewall should support 200,000 new sessions per second, with enabling application control security feature</p>	Nos.	1	1,53,88,858.00	1,53,88,858.00
		<p>Firewall should support 15 Million concurrent sessions, with enabling application control security feature</p> <p>The Firewall solution should support NAT64, DNS64 &amp; DHCPv6</p> <p>The proposed system shall be able to operate on either Transparent (bridge) mode to minimize interruption to existing network infrastructure or NAT/Route mode. Both modes can also be available concurrently using Virtual Contexts.</p> <p>The proposed system should have integrated Traffic shaping / rate limiting functionality.</p> <p>The proposed system should support</p> <p>a) IPSEC VPN</p> <p>b) PPTP VPN</p>				
		<p>16 The device shall utilize inbuilt hardware VPN acceleration:</p> <p>a) IPSEC (DES,/3DES,/AES) encryption/decryption</p> <p>b) SSL encryption/decryption</p> <p>The system shall support the following</p>				

		<p>IPSec VPN capabilities:</p> <p>a) Multi-zone VPN supports.</p> <p>b) IPSec, ESP security.</p> <p>c) Supports NAT traversal</p> <p>d) Supports Hub and Spoke architecture</p> <p>e) Supports Redundant gateway architecture</p> <p>18 The system shall support 2 forms of site-to-site VPN configurations:</p> <p>a) Route based IPSec tunnel</p> <p>b) Policy based IPSec tunnel</p> <p>The system shall provide IPv6 IPSec feature to support for secure IPv6 traffic in an IPSec VPN.</p>				
		<p>Virtualization</p> <p>The proposed solution should support Virtualization (Virtual Firewall, Security zones and VLAN). Minimum 3 Virtual Firewall license should be provided.</p>				
		<p>Intrusion Prevention System</p> <p>IPS throughput should be minimum 11 Gbps for Mix / Production traffic</p> <p>The IPS detection methodologies shall consist of:</p> <p>a) Signature based detection using real time updated database</p> <p>b) Anomaly based detection that is based on thresholds</p>				
		<p>The IPS system shall have at least 40,000 signatures</p> <p>IPS Signatures can be updated in three different ways: manually, via pull technology or push technology. Administrator can schedule to check for new updates or if the device has a public IP address, updates can be pushed to the device each time an update is available</p> <p>In event if IPS should cease to function, it will fail open by default and is configurable. This means that crucial network traffic will not be blocked and the Firewall will continue to operate while the problem is resolved</p> <p>IPS solution should have capability to protect against Denial of Service (DOS) and DDOS attacks. Should have flexibility to configure threshold values for each of the Anomaly.</p> <p>Should support automatic Real Time Signature generation based on Rate Variant, Rate Invariant algorithms &amp; Challenge Response Mechanisms; within few seconds, without human intervention. Should provide at least 1 Gbps of DDOS protection available.</p> <p>IPS signatures should have a configurable actions like terminate a TCP session by issuing TCP Reset packets to each end of the</p>				

		<p>connection, or silently drop traffic in addition to sending a alert and logging the incident</p> <p>Signatures should a severity level defined to it so that it helps the administrator to understand and decide which signatures to enable for what traffic (e.g. for severity level: high medium low)</p>				
		<p>Antivirus</p> <p>Firewall should have integrated Antivirus solution</p> <p>The proposed system should be able to block, allow or monitor only using AV signatures and file blocking based on per firewall policy based or based on firewall authenticated user groups with configurable selection of the following services:</p> <p>a) HTTP, HTTPS</p> <p>b) SMTP, SMTPS</p> <p>c) POP3, POP3S</p> <p>d) IMAP, IMAPS</p> <p>e) FTP, FTPS</p> <p>The proposed system should be able to block or allow oversize file based on configurable thresholds for each protocol types and per firewall policy.</p>				
		<p>Web Content Filtering</p> <p>The proposed system should have integrated Web Content Filtering solution without external solution, devices or hardware modules.</p> <p>The proposed solution should be able to enable or disable Web Filtering per firewall policy or based on firewall authenticated user groups for both HTTP and HTTPS traffic.</p> <p>The proposed system shall provide web content filtering features:</p> <p>a) which blocks web plug-ins such as ActiveX, Java Applet, and Cookies.</p> <p>b) Shall include Web URL block</p> <p>c) Shall include score based web keyword block</p> <p>d) Shall include Web Exempt List</p> <p>The proposed system shall be able to queries a real time database of over 280 million + rated websites categorized into 80+ unique content categories.</p>				
		<p>Application Control</p> <p>The proposed system shall have the ability to detect, log and take action against network traffic based on over 4000 application signatures</p> <p>The application signatures shall be manual or automatically updated</p> <p>The administrator shall be able to define application control list based on selectable</p>				

		application group and/or list and its corresponding actions				
		<p>High Availability</p> <p>The proposed system shall have built-in high availability (HA) features without extra cost/license or hardware component</p> <p>The device shall support stateful session maintenance in the event of a fail-over to a standby unit.</p> <p>High Availability Configurations should support Active/Active or Active/ Passive</p>				
		<p>Logs and Report</p> <p>Logs will be stored for 180 days. Storage will be catered accordingly.</p> <p>The Logs and Reporting platform must be a dedicated same OEM appliance and VM/software running on server will not be accepted.</p> <p>The Logs and Reporting platform support running on-demand and scheduled reports</p> <p>Should have f Hard Drive Capacity in RAID-1 for logging and reporting if not please quote separate appliance</p> <p>Real-time display of information allows you to follow real-time trends in network usage such as the source IP address and the destination URL for HTTP traffic or IM message traffic.</p> <p>All log files and messages are searchable and can be filtered to drill down and locate specific information.</p> <p>All associated racks, patch panel, patch cords, face plates and cabling requirements of all kinds will be provided from day 1.</p> <p>All applicable licenses will be provided for the entire warranty duration or minimum 5 years whichever is later.</p> <p>The make model and OEM of the internal Firewall will be different from that of the External firewall.</p>				

16(a)	<p>SITC of Network Access Control</p> <p>The Solution should provide a highly powerful and flexible attribute-based access control solution that combines authentication, authorization, and accounting (AAA); posture; profiling; and guest management services on a single platform.</p> <p>Provides complete guest lifecycle management by empowering sponsors to on-board guests.</p> <p>Solution should be scalable enough to support 1500 endpoints in the network from day 1 and scalable to support 5000 endpoints on the same appliance.</p> <p>Solution should be scalable enough to support 1500 Network devices from day 1 and scalable to support 5000 network devices on the same appliance in future.</p> <p>The solution should support guest users onboarding through social media login to simplify the registration process</p> <p>The solution should support sponsor approval for guest users connecting into the network and the approval request should have control from multiple sponsor to avoid single point of failure</p> <p>The solution should support flexible guest account approval even in absence of sponsor</p> <p>Enforces security policies by blocking, isolating, and repairing noncompliant machines in a quarantine area without requiring administrator attention</p> <p>The NAC solution should be able to block unauthenticated/rogue machine without giving any access to the network.</p> <p>The NAC solution should be able to control the user even before IP address is assigned.</p> <p>It should act as a pre-admission solution</p> <p>The NAC solution should be able to integrate with APT, NBAD and SIEM solution</p> <p>The solution should provide full TACACS+ capability including enable password, configuration present for different NAD types, TACACS+ proxy etc.</p> <p>Utilizes standard RADIUS protocol for authentication, authorization, and accounting (AAA).</p> <p>Supports a wide range of authentication protocols, including PAP, MS-CHAP, Extensible Authentication Protocol (EAP)-MD5, Protected EAP (PEAP), EAP-Flexible Authentication via Secure Tunneling (FAST), and EAP-Transport Layer Security (TLS).</p>	Nos.	2	17,29,671.00	34,59,342.00
	Provides a wide range of access control mechanisms, including downloadable				

	<p>access control lists (dACLs), VLAN assignments, URL redirect, and Security Group Access (SGA) tagging. It should allow Administrators to create their own device templates. These templates can be used to automatically detect, classify, and associate administrative-defined identities when endpoints connect to the network. Administrators can also associate endpoint-specific authorization policies based on device type.</p> <p>Solution must allow administrator to add exception for certain device properties in the device templates/ device profiles available in the solution to filter unintentionally picked parameters of endpoints. The Solution should have capability to see endpoints attribute data via passive network telemetry or alternatively from the infrastructure via device sensors on switches at Core, Distribution and Access Layer. Solution should allow end users to interact with a self-service portal for device on-boarding, providing a registration vehicle for all types of devices as well as automatic supplicant provisioning and certificate enrolment for standard PC and mobile computing platforms.</p> <p>Verifies endpoint posture assessment for PCs connecting to the network. Works via either a persistent client-based agent or a temporal web agent to validate that an endpoint is conforming to a company's posture policies. Provides the ability to create powerful policies that include but are not limited to checks for the latest OS patches, antivirus and antispysware software packages with current definition file variables (version, date, etc.), registries (key, value, etc), and applications. Solution should support auto-remediation of PC clients as well as periodic reassessment to make sure the endpoint is not in violation of company policies.</p> <p>Allows administrators to quickly take corrective action (Quarantine, Un-Quarantine, or Shutdown) on risk-compromised endpoints within the network. This helps to reduce risk and increase security in the network. Includes a built-in web console for monitoring, reporting, and troubleshooting to assist help-desk and network operators in quickly identifying and resolving issues. Offers comprehensive historical and real-time reporting for all services, logging of all activities, and real-time dashboard metrics</p>				
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		of all users and endpoints connecting to the network.				
		<p>Solution should have capability which allows users to add a device on a portal, where the device goes through a registration process for network access. Should allow users to mark as lost any device that you have registered in the network, and blacklist the device on the network, which prevents others from unauthorized network access when using the blacklisted device. Should have capability to reinstate a blacklisted device to its previous status in Device Portal, and regain network access without having to register the device again in the Devices Portal. Should also support removing any device in the enterprise network temporarily, then register the device for network access again later. Should provide a Registered Endpoints Report which provides information about a list of endpoints that are registered through the device registration portal by a specific user for a selected period of time. The report should provide the following details</p> <ul style="list-style-type: none"> <li>•Logged in Date and Time</li> <li>•Portal User (who registered the device)</li> <li>•MAC Address</li> <li>•Identity Group</li> <li>•Endpoint Policy</li> <li>•Static Assignment</li> <li>•Static Group Assignment</li> <li>•Endpoint Policy ID</li> <li>•NMAP Subnet Scan ID</li> <li>•Device Registration Status</li> </ul> <p>Solution should support automatic provisioning of NAC agents. The NAC solution should support any SAML v2 compliant solution. Should support native supplicant profiles to enable users to bring their own devices into network. When the user logs in, based on the profile that you associate with that user's authorization requirements, solution should provide the necessary supplicant provisioning wizard needed to set up the user's personal device to access the network. This should be supported over Microsoft windows, Apple Mac and iOS and Android devices.</p> <p>When endpoints are discovered on the network, they can be profiled dynamically based on the configured endpoint profiling policies, and assigned to the matching endpoint identity groups depending on their profiles.</p>				
		Must be able to differentiate policy based on device type + authentication				

		<p>The solution should support BYOD workflow for Partner/Contractor or Employees for BYOD scenario by automatically provisioning the supplicant such that Owner &amp; the device are authenticated based on certificate. The NAC solution should be standard RADIUS server with built-in certificate authority</p> <p>The CA server should be able to provision certificate for multiple use cases like BYOD, EAP authentication and Third Party Client and Server side authentication. The solution must have internal CA server functionality with flexibility to create certificate template to be used by other network services</p> <p>Solution must support Non 802.1x technology on assigned ports and 802.1x technology on open use ports</p> <p>The NAC solution should integrate with vulnerability scanner like Rapid7, Tenable etc. Should be a listed vendor and officially supported integration and should allow use of threat intelligence to build authorization permissions based on the vulnerability scores received from these tools to enforce permissions.</p> <p>Should support session termination with port shutdown option to block an infected host that sends a lot of traffic over the network.</p> <p>Should support TCP dump utility &amp; also support saving a TCP dump file. The solution must have internal CA server functionality to provision certificate for multiple use cases like BYOD, Contractor, Employee Asset etc.</p> <p>The Solution should support complete guest lifecycle where Sponsor should be able to Extend, Suspend and reinstate guest accounts with reasons.</p> <p>The solution should support centralized and distributed deployment options with clustering of nodes or cross-site failover for disaster recovery scenarios</p> <p>Any third party product required to achieve the functionality should be provided with the necessary enterprise version license of software/appliance and necessary hardware, database and other relevant software or hardware etc should be provided with the solution</p> <p>NAC Solution should support phased deployment for more flexibility during deployment and simplifies the transition from See/monitor phase to Control/closed mode but without allowing non-compliant</p>			
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		endpoint on network or without waiting for endpoint to receive IP address on the network;				
		<p>When Network device connectivity to NAC is lost or authentication service outage occurs the Endpoint should be retained in unauthenticated VLAN and should be automatically subjected to Reauthentication when server is marked alive to ensure that the Endpoint does not join the network without authentication.</p> <p>Solution must support identifying the profile of endpoint joining the network as early as possible without granting Endpoint access to the network and there by speed up the Endpoint discovery without compromising security.</p> <p>Solution should be able to enforce Layer 4 controls right from Access to distribution to core to edge to data centre to servers without the need of mirroring the traffic and maintaining end to end segmentation even when two endpoints are in same broadcast domain.</p> <p>Solution should consume license only based on active devices on the network where Devices include user endpoints (such as laptops, tablets and smartphones), non-user devices (such as printers, IP phones, security equipment, medical devices, manufacturing equipment), virtual machines, Network infrastructure devices (such as switches, routers and access points) should not consume license and If so vendor should consider these licenses exclusively and should be counted along with User/Endpoints.</p> <p>Solution should support 3rd party integration for sharing Contextual awareness and other endpoint related data such that it can Publish, subscribe and work as broker as well.</p> <p>The solution must have capability to hide agent to prevent the user from exiting the agent.</p> <p>Open seating environments where the MAC addressee is not persistence, solution should be to authorize managed endpoint</p> <p>Solution must have single unified agent for VPN, Posture assessment &amp; 802.1x authentication</p> <p>Solution must support integration with firewall and must be able to share usergroup information with firewall so that user traffic can be controlled based on user group at firewall.</p> <p>Solution must support integration with existing EDR solution and must be able to</p>				

		quarantine endpoint based on EDR alerts.  All associated racks, patch panel, patch cords, face plates and cabling requirements of all kinds will be provided from day 1.				
16 (b)		SITC of user group for 1500 users , expanable upto 5000 users with 5 year support	Lot	1	18,86,087.00	18,86,087.00
		<b>TOTAL</b>				<b>14,23,20,204.00</b>
<b>VI</b>		<b>IPPBX</b>				
1		<p>SITC of IP Communication Servers – 02 Nos. (On redundant mode with hot standby) as per the specifications in the RFP. Distributed Architecture, should include Rack Mountable with duplicated controls Proposed system shall be in compliance with ITU-T (International Telecommunication Union Telecommunication) standards and technical recommendation. Any subject matter not governed herein shall be in line with the applicable recommendations of ITU-T (CCITT).</p> <p>IP Users: 870 Nos. PRI: 04 Nos. Deskphone Based Operator Console with 12 Key DSS: 02 Nos. PC Based Operator Consoles with Busy lamp Field, Multi-Media Keyboard &amp; associated IP Phones: 01 No. Inclusive of PC with latest configurations Network Management Software for Managing, Maintaining and Collection of Call Detailed records with associated PC of latest configuration: 01 No. DISA &amp; Integrated Multi-Level Automated Attendant 28 Party Meet-Me Conferencing Bridges-03Nos. 28 Party Blast Dial Conference Bridge-03 No. Unlimited 3 Party Conference The proposed system shall support IPv6 from day one. It shall be possible to assign IPv6 addresses to the system, as well as IPv4 addresses. The system shall be capable of directly responding to IPv6 requests (establishing a call over IPv6, IPv6 supported IP telephone operation etc.) without requiring any converters. The system shall also support hybrid IP networks in which both IPv6 and IPv4 protocols are used. The system shall be able to communicate over IPv4 and IPv6 networks, simultaneously. System architecture should be of Server</p>	Nos	1	90,00,000.00	90,00,000.00

		gateway based with external industry standard server to facilitate a distributed architecture with centralized call control over the IP backbone. It should support geographical redundancy.				
		<p>The communication server should be deployed in a distributed architecture over IP infrastructure (LAN/WAN). Both the active and standby processors should not be in the same unit/cabinet sharing the same active backplane so as to prevent total system failure on failure of the motherboard/backplane.</p> <p>It should work in hot-standby operation mode, during changeover from active server to standby server, any active/on-going calls across the entire network/location should not be interrupted or affected. There should be no restriction on number of endpoints being backed up in case of one server failure.</p> <p>It shall be possible to distribute the system into sub-systems to be installed in different locations. However, these sub-systems shall work as a unified (single) system with a unified numbering plan, centralized operation and management. In case, connection between server and sub- systems fail, it shall be possible for the remotely located sub-systems to continue operation in self-survival mode. When the connection gets restored, sub-systems shall resume its normal operation as a part of main system. The system should have support built in subscriber page, The Subscriber Page can be accessed from all platforms such as computers with Windows or Linux operating systems or as mobile devices with IOS, Android or Windows Phone operating systems entering the IP address of the application via web interface. The system should support SNMP (Simple Network Management Protocol). It shall be possible to have access to systems from remote locations to monitor the status and to update software or to take system backup. The system shall capable of operating with the following units:</p> <ol style="list-style-type: none"> <li>1. IP telephone devices</li> <li>2. Wi-Fi telephone devices</li> <li>3. IP Video Phone</li> <li>4. Softphone (software based telephone) applications</li> <li>5. Other Telephone Exchanges (PABX)</li> <li>6. ISDN 4 PRI 2 Mbps (E1) Network</li> <li>7. Facsimile devices</li> <li>8. Data extensions</li> <li>9. Voice Mail System</li> </ol>				

		10. Smart mobile phones 11. Tablets and computers				
		<p>The system should have these security features:</p> <ol style="list-style-type: none"> <li>1. Transport Layer Security(TLS)</li> <li>2. Secure Real-time Transport Protocol (sRTP)</li> <li>3. Certification of IP endpoints</li> <li>Integration with Firewall</li> <li>4. Protection against DOS attacks</li> <li>6. Password aging</li> <li>7. Admin accounts with different authority levels</li> <li>8. Log reports</li> </ol> <p>The IP PBX system should have my subscribe page. By using My Subscriber Page;</p> <ol style="list-style-type: none"> <li>1. A call can be made.</li> <li>2. Missed calls can be seen.</li> <li>3. Reminders can be set.</li> <li>4. By using the directory special memory, shared memory and all internal numbers can be accessed and</li> <li>5. A private speed dial directory can be created.</li> <li>6. Forwarding can be made in Night and Day Time modes. Extension may check the access and usage settings.</li> <li>7. 24 Port Voice gateway for interfacing with Analog and Digital Exchanges with 5 years warranty all supporting hardware, software and licenses</li> </ol>				
2		<p>Supply of IP Phone type I - 128x64 pixels, black and white LCD with backlit, 6 soft keys, 2 fast Ethernet ports, HD Audio</p> <p>The Phone should be hands free, full duplex.</p> <p>The Phone should support 3-way conference.</p> <p>The Phone should support for using in integration with Net Console computer telephony integration (CTI) application.</p> <p>The Phone should have to show Incoming, outgoing, missed and answered calls list.</p> <p>Fast Ethernet 10/100 connectivity for LAN and PC</p> <p>802.3AF Power over Ethernet (PoE) - Class 0/1/2/3</p> <p>minimum 1 SIP account keys</p> <ul style="list-style-type: none"> <li>• Conference key</li> <li>• Redial key</li> <li>• Transfer key</li> <li>• Hold key</li> <li>• 4-way navigation and OK key</li> </ul> <p>QoS</p> <ul style="list-style-type: none"> <li>• 802.1p (SIP and RTP QoS)</li> </ul>	Nos	380	6,500.00	24,70,000.00

		<ul style="list-style-type: none"> <li>DSCP</li> <li>Phonebook</li> <li>Individual phonebook (300 entries)</li> <li>LDAP/XML directory service</li> </ul>				
3		<p>Supply of IP Phone type II - 2 X 10/100 MBPS ports, 132X64 graphical display with minimum 2 simultaneous lines with backlit or better, RJ9 and 3.5 mm Jack for headsets, Dual SIP accounts, minimum 100 individual phone entries</p> <p>i. The Phone should have 132x64-pixel graphical LCD with backlight.</p> <p>ii. The Phone should have minimum two 10/100 ethernet ports.</p> <p>iii. The Phone shall support IPv4 &amp; IPv6.</p> <p>iv. The phone shall support PoE and external power adaptor.</p> <p>v. The phone should support HD Voice</p>	Nos	110	11,999.00	13,19,890.00
		<p>vi. The phone should have Full-duplex hands-free speakerphone</p> <p>vii. The phone should support headset.</p> <p>viii. The phone support minimum 2 SIP accounts.</p> <p>ix. Wall mountable</p> <p>x. The Phone shall have 6 Feature keys, minimum 4 navigation keys &amp; volume control keys.</p> <p>xi. The Phone shall support auto provision via FTP / TFTP / HTTP/ HTTPS for easy configuration &amp; fast deployment.</p> <p>xii. The Phone shall support sRTP for voice, TLS, IEEE 802.1X and AES encryption for configuration file.</p>				
4		<p>Type- III IP Phones</p> <p>i Display: minimum 3.5 inch color, 240 x 320 pixels, LED Backlight, Ambient light sensor</p> <p>ii. The Phone shall have LED for call and message waiting indication.</p> <p>iii. The phone should have dual Gigabit (10/100/1000 Mbps) ethernet ports.</p> <p>iv. The Phone shall support IPv4 &amp; IPv6.</p> <p>v. The phone shall support PoE(802.3af) and external power adaptor</p> <p>vi. The phone shall support up to minimum 5 SIP accounts.</p> <p>vii. The phone should have full duplex speakerphone.</p> <p>viii. The phone should have HD voice, Headset</p> <p>ix. The phone Supports expansion modules.</p> <p>x. The phone should have built-in a USB port, support Bluetooth headset</p>	Nos	20	16,251.00	3,25,020.00
		<p>xi. The phone shall having mounting stand with 2 adjustable angles</p> <p>xii. The phone shall have 5 line keys with LED and line keys can be programmed up to 24 various features (minimum 2-page view).</p>				

		<p>xiii. The phone shall have 4 contextual soft key buttons, 7 feature key, minimum 4 navigation keys.</p> <p>xiv. Wall mountable</p> <p>xv. Simple, flexible and secure provisioning options.</p> <p>xvi. The Phone shall support auto provision via FTP / TFTP / HTTP/ HTTPS for easy configuration &amp; fast deployment.</p> <p>xvii. The Phone shall support sRTP for voice, TLS, IEEE 802.1X and AES encryption for configuration file</p>				
		<b>TOTAL</b>				<b>1,31,14,910.00</b>
<b>VII</b>		<b>Various Video patch cables, USB-C, HDMI, USB 2.0, Audio Connectors, Speaker Cable, Microphone cable, Control Cable, etc. for all Low Voltage Services</b>				
1		Supply, Installation, Testing and Commissioning of Face Plates which shall have HDMI, USB and RJ-45 Connectivity. It shall be supplied along with double side female connectors for easy installation complete in all respect.	Nos	45	3,780.00	1,70,100.00
2		Supply, Installation, Testing and Commissioning of High Quality 2 Core shielded audio cable. The cable shall have proper insulation for all cores and shield.	Mtr	175	378.00	66,150.00
3		Supply, Installation, Testing and Commissioning of High Quality 4 Core Control Cable. The cable shall have proper insulation for all cores and shield.	Mtr	325	378.00	1,22,850.00
4		Supply, Installation, Testing and Commissioning of 2 Core Speaker Cable which shall be 16 AWG or better.	Mtr	700	756.00	5,29,200.00
5		Supply, Installation, Testing and Commissioning of 12U Rack which shall be supplied with 1 nos 6 port 6A power strips which shall be rack mountable. It shall be supplied with cooling fan for proper ventilation. It shall be supplied with mounting screws and mounting plates as included accessories.	Nos	16	66,150.00	10,58,400.00
6		Supply, Installation, Testing and Commissioning of 24U Rack which shall be supplied with 2 nos 6 port 6A power strips which shall be rack mountable. It shall be supplied with cooling fan for proper ventilation. It shall be supplied with mounting screws and mounting plates as included accessories.	Nos	4	1,03,950.00	4,15,800.00
7		Supply, Installation, Testing and Commissioning of 3 meters HDMI Type A to Type A which shall support data rate of up to 18 Gbps. It shall support resolutions of up to 3820x2160@60 Hz or better. It shall	Nos	75	5,670.00	4,25,250.00

		have Gold Plated Contacts for Signal Integrity. It shall have a dynamic bend radius of 90mm or better. It shall have an insulation resistance of 100 ohms or better. It shall have a Dielectric Strength of 500V/minute or better. It shall be HDMI 2.0 or better. It shall have up to 1536 KHz or better Audio Sample Frequency for highest audio fidelity. It shall be highly resistant with RF and EMI interference. It shall work without the use of External Power Supplies.				
8		Supply, Installation, Testing and Commissioning of 3.5m Stereo male to male Audio Patch Cord. It shall have 3.5mm Male Connectors.	Nos	75	2,268.00	1,70,100.00
9		SITC of PoE Enable Wireless Access point a/b/g/n	Nos	14	1,07,991.00	15,11,874.00
10		SITC of 24 RJ-45 10/100/1G BaseT, 2 fixed SFP+ (1/10G)+ 4 fixed SFP+ (1G/10G) uplink/stacking ports. 1RU size, internal AC power supply. Includes a country specific power cord, guides, 19" rack mount hardware and 10 Gigabit direct attached cable (DAC, uplink/stacking) 1m, SFP+	Nos	14	91,324.00	12,78,536.00
		<b>TOTAL</b>				<b>57,48,260.00</b>
<b>VIII</b>		<b>IBS</b>				
1		Supply, Installation, Testing & Commissioning of Omni Antenna, 698-2700 MHz, PIM: -140dBc (2X33 dBm), 50W, N(F) Connector, Radiating Material:- CU, VSWR: $\leq 1.5$ .	Nos.	176	2,440.00	4,29,440.00
2		Supply, Installation, Testing & Commissioning of Panel Antenna, 698-2700 MHz, PIM: -140dBc (2X33 dBm), 50W, N(F) Connector, Radiating Material:- CU, VSWR: $\leq 1.5$	Nos.	68	3,490.00	2,37,320.00
3		Supply, Installation, Testing & Commissioning of 6dB Coupler, 698-2700 MHz, PIM: -150 dBc (2X43 dBm), 100W/Port, N(F) Connector, Inner Conductor: CU, VSWR: $\leq 1.3$	Nos.	15	2,610.00	39,150.00
4		Supply, Installation, Testing & Commissioning of 10dB Coupler, 698-2700 MHz, PIM: -150 dBc (2X43 dBm), 100W/Port, N(F) Connector, Inner Conductor: CU, VSWR: $\leq 1.3$	Nos.	3	2,610.00	7,830.00
5		Supply, Installation, Testing & Commissioning of 2 way Splitter, 698-2700 MHz, PIM: -150 dBc (2X43 dBm), 100W/Port, N(F) Connector, Inner Conductor: CU, VSWR: $\leq 1.3$	Nos.	110	2,010.00	2,21,100.00
6		Supply, Installation, Testing & Commissioning of 3 way Splitter, 698-2700 MHz, PIM: -150 dBc (2X43 dBm), 100W/Port, N(F) Connector, Inner Conductor: CU, VSWR: $\leq 1.3$	Nos.	46	2,250.00	1,03,500.00

**CGM/DFCCIL/NOIDA UNIT/Interior Fitout works for DFCCIL C. O. Building/Sec-145 Noida/2022/01**

7	Supply, Installation, Testing & Commissioning of RF Coaxial Feeder Cable 7/8 inch, Outer Conductor Copper, Inner Conductor Copper, Foam Dielectric, Flame Retardent, Halogen Free	Nos.	660	710.00	4,68,600.00
8	Supply, Installation, Testing & Commissioning of RF Coaxial Feeder Cable 1/2 inch, Outer conductor Copper, Inner Conductor Copper Clad Aluminium, Flame Retardent, Halogen Free	Nos.	3600	330.00	11,88,000.00
9	Supply, Installation, Testing & Commissioning of 1/2" N(M) Connector, DC-3000 MHz, PIM: -160 dBc (2X43 dBm), 500W @ 2GHz, Inner Conductor-Copper-Silver Plated, Durability: 500 Cycles	Nos.	600	530.00	3,18,000.00
10	Supply, Installation, Testing & Commissioning of 1/2" N(F) Connector, DC-3000 MHz, PIM: -160 dBc (2X43 dBm), 500W @ 2GHz, Inner Conductor-Copper-Silver Plated, Durability: 500 Cycles	Nos.	10	530.00	5,300.00
11	Supply, Installation, Testing & Commissioning of 7/8" N(M) Connector, DC-3000 MHz, PIM: -160 dBc (2X43 dBm), 500W @ 2GHz, Inner Conductor-Copper-Silver Plated, Durability: 500 Cycles	Nos.	26	910.00	23,660.00
12	Supply, Installation, Testing & Commissioning of Combiner, 4:4, 698-2700 MHz, PIM: -160 dBc (2X43 dBm), 100W/Port, Din(F) Connector, Isolation: $\geq 40$ dB, VSWR: $\leq 1.3$	Nos.	3	67,210.00	2,01,630.00
13	Supply, Installation, Testing & Commissioning of 1/2" Super Flex Jumper N(M) - N(M), 1m, DC-3000 MHz, PIM: -160 dBc (2X43 dBm), 500W @ 2GHz, Connector Contact- Copper with silver coating, Durability: 500 Cycles	Nos.	57	2,760.00	1,57,320.00
	<b>TOTAL</b>				<b>34,00,850.00</b>
	<b>GRAND TOTAL OF LV WORK</b>				<b>29,27,09,911.00</b>

**Explanatory Notes for BOQ:**

- i) The quantities shown in above Schedules are approximate and are as a guide to give the tenderer(s) an idea of quantum of work involved. The DFCCIL reserves the right to increase/ decrease and/or delete or include any of the quantities given above as per site conditions.
- ii) All efforts have been made to make the document/BOQ complete in all respect for successful commissioning of the works, however, if any minor item has not been specifically mentioned or being omitted, the same shall be executed without any extra cost by the agency, so as to ensure successful and satisfactory commissioning of the item / work to the full satisfaction of Engineer/DFCCIL. In this regard, decision of Engineer/DFCCIL shall be final & binding.