

Proposed Construction of Investment Building & all related service and other ancillary works at old district court road, Ludhiana (Punjab)

SCHEDULE OF QUANTITY

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	GENERAL PREAMBLES				
	<u>The Engineer-in-charge's decision shall be final and binding on the contractor regarding clarifications of items in this schedule with respect to the other sections of the Contract.</u>				
	The description of an item shall be deemed to include all preambles, headings, sub-headings and references to other documents. The detailed description of work and materials, given in the specification are not necessarily repeated in the Bill of Quantities.				
	The Preamble to the Bills of Quantities must be read in conjunction with the Conditions of Contract , Specification and Drawings and the tenderer shall be deemed to have examined the Drawings, Specifications, Conditions of Contract special condition of contract and to have acquainted himself with the Works to be done and the way in which they are to be carried out. This preamble to the Bills of Quantities shall be part of the Contract.				
	Providing and forming all temporary roads / Pathways, cross over, foot path, tracks, hard standings, Temporary ramp to approach the excavated level etc. within the site and shall provide temporary foot path outside the boundaries if required to protect the public entering into the construction area at no extra cost.				
	The Tenderers are requested to inspect the site and obtain for themselves at their own expense all necessary information and particulars to enable them to submit the tender.				
	The dimensions shown in the drawings shall have to be verified by the contractor at site before execution of the items and necessary allowance's have to be made as per the actual dimensions available at site.				
	For the items of works having Basic rate of material, price adjustment will be made only on the actual quantity measured. Wastage shall be to Contractors account. Basic rate indicates f.o.r at site including transportation charges, loading-unloading and all other levies and taxes as applicable.				
	The work shall be carried out as per drawings, specifications, the description of the items in the schedule and / or instructions of Engineer- in- charge.				
	Items of work provided in this schedule but not covered in the specifications shall be executed strictly as per instructions of the Engineer - in-charge.				
	Unless otherwise mentioned in the contract, the tenderer shall quote for the finished items and shall provide for the complete cost towards labour, materials, plant and machinery, operational costs, levies, taxes, transport, repairs, rectification, maintenance till handing over, revenue expenses, contingencies, overheads, profits and all incidental items not specifically mentioned but reasonably implied and necessary to complete the works according to the contract.				
	Contractor shall quote percentage rate both in figures and in words . All entries shall be in English language.				

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	The Engineer-in-charge's decision shall be final and binding on the contractor regarding clarifications of items in this schedule with respect to the other sections of the Contract.				
	The rate quoted should include providing general house-keeping support for the entire site inclusive of all dedicated labour and supervisory personnel at all times of work, across the entire facility. Cost to include all equipments, consumables, protective and safety measures, at site and site office, maintenance of site and site office on daily basis and providing necessary amenities like Water supply for office, Drinking water, Electricity back up in case of power cuts, Dedicated Human resources for the same and other office facilities as instructed by Engineer- In- Charge etc. complete. The site and site office shall be kept clean to the complete satisfaction and based on instructions from the Engineer- In- Charge.				
	The Contractor to provide a site office for the benefit of the LIC complete with facility, toilet, sanitation, sitting chairs, working tables, proper ventilation, drinking water facility, storage cupboards etc.				
	The rates quoted shall be inclusive of all mock-ups, associated samples prior to any mass production or procurement as per complete satisfaction of the LIC and the Architect. Inclusive of dismantling, demolishing and carting the material and making good of the surface.				
	Any debris generated out of the said work should be cleared on priority basis from the Site. The contractor to allow for work to be executed on the upper floors, temporary storage of material on the Ground Floor, for hoisting material to the upper floors, for bringing debris and waste down, for co-ordinating and scheduling movement of material with facilities available on site. The disposal of debris will be the sole responsibility of the Contractor.				
	Any fault that occurs during the time of production, shifting or installation of finished materials should be replaced with good one as per the instruction from Engineer-in-charge".				
	Considering the COVID-19 pandemic, all the necessary precautions such as social distancing, frequent sanitization etc and all other measures as per Standard Procedure / Guidelines issued for the construction sites by the local authority / state / Centre Government must be followed. Rates are inclusive of all such provisions and no extra payment shall be made on this account.				
	SECTION - A (CIVIL WORK)				
1.00	EARTH WORK				
1.01	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 within premises and lift upto 1.5 m; disposed earth to be levelled and neatly dressed as directed by Engineer -in-charge.				
a).	All kinds of soil.	1,29,360.00	Cum	159.45	2,06,26,452.00
1.02	Extra for every additional lift of 1.5M to 3.0M.				
a).	All kinds of soil	16,200.00	Cum	79.26	12,84,012.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
1.03	Extra for every additional lift of 3.0M to 4.5M.				
a).	All kinds of soil	16,180.00	Cum	158.53	25,65,015.40
1.04	Extra for every additional lift of 4.5M to 6.0M.				
a).	All kinds of soil	16,060.00	Cum	237.79	38,18,907.40
1.05	Extra for every additional lift of 6.0M to 7.5M.				
a).	All kinds of soil	15,100.00	Cum	317.05	47,87,455.00
1.06	Extra for every additional lift of 7.5M to 9.0M.				
a).	All kinds of soil	14,420.00	Cum	396.31	57,14,790.20
1.07	Extra for every additional lift of 9.0M to 10.5M.				
a).	All kinds of soil	13,550.00	Cum	475.58	64,44,109.00
1.08	Extra for every additional lift of 10.5M to 12.0M.				
a).	All kinds of soil	13,550.00	Cum	554.84	75,18,082.00
1.09	Extra for every additional lift of 12.0M to 13.5M.				
a).	All kinds of soil	8,190.00	Cum	634.10	51,93,279.00
1.10	Earth work in excavation by mechanical means (Hydraulic excavator) / manual menas 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 within premises and as directed by Engineer -in-charge.				
a).	All kinds of soil	930.00	Cum	221.22	2,05,734.60
1.11(a)	Filling with available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc., in layers not exceeding 20 cm in depth, consolidating Each deposited layer by ramming and watering lead upto 50 m and lift upto 1.5 m.	25,660.00	Cum	192.59	49,41,859.40
1.11(b)	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	9,440.00	Cum	1,712.00	1,61,61,280.00
1.12	Carriage of materials i.e. disposal of surplus earth within or outside the premises including loading, unloading and stacking etc to contractor's own dump complete as directed by Engineer-in-charge.	1,04,520.00	Cum	404.13	4,22,39,667.60
1.13	Clearing Jungle including uprooting of rank vegetation, grass, brush woods, trees and saplings of girth upto 30cm measured at a height of 1.0 metre above ground level and removal of rubbish upto a distance of 50 m outside the periphery area of the area cleared.	14,590.00	Sqm	11.00	1,60,490.00
1.14	Felling trees of the girth (measured at a height of 1.0 metre above ground level), including cutting of trunks and branches, removing the roots and stacking of serviceable material and disposable of unserviceable material.				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
a)	Beyond 30 cm girth upto and including 60 cm girth.	6.00	Each	333.71	2,002.26
b)	Beyond 60 cm girth upto and including 120 cm girth.	5.00	Each	1,485.65	7,428.25
1.15	Providing and laying 100mm thick in position ready mixed M-25 grade shotcrete using 10mm nominal or below size stone aggregate for reinforced cement concrete work, using fly ash and cement content as per approved design mix, and manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work, including pumping of R.M.C. from transit mixer to site of laying, excluding the cost of centering, shuttering and reinforcement, including cost of admixtures in recommended proportions as per IS : 9103 to accelerate / retard setting of concrete, improve workability without impairing strength and durability, providing and fixing IRC mesh of 50x50x3mm size to be laid including strengthening, cutting, bending and placing in position upto plinth level as per design and drawing. The cost of Non-shrink cement grouting with pressure shall be inclusive in the rates , pressure shall be 2-4 Kg / Sq cm. (Cost of Reinforcement and Steel plate shall be paid separately under respective items).	2,520.00	Sqm	3,527.50	88,89,300.00
	Rates are inclusive of Grouting till the nozzle refuses to accept the grout, cost of drilling holes inside the excavated earth surfaces at spacing mentioned in drawings and cleaning the holes by air blower for removing loose earth. Providing & Insert NRV (Non-Returning Valve) nipples into pre-drilled holes and sealing peripherally with polymer modified mortar all complete as per the instruction of Engineer-in-charge.				
1.16	Providing and fixing 110mm dia 350mm long PVC pipe for weep holes in the retaining earth all complete as per design and drawing.	263.00	Each	93.62	24,622.06
	TOTAL CARRIED OVER TO SUMMARY				13,05,84,486.17
2.00	PLAIN & REINFORCED CEMENT CONCRETE WORK				
	All workmanship, materials tests & performance in connection with plain and reinforced cement concrete work will be in conformity with IS Code of practice for plain and reinforced cement concrete IS : 456 . 2000 (Fourth revision), unless otherwise specified the provisions made in this "contract hold good".				
2.01 (i)	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering.				
	All work upto plinth level				
a).	1:2:4 (1 cement :2 coarse sand :4 graded stone aggregate 20mm nominal size)	13.00	Cum	5,952.24	77,379.12
b).	1:4:8 (1 cement :4 coarse sand :8 graded stone aggregate 40 mm nominal size)	2,050.00	Cum	5,076.32	1,04,06,456.00
2.02	Extra for providing and mixing water proofing material in cement concrete work in doses by weight of cement as per manufacturer's specifications.	650.00	Kilogram per 50Kg cement	49.58	32,227.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
2.03	Providing and applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7 Kg per square meter on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	120.00	Sqm	96.45	11,574.00
2.04	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering.				
(a)	1:5:10 (1 cement :5 coarse sand :10 Brick aggregate 40mm nominal size) in sunken area.	10.00	Cum	4,840.20	48,402.00
	Ready Mix Concrete to be procured and transported from approved ready mix concrete plant in transit rotary mixers .				
	Concrete of specified grade and approved Design Mix only shall be used, the design mix analysis shall be submitted and got approved prior to use in the works.				
	Curing to be done as specified. All de-shuttering shall be carried out as laid in the technical specifications.				
	All RCC works shall be in strict conformity with IS code: 456 ,2000 (latest revision) and specification appended herewith.				
	The top of RCC floor and roof slab should be left rough to receive finish including hacking , roughening of the concrete surface for receiving plaster or any other finish.				
	The rate for RCC work shall include for forming projections, sinking, of floors for toilets (If any) as per drawing and instructions, forming opening or niches, providing dowel bars, co-ordinating with other services agencies etc complete.				
	Cost to be inclusive of making cover blocks required at bottom, sides (while manufacturing the side/vertical cover blocks binding wire will be inserted in to cover blocks for tying) in all levels, cover blocks shall be manufactured using 6mm and down graded chips with same grade/ strength of concrete mix of RCC Member as applicable M-25/ M-30/ M-35/ M-40.				
2.05	Providing and laying in position ready mixed M-25 grade concrete for reinforced cement concrete work, using fly ash and cement content as per approved design mix, and manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work, including pumping of R.M.C. from transit mixer to site of laying, excluding the cost of centering, shuttering, 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.				
					0.00
	NOTE- (1) Cement content considered in this item is @ 330 kg/cum. Excess/ less cement used as per design mix is payable/ recoverable separately.				
	(2) Fly ash conforming to grade I of IS 3812 (Part-1) only be used as part replacement of OPC as per IS : 456. Uniform blending with cement to be ensured in accordance with clauses 5.2 and 5.2.1 of IS: 456 -2000/latest revision in the items of RMC.				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
a)	All works up to Plinth level.	17,510.00	Cum	7,335.13	12,84,38,126.30
b)	All works above plinth & up to floor V level.	6,300.00	Cum	8,565.77	5,39,64,351.00
	Note :- The above item shall be used judiciously where specified quality of Fly Ash is available for mixing in concrete. Also, the guidelines issued by CDO, CPWD, vide circular no. CDO/SE(RR)/Fly Ash (Main)/102 dated 9th April 2009 shall be followed in such cases.				
2.06	Same as item 2.05 for R.C.C./ R.M.C. work, but above floor V level for each four floors or part thereof.	4,410.00	Cum	8,812.10	3,88,61,361.00
2.07	Same as item 2.05 for R.C.C. / R.M.C. work, but above floor IX level for each four floors or part thereof.	2,230.00	Cum	9,058.44	2,02,00,321.20
	Steel Reinforcement Work				
	TMT bars for reinforcement in R.C.C. work at all levels including straightening , de-coiling , cutting, bending, binding ,spirally hooping and placing in position including all labour, equipments, supplies, incidentals, sampling and testing as prescribed in IS codes including all charges thereon for requisite tests, supervision and binding with 18 gauge approved quality GI annealed binding wire. The measurement shall be as per IS 1200 Part and unit weight shall be derived as mentioned in IS 1786. The rolling margin shall be on Contractors own cost. The rate shall include cost of cover blocks, spacers and pins to be provided as per specifications and will not be measured separately for payment. Chairs shall be paid separately as jointly verified by Engineer -In- Charge and contractor. Quantity of steel as per drawing and with authorized overlaps only shall be measured and paid for.				
	The quoted rate will include welding of reinforcement with low hydrogen low heat welding electrodes for the welding length mentioned in the drawings in place of conventional laps, if the Engineer in charge have recommended the same, for which no extra shall be claimed. Replacing conventional laps with welding splices will be entirely at Engineer in charge discretion and will have to be borne by the Contractor. Such unclaimed welding will also include welding of reinforcement to already fixed insert plates, structural steel members etc. Shear connectors prepared from the reinforcing steel welded to structural steel members shall be measured in the reinforcement item.				
2.08	Reinforcement for RCC work including strengthening, cutting, bending, placing in position and binding all complete upto plinth level.				
a)	Thermo mechanically treated bars of grade Fe-500D or more.	2,625.00	M.T.	61,360.00	16,10,70,000.00
2.09	Reinforcement for RCC work including strengthening, cutting, bending, placing in position and binding all complete above plinth level.				
a)	Thermo mechanically treated bars of grade Fe-500D or more.	2,110.00	M.T.	61,360.00	12,94,69,600.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
2.10	Providing, hoisting and fixing above plinth level upto floor five level precast reinforced concrete in trench covers/ Lintel beams and the like, including setting in cement mortar 1:3 (1 cement :3 coarse sand), cost of required centering, shuttering but excluding the cost of reinforcement, with 1:1.5:3 (1 cement :1.5 coarse sand (zone-III) :3 graded stone aggregate 20mm nominal size).	36.00	Cum	10,928.65	3,93,431.40
2.11	Centering and shuttering including strutting, propping etc. and removal of forms for all heights :				
a)	Foundations, footings, bases of columns etc. for mass concrete.	640.00	Sqm	249.76	1,59,846.40
b)	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	12,720.00	Sqm	534.23	67,95,405.60
c)	Suspended floors, roofs, landings, balconies and access platforms.	54,030.00	Sqm	607.66	3,28,31,869.80
d)	Shelves (cast-in-situ)	330.00	Sqm	607.66	2,00,527.80
e)	Small lintels not exceeding 1.5m clear span, moulding as in cornices, window cills, string courses, bands, copings, bed plates anchor blocks and the like.	290.00	Sqm	249.76	72,430.40
f)	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	36,590.00	Sqm	484.04	1,77,11,023.60
g)	Columns, pillars, piers, abutments, posts and struts.	20,770.00	Sqm	643.31	1,33,61,548.70
h)	Stairs (excluding landings) except spiral staircases	1,160.00	Sqm	545.68	6,32,988.80
i)	Edges of slabs and breaks in floors and walls				
a).	under 20 cms. Wide	3,930.00	Meter	151.91	5,97,006.30
b).	above 20 cms. Wide	127.00	Sqm	646.46	82,100.42
j)	Weather shade, Chajjas, corbels etc., including edges	112.00	Sqm	672.29	75,296.48
2.12	Extra for shuttering in circular work for beams.	580.00	Sqm	96.81	56,149.80
2.13	Extra for shuttering in circular work for slab.	168.00	Sqm	121.53	20,417.04
2.14	Extra for shuttering in circular work for columns.	330.00	Sqm	128.66	42,457.80
2.15	Extra for additional height in centring and shuttering wherever required with adequate bracing, propping etc. including cost of de-shuttering and de-centring at all levels over a height of 3.5M for every additional height of 1.0M or part thereof (Plan area to be measured).				
a)	Suspended floors, roofs, landings, beams and balconies.(Plan area to be measured).	47,245.00	Sqm	252.08	1,19,09,519.60
2.16	Add or deduct for providing richer mixes at all floor levels.				
a)	Providing M-40 grade concrete instead of M-25 grade RMC. (Note : Cement content considered in M-40 is @360 kg/cum)	2,420.00	Cum	183.43	4,43,900.60

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
b)	Providing M-35 grade concrete instead of M-25 grade RMC.(Note : Cement content considered in M-35 is @350 kg/cum)	610.00	Cum	122.27	74,584.70
c)	Providing M-30 grade concrete instead of M-25 grade RMC. (Note : Cement content considered in M-30 is @ 340 kg/cum)	570.00	Cum	61.16	34,861.20
d)	Add/ deduction for using extra/ less cement in the items of design mix as specified cement content therein.	742.00	quintal	590.35	4,38,039.70
2.17	Providing and fixing of expansion joint system related with floor locations as per drawing and direction of Engineer-in-charge. The joints system will be of extruded aluminium base members, self aligning/ self centering arrangement and support plates etc. as per ASTM B221-02. The system shall be such that it provides floor to floor/floor to wall expansion control system for various vertical locations in load application areas that accomodates multi directional seismic movement without stress to it's components. System shall consist of metal profiles with a universal aluminium base member design to accommodate various project conditions and finish floor treatments. The cover plate shall be designed of width and thickness required to satisfy project movement and loading requirements and secured to base members by utilising manufacturer's pre-engineered and self centering aarrangement that freely rotates/moves in all directions. The Self centering arrangement shall exhibit circular sphere ends that lock and slide inside the corrsponding aluminium extrusion cavity to allow freedom of movement and flexure in all directions including vertical displacement.				
	Provision of Moisture Barrier Membrane in the Joint System to have watertight joint is mandatory requirement all as per the manufacturer's design and as approved by the Engineer-in-charge.				
	(Material shall confirm to ASTM 6063).				
a)	Floor joint of 200mm gap	630.00	Metre	7,691.68	48,45,758.40
2.18	Providing and fixing of expansion joint system related with wall joint (internal/ external) location as per drawings and direction of Engineer-In- Charge. The joints shall be of extruded aluminum base members, self aligning / centering arrangement and support plates as per ASTM B221- 02. The material shall be such that it provides an Expansion Joints System suitable for vertical wall to wall/ wall to corner application, both new and existing construction in office Buildings & complexes with no slipping down tendency amongst the components of the Joint System. The Joint System shall utilize light weight aluminum profiles exhibiting minimal exposed aluminum surfaces mechanically snap locking the multicellular to facilitate movement. (Material shall confirm to ASTM 6063.)				
a)	Wall joint of 200mm gap	5,220.00	Metre	5,345.50	2,79,03,510.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
2.19	Providing and fixing of expansion joint system of approved make and manufactures for various roof locations as per approved drawings and direction of Engineer-In-Charge. The joints shall be of extruded aluminum base members with, self aligning and self centering arrangement support plates asper ASTM B221-02. The system shall be such that it provides watertight roof to roof/roof to corner joint cover expansion control system that is capable of accommodating multidirectional seismic movement without stress to its components. System shall consist of metal profile that incorporates a universal aluminum base member designed to accommodate various project conditions and roof treatments. The cover plate shall be designed of width and thickness required to satisfy movement and loading requirements and secured to base members by utilizing manufacturer's pre-engineered self-centering arrangement that freely rotates / moves in all directions. The Self centering arrangement shall exhibit circular sphere ends that lock and slide inside the corresponding aluminum extrusion cavity to allow freedom of movement and flexure in all directions including vertical displacement.				
	The Joint System shall resists damage or deterioration from the impact of falling ice, exposure to UV, airborne contaminants and occasional foot traffic from maintenance personnel. Provision of Moisture Barrier Membrane in the Joint System to have water tight joint is mandatory requirement. Material shall confirm to ASTM 6063.				
a)	Roof Joint of 200 mm gap	41.00	Metre	6,009.76	2,46,400.16
2.20	Providing and fixing in position Stainless steel Grade 304 plate-1.0 mm thick as per design for expansion joints.				
a)	300mm wide	630.00	Metre	882.28	5,55,836.40
TOTAL CARRIED OVER TO SUMMARY					66,20,64,708.72
3.00	BRICK/ AAC BLOCK MASONRY WORK				
	Rates quoted for all items shall include the cost of the following.				
	(a) All scaffolding, ladders, platforms, staging and plant required for the execution of work at any height and depth unless otherwise specified in the item .				
	(b)Hacking and roughening of concrete or other surface in contact with masonry for bondage.				
	(c)Raking cut joints to 12mm depth either for plastering or pointing.				
	(d) Leveling up and preparing top of masonry for Damp Proof Course.				
	(e)Built in hold fasts, bolts and such other inserts as directed by the Engineer- In- Charge .				
	(f) Keeping the masonry work well wetted for two weeks or as directed by the Engineer- In- Charge .				
	(g) Work at all heights, levels, depths, unless otherwise specified.				
	(h) All works curved or straight.				
	(i) Soaking of bricks in water for minimum period of 60 minutes so that the entire brick is soaked in water.				
	(j) Cost of all materials, transport to site and labour.				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	(k) The rate is inclusive of any pipe fittings and specials, spouts, hold fasts and other fixtures which are required to be built into the walls shall be embedded, as specified, in their correct position as the work proceeds unless otherwise directed by the Engineer- In- Charge .				
	(l) Provision to be made for cut-outs (openings for sanitary, electrical, fire fighting or any other services) and after completion of the services work, all the cut-outs and openings to be made good, matching the surroundings.				
3.01	Brick work with common burnt clay F.P.S. (non-modular) bricks of class designation 7.5 in foundation and plinth in Cement mortar 1:6 (1 cement :6 coarse sand).	1,020.00	Cum	5,398.85	55,06,827.00
3.02	Providing and laying autoclaved aerated cement blocks masonry with 150/230/300 mm thick AAC blocks in super structure above plinth level up to floor V level with RCC band at sill level and lintel level with approved block laying polymer modified adhesive mortar all complete as per direction of Engineer Incharge. (The Payment of RCC band and reinforcement shall be made separately)	2,430.00	Cum	5,819.28	1,41,40,850.40
3.03	Providing and laying autoclaved aerated cement blocks masonry with 150/230/300 mm thick AAC blocks in super structure above floor V level for every four floors or part thereof with RCC band at sill level and lintel level with approved block laying polymer modified adhesive mortar all complete as per direction of Engineer Incharge. (The Payment of RCC band and reinforcement shall be made separately)	1,040.00	Cum	6,026.77	62,67,840.80
3.04	Providing and laying autoclaved aerated cement blocks masonry with 150/230/300 mm thick AAC blocks in super structure above floor IX level for every four floors or part thereof with RCC band at sill level and lintel level with approved block laying polymer modified adhesive mortar all complete as per direction of Engineer Incharge. (The Payment of RCC band and reinforcement shall be made separately)	650.00	Cum	6,234.27	40,52,275.50
3.05	Providing and laying autoclaved aerated cement blocks masonry with 100 mm thick AAC blocks in superstructure above plinth level up to floor V level in cement mortar 1:4 (1 Cement : 4 coarse sand). The rates includes providing and placing in position 2 No.s 6 mm dia M.S. bars at every third course of masonry work.	141.00	cum	7,213.74	10,17,137.34
3.06	Providing and laying autoclaved aerated cement blocks masonry with 100 mm thick AAC blocks in superstructure above floor V level for every four floors or part thereof in cement mortar 1:4 (1 Cement : 4 coarse sand). The Rates includes providing and placing in position 2 No.s 6 mm dia M.S. bars at every third course of masonry work.	105.00	cum	7,421.24	7,79,230.20
3.07	Providing and laying autoclaved aerated cement blocks masonry with 100 mm thick AAC blocks in superstructure above floor IX level for every four floors or part thereof in cement mortar 1:4 (1 Cement : 4 coarse sand). The Rates includes providing and placing in position 2 No.s 6 mm dia M.S. bars at every third course of masonry work.	2.50	cum	7,628.16	19,070.40

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	TOTAL CARRIED OVER TO SUMMARY				3,17,83,231.64
4.00	STEEL WORK				
	Note: Fabrication of steel structural work from structural steel plates and sections will involve preparing shop drawings, obtaining Structural approval, supplying, fabricating in accordance with IS:800, delivering at site, hoisting and fixing in position, including all temporary staging and supporting work and making all structural steel work in accordance with the design, drawings. The rate of steel work shall include cutting, grinding, machining, assembly, welding, jointing, building up new sections, cost of fasteners (nuts, bolts and washers), pre-heating the sections to temperatures up to 250 degree C if thickness of the section is equal to or more than 25 mm. Fabrication will involve connections using plates, channels and angles, gusset plate, foundation bolts, cleats, fasteners etc. as per drawing.				
	Note: The contractor shall submit fabrication drawings for work Involved based on construction drawings (that may be issued during construction period) for approval by the Engineer- In - charge . The fabrication work shall start only after approval of the fabrication drawings. Any change required in the fabrication drawings shall be carried out at no extra cost. Fabrication shall be in a perfect Architectural workmanship manner and carried out by qualified welders.				
4.01	Structural 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.				
a).	In Gratings, Frames, guard bar, ladder, railings, brackets, plates , gates & similar works.	4,850.00	Kg	114.86	5,57,071.00
4.02	Providing and fixing Stainless Steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete , including fixing the railing with necessary accessories and stainless steel dash fasteners, stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer-in-charge,(for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts, fasteners etc.).	6,380.00	Kg	504.55	32,19,029.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
4.03	Supply and installation of AISI 316 Grade Stainless Steel Knock Down railing system comprising Ø 38mm Handrail fixed on 40x40 mm S.S. Square baluster with glass holding accessories including top bracket to hold hand railing, placed at maximum 1200mm c/c along with 12mm thick toughened glass connected with baluster with special glass holding fixtures. The Glass height should be taken as minimum 650mm. The balustrade would be fixed onto floor with casted base plate of minimum 6mm thickness. Base plate shall be concealed with suitable S.S. 316 grade cover cap so that the mounting anchor fasteners are not visible after installation. Wall thickness of all Pipes shall be taken as 1.5mm along with all visible components developed in High Grade S.S. and whenever required, joints to be filled with bushings for extra strength.	148.00	Sqm	15,561.00	23,03,028.00
4.04	Supply and installation of AISI 316 Grade Stainless Steel Knock Down railing system comprising Ø 38mm Handrail fixed on 10 x 50 mm S.S. Flat baluster with glass holding accessories including top bracket to hold hand railing, placed at maximum 1800 mm c/c along with 12mm thick toughened glass connected with baluster with special glass holding fixtures. The Glass height should be taken as minimum 650mm. The balustrade would be fixed onto floor with casted base plate of minimum 6mm thickness. Base plate shall be concealed with suitable S.S. 316 grade cover Cap so that the mounting anchor fasteners are not visible after installation. Wall thickness of all Pipes shall be taken as 1.5mm along with all visible components developed in High Grade S.S. and whenever required, joints to be filled with bushings for extra strength.	1,200.00	Sqm	15,792.00	1,89,50,400.00
4.05	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.	1,78,070.00	Kg	89.21	1,58,85,624.70
4.06	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.				
a).	80x1.25mm M.S. laths with 1.25 mm thick top cover.	830.00	Sqm	2,581.39	21,42,553.70
4.07	Providing and fixing ball bearing for rolling shutters.	89.00	Each	368.12	32,762.68
4.08	Extra for providing mechanical device chain and crank operation for operating rolling shutters.				
a).	Exceeding 10.00 sqm and upto 16.80 sqm in the area.	35.00	Sqm	970.22	33,957.70
b).	Exceeding 16.80 sqm in area.	790.00	Sqm	970.22	7,66,473.80

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	TOTAL CARRIED OVER TO SUMMARY				4,38,90,900.58
5.00	ALUMINIUM DOORS, WINDOWS, GLAZING & STRUCTURAL GLAZING				
5.A	ALUMINIUM DOORS, WINDOWS & GLAZING				
5.A.01	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 and paneling to be paid for separately) :				
a)	For fixed portion Polyester powder coated aluminium (minimum thickness of polyester powder coating 50 micron)	9,610.00	Kg	407.45	39,15,594.50
b)	For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately). Polyester powder coated aluminium (minimum thickness of polyester powder coating 50 micron)	4,130.00	Kg	486.58	20,09,575.40
5.A.02	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of Engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item):				
(a)	With float glass panes of 5.50 mm thickness	460.00	Sqm	1,136.68	5,22,872.80
(b)	With float glass panes of 8 mm thickness	8.00	Sqm	1,282.19	10,257.52
5.A.03	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side, having 12 mm air gap, including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete.	700.00	Sqm	3,424.21	23,96,947.00
5.A.04	Providing and fixing aluminium sliding door bolts ISI marked anodised (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 :				
a)	250 x 16 mm	3.00	Each	203.15	609.45
5.A.05	Providing and fixing aluminium tower bolts ISI marked anodized (anodic coating not less than grade AC 10 as per I.S. 1868) transparent or dyed to required colour or shade with necessary screws etc complete.				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
a)	250 x 10 mm	149.00	Each	90.79	13,527.71
b)	150 x 10 mm	149.00	Each	65.76	9,798.24
5.A.06	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 :				
a)	100 mm	126.00	Each	46.34	5,838.84
5.A.07	Providing and fixing aluminium hanging floor door stoppers ISI marked anodized (anodic coating not less than grade AC 10 as per IS:1868) transparent or dyed to required colour and shade with necessary screws etc. complete.				
a)	Twin rubber stopper	149.00	Each	54.41	8,107.09
5.A.08	Providing and fixing aluminium extruded section body tubular type universal heavy duty hydraulic door closer of Godrej (model C-071) or equivalent with double speed adjustment with necessary accessories and screws etc. complete.	160.00	Each	1,320.00	2,11,200.00
5.A.09	Providing and fixing stainless steel finished brass 100 mm mortice latch and lock with six levers and a pair of lever handles with necessary screws etc complete (best make of approved quality).	149.00	Each	2,345.00	3,49,405.00
5.A.10	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg., for doors, including cost of cutting floors , embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.				
(a)	with stainless steel cover plate minimum 1.25mm thickness.	200.00	Each	2,115.28	4,23,056.00
5.A.11	Providing and fixing 12mm thick both side decorative solid compact laminate board of required colour, texture and shade for toilet cubicals of required sizes of Classique Evergreen from Greenlam Sturdo or approved equivalent including doors, pilasters and intermediate panels should be resistant to heat, bacteria, water, chemical, scratch and impact with SS -304 grade accessories like round top rail with corner connectors, door knob, thumb turn lock set with occupancy indicator, coat hooks, door stopper, U-Channels, adjustable foot/pedestal, gravity hinges, rubber noise deafening tape, screws & wall plugs, corner bends (connector) in the absence of brick wall etc. as per drawing. The height of the door 1875mm has been considered after deducted the initial gap of 150mm from the ground level. The door should be provided with locking arrangement all complete as per drawing and instruction of the Engineer-in-Charge.	1,610.00	Sqm	5,736.00	92,34,960.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
5.A.12	Providing and fixing 12mm thick toughened glass partitions fixed to floors and in ceiling with stainless steel patch fittings of grade 304 of approved make and G.I. hangers etc. and in floors with U-shaped aluminium channel embedded in floor below flooring sealed with silicon of approved quality and make complete as directed by the architect and as per drawings. (Note:- Glass door area will be paid seperately).	150.00	Sqm	6,032.00	9,04,800.00
5.A.13	Providing and fixing 12 mm thick frameless toughened glass door shutter 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-in-charge. (Door handle lock and stopper to be paid seperately).	150.00	Sqm	3,899.92	5,84,988.00
5.A.14	Providing and fixing 25mm dia 600mm long c/c Glass Door Stainless Steel Pull Handles 'DC' in combination of matt and shine finish with necessary SS screws all complete.	20.00	Each	2,381.40	47,628.00
5.A.15	Providing and fixing of GEZE make or approved equivalent make, Automatic sliding door operator with 12mm thick tempered clear glass shutters, modular design, including internal cover with compact automatic linear sliding door with only 70mm drive height, TUV type tested as per DIN 18650, for leaf weight upto 125 Kg per leaf, with self cleaning rollers, integrated battery pack for emergency opening or closing in case of power failure, software for optional bluetooth connection to PC for comfortable start up, maintenace and parameterisation. Intellegent digital DCU controller (category 2 as per DIN EN 954-1, PL D as per DIN EN ISO 13849). Self-learning, with dynamic adjustable of hold-open time on traffic for optimal comfort, Network able and integrable in building systems with CAN Bus, Error self detection and logging. All movement parameters can be adjusted. All functions are integrated in one device, further modules are not necessary. Extremely quiet DC drive, rugged transformer with integrated all poles disconnecting main switch and fuse protection, static dynamic force limitation as per new DIN 18650 and under 150N as BGR 232 (formerly ZH 1/494),				
	Automatic reversing on obstaccle detection, Drive dimensions (H x D): 70 x 190mm. The system should have constant power supply 230 V, 50/60 Hz, UPS Supply.				
a)	Size 1.80 x 2.15M linear type	3.00	Each	2,39,245.00	7,17,735.00
b)	Size 1.80 x 2.15M in curvature (Radius of Curvature = Approx. 14.61 mtr.)	2.00	Each	15,59,513.00	31,19,026.00
	SUB HEAD 5.A TOTAL CARRIED OVER TO SUMMARY				2,44,85,926.55
5.B	STRUCTURAL GLAZING				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
5.B.1	Providing and supplying aluminium extruded tubular and other aluminium sections as per the architectural drawings and approved shop drawings, the aluminium quality as per grade 6063 T5 or T6 as per BS 1474, including super durable powder coating of 60-80 microns conforming to AAMA 2604 of required colour and shade as approved by the Engineer-in-Charge. (The item includes cost of material such as cleats, sleeves, screws etc. necessary for fabrication of extruded aluminium frame work. Nothing extra shall be paid on this account).	78,220.00	Kg	324.81	2,54,06,638.20
5.B.2	Designing, fabricating, testing, protection, installing and fixing in position semi (grid) unitized system of structural glazing (with open joints) for linear as well as curvilinear portions of the building for all heights and all levels, including:				
a)	Structural analysis & design and preparation of shop drawings for the specified design loads conforming to IS 875 part III (the system must passed the proof test at 1.5 times design wind pressure without any failure), including functional design of the aluminum sections for fixing glazing panels of various thicknesses, aluminium cleats, sleeves and splice plates etc. gaskets, screws, toggles, nuts, bolts, clamps etc., structural and weather silicone sealants, flashings, fire stop (barrier)- cum-smoke seals, microwave cured EPDM gaskets for water tightness, pressure equalisation & drainage and protection against fire hazard including:				
b)	Fabricating and supplying serrated M.S. hot dip galvanised / Aluminium alloy of 6005 T5 brackets of required sizes, sections and profiles etc. to accommodate 3 Dimentional movement for achieving perfect verticality and fixing structural glazing system rigidly to the RCC/ masonry/structural steel framework of building structure using stainless steel anchor fasteners/ bolts, nylon seperator to prevent bimetallic contacts with nuts and washers etc. of stainless steel grade 316, of the required capacity and in required numbers.				
c)	Providing and filling, two part pump filled, structural silicone sealant and one part weather silicone sealant compatible with the structural silicone sealant of required bite size in a clean and controlled factory /work shop environment , including double sided spacer tape, setting blocks and backer rod, all of approved grade, brand and manufacture, as per the approved sealant design, within and all around the perimeter for holding glass.				
d)	Providing and fixing in position flashings of solid aluminium sheet 1 mm thick and of sizes, shapes and profiles, as required as per the site conditions, to seal the gap between the building structure and all its interfaces with curtain glazing to make it watertight.				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
e)	Making provision for drainage of moisture/ water that enters the curtain glazing system to make it watertight, by incorporating principles of pressure equalization, providing suitable gutter profiles at bottom (if required), making necessary holes of required sizes and of required numbers etc. complete. This item includes cost of all inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&P, scaffolding and other incidental charges including wastages etc., enabling temporary structures and services, cranes or cradles etc. as described above and as specified.				
	The item includes the cost of getting all the structural and functional design including shop drawings checked by a structural designer, dully approved by Engineer-in-charge. The item also includes the cost of all mock ups at site, cost of all samples of the individual components for testing in an approved laboratory, field tests on the assembled working structural glazing as specified, cleaning and protection till the handing over of the building for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineerin-Charge.				
					0.00
	Note:- 1. The cost of providing extruded aluminium frames, shadow boxes, extruded aluminium section capping for fixing in the grooves of the curtain glazing and vermin proof stainless steel wire mesh shall be paid for separately under relevant items under this subhead. However, for the purpose of payment, only the actual area of structural glazing (including width of grooves) on the external face shall be measured in sqm. up to two decimal places.				
	Note:-2. The following performance test are to be conducted on structural glazing system if area of structural glazing exceeds 2500 Sqm from the certified laboratories accredited by NABL(National Accreditation Board for Testing and Calibration Laboratories), Department of Science & Technologies, India. Cost of testing is payable separately. The NIT approving authority will decide the necessity of testing on the basis of cost of the work, cost of the test and importance of the work. Performance Testing of Structural glazing system Tests to be conducted in the NBL Certified laboratories				
	1. Performance Laboratory Test for Air Leakage Test (-50pa to – 300pa) & (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr.				
	2. Static Water Penetration Test. (50pa to 1500pa) as per ASTM E- 331- 09 testing method for a range up to 2000 ml.				
	3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a range upto 2000 ml.				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	4. Structural Performance Deflection and deformation by static air pressure test (1.5 times desing wind pressure without any failure) as per ASTME-330-10 testing method for a range upto 50 mm.				
	5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4-09 testing method for Qualitative test. Tests to be conducted on site.				
	6. OnsiteTest for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000ml.	5,220.00	Sqm	2,585.95	1,34,98,659.00
5.B.3	Providing and supplying Spandrel Glass Panels comprising of 6 mm thick heat strengthened monolithic float glass of approved colour and shade with reflective soft coating on surface # 2 of approved colour and shade so as to match the colour and shade of the IGUs in the vision panels etc.,all complete for the required performances as specified, as per the Architectural drawings, as per the approved shop drawings, as specified, and as directed by the Engineer- in-Charge. For payment, only the actual area of glass on face # 1 of the glass panels (but excluding the area of grooves and weather silicone sealant) provided and fixed in position, shall be measured in sqm.(Payment for fixing of Spandrel Glass Panels in the curtain glazing is included in cost of relevent Item*).				
i)	Coloured tinted float glass 6mm thick substrate with reflective soft coating on face # 2, having properties as visible Light transmittance (VLT) of 25 to 35%, Light reflection internal 10 to 15%, light reflection external 10 to 20%, shading coefficient (0.25- 0.28) and U value of 3.0 to 3.3 W/m2 degree K etc. The properties of performance glass shall be decided by technical sanctioning authority as per the site requirement.	280.00	Sqm	1,865.79	5,22,421.20
ii)	Clear float glass 5.5mm thick	240.00	Sqm	1,136.68	2,72,803.20
5.B.4	Providing, assembling and supplying vision glass panels (IGUs) comprising of hermetically-sealed 6-12- 6 mm insulated glass (double glazed) vision panel units of size and shape as required and specified, comprising of an outer heat strengthened float glass 6mm thick, of approved colour and shade with reflective soft coating on surface # 2 of approved colour and shade, an inner Heat strengthned clear float glass 6mm thick, spacer tube 12mm wide, dessicants, including primary seal and secondary seal (structural silicone sealant) etc. all complete for the required performances, as per the Architectural drawings, as per the approved shop drawings, as specified and as directed by the Engineer-in-Charge. The IGUs shall be assembled in the factory/ workshop of the glass processor. (Payment for fixing of IGU Panels in the curtain glazing is included in cost of item No.5.14) For payment, only the actual area of glass on face # 1 of the glass panels (excluding the areas of the grooves and weather silicone sealant) provided and fixed in position, shall be measured in sqm.				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	(i) Coloured tinted float glass 6mm thick substrate with reflective soft coating on face # 2, + 12mm Airgap + 6mm Heat Strengthened clear Glass of approved make having properties as visible Light transmittance (VLT) of 25 to 35 %, Light reflection internal 10 to 15%, light reflection external 10 to 20 %, shading coefficient (0.25- 0.28) and U value of 3.0 to 3.3 W/m2 degree K etc. The properties of performance glass shall be decided by technical sanctioning authority as per the site requirement.	3,570.00	Sqm	2,850.43	1,01,76,035.10
ii)	Double glazed hermetically sealed glazing with 6 mm thick clear float glass both side, having 12 mm air gap,	1,160.00	Sqm	3,424.21	39,72,083.60
5.B.5	Extra for openable side / top hung vision glass panels (IGUs) including providing and supplying at site all accessories and hardwares for the openable panels as specified and of the approved make such as heavy duty stainless steel friction hinges, min 4 -point cremone locking sets with stainless steel plates, handles, buffers etc. including necessary stainless steel screws/ fasteners, nuts, bolts, washers etc. all complete as per the Architectural drawings, as per the approved shop drawings, as specified and as directed by the Engineerin- Charge.	550.00	Sqm	2,773.41	15,25,375.50
5.B.6	Providing, fabricating and supplying shadow box of required size and shape, for fixing in the spandrel portion of the structural glazing, in linear as well as curvilinear portions of the building by providing semi -rigid, inorganic, non-combustible fibre glass wool insulation 50 mm thick, conforming to IS: 8183 and BS: 3958 Part 5. The insulation layer shall have facing (factory bonded on surface # 1of the fibre glass insulation layer), of black nonwoven fibre glass tissue of nominal thickness 0.5 mm and nominal mass not less than 60 gm / sqm, made of randomly oriented glass fibres distributed in a binder by a wet-lay process including fixing 1.5 mm thick solid aluminum sheet backing using, 6 mm thick cement board including SS rivets, nuts, bolts, washers etc complete.	630.00	Sqm	1,651.50	10,40,445.00
SUB HEAD 5.B TOTAL CARRIED OVER TO SUMMARY					5,64,14,460.80
6.00	WOOD WORK				
6.01	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).				
a)	Second class teak wood	8.00	Cum	1,14,144.50	9,13,156.00
6.02	Providing and fixing ISI marked flush door shutters conforming to IS: 2202 (Part I) non-decorative type, core of block board construction with frame of 1st class hard wood and well matched commercial 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters :				
a)	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	410.00	Sqm	1,654.26	6,78,246.60

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
6.03	Extra for Providing and fixing flush doors with decorative veneering instead of non decorative ISI marked flush door shutters conforming to IS: 2202 (Part I)				
a)	On one side only.	62.00	Sqm	387.11	24,000.82
6.04	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).	410.00	Sqm	351.95	1,44,299.50
6.05	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured) :				
a)	Rectangular or square.	410.00	Sqm	152.52	62,533.20
6.06	Extra if louvers (not exceeding 0.2 sqm) are provided in flush door shutters (overall area of door shutters to be measured).				
a)	Decorative type door.	88.00	Sqm	310.87	27,356.56
6.07	Extra for cutting rebate in flush door shutters (Total area of the shutter to be measured).	240.00	Sqm	82.11	19,706.40
6.08	Providing and fixing wooden moulded beading to door and window frames with iron screws, plugs and priming coat on unexposed surface etc. complete :				
a)	50 x 20 mm	2,510.00	Rm	203.55	5,10,910.50
6.09	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)	1,340.00	Each	157.12	2,10,540.80
6.10	Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt / suede finish with high density protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S including cost of adhesive of approved quality.				
a)	1.5 mm thick.	186.00	Sqm	738.92	1,37,439.12

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
6.11	Providing and fixing fire resistant door frame of section 50 x 60 mm on horizontal side & 35 x 60 mm on vertical sides having built in rebate made out of 1.6 mm thick GI sheet (Zinc coating not less than 120gm/m ²) suitable for mounting 120 min Fire Rated Glazed Door Shutters. The frame shall be filled with Mineral wool Insulation having density min 96Kg/m ³ . The frame will have a provision of G.I. Anchor fastners 14 nos (5 each on vertical style & 4on horizontal style of size M10 x 80) suitable for fixing in the opening along with Factory made Template for SS Ball Bearing Hinges of Size 100x89x3mm for fixing of fire rated glazed shutter . The frame shall be finished with a approved fire resistant primer or Powder coating of not less than 30 micron in desired shade as per the directions of Engineer - in- charge . (Cost of SS ball bearing hinges is excluded).	410.00	Rm	1,326.55	5,43,885.50
6.12	Providing and fixing 60 mm thick glazed fire resistant door shutters of 120 min Fire Rating confirming to IS:3614 (Part II) or EN1634-1:1999, tested and certified as per laboratory approved by Engineer-in-charge, with suitable mounting on door frame, consisting of vertical styles, top rail & side rail 60 mm x 60 mm wide and bottom rail of 110 mm x 60 mm made out of 1.6mm thick G.I. sheet (zinc coating not less than 120gm/m ²) duly filled mineral wool insulation having density min 96 kg/m ³ and fixing with necessary stainless steel ball bearing hinges of size 100x89x3mm of approved make, including applying a coat of approved fire resistant primer or powder coating not less than 30 micron etc all complete as per direction of Engineer-in-charge (panelling to be paid for seperately).	186.00	Sqm	7,346.97	13,66,536.42
					0.00
6.13	Providing and fixing glazing in fire resistant door shutters, fixed panels & partitions etc., with G.I. beading made out of 1.6 mm thick G.I. sheet (zinc coating not less than 120 gm/m ²) of size 20 x 33 mm screwed with M4 x 38 mm SS screws at distance 75 mm from the edges and 150 mm c/c , including applying a coat of approved fire resistant primer/powder coating of not less than 30 micron on G.I. beading, & special ceramic tape of 5 x 20 mm size etc complete in all respect as per NBC 2016, IS 16231 (Part 3):2016 and as per direction of Engineer-in-charge with glass of required thickness having 120 minutes of fire resistance both integrity & radiation control (EW120) and minimum 20 minutes of insulation (EI20). The manufacturer have to give test report/certification of fire glass and the glass should have the stamp showing the value of E, EW & EI. The glass shall be tested in approved NABL accredited lab or by any other accreditation body which operates in accordance with ISO/IEC 17011 and accredits labs as per ISO/IEC 17025 for testing and calibration scopes shall be eligible. The maximum glazing size shall not be more than 1100x2200 mm (w x h) or 2.42 sqm.	130.00	Sqm	34,541.80	44,90,434.00
6.14	Providing and fixing panic bar / latch (Double point) fitted with a single body, Trim Latch & Lock on back side of the Panic Latch of reputed brand and manufacture to be approved by the Engineer- in- charge, all complete.	72.00	Each	6,255.84	4,50,420.48

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	TOTAL CARRIED OVER TO SUMMARY				95,79,465.90
7.00	FLOORING				
	The sample of tiles/slabs to be submitted to the Chief Engineer for approval before execution of the item.				
	The rate to include all mirror machine polishing for Marble and wax mirror polishing or Titanium polishing for Kota stone. The final decision will be as per the direction of Engineer- In- Charge .				
	The basic cost of tiles/stones to be used in work should be appx . the same as mentioned below in the respective items of work . The materials of (tiles/ stone slabs) of less basic cost than the basic cost mentioned in the respective items , will not be accepted for using in the work. The basic cost of materials shall be inclusive of all material cost, transportation, loading-unloading and all statutory taxes if applicable except GST				
	For staircase treads and risers, the stone shall be in one piece unless otherwise specified. The contractors shall have to measure the dimensions at site before ordering the materials.				
	The joints for all flooring to run in a straight line and should not exceed 1.5mm for stones and 1mm for tiles and should be filled with grouts to the full depth.				
	For all White Marble flooring, skirting, treads and risers use White Cement float.				
	The rate for all the flooring items (whether specifically mentioned or not) to include ;				
	(a) All materials, labour, surface preparation, working at all levels, tools and plants, machine polishing for stones like Marble, Kota.				
	(b) Grouting the joints as mentioned in the individual items.				
	(c) Soaking the tiles in water for at least two hours before laying.				
	(d) Curing & cleaning the surface .				
	(e) In case adhesives are used for flooring, the rate to be inclusive of extra cement bedding required to match the existing levels. In case, adhesives are used for cladding on walls, the rate to include backing coat of plaster in cement mortar 1:3, to bring the wall in proper plumb, line and level.				
	(f) Any additional mortar or concrete required to bring the surface to the required level and gradient before laying the base mortar at no extra cost.				
	(g) The contractor must confirm the location of all ducts, raceways, junction box etc before laying the tile by co-ordinating with service vendors and Engineer- In- Charge .				
7.01	Cement concrete flooring 1:2:4 (1 cement :2 coarse sand :4 graded stone aggregate) finished with a floating coat of neat cement including cement slurry but excluding the cost of nosing of steps etc. complete.				
a)	40 mm thick with 20 mm nominal size stone aggregate	190.00	Sqm	436.95	83,020.50

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
7.02 a)	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-in-charge. (The panel shuttering work shall be paid for separately).	90.00	Cum	7,595.76	6,83,618.40
	(Note:- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/ recoverable separately).				
7.02 b)	62 mm thick cement concrete flooring with concrete hardener topping, under layer 50 mm thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) and top layer 12mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix : 2 graded stone aggregate, 6mm nominal size) by volume, hardening compound mixed @ 2 litre per 50 kg of cement or as per manufacture's specifications. This includes cost of cement slurry, but excluding the cost of nosing of steps etc. complete	22,500.00	Sqm	749.05	1,68,53,625.00
7.03	Cement plaster skirting upto 30 cm height, with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement.				
a)	18 mm thick	330.00	Sqm	456.94	1,50,790.20
7.04	Extra for making chequers of approved pattern on cement concrete floors, steps, landing, pavements etc.	690.00	Sqm	55.41	38,232.90
7.05	25mm thick 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) :	3,540.00	Sqm	1,343.13	47,54,680.20
7.06	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 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.	420.00	Sqm	1,587.05	6,66,561.00
7.07	Extra for pre finished nosing in treads of steps of Kota stone/ sand stone slab.	1,300.00	Rm	129.85	1,68,805.00
7.08	Extra for Kota stone/ sand stone in treads of steps and risers using single length up to 1.05 metre .	590.00	Sqm	29.02	17,121.80
7.09	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS:15622 (thickness to be specified by the manufacture) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-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.	1,280.00	Sqm	903.37	11,56,313.60

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
7.10	Providing and laying Ceramic glazed floor tiles of size 300x300 mm (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in colours such as White, Ivory, Grey, Fume Red Brown laid on 20mm thick bed of Cement Mortar 1:4 (1 Cement : 4 Coarse sand) jointing with grey cement slurry @3.3kg/sqm including pointing the joints with white cement and matching pigments etc., complete.	310.00	Sqm	812.71	2,51,940.10
7.11	Providing and laying polished granite stone flooring in required design and patterns, in linear as well as curvilinear portion of the building, all complete as per architectural drawings, with 18mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand), laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade, including rubbing, curing and polishing etc. all complete as specified and as directed by Engineer-in-charge.				
a).	Polished granite stone slab jet black, Cherry Red, Elite Brown, Cat Eye or equivalent. (basic rate Rs 2200/sqm)	7,380.00	Sqm	3,631.75	2,68,02,315.00
7.12	Providing and fixing mirror finish 18 to 20mm thick superior granite stone in risers of steps, skirting and dados, machine cut in required size, approved shade, colour and texture laid on 12 mm (average) thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointed with white cement mortar 1:2 (1cement :2 marble dust) mixed with matching pigment to match the shade of the stone including rubbing and curing etc. complete at all levels. (Sample of granite stone shall be got approved by Engineer-in-Charge).				
a).	Polished zet black granite stone (basic rate Rs 2200/sqm)	6,650.00	Sqm	3,809.00	2,53,29,850.00
7.13	Extra for Granite Stone flooring in treads of steps and risers using single length upto 2.0 metre.	790.00	Sqm	357.94	2,82,772.60
7.14	Extra for pre finish nosing in treads of steps of Granite Stone slab.	1,740.00	Meter	329.90	5,74,026.00
7.15	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and pre polished machine cut granite stone for kitchen platforms, vanity counters, window cills, facias and similar locations of required size of approved shade, colour and texture laid over 20 mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement mixed with matching pigment, epoxy touch-ups including rubbing, curing, moulding and polishing to edge to give high gloss finish etc. complete at all levels.				
a).	Granite of any colour and shade area of slab over 0.50 sqm.(basic rate Rs 2200/sqm)	330.00	Sqm	4,006.63	13,22,187.90
7.16	Providing edge moulding to 18mm thick Granite Stone Counters, Vanities, etc. including machine polishing to edge to give high gloss finish etc. complete as per design approved by Engineer-in-Charge.	410.00	Meter	329.90	1,35,259.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
7.17	Extra for fixing marble / granite stone over and above corresponding basic item, in facia and drops of width upto 150 mm with epoxy resin based adhesive including cleaning etc. complete.	410.00	Meter	380.75	1,56,107.50
7.18	Extra for providing opening of required size & shape for wash basins/ kitchen sink in kitchen platform, vanity counters and similar location in marble / granite / stone work including necessary holes for pillar taps etc. including rubbing and polishing of cut edges etc. complete.	370.00	Each	644.05	2,38,298.50
7.19	Marble work gang saw cut (polished and machine cut) of thickness 18mm for wall lining (veneer work), backing filled with a grout of average 12 mm thick in cement mortar 1:3 (1 cement : 3 coarse sand) including pointing with white cement mortar 1:2 (1 white cement : 2 marble dust) with an admixture of pigment to match the marble shade. (To be secured to the backing by means of cramps, which shall be paid for separately).				
a).	Raj Nagar Plain white marble/ Udaipur green marble/ Zebra black marble.(basic rate Rs 900/sqm)				
i)	Area of slab over 0.50 sqm	1,290.00	Sqm	4,342.62	56,01,979.80
7.20	Mirror polishing on marble work/Granite work/stone work where ever required to give high gloss finish complete.	17,470.00	Sqm	322.66	56,36,870.20
7.21	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).				
a).	Stainless steel cramps.	2,410.00	Kg	537.13	12,94,483.30
7.22	Providing and fixing expansion hold fasteners on C.C. /R.C.C./Brick masonry surface backing including drilling necessary holes and the cost of bolt etc complete.				
a).	Wedge expansion type				
i)	Fastener with threaded dia 10 mm.	9,600.00	Each	29.24	2,80,704.00
TOTAL CARRIED OVER TO SUMMARY					9,24,79,562.50
8.00	FINISHING				
	Plastering work				
	The Plaster shall be of sufficient thickness to fill up all undulations in the surfaces of masonry and to provide a true surface for wall/ceiling . Special care shall be taken to soak the walls before applying the plaster and finishing the surface of plaster to ensure uniform texture and free from air cracks. Before starting the work sufficient Number of button marks shall be done to plumb and level to achieve uniform finish.				
	All External Windows shall be finished to slope outwards and not less than 1 in 48. The exterior & Interior shall be finished as per sample approved.				
	Plastering to be done either vertical face, horizontal face or angular face. Rate shall include circular /semicircular or any other shape of the faces of plastering area.				
	The contractor shall make good all the grooves, pockets etc. after the scaffolding is removed.				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	The rate for all types of plaster given below should be inclusive of the following items.				
	Forming of drip mould/ bands, grooves of sizes as required etc., wherever grooves are to be provided horizontally/ vertically for in accordance with the drawings.				
	Cost of All material and labour.				
	Hacking concrete surfaces to be plastered or rendered.				
	Preparation of surfaces by raking out joints, wetting the surface etc.,				
	Washing floors, cleaning glass and leaving premises clean and tidy after the plastering is done. Disposing off the debris outside the site.				
	Curing the same.				
	Providing necessary scaffolding, ladder, platform for any height and depth and removing the same after the work is completed.				
	Painting Work				
	Paint shall be applied as per the specification and Manufacturer's instructions.				
	Rate is inclusive of curing, protecting the painted surface, adjacent work and thoroughly cleaning of the premises.				
	Paint shall be ready mixed and of first quality of the approved brand and manufacturer. The paint shall generally conform to the chemical composition and other characteristics laid down in the relevant Indian standard specification. It is desired that materials of one manufacturer only shall be used as far as possible and paint of one shade be obtained from the same manufacturing batch.. Any materials found not conforming to the relevant specification & IS standards, shall have to be removed by the Contractor from the work site at no extra cost.				
	All primer coats shall be compatible to the material of the surface to be finished as well as to the succeeding finishing coats to be applied.				
	All coats shall be thoroughly dry before being sand papered or before the succeeding coat is applied. Coats of painting as specified are intended to cover surfaces perfectly. In case the surface is not covered properly by applying the specified number of coats, further coats shall be applied by the Contractor if directed by the Engineer- In- Charge, at no extra cost.				
	Painting shall be done by skilled labourers in a workman like manner. All materials shall be evenly applied so as to be free from sags, runs, crawls, or other defects. All coats shall be of proper consistency and shall be well brushed out, so that no brush marks are visible, except varnish and enamels which shall be uniformly flowed on. The brushes shall be clean and in good condition before application of paint.				
	The rate to include the following;				
	(a) All surface preparation, suitable number of base coats required, primers and suitable nos of finishing coats, to the complete satisfaction of the Engineer in Charge.				
	(b) Scaffolding and all leads and lifts.				
	(c) Proper curing in between the two subsequent coats.				
	(d) Touch ups to the paint after the scaffolding is removed.				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	e) Any splash or spray of paint shall be removed immediately after painting work. All doors and windows or any other area which is not to be painted shall be taped properly with paper. All this material shall be removed disposed without damaging the painted surface.				
8.01	Providing and laying 6 mm thick (average) cement plaster 1:3 (1 cement : 3 fine sand) to RCC work at all floors and location, finished in smooth line and level etc. complete as per direction of Engineer Incharge.	13,920.00	Sqm	199.34	27,74,812.80
8.02	Providing and applying 12 mm thick (average) premixed formulated one coat gypsum lightweight plaster having additives and light weight aggregates asvermiculite/ perlite respectively conforming to IS: 2547 (Part - 1 & II) 1976, appliedon hacked / uneven background such as bare brick/ block/ RCC work on walls & ceiling at all floors and locations, finished in smooth line and level etc. complete.	54,060.00	Sqm	300.61	1,62,50,976.60
8.03	Providing and applying 18 mm cement plaster in two coats under layer 12 mm thick using Premixed cement plaster 1:3 and a top layer 6mm thick Premixed cement plaster 1:3 finished rough with sponge in line and level etc. complete as per direction of Engineer Incharge.	4,400.00	Sqm	334.00	14,69,600.00
8.04	Providing and applying 20 mm cement plaster Premixed cement plaster 1:3 mixed with waterproofing compound in recommended proportion in sunken area to protect tapecrete waterproofing. (Water proofing compound to be paid separately).	3,980.00	Sqm	315.74	12,56,645.20
8.05	Providing and applying two coats white cement based putty (JK wall care, Birla putty or approved equivalent) over plastered/ RCC surface and grinding the surface smooth with sand paper to get an even and smooth finish including cost and cartage of all materials, labour charges, scaffolding, sundries etc. complete.	16,880.00	Sqm	172.47	29,11,293.60
8.06	Finishing walls with water proofing cement paint of required shade : New work (Two or more coats applied @ 3.84 kg/10 sqm)	18,210.00	Sqm	80.01	14,56,982.10
8.07	Providing & applying water thinnable cement primer on wall surface having VOC content less than 50 grams/litre to obtain even shade in one or more coats etc. complete as per direction of Engineer Incharge.	35,030.00	Sqm	52.61	18,42,928.30
					0.00
8.08	Distempering with 1st quality acrylic distemper, 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. Two coats Including priming coats with primer of approved brand and manufacture, With water thinnable cement primer on wall surface having low VOC (Volatile Organic Compound) content less than 50 grams/litre	9,660.00	Sqm	124.42	12,01,897.20
8.09	Finishing walls with textured exterior paint of required shade on new work (two or more coats applied @ 3.28 ltr. / 10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm.	4,630.00	Sqm	203.42	9,41,834.60

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
8.10	Wall painting with premium acrylic emulsion paint of interior grade, 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. Two coats Including priming coats with primer of approved brand and manufacture,.With water thinnable cement primer on wall surface having low VOC (Volatile Organic Compound) content less than 50 grams/litre	6,400.00	Sqm	152.48	9,75,872.00
8.11	Applying priming coats with primer of approved brand and manufacture, With ready mixed pink or grey primer on wood work (hard and soft wood)having low VOC (Volatile Organic Compound) content. less than 50 grams/ litre (DSR ref 13.85.1)	700.00	Sqm	50.02	35,014.00
8.12	Applying priming coats with primer of approved brand and manufacture, With ready mixed red oxide zinc chromatic on steel / iron works having VOC content less than 250 grams/ liter	1,810.00	Sqm	32.55	58,915.50
					0.00
8.13	Painting with synthetic enamel paint, having VOC (Volatile Organic Compound) content less than 150 grams/ litre, of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour. Two coats or more coats	6,090.00	Sqm	75.00	4,56,750.00
8.14	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone additives of required shade on new work (Two or more coats applied @ 1.43 ltr. Per 10 sqm. over and including priming coat of exterior primer applied @ 2.20 kg/10 sqm).	550.00	Sqm	141.30	77,715.00
8.15	Providing and laying Granite look stone coat of approved shade on external walls and columns with spray equipment @0.4 Kg/sqm over and including the cost of water proof base coat MYK AK 133 by roller/sparay machine @ 0.7 kg/sqm and the primer coat MYK Prime MS 100 by brush or roller @ .15 Kg/sqm. The surface should be cleaned and free from all loose material and dirt for receiving the base coat. After putting the stone coat Uv & abrasion resistant top coat to be provided evenly by roller @ 0.15 Kg/sqm.all complete as per instruction of Engineer-in-Charge.	310.00	Sqm	3,817.00	11,83,270.00
8.16	Providing and fixing 40mm thick pre polished red sand stone for window cills, facias, on copings and similar locations of required size laid over 20 mm average thick base of cement mortar 1:5 (1 cement : 5 coarse sand), joints treated with white cement mortar 1:2 (1cement:2 stone dust) admixed with matching pigment to match the shade of stone, including rubbing, curing, moulding and polishing to edge etc. complete at all levels.	216.00	Sqm	1,180.52	2,54,992.32

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
8.17	Providing 10 mm thick brick tiles (Unitile / Prakriti or equivalent make approved by Competent authority) of size 230 x 75mm / 100 x 50mm or any other approved size exposed brick tile cladding to brick/ AAC masonry or RCC walls in 15 to 20mm thick cement mortar 1:3 (1 Cement :3 Coarse sand) with 10 mm wide and 10 mm deep mortar joints by using spacers including pointing with cement mortar 1:2 (1 cement : 2 fine sand) mixed with pigment to match the shade of brick tiles, curing and cleaning etc. all complete as per design and drawing. (Basic Rates of tile = Rs. 807.00 per Sqm)	2,560.00	Sqm	1,625.00	41,60,000.00
8.18	Providing and applying semi viscos liquid formulation over heavily soiled granite stone/sand stone/unpolished soiled surface/RCC/painted surface/brick cladding using 30 PST (2Bar spacing) equipment/tools from bottom of the structure to top direction in an even coating of 0.30 liter/sqm area of the surface to be treated, allow a penetration and chemical reaction time of 60 minutes. The surface is then rinsed with a 5 GPM nozzle at 1500 PST (19 ltrs./minute) times along with the wire brush for scrubbing till all the organic/inorganic contamination, dirt, hydro carbon gets algae and rust stains from the surface and pills of the substrate is completely removed and the stone is returned to the colour. The process should include all chemical, materials, labour application tools, spraying equipment high pressure water jet machine, cleaning of surface from the water jets before applying the semi viscos liquid formulation complete as per manufacturer's specification and including the cost of jhullas/scaffolding if required.	2,560.00	Sqm	460.00	11,77,600.00
8.19	Providing and fixing stainless steel sheet cladding on columns comprises of hollock timber frame work from floor level to the level of 3" above false ceiling or as per shown in the drawings of size 50x25mm at spacing not exceeding 600mm centre to centre in both directions fixed to concrete/ masonry with dash fasteners and fixing 12mm thick commercial board on the frame work and finished with 1.5mm thick stainless steel sheet of approved make and shade in approved pattern as per design & drawing including the cost of making of 3mm wide groove in cladding as per approved pattern and design all complete as per the direction of Engineer-in-Charge.	1,310.00	Sqm	4,250.00	55,67,500.00
8.20	Providing and fixing machine cut, mirror/eggshell polished marble stone work for wall lining (veneer work) including dado, skirting, riser 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 @ 3.3kg/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 Engineer-in-charge.				
a)	18mm thick Italian Marble Stone Slab, Perlato, Rosso Verona, Fire Red or Dark Empradoor, Travertine etc. (Basic Rates of Italian Marble = Rs. 3209.00 per Sqm)	2,890.00	Sqm	7,736.66	2,23,58,947.40

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
8.21	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.	34,750.00	Sqm	57.82	20,09,245.00
	TOTAL CARRIED OVER TO SUMMARY				6,84,22,791.62
9.00	ROOFING & WATERPROOFING WORK				
	Preambles for Water Proofing work				
	The above work shall have to be carried out through an agency carrying out similar works and approved by the Engineer-in-charge".				
	Main Contractor shall submit a guarantee for a period of 10 years from the schedule date of completion. Rate quoted shall include for the same.				
9.01	Providing and laying water proofing treatment to vertical and horizontal surfaces of depressed portions of W.C., kitchen and the like consisting of: (i) Ist course of applying cement slurry @ 4.4 kg/sqm mixed with water proofing compound conforming to IS 2645 in recommended proportions including rounding off junction of vertical and horizontal surface. (ii) IInd course of 20 mm cement plaster 1:3 (1 cement : 3 coarse sand) mixed with water proofing compound in recommended proportion including rounding off junction of vertical and horizontal surface. (iii) IIIrd course of applying blown or residual bitumen applied hot at 1.7 kg. per sqm of area. (iv) IVth course of 400 micron thick PVC sheet. (Overlaps at joints of PVC sheet should be 100 mm wide and pasted to each other with bitumen @ 1.7 kg/sqm).	3,980.00	Sqm	618.76	24,62,664.80
9.02	Providing and laying APP (Atactic Polypropylene Polymer) modified prefabricated five layer 3 mm thick water proofing membrane, black finished reinforced with nonwoven polyester matt consisting of a coat of bitumen primer for bitumen membrane @ 0.40 litre/sqm by the same membrane manufacture of density at 25°C, 0.87-0.89 kg/ litre and 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 650/ 450N/ 5cm. Tear strength in longitudinal and transverse direction as 300/250N. Softening point of membrane not less than 150°C. Cold flexibility shall be upto -2°C when tested in accordance with ASTM, D - 5147. The laying of membrane shall be gotdone through the authorised applicator of the manufacturer of membrane : 3 mm thick	4,930.00	Sqm	469.09	23,12,613.70
9.03	Providing gola 75 x 75 mm in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 stone aggregate 10 mm and down gauge) including finishing with cement mortar 1:3 (1 cement : 3 fine sand) as per standard design in 75 x 75mm deep chase.	570.00	Meter	208.02	1,18,571.40
9.04 (a)	Making khurrah 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 1mx1mx400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement rounding the edges and making and finishing the outlet complete.	82.00	Each	213.98	17,546.36

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
				0.00	
9.04 (b)	Providing & applying two coats of acrylic cementitious polymer modified elastomeric waterproof coating DR Fixit Pidifin 2K (1 part Liquid : 2 parts Powder) Or other equivalent and approved - two component ready to use cementitious waterproof coating on properly prepared surface by brush having elongation of > 50%, approximate . 0.6 - 0.75 M2/KG at 1 mm thickness (Area of Terrace, podium and toilet)	11,230.00	Sqm	350.00	39,30,500.00
9.05	Providing and laying integral cement based treatment for water proofing on horizontal surface at all depth below ground level for under ground structures as directed by Engineer-in-Charge and consisting of :				
i)	1st layer of 22mm to 25mm thick approved and specified rough stone slab over a 25mm thick base of cement mortar 1:3 (1 cement : 3 coarse sand) mixed with water proofing compound conforming to IS:2645 in the recommended proportion over the leveling course (leveling course to be paid separately). Joints sealed and grouted with cement slurry mixed with water proofing compound.				
ii)	2nd layer of 25mm thick cement mortar 1:3 (1 cement: 3 coarse sand) mixed with water proofing compound in recommended proportions.				
iii)	Finishing top with stone aggregate of 10mm to 12mm nominal size spreading @ 8 cu dm/sqm thoroughly embedded in the 2nd layer.				
a)	Using rough kota stone.	7,920.00	Sqm	1,186.92	94,00,406.40
9.06	Providing and laying integral cement based treatment for water proofing on the vertical surface by fixing specified stone slab 22 mm to 25mm thick with cement slurry mixed with water proofing compound conforming to IS:2645 in recommended proportions with a gap of 20mm (minimum) between stone slabs and the receiving surfaces and filling the gaps with neat cement slurry mixed with water proofing compound and finishing the exterior of stone slab with cement mortar 1:3 (1 cement : 3 coarse sand) 20mm thick with neat cement punning mixed with water proofing compound in recommended proportion complete at all levels and as directed by Engineer-in-charge :				
a)	Using rough kota stone.	4,720.00	Sqm	1,523.88	71,92,713.60
9.07	Providing and Placing in position suitable PVC water stops conforming to IS:12200 for construction/ expansion joints between two RCC members and fixed to the reinforcement with binding wire before pouring concrete etc. complete :				
a)	Serrated with central bulb (225mm wide, 8-11mm thick).	3,600.00	Rm	248.31	8,93,916.00
9.08	Providing and fixing thermal insulation of ceiling (under deck insulation) /roofing fixed with suitable adhesive to the false ceiling/ceiling as per the directions of the Engineer-in-charge :				
a)	With Type SE - Self Extinguishing type 50 mm thick	4,930.00	Sqm	273.43	13,48,009.90

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
9.09	Providing and fixing 12mm thick Multicell Polycarbonate Panel system upto 600mm wide for 12mm thick with 3cells and 4walls. The panels shall be uniform in color with an integral Multicell core and shall be manufactured with Vertical Standing Seam at both sides of the Panel with Snap-on polycarbonate connector to interlock the panels with grip-lock mechanism to ensure maximum uplift capability and stability including aluminium cleat with both sides uphold, vertical thickness not less than 1.5mm and horizontal (base) thickness not less than 3mm. End-cap, Aluminium U-Profile (mill finish) for ends. Panels shall be coextruded UV both side protected. The product following quality system code SO/TS16949, ISO9001, ISO14001. The panels shall be fixed over structural steel / MS purlins (to be paid seperatly) and be secured with snap-on connectors at all levels including all accessories complete to make a water tight system for covering of atrium area all complete as per manufacturer's specifications. (Approved make - Gallina / KAPHS India / Tuflite Polymers Limited)	560.00	Sqm	2,666.00	14,92,960.00
9.10	Providing and laying water proofing treatment on roofs of slabs by applying cement slurry mixed with water proofing cement compound consisting of applying: (a) after surface preparation, first layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/sqm. (b) laying second layer of Fibre glass cloth when the first layer is still green.Overlaps of joints of fibre cloth should not be less than 10 cm. (c) third layer of 1.5 mm thickness consisting of slurry of cement @ 1.289 kg/sqm mixed with water proofing cement compound @ 0.670 kg/sqm and coarse sand @ 1.289 kg/sqm. This will be allowed to air cure for 4 hours followed by water curing for 48 hours. The entire treatment will be taken upto 30 cm on parapet wall and tucked into groove in parapet all around. (d) fourth and final layer of screed concrete (which will be paid for separately. For the purpose of measurement the entire treated surface will be measured." (For podium area)	2,320.00	sqm	458.61	10,63,975.20

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
9.11	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 engineer-in-charge. The product performance shall carry guaranteed for 10 years against any leakage. (Approved make - Pidilite / Aroex Endura / Sika)				
a	For vertical surface two coats @0.70 kg per sqm per coat	1,910.00	sqm	424.77	8,11,310.70
b	For horizontal surface one coat @1.10 kg per sqm.	500.00	sqm	327.40	1,63,700.00
9.12	Grading roof for water proofing treatment with Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	550.00	Cum	6,071.53	33,39,341.50
9.13	Providing and applying a coat of cement slurry using 2.75 Kg/ Sqm of cement admixed with water proofing compound confirming to IS 2645 and then laying 20 mm thick cement mortar plaster 1:4 (1 cement : 4 coarse sand) with adding water proofing compound in cement mortar confirming to IS 2645. Finishing with final course of spreading 6.0 mm down size or pea size gravel at 6.0 cum per sqm etc. complete as per direction of Engineer Incharge.	7,250.00	Sqm	229.00	16,60,250.00
TOTAL CARRIED OVER TO SUMMARY					3,62,08,479.56
10.00	MISCELLANEOUS WORK				
10.01	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement :3 coarse sand : 6 graded stone aggregate 20 mm nominal size) over 75mm thick bed of dry brick ballast 40 mm nominal size, well rammed and consolidated and grouted with fine sand including finishing the top smooth	225.00	Sqm	538.40	1,21,140.00
10.02	Brick edging 7cm wide 11.4 cm deep to plinth protection with common burnt clay F.P.S. (non modular) bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand).	390.00	Rm	45.59	17,780.10

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
10.03	Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture spintone/cosmos / Hexa or equivalent of size 595 x 595 mm in true horizontal level suspended on inter locking metal grid of hot dipped galvanised steel sections (galvanising @ 120 grams per sqm including both side) consisting of main 'T' runner suitably spaced at joints to get required length and of size 24x38mm made from 0.33 mm thick (minimum) sheet, spaced 1200mm centre to centre, and cross "T" of size 24x28mm made out of 0.33mm (Minimum) sheet, 1200mm long spaced between main'T' at 600mm centre to centre to form a grid of 1200x600mm and secondary cross 'T' of length 600mm and size 24 x28mm made of 0.33mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600mm panel to form grid of size 600x600mm, resting on periphery walls /partitions on a Perimeter wall angle pre-coated steel of size(24x24X3000 mm made of 0.40 mm thick (minimum)				
	sheet with the help of rawl plugs at 450mm centre to centre with 25mm long dry wall screws '@ 230mm interval and laying 15mm thick densified edges calicum silicate ceiling tiles of approved texture (Spintone / Cosmos/hexa) in the grid including, cutting/ making opening for services like diffusers, grills,light fittings, fixtures, smoke detectors etc., wherever required, Main 'T' runners to be suspended from ceiling using G.I. slotted cleats of size 25x35x1.6mm fixed to ceiling with 12.5 mm dia and 50mm long dash fasteners, 4mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200mm centre to centre along main 'T' , bottom exposed with 24mm of all T-sections shall be pre-painted with polyster baked paint, for all heights, as per specifications, drawings and as directed by engineer-in-charge.				
	Note :- Only calcium silicate false ceiling area will be measured from wall to wall. No deduction shall be made for exposed frames/opening (cut outs) having area less than 0.30 sqm.The calcium silicate ceiling tile shall have NRC. value of 0.50(Minimum), light reflection > 85%, non - combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity<0.043 w/mK.				
a)	In all Corridor	4,120.00	Sqm	1,441.42	59,38,650.40
10.04	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 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts other flange of cleat fixed to the angle hangers of				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	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 20 mm 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 manufacturer'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 and direction of the Engineer in Charge but excluding the cost of painting with :				
a)	12.5 mm thick tapered edge gypsum moisture resistant board.	1,970.00	Sqm	1,127.74	22,21,647.80
10.05	Providing and fixing GI Clip in Metal Ceiling System of 600x600 mm module which includes providing and fixing 'C' wall angle of size 20x30x20mm made of 0.5mm thick pre painted steel along the perimeter of the room with help of nylon sleeves and wooden screws at 300mm center to centre, suspending the main C carrier of size 10x38x10mm made of G.I steel 0.7 mm thick from the soffit with help of soffit cleat 37x27x25x1.6 mm, rawl plugs of size 38x12 mm and C carrier suspension clip and main carrier bracket at 1000mm c/c. Inverted triangle shaped Spring Tee having height of 24 mm and width of 34mm made of GI steel 0.45 mm thick is then fixed to the main C carrier and in direction perpendicular to it at 600mm centers with help of suspension brackets. Wherever the main C carrier and spring T have to join, C carrier and spring T connectors have to be used. All sections to be galvanized @ 120 gms/sqm (both side inclusive) Fixing with clip in tiles into spring 'T' with :				
a)	GI Metal Ceiling Clip in plain Beveled edge global white color tiles of size 600x600 and 0.5mm thick with 25mm height, made of G I sheet having galvanizing of 100 gms/sqm (both sides inclusive) and 20% perforation area with 1.8mm dia holes and having NRC of 0.5, electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending and perforation.	380.00	Sqm	1,649.79	6,26,920.20

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
10.06	Providing and fixing of Spider glazed skylight of DORMA/IR/SATENLY as per IS 875 part 3 and AS1288 2006 CODAL requirements, fixed on the steel support structure on the top of incorporating 13.52m laminated glass panels as per approved drawings, and Steel support structure as stabilizers, used at each silicon joint to provide stiffness against wind loading. Deflections and other specified loads expected including frame work wherever necessary and hardware all other accessories in the glazing with all extrusions, fittings, MS brackets, spider fittings of DORMA make with 4,2, 1 points spiders & RODAN stainless steel bolts as per design. The DORMA spider fitting shall have a stream line design with swirl arm for high strength performance and better aesthetics. The RODAN bolts for facade glass shall be of SS 316 with all necessary accessories. The spiders shall be manufactured by investment casting process of grade SS 316 as per EN norms.				
	All screws, all weather elements such as flashing, coping, approved silicone sealants, etc to make the system completely waterproof. All spider fittings Dorma / rodan should be designed to support the weight of the glass by direct bearing on the bolts wherein the structure should be designed as per the relevant codes and should be able to	94.00	Sqm	16,500.00	15,51,000.00
	TOTAL CARRIED OVER TO SUMMARY				1,04,77,138.50
11.00	ROAD WORK AND PATHWAYS				
11.01	Preparation and consolidation of sub-grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with in premises and as directed by Engineer-in-charge.	7,130.00	Sqm	137.44	9,79,947.20
11.02	Supplying and stacking of graded stone aggregate at site of size range				
a)	90 mm to 45 mm	1,080.00	Cum	1,613.36	17,42,428.80
b)	63 mm to 45 mm	1,080.00	Cum	1,346.46	14,54,176.80
11.03	Supplying and stacking of stone screenings / chippings at site.				
a)	13.2 mm nominal size (Type A)	370.00	Cum	1,514.80	5,60,476.00
11.04	Laying spreading and compacting stone aggregate of specified sizes to WBM specifications including spreading in uniform thickness, hand picking, rolling with 3 wheeled road/vibratory roller 8 to 10 tonne in stages to proper grade and camber, applying and brooming requisite type of screening/binding material to fill up interstices of coarse aggregate watering and compacting to the required density.	2,150.00	cum	672.72	14,46,348.00
11.05	Supplying and stacking moorum at site.	178.00	cum	708.28	1,26,073.84

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
11.06	Providing and laying design mix cement concrete of M-30 grade in roads/taxi tracks/runways, using cement content as per design mix using coarse sand and graded stone aggregate of 40mm nominal size in appropriate proportions as per approved and specified design criteria, providing dowel bars with sleeve/tie bars wherever required, laying at site, spreading and compacting by mechanically by using needle and surface vibrators, levelling to required slope/camber, finishing with required texture, including steel form work with sturdy M.S. channel sections, curing, making provision for contraction/expansion, constructional and longitudinal joints (10mm wide and 50mm deep) by groove cutting machine, providing and filling joints with approved joint filler and sealants, complete all as per direction of Engineer-in-charge (Item of joint fillers, sealants, dowel bars with sleeve/tie bars to be paid separately).				
	(Note:- Cement content considered in M-30 is @ 340 kg/cum. Excess/less cement used as per design mix is payable/ recoverable separately).				
	Cement concrete manufactured in automatic batching plant (RMC Plant) including transportation to site in transit mixer.	640.00	Cum	8,026.01	51,36,646.40
11.07	Providing and laying factory made chemfered edge cement concrete grass paver blocks in footh path, park and lawns driveway or light traffic parking etc. of required strength, thickness and size/shape, made by table vibratory method using PU mould, laid in required colour and pattern over 50mm thick compacted bed of coarse sand, compacting and proper embedding/laying of interlocking paver blocks into the sand bedding layer through vibratory compaction by using plate vibrator, 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 specification & Direction of Engineer-in-charge.				
a)	80mm thick cement concrete grass paver block of M-30 grade with approved colour, design and pattern.	2,530.00	Sqm	835.59	21,14,042.70
11.08	Providing and laying factory made coloured chamfered edge Cement Concrete paver blocks of required strength, thickness & size/shape, made by table vibratory method using PU mould, laid in required colour & pattern over 50mm thick compacted bed of fine sand, compacting and proper embedding/laying of inter locking paver blocks into the sand bedding layer through vibratory compaction by using plate vibrator, filling the joints with jamuna sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand in footpath, parks, lawns, drive ways or light traffic parking etc. complete as per manufacturer's specifications & direction of Engineerin-Charge.				
a)	60mm thick C.C. paver block of M-35 grade with approved colour, design & pattern.	440.00	Sqm	775.75	3,41,330.00
11.09	Providing and fixing at or near ground level precast cement concrete in kerbs, edgings etc. as per approved pattern and setting in position with cement mortar 1:3 (1 cement : 3 coarse sand) including the cost of required centering, shuttering complete.				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
a)	1:1.5:3 (1 cement : 1.5 coarse sand (zone- III) : 3 graded stone aggregate 20 mm nominal size).	90.00	Cum	6,605.68	5,94,511.20
11.10	Providing and fixing in position pre-moulded joint filler in expansion joints	3,290.00	per cm depth cm width per m length	2.72	8,948.80
11.11	Providing and laying in position bitumen hot sealing compound for expansion joints etc using grade "A" sealing compound	3,290.00	per cm depth cm width per m length	2.89	9,508.10
11.12	Painting of road and parking area marking with adequate no. of coats to give uniform finish with road marking paint of superior make as approved by the Engineer-in-charge including cleaning the surface of all dirt, scales, oil, grease and other foreign material etc. and lining out complete.				
a).	New work (Two or more coats)	40.00	Sqm	132.27	5,290.80
11.13	Providing and fixing 10x10x7.5cm granite stone block hand cut and chisel dressed on top, for paving in floors, drains etc. laid over 20 mm thick base mortar 1:4 (1 cement : 4 coarse sand) with joints 10mm wide filled with same mortar including ruled pointing etc. complete as per the direction of Engineer-in-charge.	660.00	Sqm	1,664.12	10,98,319.20
TOTAL CARRIED OVER TO SUMMARY					1,56,18,047.84
12.01	Sanitary Works				
12.01.1	Providing & fixing of white vitreous china wall mounted type water closet (European type) with seat and lid, 3/6 litres concealed cistern including suitable frame and face plate, overflow arrangement with specials of standard make and mosquito proof coupling of approved municipal design complete including painting of fittings and brackets, cutting and making good the wall and Floors wherever required etc. complete as per direction of Engineer Incharge				
	Kohler Make EWC (Presquile Wall hung Toilet W/SC UF Seat" 18133IN-SS-0"), Seat/ Lid (Replay wall hung Bowl W/ RC Seat 6098IN-SR-0), Concealed Cistern (Insta flush pneumatic tank3/6 LWOframe 77027IN-P-NA), face plate (Lynk pneumatic faceplate polished chrome 75890IN-P-CP) or				
	Jaquar Make EWC with seat/ lid (rimless blind installation wall hung WC with UF Soft close slim seat cover and accessories SLS-WHT- 6953BIUFSM), Concealed Cistern (single piece slim concealed cistern body with installation kit & S type drain Pipe connection set for wall hung WC - JCS-WHT-24005), face plate (Control Plate opal JCP-CHR-152415) or equivalent				
	W.C pan with white solid plastic seat and lid including concealed flushing cistern and face plate etc.	311.00	EACH	23,710.00	73,73,810.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
12.01.2	Providing and fixing white vitreous china 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 manufacturers specification and direction of Engineer-InCharge.				
	Kohler Make Urinal (Bardon S Mid Size Urinal With Rear Inlet 4978IN-ER-0), Sensor including batteries (Patio Urinal Sensor 24199IN C01-CP) or				
	Jaquar Make Urinal (Urinal With Fixing Accessories set URS-WHT-132530), Sensor including batteries (Sensotronic F/V for urinal with Instl Box SNR-STL-51087) or equivalent				
	Urinal with sensor operated sytem for flushing including all accessories.	159.00	EACH	15,450.00	24,56,550.00
12.01.3	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50 cm deep and 1.8 cm thick fixed in urinal partitions by cutting a chase of appropriate width with chase cutter and embedding the stone in the chase with epoxy grout or with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 6 mm nominal size) as per direction of Engineer-in-charge and finished smooth.				
	White Agaria Marble Stone.	165.00	SQM	2,820.58	4,65,395.70
12.01.4	Providing & fixing wash basin with C.I. brackets, 32 mm C.P. brass waste coupling of standard pattern, including sensor operated tap and bottle trap, painting of fittings and brackets, cutting and making good the walls wherever required:				
	Kohler Make - Wash basin (Ladena 591x410 mm size undercounter lavatory-2215IN-0), pillar tap with sensor (Auclen touchless faucet -18057IN-ND-CP), Bottle trap (Bottle trap 300 mm - 7314IN-CP) or				
	Jaquar Make - Wash basin (undercounter basin with fixing accessories set size 595x420x200mm - CNS-WHT-705), Pillar tap with sensor (Sensotronic Sensor faucet for wash basin SNR-CHR-51021), Bottle trap (Bottle trap 32 mm size with 300 mm & 190mm long - ALD-CHR-769L 300x190) or equivalent				
	White Vitreous China under counter Wash basin with sensor operated pillar tap including bottle trap & CP brass waste coupling	356.00	EACH	19,573.00	69,67,988.00
12.01.5	Providing & fixing liquid soap container 109mm wide, 125mm high and 112mm 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.				
	Jaquar Make (Soap dispenser with metallic bottle - CAN-CHR- 1137 N) or any other equivalent model of approved make.				
	Liquid Soap dispenser with bracket	356.00	EACH	3,103.00	11,04,668.00
12.01.6	Providing & fixing mirror of superior glass (of approved quality) and of required shape and size with 6 mm hard board of approved make and shade with 6mm thick hard board backing.				
	Rectangular Shape	120.00	Sqm	1,570.00	1,88,400.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
12.01.7	Providing & fixing Recessed type S.S. Toilet paper holder including cutting and making good the walls.				
	Kohler Make - Toilet roll holder with stainless steel flap - ACN-CHR-11535) or				
	Jaquar Make - (paper/ tissue holder -5633IN-CP) or equivalent of other approved make.				
	Stainless Steel Toilet Paper Holder	309.00	EACH	1,103.00	3,40,827.00
12.01.8	Providing & fixing 15mm dia C.P. brass angle valve with connection pipe for basin mixer and geyser points of approved quality conforming to IS:8931 a) 15 mm nominal bores.s mesh filter and c.p.cast brass wall flange with extension piece in required length.				
	Kohler Make 80158IN-9-CP or equivalent of other approved make.				
	15 mm nominal bore	1,141.00	EACH	712.00	8,12,392.00
12.01.9	Providing & fixing 15mm dia C.P. ablution health faucet with 1.0m long ss extension pipe with wall hook and oprating knob complete in all respect.				
	Kohler make (health faucet with 1.0 m long easy flex tube in chrome finish& wall Hook - ALD-CHR-565)				
	Jaquar make (health faucet W/SD spray metal hose - 12927IN- CP)				
	15mm dia C.P. ablution health faucet	311.00	EACH	1,400.00	4,35,400.00
	NOTE:				
	Detail of Sanitary fixture are for the information of the Contractor,however model/makes of all sanitary fixtures shall be selected by the Concerned Authority and the same shall be binding for execution.				
	TOTAL CARRIED OVER TO SUMMARY				2,01,45,430.70
12.02	Internal Drainage (Rainwater,Soil,waste & Fittings)				
12.02.1	Providing & fixing anti cockroach trap with grating of stainless steel with chrome finish of approved quality 100 mm nominal dia	468.00	EACH	230.00	1,07,640.00
12.02.2	Providing and fixing soil,waste,rain water and vent CI pipes as per IS 3989 including collar, bend of all types, tee, shoe, cowl etc. complete with CI Fittings including lead jointing as directed by Engineer Incharge				
a.	75 mm .	295.00	MTRS	1,611.00	4,75,245.00
b.	100 mm .	1,918.00	MTRS	1,869.00	35,84,742.00
c.	150 mm .	653.00	MTRS	3,042.00	19,86,426.00
d.	200mm	1,827.00	MTRS	4,077.00	74,48,679.00
12.02.3	Providing and Fixing trap of self cleansing design with screwed down or hinged grating with or without vent arm complete including cost of cutting and making good the walls & floors. 100 mm dia (inlet) x75 mm dia (out let) etc. complete as per direction of Engineer Incharge.				
	Sand cast iron S&S as per IS 3989	575.00	EACH	1,072.80	6,16,860.00
	TOTAL CARRIED OVER TO SUMMARY				1,42,19,592.00
12.03	Internal Water supply				
12.03.1	Providing and fixing G.I. Pipes complete with G.I. fittings and clamps, i/c making good the walls etc. concealed pipe, including painting with anti corrosive bitumastic paint, cutting chases and making good the wall				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
(i)	15 mm nominal outer dia pipes	736.00	Mtrs.	392.4600	288850.56
(ii)	20 mm nominal outer dia pipes	1286.00	Mtrs.	433.23	557133.78
12.03.2	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc. Internal Work-Exposed on wall				
(i)	25 mm nominal outer dia pipes	524.00	Mtrs.	384.04	201236.96
(ii)	32 mm nominal outer dia pipes	232.00	Mtrs.	464.44	107750.08
(iii)	40 mm nominal outer dia pipes	190.00	Mtrs.	560.80	106552.00
(iv)	50 mm nominal outer dia pipes	597.00	Mtrs.	689.82	411822.54
(v)	65 mm nominal outer dia pipes	158.00	Mtrs.	791.00	124978.00
(vi)	100 mm nominal outer dia pipes	677.00	Mtrs.	1440.00	974880.00
12.03.3	Painting G.I. pipes and fittings with synthic enamel white paint with two coats over ready mixed priming coat of approved quality for new work.				
(i)	25 mm nominal outer dia pipes	524.00	Mtrs.	20.78	10888.72
(ii)	32 mm nominal outer dia pipes	232.00	Mtrs.	24.90	5776.80
(iii)	40 mm nominal outer dia pipes	190.00	Mtrs.	29.29	5565.10
(iv)	50 mm nominal outer dia pipes	597.00	Mtrs.	34.90	20835.30
(v)	65 mm nominal outer dia pipes	158.00	Mtrs.	25.38	4010.04
(vi)	100 mm nominal outer dia pipes	677.00	Mtrs.	29.46	19944.42
12.03.4	Providing & fixing ball valve (brass) of approved quality,High or low pressure, with plastic floats complete:-				
(i)	15 mm dia nominal bore	177.00	Nos.	296.97	52563.69
(ii)	20 mm dia nominal bore	12.00	Nos.	338.80	4065.60
(iii)	25 mm dia nominal bore	3.00	Nos.	345.46	1036.38
12.03.5	Providing and fixing ferrul with c.i mouth cover 25 mm dia nominal bore	1.00	No	384.35	384.35
12.03.6	Providing & fixing gunmetal gate valve wih CI wheel of approved quality-screwed end complete as required.				
(i)	50 mm dia	15.00	Nos.	3119.00	46785.00
(ii)	65 mm dia	15.00	Nos.	5429.00	81435.00
(iii)	100 mm dia	5.00	Nos.	17196.00	85980.00
12.03.7	Providing and fixing in position of approved quality G.M. float valve with copper ball float and brass rods of required length suitable for pressure of 10 Kg/sqcm of the following sizes:				
a)	50 mm dia	3.00	Nos.	2555.00	7665.00
TOTAL CARRIED OVER TO SUMMARY					3120139.32
12.04	Miscellaneous Items				
12.04.1	Providing and fixing M.S. puddle flanges fabricated out of 6 mm thick M.S. plate of size 200 x 200mm plus dia of pipe of 750 mm long pipe pieces to R.C.C. water tanks / R.C.C. walls. The entire fitting shall be hot dipped galvanised.				
(i)	250mm dia	2.00	Nos.	2194.00	4388.00
(ii)	150mm dia	30.00	Nos.	1950.00	58500.00
(iii)	100mm dia	30.00	Nos.	1828.00	54840.00
(iv)	80mm dia	15.00	Nos.	1707.00	25605.00
(v)	65mm dia	8.00	Nos.	1219.00	9752.00
(vi)	50mm dia	10.00	Nos.	975.00	9750.00
(vii)	25mm dia	12.00	Nos.	488.00	5856.00
TOTAL CARRIED OVER TO SUMMARY					168691.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
12.05	External Water Supply				
12.05.1	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc.				
(i)	20 mm dia nominal bore	150.00	Mtr	248.8	37326.00
(ii)	32 mm dia. nominal bore	20.00	Mtr	319.64	6392.80
(iii)	65 mm dia pipes	480.00	Mtr	627.79	301339.20
(iv)	100 mm dia pipes	700.00	Mtr	1085.00	759500.00
12.05.2	Constructing masonry Chamber 60X60X75 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with channel lid and RCC top slab 1:2:4 mix (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) 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:				
	With F.P.S. bricks	8.00	Each	8144.07	65152.56
12.05.3	Constructing masonry Chamber 90X90X100 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for sluice valve, with C.I. surface box 100 mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with channel lid and RCC top slab 1:2:4 mix (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) 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:				
	With F.P.S. bricks	10.00	Each	14146.42	141464.20
12.05.4	Providing & fixing gunmetal gate valve with CI wheel of approved quality-screwed end complete as required.				
(i)	65 mm dia	8.00	Nos	5429.00	43432.00
(ii)	100 mm dia	10.00	Nos	17196.00	171960.00
12.05.5	Providing & fixing bronze pressure release valve of approved quality complete as required.				
(i)	50 mm dia	3.00	Nos	5989.00	17967.00
(ii)	65 mm dia	1.00	Nos	11368.00	11368.00
(iii)	100 mm dia	8.00	Nos	35026.00	280208.00
12.05.6	Excavating trenches of required width for pipes, cables etc. including excavation for sockets and dressing of sides, ramming of bottom depth upto 1.5 M including getting out the excavated soil (HARD OR SOFT) and then returning the soil as required in layers not exceeding 20 cms in depth including consolidating each deposited layer by ramming, watering etc. and disposing of surplus excavated soil as directed within a lead of 50m. [hard/Dense soil]				
	Ordinary rock				
	Pipes,cables etc.exceeding 80mm dia.but not exceeding 300mm dia.	1180.00	Mtr	703.06	829610.80
TOTAL CARRIED OVER TO SUMMARY					2665720.56

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
12.06	External Sewer Drainage				
12.06.1	Providing, laying, jointing glazed stoneware pipes grade 'A' with stiff mixture of cement mortar in the proportion of 1:1 (1 cement;1 fine sand) including testing of joints etc. complete: 200 mm dia	425.00	Mtr	696.40	295970.00
12.06.2	Providing and laying cement concrete 1:5:10 (1 cement:5coarse sand:10 graded stone aggregate 40mm nominal size) all-round S.W. pipes including bed concrete as per standard design. 200 mm dia	425.00	Mtr	1021.30	434052.50
12.06.3	Providing and fixing square-mouth S.W. gully trap grade 'A' complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame of 300x300 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 :				
(i)	150x100 mm size P type with F.P.S. bricks of class designation 75.	4.00	Each	2031.90	8127.60
(ii)	180x150 mm size P type with F.P.S. bricks of class designation 75.	4.00	Each	2112.74	8450.96
12.06.4	Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand),in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation cocreate 1:3:6 mix (1 cement :3 coarse sand : 6 graded staone aggregate 40 mm norminal 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:				
	0.91 m deep with S.F.R.C 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):				
	With Sewer. bricks conforming IS:4885	14.00	Each	9674.39	135441.46
12.06.5	Extra depth for circular type manhole 0.91 m internal dia (at bottom) with beyond 0.91m to 1.67m				
(i)	With Sewer. bricks conforming IS:4885	4.96	Mtr	5676.53	28155.59
12.06.6	Constructing brick masonry circular type manhole 1.22m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand),in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation cocreate 1:3:6 mix (1 cement :3 coarse sand : 6 graded staone aggregate 40 mm norminal 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:				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	1.68 m deep with S.F.R.C 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):				
	With Sewer. bricks conforming IS:4885	7.00	Each	18636.30	130454.07
12.06.7	Extra depth for circular type manhole 1.22 m internal dia (at bottom) with beyond 1.68m to 2.29m:				
	With Sewer. bricks conforming IS:4885	10.00	Mtr	7366.87	73668.70
12.06.8	Providing M.S. foot rest including fixing in manholes with 20x20x10 cm cement concrete blockes 1:3:6 (1 cement: 3 coarse sand:6graded stone aggregate 20 mm nominal size) as per standard design:				
	With 20 mm diameter bar	115.00	Each	336.43	38689.45
12.06.9	Excavating trenches of required width for pipes, cables etc. including excavation for sockets and dressing of sides, ramming of bottom depth upto 1.5 M including getting out the excavated soil(HARD OR SOFT) and then returning the soil as required in layers not exceeding 20 cms in depth including consolidating each deposited layer by ramming, watering etc. and disposing of surplus excavated soil as directed within a lead of 50m. [hard/Dense soil]				
	All kind of soil				
	Pipes,cables etc.exceeding 80mm dia.but not exceeding 300mm dia.	425.00	Mtr	319.33	135715.25
12.06.10	Extra for excavating trenches for pipes, cables etc. in all kinds of soil for depth exceeding 1.5m,but not exceeding 3 m.(Rate is over corresponding basic item for depth up to 1.5 metre).	240.00	Mtr	405.33	97279.20
TOTAL CARRIED OVER TO SUMMARY					1386004.78
12.07	External Rain Water Disposal				
12.07.1	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:				
(i)	150mm dia RCC pipe	428.60	Mtr	405.61	173844.45
(ii)	200mm dia RCC pipe	288.50	Mtr	661.50	190842.75
(iii)	300mm dia RCC pipe	165.00	Mtr	757.25	124946.25
12.07.2	Providing and laying cement concrete 1:5:10 (1 cement:5coarse sand:10 graded stone aggregate 40mm nominal size) up to haunches of pipes including bed concrete as per standard design.				
(i)	150mm dia RCC pipe	429.00	Mtr	551.77	236709.33
(ii)	200mm dia RCC pipe	289.00	Mtr	648.57	187436.73
(iii)	300mm dia RCC pipe	165.00	Mtr	871.23	143752.95

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
12.07.3	Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand),in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation cocrete 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:				
	0.91 m deep with S.F.R.C 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):				
	With Sewer. bricks conforming IS:4885	21.00	Each	9674.39	203162.19
12.07.4	Extra depth for circular type manhole 0.91 m internal dia (at bottom) with beyond 0.91m to 1.67m				
	With Sewer. bricks conforming IS:4885	6.30	Mtr	5653.96	35591.68
12.07.5	Constructing brick masonry circular type manhole 1.22m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand),in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation cocrete 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:				
	1.68 m deep with S.F.R.C 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):				
	With Sewer. bricks conforming IS:4885	11.00	Each	18636.30	204999.30
12.07.6	Extra depth for circular type manhole 1.22 m internal dia (at bottom) with beyond 1.68m to 2.29m:				
	With Sewer. bricks conforming IS:4885	11.73	Each	7366.87	86376.55
12.07.7	Making connection of drain or sewer line with existing manhole , including breaking into & making good the walls ,floors with cement concrete 1:2:4 mix (1 cement :2 coarse sand :4 graded stone aggregate 20mm nominal size) cement plastered on both sides with cement mortar 1:3 (1 cement :3 coarse sand) finished with floating coat of neat cement & making necessary channels for the drain etc. complete.				
	For Pipes 350 to 450 mm diameter	1.00	Each	907.88	907.88

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
12.07.8	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 :				
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	50.00	Each	4567.34	228367.00
12.07.9	Excavating trenches of required width for pipes, cables etc. including excavation for sockets and dressing of sides, ramming of bottom depth upto 1.5 M including getting out the excavated soil(HARD OR SOFT) and then returning the soil as required in layers not exceeding 20 cms in depth including consolidating each deposited layer by ramming, watering etc. and disposing of surplus excavated soil as directed within a lead of 50m. [hard/Dense soil]				
	All kind of soil				
(i)	Pipes,cables etc.exceeding 80mm dia.but not exceeding 300mm dia.	882.10	Mtr	319.33	281680.99
(ii)	Extra for excavating trenches for pipes, cables etc. in all kinds of soil for depth exceeding 1.5m,but not exceeding 3 m.(Rate is over corresponding basic item for depth up to 1.5 metre).	260.00	Mtr	405.55	105443.00
12.07.10	Providing M.S. foot rest including fixing in manholes with 20x20x10 cm cement concrete blockes 1:3:6 (1 cement: 3 coarse sand:6graded stone aggregate 20 mm nominal size) as per standard design:				
	With 20 mm diameter bar	160.00	Each	336.43	53828.80
12.07.11	Constructing Brick masonry Square/circular rain water harvesting tank of size exact as per site / service drawing, including providing of filtration bed media in harvesting tank in different layers - 0.5mm thick sand of 1.5 to 2.0m size (4 Cum), 0.5mm thick gravel of 5-10mm size (4 Cum), 0.5mm thick boulders of 5-15mm size (4 Cum) in storm water collection tank including 160mm dia UPVC perforated pipe upto required depth below subsoil water table complete as per standard design.	7.00	Nos	369357.00	2585499.00
	Boring Size-300 mm Dia,Chamber size- 4m X 3mX 3 m deep.				
TOTAL CARRIED OVER TO SUMMARY					4843388.85
12.08	Water Treatment Plant				
	Providing and fixing horizontal / vertical single/multistage centrifugal pumping set with CI connections, SS impeller, stainless steel shaft and induction motor mounted on common base frame, vibration eliminating pads accessories complete as per specifications. Motor to be suitable for 415 Volts				
	+ 10%, 3 phase 50 Hz. A/C supply.				
	APPROVED MAKES OF INSTALLERS-NETSOL,BRIZANSIA,EUREKA FORBES.				
	Filter Feed Pumps (1 Working + 1 Stand By) = 1SET				
12.08.1	Supply, Installation , testing and commissioning of (Type of pump)-Horizontal Multi-stage centrifugal pump with axial suction port and radial discharge port with a three phase motor, mounted on a common baseplate.	1.00	Set	456920.00	456920.00

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	Location - Plant Room				
	Capacity - 660 LPM				
	Head - 30 M.				
	RPM - 2900				
12.08.2	Supply, Installation , testing and commissioning of Softner-Feed Pumps (1 Working + 1 Stand By) = 1SET	1.00	Set	226724.00	226724.00
	Location - Plant Room				
	Capacity - 350LPM				
	Head - 30 M.				
	RPM - 2900				
12.08.3	Supply, Installation , testing and commissioning of Domestic Transfer Pump With VFD	1.00	Set	947326.00	947326.00
	Location - Plant Room (1 Working + 1 Stand By) = 1SET				
	Capacity - 210LPM.				
	Head - 65 M.				
	RPM - 2900				
12.08.4	Supply, Installation , testing and commissioning of Soft Water transfer Pumps (1 Working + 1 Stand By)= 1SET	1.00	Set	269554.00	269554.00
	Capacity - 250 LPM.				
	Head - 65 M.				
	RPM - 2900				
12.08.5	Supply, Installation , testing and commissioning of Flushing water transfer PUMP with VFD	1.00	Set	760547.00	760547.00
	Location - STP Plant Room (1 Working + 1 Stand By) = 1set				
	Capacity - 135LPM.				
	Head - 65 M.				
	RPM - 2900				
12.08.6	Sumersible drainage Pumps vertical stage S.S. pump with float type controller automatic operation required flow rate per hour,required head, submersible type, suitable for clear water drainage & 30 mm solid handling capacity complete with motor, control panel , submersible cable, built in suction strainer, bottom support frame and dual plate type NRV's as required. -				
12.08.6 (i)	Location - Basement Drainage (Each set consist of 1 No. working pump and 1 No. of Stand by Pump)	3.00	Set	253018.00	759054.00
	Capacity - 475 LPM				
	Head - 16 M.				
	RPM - 2900				
12.08.6 (ii)	Location - STP plant room Drainage (1 Working + 1 Stand By) =1set	1.00	Set	230090.00	230090.00
	Capacity - 115 LPM				
	Head - 16 M.				
	RPM - 2900				
12.08.6 (iii)	Location - Sewage (cutter type)Sump (1 Working + 1 Stand By)= 1 set	1.00	Set	230090.00	230090.00
	Capacity - 150 LPM				
	Head - 12 M.				
	RPM - 2900				
	Note :				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	The Motor HP to be confirmed by the manufacturer for the duty mentioned for each pump alongwith performance characteristic curve.				
	The Motor of pumps shall be suitable for operation with variable frequency drives system.				
12.08.7	The following Automation and instrumentation including supply, installation, testing and commissioning of all sensors, relays, level controller/switches, level indicators etc. Relays/Modules and wiring for completely functional system.				
	For Automatic switching ON-OFF of following pumps:				
12.08.7 (i)	Raw water pumps from Level Controller (four level float type) installed in Filter Water Tank.	4.00	Each	2136.00	8544.00
12.08.7 (ii)	Tubewell pumps from Level Controller (four level float type) installed in Raw Water Tank including Dry Run Preventor for each of the above pumps by providing Low level sensor in the three tank viz Raw Water tank, Filter water tank and Soft water tank.	4.00	Each	2136.00	8544.00
12.08.8	Regulation of Pumps includes cut in, cut-outs, switching ON-OFF pumps based on requirements.				
	Water Level Indicator				
12.08.8(i)	Side mounted Magnetic float type with fluorescent indication properly protected for Underground tank.	8.00	Each	12132.00	97056.00
12.08.8(ii)	Flow switches for inter locking of Chlorine Dosing Pump with Hydropneumatic filter water supply pump.	1.00	Each	3904.00	3904.00
12.08.8 (iii)	Providing and fixing cast iron dual plate type non-return valve (as per Technical specification) including nuts, bolts, 1.5mm thick CAF gasket sheets complete in all respects (PN 16)				
	40 NB	4.00	Each	5240.00	20960.00
12.08.9	Providing and fixing Pressure Reduce value from 6.kg/cm ² to 4kg/cm ² as per IS, including nuts and bolts complete in all respects.				
12.08.9(i)	32 dia	2.00	Each	5200.00	10400.00
12.08.9(ii)	40 dia	1.00	Each	5293.00	5293.00
12.08.10	Providing and fixing standard dial type pressure gauge dia 100 mm with screwed inlet with isolation cock suitable for liquid gauge to show pressure upto: Make - Guru				
12.08.10 (i)	(0-10) Kg/Sq.cm	8.00	Each	1480.63	11845.04
	Water Filtration Units				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
12.08.11	The Multi-grad filter shall be constructed of M.S. material with inner shell of integrated polyethylene, polypropylene and other material as per manufacturer's standard. The inter distribution system and the underbed draw off system shall be of Hub & Lateral type of polypropylene material. The filter shall be provide with manhole cover, hand hole, flanged outlet for piping/valve connection and adequate tripod with skid self supporting structure for making the installation completed. The filter shall also be provided with vacuums breaking connection / accessories to avoid any collapse of internal lining. All filters shall be provided with lifting lugs and making the installation completed as required. Flow Rate : 40.0 m3 / h FOR 10 hr Rate of Flow not to be exceed : 18 Cu.M/Hr/Sq.M.	1.00	Set	503412.50	503412.50
	Water Filtration Units				
12.08.12	The Activated carbon filter shall be constructed of M.S. material with inner shell of integrated polyethylene, polypropylene and other material as per manufacturer's standard. The inter distribution system and the underbed draw off system shall be of Hub & Lateral type of polypropylene material. The filter shall be provide with manhole cover, hand hole, flanged outlet for piping/valve connection and adequate tripod with skid self supporting structure for making the installation completed. The filter shall also be provided with vacuums breaking connection / accessories to avoid any collapse of internal lining. All filters shall be provided with lifting lugs and making the installation completed as required. Flow Rate : 40.0 m3 / h FOR 10 hr Rate of Flow not to be exceed : 18 Cu.M/Hr/Sq.M.	1.00	Set	493320.56	493320.56
	Chemical Dosing Unit				
12.08.13	Medium pressure synchronous motor type chemical dosing pump with noryl Plastic body and PVC parts, dispensing valves, foot valves, relief valves, mounting plate, chemical tank of 250 litre capacity complete.				
	Capacity 0-6 LPH at pressure head of 40 MWC..	1.00	Set	23690.00	23690.00
	Softener Unit				
12.08.14	The filter shall be constructed of FRP material with inner shell of integrated polyethylene, polypropylene and other material as per manufacturer's standard. The inter distribution system and the underbed draw off system shall be of Hub & Lateral type of polypropylene material. The filter shall be provide with manhole cover, hand hole, flanged outlet for piping/valve connection and adequate tripod with skid self supporting structure for making the installation completed. The filter shall also be provided with vacuums breaking connection / accessories to avoid any collapse of internal lining. All filters shall be provided with lifting lugs and making the installation completed as required. Softner-unit will be with pumpset with Flow Rate :21 m3/hr. OBR-10 HR.,Hardness for design=600ppm(or as per water test)	1.00	Set	621862.50	621862.50
	Regeneration Tank/Salt Dilution Tank				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
12.08.15	FRP construction of suitable capacity tank to store and measure brine for regeneration of softening plant. Tank to be complete with interconnecting MS/HDPE pipe and other assembly required for commissioning. Salt Dilution Tank shall be provided with structural support of suitable dimensions for proper operating space at height of 1500mm.				
12.08.15 (i)	Brine Measuring Tank - 200 litres capacity	1.00	Set	5922.50	5922.50
12.08.15 (ii)	Salt Dilution Tank - 1000 litres capacity	1.00	Set	29612.50	29612.50
12.08.16	Providing & fixing solenoid valve with electrical control panel to operated 24 v ac,50 Hz solenoid valves,solenoid valves,float valve for overhead tanks.	6.00	Each	5949.00	35694.00
12.08.17	Providing & fixing butterfly valve tested to a pressure of 15 Kg/Sq.cm. Including rubber gasket, flanges, nuts, bolts, washers & painting complete as required.				
(i)	65 mm dia	5.00	Each	1396.85	6984.25
(ii)	80 mm dia	5.00	Each	1514.77	7573.85
(iii)	100 mm dia	10.00	Each	2086.31	20863.10
(iv)	150 mm dia	15.00	Each	2653.12	39796.80
12.08.18	Providing & fixing cast iron Slim seal dual type non-return valves (PN 16) complete with matching flanges, rubber insertion, nuts, bolts and washer complete as required.etc. of following sizes.				
(i)	65 mm dia	5.00	Each	3422.00	17110.00
(ii)	80 mm dia	5.00	Each	4051.00	20255.00
(iii)	100 mm dia	6.00	Each	5490.00	32940.00
(iv)	150 mm dia	2.00	Each	9245.00	18490.00
12.08.19	Water Supply Pumps Panel				
A	INCOMER				
i)	2 Nos. 160A TPN MCCB (35 KA)				
B	METERING & INDICATION				
i)	1 set of R,Y,B phase indicating lamps				
ii)	Digital Multifunction meter for Voltage, Current & KW with selector switch. Each with 3nos. Of 2A SP MCB & 3nos 125/5A CTs (125A/500V) rating.				
C	BUS-BAR				
i)	1 Set of 200A TPN Aluminium Bus Bar with colour coded PVC Sleeves				
D	OUTGOINGS				
i)	4 Nos. 40A/63A TP MCB (10 KA) C curve				
ii)	5 Nos. 20A/25A/32A TP MCB (10 KA) C curve				
iii)	6 Nos. 16A/25A/32A TPN MCB (10 KA) C curve				
iv)	2 Nos. 16/25/32A DP MCB (10 KA) C curve				
v)	2 Nos. S/D starter with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 12.5 HP Motor.				
vi)	2 Nos. S/D starter with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 10 HP Motor.				
vii)	2 Nos. DOL starter with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 7.5 HP Motor.				
viii)	2 Nos. space for DOL starter with self illuminated Push button for ON & OFF.				
	Supply of Water Pump Panel as described above.	1.00	Set	325737.50	325737.50
12.08.20	Receiving, fixing, testing & commissioning of Water Pump Panel as described above	1.00	Set	10000.00	10000.00
	Note:				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
1	The rating of all switchgear must match the HP of all pumps quoted and 20% space for spare to be kept in the panel.				
2	Item to be operated after confirmation from Project Manager				
12.08.21	Supply and making end termination with brass compression gland and aluminum lugs for following size of PVC insulated and PVC sheathed/ XLPe aluminum conductor cable of 1.1 grade required.				
	3C x 10 sq.mm	54.00	Nos	206.00	11124.00
12.08.22	Earthing work				
(i)	Providing and fixing of 6 SWG dia GI wire on surface or in recess for loop earthing as required.	250.00	Mtrs.	37.00	9250.00
(ii)	Providing and fixing of 25x5mm GI strip on surface or in recess for connections etc. as required.	250.00	Mtrs.	129.00	32250.00
12.08.23	Supplying and installing following size of perforated pre-painted M.S. cable trays with perforation not more than 17.5% joined with connectors,suspended from the ceiling with M.S. suspenders including bolts & nuts,painting suspenders etc as required.				
(i)	300 mm width X 50mm depth X 1.6mm thickness	120.00	Mtrs.	526.00	63120.00
(ii)	150 mm width X 50mm depth X 1.6mm thickness	75.00	Mtrs.	393.00	29475.00
(iii)	100 mm width X 50mm depth X 1.6mm thickness	50.00	Mtrs.	348.00	17400.00
12.08.24	Supply, and fixing of following size of steel, conduits 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.				
(i)	20 mm dia-	125.00	Mtrs.	126.00	15750.00
(ii)	25 mm dia-	65.00	Mtrs.	147.00	9555.00
12.08.25	Supply and drawing following sizes of FR PVC insulated copper conductor , single core cable in the existing surface/ recessed steel/ PVC conduit as required.				
(i)	1.17.3 3 x 1.5 sq.mm.	50.00	Mtrs.	50.00	2500.00
(ii)	1.17.4 4 x 1.5 sq.mm.	50.00	Mtrs.	64.00	3200.00
(iii)	1.17.7 7 x 1.5 sq.mm.	50.00	Mtrs.	114.00	5700.00
12.08.26	Supply and making end termination with brass compression gland and aluminum lugs for following size of PVC insulated and PVC sheathed/ XLPe aluminum conductor cable of 1.1 grade required.				
(i)	3C x 16 sq.mm	16.00	Nos	202.00	3232.00
(ii)	3C x 50 sq.mm	14.00	Nos	286.00	4004.00
(iii)	3C x 70 sq.mm	6.00	Nos	361.00	2166.00
	Note:-				
	The Bidders should read the technical specifications carefully before quoting as some of the details/specifications may not be apparent from the above BOQ.				
	TOTAL CARRIED OVER TO SUMMARY				6468842.10
12.09	SEWAGE TREATMENT PLANT, Capacity :200 KLD.				
A	Preliminary Works				
	Shop Drawings.				
	Detailed GA drawing, flow diagram, equipment list, power load requirement complete job				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	Design, calculations of all elements of the plant, electrical and mechanical work to satisfy adequacy of design-complete Job				
	Submission of detailed GOOD FOR CONSTRUCTION' stage architectural, structural, construction, electrical, mechanical and piping drawing for approval - complete Job				
	APPROVED MAKES OF INSTALLERS-NETSOL,BRIZANSIA,EUREKA FORBES/ Any other reputed manufacturer as approved by Employer				
B	Sewage Treatment Plant				
	Design, Supplying, Installing, Testing & Commissioning of Sewage Treatment Plant capacity 200KLD. The plant proposed shall be 200 kld with a main pump room. The plant is proposed to be installed in the Under-ground from the pump room itself for future maintenance. Opening shall be provided on above for this purpose, for the following :				
	Nature of effluent - Domestic Sewage from Toilet use and kitchen waste,washing waste water.				
	Daily average flow - 200 Cum / Day				
	pH - 6.5 - 8.5				
	BOD5 - upto 250-450 Mg/L				
	S. Solids - 250 - 400 Mg/L				
	COD - upto 450-600 Mg/L				
	Oil & Grease - 50 Mg / L				
	Effluent discharge standard after treatment				
	pH - 6.5 - 8.5				
	BOD5 - Less than 30 Mg/L				
	S. Solids - Less than 10 Mg/L				
	COD - Less than 100 Mg/L				
	Oil & Grease - Nil				
	Note: The limits mentioned above are indicative only. However, the limit prescribed by CPCB as per latest norms applicable for STP in Ludhiana, Punjab shall be strictly followed.				
	Sewage treatment plant shall include the following items:				
	Screen Chamber				
	Sewage equalization tank/sump				
	MBBR(FAB) Tanks				
	Settling/ Clarifier Tank				
	Clear Water tank				
	Softener Feed PUMPS				
	Soft Water tank				
	Sludge Holding Tank				
	Plant Room Sump				
	Filtration through MGF & ACF,softner				
	Air Blowers, Pumps & equipment,filter press.				
	Piping, valves etc				
	Electrical Panel & Cabling				
	Common plant room adjacent to STP.				
	All piping, valves & level indicator/controller etc. within plant room.				
C	Supply, installation, testing & commissioning of 2 Nos Stainless Steel Perforated Screen with suitable lifting arrangement (size 600 mm wide x 1200 mm high approx) - 1 Set				
D	Supply, installation, testing & commissioning of electronic type level indicator and controller for automatic operation of the system with high/low level alarm complete with auxiliary NO/NC contacts. - 1 Set				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	Contractor shall ensure submission of detailed GA drawings (Plan & Section), P & I diagram, schematic diagram for the above mentioned components and additional components such as inserts, puddle flanges, vent pipes etc. if so required for the complete work.				
E	Supply, installation, testing & commissioning of non clogging type pumps, having C.I. casing & bronze impeller complete with all accessories, motor of required capacity. Delivery header with isolation valve, pressure gauge on delivery line with isolation cock level controller with wiring to control the level of sump automatically. Pump shall have following duty.				
	Submersible Transfer Pumps (2 Nos. - One working & one standby)				
	(Solid handling Cap. 38 mm)				
	Flow rate (each) = 8 m ³ / hr				
	Head = 10-12 Mtr				
F	Plant room sump pump 2 Nos (1 working + 1 standby) .				
	Flow rate = 2.0 cum/hr				
	Head = 10-12 Mtr				
	(Solid handling size for this pump shall be 15 mm).				
G	Mono block centrifugal Sludge Transfer Pumps (2 Nos. - One working & one stand by) Make: Kirloskar / Equivalent.				
	(Solid handling cap. 10 mm)				
	Flow rate (each) = 8 m ³ / hr				
	Head = 8-10 Mtr				
	Cost shall be inclusive of PVC flexible Hose pipe (for piping submerged in effluent) with M S epoxy piping (for piping non-submerged in effluent)				
	Provision of guide ropes to guide submersible pump from upper level to operational level in sump basin with channels / angle section of MSEP shall be made by the STP contractor.				
H	Air diffusion system shall include the following:				
	Twin type rotary air blowers (one working & one standby) capable of delivering 150 cum/hr (each) of free air at 0.5 kg/cm ² driven through "V" belt or directly coupled through flexible coupling to a TEFC motor of suitable HP Suitable for 415 ± 10% volts, 3 phase, 50 cycles a/c supply -				
I	Air piping shall comprise of pipes droppers/ laterals with M S (epoxy coated) Header complete with all fittings such as tees, crosses, plugs, sockets, elbows, reducers, supports & clamps, puddle flanges etc cutting chases & making good - Complete job				
J	Non clog type air dispersion system capable of handling 3-5 cfm of air with oxygen transfer efficiency of 3-4% per/meter water depth. Air dispersion grid shall be assembled in modular form so that they can be replaced / repaired				
	Fine bubble diffusers				
a)	For equalization tank -1 No.				
b)	For sludge holding tank - 1 No.				
c)	Reactor tank - 1 No.				
Note :	Air dispersion system shall be provided for Equalization Tank, Sludge holding Tank and reactor Tank.				
K	Providing and fixing all piping (as described below) and isolation control valves for making the system complete.				
	SS 304 :Submerged air piping				
	MS Epoxy : Air piping				
	PVC piping :Pumped effluent & tank overflow pipe line - 1 Job				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
L	Supply, installation, testing and commissioning of 8.0 cum Fludised Media for Aeration Tank (FAB Media) Make - Cooldeck/Equivalent				
M	Supply, installation, testing and commissioning of Bowl type Centrifuge 1-2m ³ /hr Make Hiller with screw feed pumps for required capacity (1Working+1Standby), with interconnecting piping and poly dosing system all complete.				
N	Supplying, installing, testing & commissioning of centrifugal vertical / horizontal filter feed water pumps C.I. Body, bronze impeller with mechanical seal along with motor. Pressure gauge with isolation cock, NRV, Isolation valve on delivery line. Isolation valve, strainer at suction. The pump shall be suitable for 415 ± 10% volts, 3 phase, 50 cycles a/c supply.				
	Capacity :12 M ³ /hr.				
	Head : 30 M				
	No. of Pumps (1 working + 1 standby)				
M	Supplying, installing, testing & commissioning of centrifugal vertical / horizontal Softener Feed pumps C.I. Body, bronze impeller with mechanical seal along with motor. Pressure gauge with isolation cock, NRV, Isolation valve on delivery line. Isolation valve, strainer at suction. The pump shall be suitable for 415 ± 10% volts, 3 phase, 50 cycles a/c supply.				
	Capacity :6 M ³ /hr.				
	Head : 25 M				
	No. of Pumps (1 working + 1 standby)				
Note:	Operation of pump shall be based on level controller proposed to be installed in tank as per site location. The contractor to ascertain the Head required for pumps as per site conditions and provide accordingly.				
N	Supplying, installing, testing and commissioning of MS vessel filter with frontal piping and associated valves and accessories . Filter shall be suitable for a minimum working pressure of 3.0 kg / cm ² and shall include media, standard fittings like pressure tight manholes, initial charge of media, raw water distributor, under drain system, face piping, pressure gauges etc.,				
	The Multi-grad filter shall be constructed of M.S material with inner shell of integrated polyethylene, polypropylene and other material as per manufacturer's standard. The inter distribution system and the underbed draw off system shall be of Hub & Lateral type of polypropylene material. The filter shall be provide with manhole cover, hand hole, flanged outlet for piping/valve connection and adequate tripod with skid self supporting structure for making the installation completed. The filter shall also be provided with vacuums breaking connection / accessories to avoid any collapse of internal lining. All filters shall be provided with lifting lugs and making the installation complete set as required -				
	Flow rate : 12 cum/hr				
	Filter Diameter : A/D mm. 2400 Dia Height 2800 mm				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
O	The Activated Carbon filter shall be constructed of M.S material with inner shell of integrated polyethylene, polypropylene and other material as per manufacturer's standard. The inter distribution system and the underbed draw off system shall be of Hub & Lateral type of polypropylene material. The filter shall be provide with manhole cover, hand hole, flanged outlet for piping/valve connection and adequate tripod with skid self supporting structure for making the installation completed. The filter shall also be provided with vacuums breaking connection / accessories to avoid any collapse of internal lining. All filters shall be provided with lifting lugs and making the installation complete set as required.				
	Flow rate : 12 cum/hr				
	Filter Diameter : A/D mm.2400 Dia Height 2800 mm				
P	The Softner shall be constructed of M.S. material with inner shell of integrated polyethylene, polypropylene and other material as per manufacturer's standard. The inter distribution system and the underbed draw off system shall be of Hub & Lateral type of polypropylene material. The filter shall be provide with manhole cover, hand hole, flanged outlet for piping/valve connection and adequate tripod with skid self supporting structure for making the installation completed. The filter shall also be provided with vacuums breaking connection / accessories to avoid any collapse of internal lining. All filters shall be provided with lifting lugs and making the installation completed as required. With SS salt-saturator & Moter.(softner for cooling tower water) - complete set as required as detailed below				
	Flow Rate :6 cum/hr				
	OUT-Put water hardnes- zero				
	Reg.time-10 hr.				
	(Incoming Hardness 300mg/lit (Approx))				
	Working Pressure 3.0 Kg/Cum				
	Outgoing hardness less than 50 ppm				
	Water Softening plant as described above				
Q	Supply, installation, testing and commissioning of Filter Press of plate size 30"x 30" x 35 Nos plate with screw feed pumps for required capacity (1Working+1Standby), with interconnecting piping system all complete job as required.				
	Electrical Installation				
R	Design, fabrication, assembling, wiring, supply, installation, testing and commissioning of motor control centre fabricated out of 14 gauge CRCA sheet steel. Cable gland plates shall be provided on top as well as at the bottom of the panels. Panels shall be treated with all anticorrosive process before painting as per specifications with 2 coats of red oxide primer and final approved shade of powder coated paint. 2 Nos. earthing terminals shall be provided for 3 phase, 4 wire, 50 Hz supply system. Lifting hooks shall also be provided in case of large panels. Approval shall be taken for each panel before fabrication. Quoted rates shall be inclusive of cables (in accordance to specification) with earthing from panel to each motor / equipment.				
	Motor Control Centre				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	Incoming				
	200 amps TPN MCCB with the following accessories:				
a)	0-500 volts 96 x 96 mm square electronic voltmeter with selector switch shall be protected by 2 amps TP MCB. 1 Set				
b)	0-100 amps 96 x 96 mm square electronic ammeter with selector switch and 100./5 amps 10 VA CL:1 CTs. 1 Set				
c)	Phase indicating lamps shall be protected by 2 amp SP MCB 3 Sets				
	Bus Bar				
	200 amps TPN (15 KA) copper bus bar with heat shrinkable insulation sleeves.				
a)	a. Required Nos of required capacity TPN MCB for direct on line starter/star delta starters and out going feeders to all the pumps/blowers etc. (including standbys). Each compartment shall contain auto / manual selector switch and indicating lamp with MCB's for 'ON/OFF/TRIP' status of motor				
b)	Spare MCB's of following capacities:				
i.	32 amps TPN MCB's 3 Nos.				
c)	Necessary cable alleys, internal / cabling, wiring, cabling from MCC to various pumps / equipment and interlocking, earthing for all equipment shall also included				
	Notes :-				
a)	All MCCBs / MCBs shall be of 15 KA breaking capacity and suitable for motor duty application.				
b)	All motor starters shall be provided with Automatic level controller				
c)	DOL starters shall be used for motors below 7.5 HP and Star-Delta Starters for other motors .				
d)	Provision shall be made for providing potential free contacts to all pumps starters				
S	MCC for all STP equipments/pumps as described in sub head II - 1 Job				
	Maintenance of Sewage Treatment Plant				
	To operate the entire STP under available load conditions for a period of 30 days on round the clock basis after commissioning before handing over the same. This period is exclusive of Defect Liability period. Nothing shall be paid extra on this account.				
T	To provide services of contractors expert operating personal comprising of :				
a)	One Supervisor 4 hrs Three times a week.				
b)	One Plant operator one per shift in three shifts.				
c)	One helper for general maintenance and assistance. One per shift in three shifts.				
U	Company's back up services of senior engineers and experts for any major problems, general check up and maintenance and advise. Once a week for 2 hours minimum more or more if required.				
V	All tools, equipment and testing devices to be provided by the contractor.				
X	Consumable including lubricants and chemicals will be provided by Owners.				
	TOTAL CARRIED OVER TO SUMMARY FOR COMPLETE JOB UNDER HEAD 12.09	1.00	JOB	4864250.00	4864250.00
12.10	Borewell				

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
	Boring/drilling bore well of required dia for casing/strainer pipe, by suitable method prescribed in IS:2800 (Part-1) 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, up to 90 mtr depth below ground level.				
	All types of Soil				
12.10.1	400 mm Dia	300.00	MTR	628.84	188652.00
	Supplying,assembling,lowring 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, fitting & accessories etc.all complete,for all depths,as per direction of Engineer-in-charge.				
12.10.2	200 mm nominal size dia	300.00	MTR	934.71	280413.00
12.10.3	Gravel packing in tubewell construction in accordance with IS4097,including providing gravel fine/medium/corse,in required grading,& sizes as per actual requirement, all complete as per direction of Engineer-in-charge.	50.00	Cum	1313.18	65659.00
12.10.4	Providing and fixing factory made precast RCC perforated drain covers, having concrete of strenth not less than M-25,of size 1000x450x50 mm, rein forced with 8 mm dia four nos longitudinal &9 nos cross sectional T.M.T. hoop bars, including providing 50 mm dia perforations @ 100 to 125 mm c/c,including providing edge binding with M.S. flats of size 50mmx1.6 mm complete,all as per direction of Engineer-in-charge.	4.00	Each	1061.67	4246.68
12.10.5	Devlopment of tubewell in accordance with IS:2800 (part1) and IS:11189,to establish maximum rate of usable water yield without sand content (beyond permissible limit),with required capacity air fully developed,measuring yield of well by "v" notch method or any other approved method, measuring static level & draw down etc. by step draw down method,collecting water samples & getting tested in approved laboratory, i/c disinfection of tubewell,all complete,including hire & labour charges of air compressor,tools & accessories etc.,all as per requirement and direction of Engineer-in-charge.	4.00	Hours	751.94	3007.76
12.10.6	Providing and fixing suitable size threaded mild steel cap or spot welded plate to the top of bore well housing/casing pipe,removable as per requirement,all complete for borewell of				
	200 mm dia	4.00	each	246.34	985.36
12.10.7	Providing and fixing M.S. clamp of required dia to the top of casing/housing pipe of tubewell as per IS:2800 (part1),including necessary bolts& nuts of required size complete.				
	200 mm dia	4.00	each	1482.80	5931.20
12.10.8	providing and fixing bail plug/ Bottom plug of required dia to the bottom of pipe assembly of tubewell as per IS:2800 (part I)				
	200 mm dia	4.00	each	269.84	1079.36

T.I.	DESCRIPTION OF ITEMS	QTY.	UNIT	RATE (Rs.)	AMOUNT (Rs.)
12.10.9	Supply of KSB/Kirlosker make submersible pumping set with 7.5 HP motor pump. Capacity of pump = 22000 lph Head - 58 M. RPM - 2900	4.00	Nos	136543.24	546172.96
12.10.10	Panel Board for submersible pump Fitted with DOL starter ammeter, voltmeter single phase preventer standard/ indo/ cop make MCB on off switch push button duly wired and made out of 16/18 SWG sheet. FOR 7.5 HP.	2.00	each	48967.23	97934.46
12.10.11	6 sq.mm. 3 core from panel to submersible cable.	300.00	Mtr	425.64	127692.00
TOTAL CARRIED OVER TO SUMMARY					13,21,773.78

SUMMARY FOR SANITRAY WORKS & PLUMBING WORKS (INCL. INTERNAL, EXTERNAL, WTP, STP, BOREWELL ETC.)

S.H.N.	DESCRIPTION	AMOUNT
12.01	Sanitary Fixtures	2,01,45,430.70
12.02	Internal Drainage (Rainwater, Soil, waste & Fittings)	1,42,19,592.00
12.03	Internal Water supply	31,20,139.32
12.04	Miscellaneous Items	1,68,691.00
12.05	External Water Supply	26,65,720.56
12.06	External Sewer Drainage	13,86,004.78
12.07	External Rain Water Disposal	48,43,388.85
12.08	Water Treatment Plant	64,68,842.10
12.09	SEWAGE TREATMENT PLANT, Capacity :200 KLD.	48,64,250.00
12.10	Borewell	13,21,773.78
	Total Amount (Rs.)	5,92,03,833.09

SH 13 : ELECTRICAL WORKS (Internal, External, Data Cabling & UPS)
SH 13.A : EXTERNAL ELECTRICAL WORKS INCLUDING HT, ELECTRICAL SUBSTATION AND EXTERNAL LIGHTING

SH-13.A.1		66 KV H T SUBSTATION EQUIPMENTS			
		Please Note: The scope of work includes complete designing of the Sub-station, preparation of drawings, submission / approval of the same from statutory authorities i.e PSEB, Electrical Safety Deptt. Fire Safety Deptt etc as required and after Installation / commissioning of the same, final approval for energization of the Sub Station from the PSEB / Electrical Safety Deptt./ Fire Safety Deptt.etc. The work will be completed only after energization of the same by PSEB after getting all the approvals. All the statutory fees shall be reimbursed on production of proof of the same.			
S.No	Description of Item	Qty.	Unit	Rate (Rs)	Amount (Rs)
1	Main Equipment with 25mm/KV,31.5 KA for 3 sec				
a	SITC of 60 KV,10 KA GAPLESS TYPE, station class LIGHTNING ARRESTER Hermetically sealed with SURGE COUNTER & Monitor as per IS: 3070 and INSULATING BASE HAVING CREAPAGE OF 31 mm/KV.	6	Nos	34,497.00	2,06,982.00
2	66 KV ISOLATOR				
	72.5 KV, 800A ,3500 MVA,31.5 KA FOR 3 secs. DOUBLE BREAK,CENTER POST Rotating Motorised Isolator				
a	SITC of Outdoor type 72.5 KV , 800 A, 31.5 KA for 3 sec, DBR center post rotating motorised Isolator with earth switch including solid core post insulator.	1	Set.	4,47,178.00	4,47,178.00
3	Metering Bay				
a	66 KV current transformers				
	SITC of CURRENT TRANSFORMER (as per PSEB) outdoor type 72.5 KV , 31.5 KA for 3 sec, oil cooled, single phase live tank Hermetically sealed CT with ratio 75-1-1 Amps.	3	No.	1,41,587.00	4,24,761.00
	Core 1 : Class-0.2S, Burden : 30VA				
	Core 2 : Class-0.2S, Burden : 30VA				
	Core 3 : Class-0.2S, Burden : 30VA				
b	66 KV Potential transformer	3	No.	96,033.00	2,88,099.00
	SITC of Voltage Transformer (as per PSEB) for metering purpose.				
	Core 1: 66KV/ V3/ 110V/ V3 Class 0.2, 50VA/Ph				
	Core 2 : 66KV/ V3/ 110V/ V3 Class 0.2, 50VA/Ph				
c	SITC of Tri vector meter at 66 KV of accuracy class 0.2s with suitable metering cubical outdoor type as required. (as per PSEB norms). The rates includes submission of tri-vector meter at PSEB for necessary testing and further installation of the same complete as required.	2	No.	2,87,471.00	5,74,942.00
4	Supply, installation, testing and commissioning of outdoor type 72.5 KV, 1250A, 31.5KA / 3 Sec three pole and switch system single Busbar (Hybrid type) includes per bay comprise of following functionality.				
a.	single pole ring type current transformers positioned on bushings.				
	voltage tranformers.				

	b.	three pole Combined disconnecting cum earthing switch motorised and hand operated.(Isolator)				
	c.	1250A,31.5kA Circuit breakers(SF6 Type) three pole operating mechanism, spring type.				
	d.	One local Control cubical				
	e.	Electric diagram including interlocking system of plus and switch system module.				
	f.	Power Supplies and control signals cabling from pole equipment to local control cubical / Room(Multi cables Plug in Type) as required complete.				
	g.	Bushing made of Silicon rubber				
	h.	Supply of SF6 Gas if required.				
	i.	Crank for the spring charging of the CB drive. The disconnectors and the Earthing switch are combined and operated by means a common driving mechanism.	1	No.	72,88,645.00	72,88,645.00
	5	Transformer				
	i)	Supply, installation, testing and commissioning of out door type 8 MVA, 66/11 KV, 50 cycle 3 phase delta/delta or Star/Star or Delta / Star or Star / Delta as per PSEB requirement, Oil filled ONAF, double copper wound Transformer including automatic and manual On Load Tap Changer with RTCC and AVR, including all standard fittings, accessories and instruments complete as per specifications and as required. Transformer shall be provided with Open Air Bushing with Arching Horn on 66 KV suitable for Leopard conductor and 11 KV side cable box with alm gland plate for 2 x 1c x 400 Sqmm Al Ar XLPE (UE) cable. The transformer shall have 20% Voltage variation 16 steps with 4 taps on plus side & balance on minus side. The temp. rise shall be 40 degree in oil 50 degree in winding.				
		The transformer shall have magnetic oil level gauge with trip & alarm contacts, air cell conservator, surge relay with trip & alarm contacts, buckholz double float relay, winding temp. meter with trip & alarm contacts, oil temp. meter with trip & alarm contacts. The transformer losses shall be 10KW for NO Load (max. guaranteed), 60KW for Load Losses (max. guaranteed) and 2KW auxiliary losses for 8MVA rating during ONAF condition. This shall have neutral CT on LV star side with 2 neutral CT's ratio 200/1 PS class /5P20. The transformer will have aluminium gland plate on 11KV side for terminating single core 11KV (UE) cables. This installation shall include all supply, installation and termination of control cables between transformer OLTC & RTCC along with incoming cable for OLTC, lighting inside the marshalling box and from Main Electrical Control Room as required complete for complete operation and monitoring of the Transformer.	1	No	1,12,02,610.00	1,12,02,610.00
	6	Supply, installation, testing and commissioning of Nitrogen Injection Force Pressure system for above 66 / 11 KV Transformer as required and as per Fire Safety and Electrical Safety Department complete as required..	1	No	18,46,785.00	18,46,785.00
	7	66 KV CONTROL AND RELAY PANEL with Numerical relay				

		SITC of 66 kV Transformer Control and Relay Panel with Numerical (microprocessor-based) Protection Relays , 24-window Annunciator,REF,OC+F,Differential relay, Digital meters , TVM meter , and all standard accessories.,metering instruments accuracy class-0.5 compatible for Hybrid switchgear as above complete.	1	No.	15,38,988.00	15,38,988.00
	8	Other Station Aux Equipments				
		DC Charger and DCDB				
	A	SITC of 110V DC, 100AH , 25A , MF-VRLA , FLOAT CUM BOOST BATTERY CHARGER WITH SMF BATTERY BANK WITH INTEGRATED DCDB HAVING 63A DP MCB INCOMER WITH VOLTMETER AND 12 Nos. OUTGOING , 20A DP MCB suitable for 66 / 11 KV Substation as required complete.	1	Set	5,04,788.00	5,04,788.00
	B	SITC of Floor mounted ACDB for control room , I/C-160A MCCB,O/G-100Ax2,TPN-63x5+32x6,DP-32x4+20x6,SP-6Ax6 , Off line UPS 650VA ,220v -01 qty	1	No	1,53,899.00	1,53,899.00
	9	STEEL				
	a	Design, Supply, Fabrication and Installation of Galvanised lattice type steel Structure for towers, beams, equipment structures including fixing arrangement etc. welding, nut, bolts, clamps complete(The mentioned qty is indicative only, final payment shall be made as per measured qty as per approval of drawings from the Engineer Incharge). Pease note the rates are inclusive of foundation of required RCC of minimum grade M-25 for the above structures or as required complete. (Note for payment purpose only weight of Galvanised lattice type steel Structure shall be considered excluding fixing accessories such as nut, bolts, fasteners etc.)	20000	Kg	159.50	31,90,000.00
	10	Earthing Section				
		SITC of following components as required complete. EARTHING FOR 66 KV OUTDOOR SWITCHYARD as per IEEE-80 and IS 3043 as required. EARTHING STRIP 50x 6 GI for structures/equipment earthing as required. EARTHING STRIP 75x 10 GI for the main grid of switchyard. 600x600x6 mm COPPER PLATE electrode for transformer neutral. 50x6 mm COPPER STRIP for transformer earthing. Flexible copper earthing strips for equipment earthing. SHIELD WIRE (7/3.15 MM GSS Wire) FOR LIGHTNING PROTECTION including all required string type clamps and other accessories for striding the conductor on top of switchyard area as required. Any other GI or copper strip required apart from above for earthing purpose of switchgears / Towers etc. as required for complete substation. The required No and length of cable trays (Heavy Duty) of GI as required in the above substation complete.				

		Please Note: the rates are inclusive of required no.s of Earthing stations, GI and Copper earthing strips etc.as per Indian Elect. Rules / Elect. Safety Deptt / PSEB etc as required complete.	1	Job	9,77,500.00	9,77,500.00
		Safety Material for the Yard comprising of.				
	11	SITC of following items as required as per Indian Electricity Rules / Elect. Safety Deptt./ PSEB / Fire Safety Deptt. etc.complete.				
	a	Fire Extinguisher , 4.5 Kg (CO2 type)				
	b	Fire Extinguisher , 10 Kg (Dry Chemical Power Type)				
	c	Fire Extinguisher , 9 Kg (Foam Type)				
	d	Fire Extinguisher , 25 Kg with trolley , first filling				
	e	66 kV Danger Boards , size 250x200MM as per approved sample written in English & Hindi for MV & HV made of 2 mm thick sheet.				
	f	11 kV Danger Boards , size 250x200MM as per approved sample written in English & Hindi for MV & HV made of 2 mm thick sheet.				
	g	Sand Bucket with stand (comprising of 6 nos.buckets) , each painted red with fire written out complete with sand filling				
	h	First Aid Box (complete) as approved by st.John ambulance or Indian red Cross.				
	i	First Aid Chart/Shock Treatment Charts in English & Hindi mounted on wooden frame with glass .				
	j	11 KV Grade Hand Gloves pair				
	k	Rubber mat 11 KV , 1000mm wide 15 mm thick (complying with I.S.S).	1	Job	402500	402500
	12	Providing and laying of stone aggregate of required size for above sub station.	50	Cu.M	2,320.00	1,16,000.00
	13	Supply, Fabrication and erection of fencing made of heavy duty wire mesh in suitable size MS angle iron duly supported by MS flats etc. as required. The rate includes the necessary masonry works required for fixing of the same OR Boundary wall as per Electricity board norms etc complete in all respect.	150	Sq.M	1,500.00	2,25,000.00
		MISCELLANEOUS EUIPMENTS :				
	14	SITC of following items as required as per Indian Electricity Rules / Elect. Safety Deptt./ PSEB / Fire Safety Deptt. etc.complete.				
	a	INSULATOR FITTING WITH STRAIN INSULATOR				
	b	ACSR CONDUCTOR (Moose)				
	c	CONNECTORS & CLAMPS & GI pipes for CT wiring upto metering including all required GI Pipe accessories bends , tees, elbows and 4sqmm Cu. Wire for connection from CTPT to metering as required complete.				
	d	JUNCTION BOXES FOR CT'S & PT'S @ 03 Nos. @ 15000 per No.				

		Complete anti termite treatment and de vidding of the sub station area as require as directed complete.	1	Job	5,00,000.00	5,00,000.00
		Sub Total Rs.				2,98,88,677.00
Please Note : All the Civil work for above 66/11 KV Substation shall be paid seperately unless notified/mentioned otherwise specifically.						
	SH-13.A.2	11 KV H T PANEL'S				
	13.A.2.1	HT PANEL				
		Supply, installation, testing and commissioning of indoor type floor mounted metal clad, 11 KV VCB panel with 4 VCB's, totally enclosed & fully interlocked, horizontal drawout, horizontal isolation type breaker as per IS : 13118, as amended upto date and additional specifcations, having capacities as mentioned below, single break, trip free mechanism, motorised and manually charged and auto / manually closing breaker suitable for use on 11 KV, 3 Phase, 50 Hz A.C. supply with short circuit fault level of 350 MVA, complete with self contained, fully interlocked, rack in and rack out mechanism, air insulated but encapsulated copper bus bars of 800 Amps capacity, breaker featured with mechanical ON/OFF indicator with hand trip device, spring release coil, shunt trip coil and auxiliary switch of 4 NO + 4 NC and equipped with following switchgears and accessories i/c connections suitable for 3 x 300Sq.mm. XLPE 11KV cable (cable entry bottom) and end termination with heat shrinkable jointing material etc as required complete. (Note - Cost of end termination not included in this item)				
A	(a)	Incoming - 2c No. 800 Amp. VCB				
	(b)	2 Nos. 11 KV / 110 Volts PT Class 0.5 accuracy and 100VA burden with 1 No. Voltmeter (0-15KV), analog type, selector switch for Voltmeter and protection MCB for HT metering upto 12KV on incomer.				
	(c)	2 Nos. - (0-300A) dual scale Ammeter, analog type, seleter switches for ammeters				
	(d)	2 Nos. - Microprocessor based numerical relay with O/L, E/F and S/C protection.				
	(e)	2 Nos. - set of dual core dual ratio 3CT's 300/150/5/5A of 15VA burden and accuracy Class-0.5 for metering and class 5P10 for protection.				
	(f)	2 Sets - RYB LED type indication with Fuses/MCB				
B	(a)	Outgoing - 2Nos. 800Amp. VCB				
	(b)	2 Nos. - (0-100A) dual scale Ammeter, analog type, seleter switches for ammeters				

	(c)	2 Nos. - Microprocessor based numerical relay with O/L, E/F and S/C protection.				
	(d)	2 Nos. - set of dual core dual ratio 3CT's 100/50/5/5A of 15VA burden and accuracy Class-1.0 for metering and class 5P10 for protection.	1	Set	1467113	1467113
	13.A.2.2	BATTERY CHARGER & BATTERIES				
13.A.2.2.1		Supply, listallation, testing and commissioning of 1 (One) number 24 V Battery Charger alongwith 2 (two) numbers of 12V 180 AH maintenance free sealed lead acid batteries Battery Charger shall be solid state, full wave fully controlled bridge, input suitable for single phase 230V AC supply, conforming to degree of protection IP-42, Sheet steel enclosure 14 SWG thick, with automatic voltage regulation, current limiting circuitry, auto cut facility, smooth filter circuit switches, Ammeter & voltmeter on DC side, RYB indicating lamps (LED type) on AC side complete in all respect with float and boost / buck charging, switchgear, Earthing, powder coated painting etc as required complete.				
	i)	1 Set each for D.C Trip control supply to LT panel	1	Set	347959	347959
		Sub Total Rs.				18,15,072.00
	SH-13.A.3	TRANSFORMER				
13.A.3.1		Supply, installation, testing and commissioning of 3000 KVA Copper wound Oil type Transformer conforming to IS: 2026 of rating 11/0.433KV Delta-Star Connected, Vector Group Dyn 11, standard accessories like conservator, silica gel breather, radiator, fins, HT bushing & LT cableboxes, Off -LTC (+/- 5% in steps of 2.5%) winding temperature rise of 50/55 C, ISI marked drain valve, Dial type Temperature gauge, first fill of oil, Epoxy based paint, including carrying of pre-commission Testing & Charging of Transformer complete in all respect.				
		(All the transformers shall have same vector group / phase displacement for parallel operation All civil work including foundation etc. complete as per specifications are included)	2	No.	3260250	6520500
		TOTAL CARRIED OVER TO SUMMARY			Rs.	65,20,500.00
	SH-13.A.4	11KV HT CABLES				
		(Note : All cables shall be FRLS Type)				
13.A.4.01		Supply and laying of following sizes of XLPE insulated and PVC sheathed aluminium conductor armoured power cable of 11 KV grade (11KV earthed system) conforming to IS 7098 (Part-II) amended upto date etc. complete.				
	i)	3 Core, 400 Sq.mm.	113	Mtr.	3501	395613

13.A.4.0 2	Supplying and making outdoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs for the following size of 3 Core, XLPE aluminium conductor cable of 11 KV grade as required etc. complete.				
	a) 3 Core 400 Sq.mm.	4	Set	15051	60204
13.A.4.0 3	Supplying & making indoor cable end termination with heat shrinkable jointing kit complete with all accessories including lugs for the following size of 3 core XLPE aluminium conductor cable of 11 KV grade complete as required etc complete.				
	a) 3 Core 400 Sq.mm.	4	Set	10242	40968
13.A.4.0 4	Supplying & making straight through cable jointing with heat shrinkable jointing kit complete with all accessories including ferrules suitable for following size of 3 core XLPE aluminium conductor cable of 11 KV grade complete as required.				
	a) 3 Core 400 Sq.mm.	1	Set	16935	16935
	Sub Total Rs.				5,13,720.00
SH-13.A.5	EARTHING & SAFETY EQUIPMENTS				
13.A.5.0 1	Providing, testing and commissioning of Earthing with G.I. earth plate 600 mm X 600 mm X 6 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 etc complete.	18	No.	5450	98100
13.A.5.0 2	Providing, testing and commissioning of 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 etc complete.	18	No.	10341	186138
13.A.5.0 3	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required complete.	12	Mtr	423	5076
13.A.5.0 4	Providing and fixing 25 mm x 5 mm G.I. strip on surface or in recess for connections etc. as required.	184	Mtr	181	33304
	Supplying and fixing following sizes of G.I. strip alongwith existing cable tray/ raceway as required etc complete.				
a)	25 x 5 mm	303	Mtr	181	54843

13.A.5.0 5	Providing and fixing MV danger notice plate of 200 mm x 150 mm made of mild steel atleast 2 mm thick and vitreous enameled white on both sides & with inscription in signal red colour on front side as required etc complete.	5	No.	198	990
13.A.5.0 6	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I. pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required etc complete.	12	Mtr	1073	12876
13.A.5.0 7	Providing and fixing 25 mm X 5 mm copper strip on surface or in recess for connections etc. as require complete.	230	Mtr	885	203550
13.A.5.0 8	Providing & fixing of 50mm x 5mm Copper strip in 65mm dia 'B' class GI pipe from earth electrode as required complete.	42	Mtr.	1828	76776
13.A.5.0 9	Providing & fixing of 50mm x 5mm copper strip on surface or recess for earth connection as required complete.	300	Mtr.	1617	485100
13.A.5.1 0	Providing & fixing of 50mm x 6mm G.I strip in 65mm dia 'B' class GI pipe from earth electrode as required etc complete.	42	Mtr.	955	40110
13.A.5.1 1	Providing & fixing of 50mm x 6mm G.I strip on surface or recess for earth connection as required etc complete.	265	Mtr.	349	92485
13.A.5.1 2	Supplying Rubber hand gloves suitable for 11 KV etc complete.	2	Pair	884	1768
13.A.5.1 3	Supply and fixing Shock treatment chart duly mounted on a wooden frame with 5mm thick glass as required in Hindi, English & Local language.(approximate front area 1.20 sq.metre) etc complete.	2	No.	2650	5300
13.A.5.0 14	Supply and fixing safety instruction chart in word framed with 5mm thick glass as required.(approximate front area 1.20sq.metre) etc complete.	2	No.	2650	5300
13.A.5.1 5	Providing & fixing HT danger notice plate of 250 mm x 200mm, made of mild steel, at least 2mm thick & vitreous enamelled white on both sides and with inscription in signal red colour on front side as required etc complete.	2	No.	156	312
13.A.5.1 6	Supply and fixing Carbon dioxide fire extinguishers of 4.5 kg each as per IS : 2878-1976 and cylinders fully charged hanged on wall with bracket as required etc complete.	5	No.	13628	68140
13.A.5.1 7	Supply and installation of capacity 9 Litre chemical foam type fire extinguisher suitable for petroleum fires protection conforming to IS : 5507 etc complete.	3	No.	4214	12642

13.A.5.1 8		Providing of set of 4 Nos.9.5 Litre capacity G.I. buckets painted in post office red colour with prior coat of red-oxide paint and written with white paint 'FIRE' and , mounted on MS angle iron frame with bracket of appropriate size and capacity including filling sand etc complete.	1	No.	13278	13278
13.A.5.1 9		Providing First aid box as approved by St. John Ambulance brigade/Indian Red Cross confirming to IS 2217-1963 etc complete.	1	No.	445	445
13.A.5.2 0		Providing of rubber mat 1 mtr wide and 12mm thick to withstand 15KV dielectric strength as per IS : 5424 - 1969 etc complete.	15	Mtr.	3181	47715
13.A.5.2 1		Providing of rubber mat 1 mtr wide and 6mm thick to withstand 3.3KV dielectric strength as per IS : 5424 - 1969 etc complete.	25	Mtr.	2121	53025
13.A.5.2 2		Supply and installation of 5 kg capacity dry chemical powder type fire extinguishers conforming to IS : 2171 etc complete.	6	No.	6579	39474
		Sub Total Rs.				1536747
SH-13.A.6		LIGHTNING PROTECTION				
13.A.6.0 1		ESE AIR TERMINAL Supply ,Installation , testing and Commissioning of fully autonomous Early Streamer Emission Lightning Air Terminal (ESEAT) comprising of floating panels/body isolated from an earthed central finial/tip (elevated sharp tip) on top of the highest point to protect from direct lightning strikes with the following technical parameters. As per NF C 17-102:2011 standard (Annexe C), Clause C.3.4 - the ESE air terminal should be tested for an Impulse current (10/350 micro sec)=100 KA ($\pm$ 10%), Charge (Q)=50 A.s ($\pm$ 20%), Specific Energy (W/R)=2500 KJ/Q ($\pm$ 35%) and as per Clause C.3 all the tests should be carried out on a sample (preferably all tests in one lab) according to the flow chart in figure C.1 (Sequence of testing). As per Clause C.3.5.2.3.4, the ese air terminal shall be tested for 50 impulse and recorded for delta T (Triggering time advance). For the local certification, the ESE air terminal should be tested for switching impulse current of 40 KA (8/20 micro sec) or more. The international testing laboratory should be duly accredited by ILAC / IEC / ENAC / EZU / UL to ensure the genuine testing and the quality of the product and the ese air terminal should be supplied along with the country of origin certificate as required etc complete.				
	a)	ESE air terminal of delta T (ΔT) = 50 micro seconds (Protection radius = 68 mtrs @ Level I / Very High)	1	No.	151707	151707

13.A.6.0 2	LIGHTNING AIR TERMINAL ADAPTOR Supply ,Installation , testing and Commissioning of highly insulated polyplastic adaptor to fix the lightning ese air terminal with the mast. The adaptor shall have suitable metal connector/connecting point in such a way the top portion shall be electrically connected to the central finial/tip (elevated sharp tip) of the ese air terminal and the bottom portion shall be connected to the down conductor as required.	1	No.	6883	6883
13.A.6.0 3	MAST Supply ,Installation , testing and Commissioning of mast of GI pipe of 5 mtrs long 50 mm dia with base plate along with the guy wire kit (18 mtrs) to fix the ese air terminal as required etc complete.	1	No.	8603	8603
13.A.6.0 4	DOWN CONDUCTOR Supply,fixing and testing of 70 sq mm pvc insulated copper flexible cable for down conductor including fixing of suitable clamps and other accessories from the ese air terminal to the earth pit as required etc complete.	70	Mtr.	857	59990
13.A.6.0 5	TEST LINK Supply ,Installation , testing and Commissioning of non corroding weather proof water proof polycarbonate/polystyrene IP 65 / IP 55 (with glands) enclosure (in accordance with IEC 60670-22 standard) including providing of 2 numbers of insulated supports, 25 x 3 mm thick copper strip with suitable holes Pre-fitted SS bolt & nuts to fix the down conductor & earth wire. The dimension shall be of minimum 160 mm (W) x 120 mm (H), 80 mm (D) duly certified by VDE / UL as required etc complete.	1	No.	5162	5162
13.A.6.0 6	GEL EARTHING SYSTEM Supply ,Installation , testing and Commissioning of Tripod advance chemical gel earthing system of 03 numbers of any UL listed & CPRI tested 10 feet long 25 mm dia 250 microns copper bonded steel rod along with 50 Kgs (20 Kgs or more per pit) or more quantity of resistance lowering grounding minerals, well interconnected with suitable copper strip to form a triangle shape (distance between the rods shall be the length of the rod). The UL listed copper bonded rod should be tested & certified from a local body CPRI for a short circuit current of 50 KA or more. The UL listing shall be marked on the rod for the physical verification at site. The markings shall be of UL Control number, Dimension details of the rod, Product model number & UL certificate reference number. As per IEEE 80-2013 (Clause 14.5 d), the grounding minerals shall be tested & certified for the resistivity of less than 0.12 ohm-mtr. Also the compound shall be tested in compliance				

		with the international standard IEC 62561-7. The grounding minerals should be ROHS certified to ensure it does not pollute the ground water. Each earth pit shall be covered with suitable heavy duty weather proof environment friendly polyplastic earth pit chamber with cover of auto-locking facility and tested from any Govt of India laboratory for 9 tons load bearing capacity with the following dimensions - 254 mm dia (top), 330 mm dia (bottom) and 260 mm (height). 4 knock-out openings are provided for the easy interconnection of earth strips between the earth pits to form a grid as required etc complete.	1	No.	51621	51621
		Sub Total Rs.				283966
	SH-13.A.7	EXTERNAL LIGHTING				
13.A.7.0 1		Supply, Installation testing and commissioning of Swaged Steel Tubular, hot dip galvanized 9 mtrs Poles planting depth 1500mm and length of sections are Bottom 3000 mm and Top 6000mm having outside diameter and thickness of sections are Bottom (140 x 4.8mm) and Top (90 x 4 mm) with base plate. Pole have a service window of size 300 x 100mm at the bottom comprising four way 25 Amp connector terminal and with 16 amps DP MCB and terminal block removeable gland plate, including internal wiring of pole with PVC insulated 3 x 2.5 sq.mm. copper conductor wire. Pole having bottom dia of 140 mm & base plate of approx 400x400 mm, 20 mm thick on 1500 mm deep RCC foundation, as per drawing & specification including supply and fixing of steel foundation bolts, washers nuts, anchor plates, two nos 40mm dia GI / PVC pipe for incoming & out going cable, 6mm thick bakelite plate, two nos. 4 way connector, 16 amp MCB's, earthing stud and 60 mm dia arm suitable for 100W LED light fitting of following height as per IS : 2713-1980 as required etc complete.				
	a)	9 mtr. Pole (Single Bracket & One luminary)	24	Nos.	43971	1055304
13.A.7.0 2		Supplying, installation, testing & commissioning of LED based 100 Watt Street Light fittings, having pressure die cast aluminium housing with built in heat sinks. The housing shall have two compartments, one for LED arrays and other for LED driver and mains cable entry. The optical & electrical compartments, should be sealed with silicon gasket, toughened glass and shall confirm to IP-65 protection with following requirement etc complete.	24	Nos.	17944	430656
		Total power of light fixture = 100 watt.				
		Input voltage = AC 110 to 270 volts, 50 Hz				
		Power factor = > 0.95				
		Minimum Lumen Output of LED = 100 lumen / watt				
		Total lumen output of luminaire = > 9720 lumens				
		Luminaries Protection = IP 65				
		Colour Temperature of Eds = 6000 to 7000 K				
		LED drive current = 625 mA				
		Junction temperature of LEDs = < 65 deg. C				
		Luminaries efficiency = minimum 75%				

13.A.7.0 3		Supplying, erection, testing & commissioning of 1x 6W LED light fitting 920mm high, cylindrical shape integral decorative LED bollard with opal acrylic complete with foundation , 2 nos bolts ,electronic driver, lamps etc. as required. (The design of foundation shall be of OEM only & shall be submitted along with tender).	9	Nos.	9826	88434
13.A.7.0 4		Supply, installation, connecting and testing of 200 w LED light fitting surface mounted, non integral flood light luminaries with high power LED and unique flood light optics to ensure uniform distribution and maintenance free system including fixing accessories etc complete as required.	9	Nos.	50510	454590
13.A.7.0 5		Supply, installation, connecting and testing of 6Watts LED Spike light fitting, IP-67, with Spike i/c lamp, adjustable bracket assembly, fixing accessories etc complete as required.	9	Nos.	9445	85005
13.A.7.0 6		Supply, Installation testing and commissioning of Swaged Steel Tubular, hot dip galvanized 4 mtrs Poles planting depth 1500mm and length of sections are Bottom 1000 mm and Top 3000mm having outside diameter and thickness of sections are Bottom (140 x 4.8mm) and Top (90 x 4 mm) with base plate. Pole have a service window of size 300 x 100mm at the bottom comprising four way 25 Amp connector terminal and with 6 amps DP MCB and terminal block removable gland plate, including internal wiring of pole with PVC insulated 3 x 2.5 sq.mm. copper conductor wire. Pole having bottom dia of 140 mm & base plate of approx 400x400 mm, 20 mm thick on 1500 mm deep RCC foundation, as per specification including supply and fixing of steel foundation bolts, washers nuts, anchor plates, two nos 40mm dia GI / PVC pipe for incoming & out going cable, 6mm thick bakelite plate, two nos. 4 way connector, 6 amp MCB's, earthing stud suitable for 40 W LED light fitting of following height as per IS : 2713-1980 as required etc complete.				
	a)	4 mtr. Pole	29	Nos.	19112	554248
13.A.7.0 7		Supplying, installation, testing & commissioning of LED based 40 Watt Post top lantern Light fittings, having pressure die cast aluminium housing with built in heat sinks. The housing shall have two compartments, one for LED arrays and other for LED driver and mains cable entry. The optical & electrical compartments should be sealed with silicon gasket, toughened glass and shall confirm to IP-65 protection with following requirement etc complete.	37	Nos.	8459	312983
		Total power of light fixture = 40 watt.				
		Input voltage = AC 110 to 270 volts, 50 Hz				
		Power factor = $\geq$ 0.95				
		Minimum Lumen Output of LED = 117.50 lumen / watt				
		Total lumen output of luminaries = $\geq$ 4700 lumens				
		Luminaries Protection = IP 65				

		Colour Temperature of Eds = 6000 to 7000 K				
		LED drive current = 300 mA				
		Junction temperature of LEDs = < 65 deg. C				
		Luminaries efficiency = minimum 75%				
13.A.7.0 8		Providing, fixing, connecting and testing of Auto / manual switching Single partition panel for street / road / Security lighting weather proof outdoor type feeder pillar made out of 12 gauge CRCA sheet duly painted with powder coated paint and mounted with following accessories and their connections etc. & providing and making work in platform of brick works including PCC of required size in front & Rear side of feeder pillar with IP 65 Protection etc complete.				
a)		1 Nos. 100 Amps 25 KA, 4 pole MCCB with 63 Amps - coil Voltage 240V, Four pole, power contactor and modular digital 24 hrs. and 7 day time - switch with manual override switch.				
b)		1 set of 150 amps Aluminium conductor TP&N bus bar.				
c)		2 sets of push button.				
d)		1 toggle switch Auto-OFF manual positions.				
e)		2 Nos. lamp with holder, door switch and fuse.				
f)		2 Nos. earth bus 32x6mm GI strip				
g)		4 Nos. earth removable gland plates				
h)		Terminal Block				
i)		12 Nos. 6-32A 2 Pole MCB	2	Sets	65240	130480
13.A.7.0 9		Supply and laying of following sizes of PVC insulated PVC sheathed, steel armoured aluminium conductor cable of 1.1 KV grade confirming to IS:1554 PT-I 1988 amended to date etc complete.				
i)		6 sqmm x 2 core	370	RM	274	101380
ii)		4 sqmm x 4.0 core	740	RM	335	247900
iii)		6 sqmm x 4.0 core	720	RM	468	336960
13.A.7.1 0		Supplying and making end termination with brass compression gland and aluminium lugs for following size of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required				
i)		6 sqmm x 2 core	80	Sets	174	13920
ii)		4 sqmm x 4.0 core	74	Sets	479	35446
iii)		6 sqmm x 4.0 core	48	Sets	506	24288
13.A.7.1 1		Providing, laying and fixing following dia G.I. pipe (medium class) in ground complete with G.I. fittings including trenching (75 cm deep) and re-filling as required etc complete.				
i)		50 mm dia	30	RM	470	14100
ii)		100 mm dia	120	RM	976	117120
13.A.7.1 2		Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing along with existing surface/ recessed conduit/ submain wiring/ cable as required etc complete.	1830	Mtr	32	58560
		Sub Total			Rs.	4061374
		TOTAL OF SUB HEAD - 13.A			Rs.	44620056.00

SH 13.B : INTERNAL ELECTRICAL WORKS INCLUDING UPS

S.No	Description of Item	Qty.	Unit	Rate (Rs)	Amount (Rs)
SH-13.B.1	<u>AUTO LOAD SHARING / SYNCHRONISING PANEL</u>				
13.B.1.1	Supply, Installation, Testing and Commissioning of Auto Load Sharing / Synchronising Panel cubicle type, Totally Type tested (TTA) as per IEC 61439 part 1 made out of 14 swg CRCA sheet steel, totally enclosed, IP 54, protection free standing, floor mounting, dust and vermin proof ,indoor, compartmentalised, powder coated painting suitable for operation on 3 Phase and neutral, 415v, 50 Hz AC supply system with busbars extensible on both sides, interconnections with suitable size of copper lead/ solid aluminium strips, control circuit with breaker control switch & auto/ manual selector switch, spring charging indication, ammeter, ammeter selector switches voltmeter, voltmeter selector switches, indicating lamps CT's, multifunction meters internally wired, interlocking and having following incomer & Bus coupler Air circuit breakers and outgoing Air circuit breaker/ Moulded case circuit breaker complete with releases for protection all as shown on drawing including supply & installation complete as required items and as per specifications etc. complete.				
	LT switch board shall be ready with Ethernet(TCP/IP) communication. The necessary com module interconnection wiring required to interconnect with BMS system shall be carried out by the panel supplier				
A.	INCOMER :-				
i)	2 Nos. ACB, 6300 Amps, 65 kA, four Pole, Microprocessor release Motor wound spring charged closing mechanism (EDO) for Transformer and 4 Nos. ACB, 2000 Amps, 65 kA, four Pole, Microprocessor release Motor wound spring charged closing mechanism (EDO) for DG Sets, horizontal Drawout type with all protection i/c Earth fault, reverse power blocking, Under/Over Voltage, Under/Over Frequency, Current Unbalance, Temperature rise at breaker terminals etc. and Real-time on-line display of OSIE Curves, On-screen display of measurements, Current : phase/neutral/earth, average, max, % loading, seq components, Voltage : Phase, Line, Average. Power and Energy : active, reactive, total, Frequency and Power Factor, Maximum Demand, Termination temprature etc. complete.				
	Each Incomer shall have one set of the following items:				
(a)	Intelligent multifunction digital meter (to read V, A, KVA, KW, KVAR, Pf, HZ etc) with communication facility (RS485 port) and LED display with 3nos CTs, 15VA, Class 1.0 and control circuit wiring with HRC control fuses.				

	(b)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON' , 'OFF', 'TRIP' & spring charged lamps.				
	(c)	1 Set of HRC control fuses with base for control circuit.				
B.		BUS BARS				
		2 Nos 7000 Amps TPN Copper Bus bars.				
C.		BUS COUPLER				
	(a)	1 Nos. ACB, 6300 Amps , 65 kA, 4 Pole, (EDO) without release with Electrical interlocking arrangement with incomer breakers as per single line diagram, Motor wound spring charged closing mechanism, horizontal Drawout type including Auxilary contactor & control MCB's, if any.				
	(b)	3 Sets Indication Lamps, LED type, for RYB & breaker 'ON' , 'OFF', 'TRIP' & spring charged lamps with HRC control fuses.				
D.		OUTGOING				
	(a)	4 Nos. ACB, 5000 Amps, 65 kA, 4 Pole with microprocessor release with reverse power protection facility, Motor wound spring charged closing mechanism (EDO), horizontal drawout type.				
	(b)	4 Nos. ACB, 2500 Amps, 65 kA, 4 Pole with microprocessor release with reverse power protection facility, Motor wound spring charged closing mechanism (EDO), horizontal drawout type.				
	(c)	1 Nos. ACB, 1000 Amps, 65 kA, 4 Pole with microprocessor release with reverse power protection facility, Motor wound spring charged closing mechanism (EDO), horizontal drawout type.				
	(d)	1 No. MCCB, 800A, FP, 65 kA with microprocessor release and earth fault protection.				
	(e)	1 No. MCCB, 630A, FP, 65 kA with microprocessor release and earth fault protection.				
	(f)	4 Nos. MCCB, 400A, FP, 65 kA with microprocessor release and earth fault protection.				
	(g)	3 Nos. MCCB, 250A, FP, 65 kA with Thermal Magnetic release and earth fault protection.				
	(h)	5 Nos. MCCB, 200A, FP, 65 kA with Thermal Magnetic release and earth fault protection.				
	(i)	1 Nos. MCCB, 160A, FP, 65 kA with Thermal Magnetic release and earth fault protection.				
	(j)	1 Nos. MCCB, 63A, FP, 65 kA with Thermal Magnetic release and earth fault protection.				
	(k)	1 Set (1 Set for each outgoing ACB) Indication Lamps, LED type, for RYB & breaker 'ON' , 'OFF', 'TRIP' lamps with HRC control fuses.				
	(l)	1 Set (1 Set for each outgoing ACB) Indication Lamps, LED type, for RYB & breaker 'ON' , 'OFF', 'TRIP' lamps with HRC control fuses.				
	(m)	1 Set LED Indication lamps, Push buttons, window annunciation fascia etc of required quantity as per technical specifications.				

		DG Auto load sharing / Synchronising Panel as described as above and as per specification complete in				
E		PLC (PLC shall be provided in separate floor mounted cubical type panel and all interconnecting control cables between DG and ALS Panel shall be included)				
		PLC Based AMF, Auto and Manual Synchronisation , Auto Load Sharing and Auto Load Management for 4 x 1000 KVA DG Sets and other Interlockings				
		PLC control panel shall be following hardware for auto load sharing and auto load management				
	(i)	PLC HARDWARE				
		Processor with 128 input and 128 output with 8 analog input for synchronization of 4 DG Sets as per SLD.				
		4 Nos - Analyzer				
		1 No - Phase angle transducer				
		5 Nos - KW transducer unbalance type				
		1 No. - 232/485 converter				
		1 Set - Cable accessories & other required hardware				
	(ii)	MONITOR INTERFACE				
		1 No - Window based graphic software				
		1 No - Ethernet cable				
		1 No - 2000 VA UPS				
		1 No - Intel i5 processor 500 GB HD & 4 GB RAM				
		coloured 21" TFT Monitor with colored laser printer of A-3 size. Speed 20ppm				
		PLC shall be generate the following:				
		Closing / Opening of all the breakers for synchronizing and load management. The PLC shall take starting permissive of DG set through master trip relay.				
		Suitable software for synchronizing, load sharing, load shedding and history trend.				
		Entire communication between incoming, outgoing ACB's, Neutral contactor and DG sets				
		All control cabling for interconnecting master control				
		All control cabling for annunciation, controls speed control between DG breaker panels. DG control panel and synchronizing panel for DG feeders including bus couplers				
	(iii)	FOR MANUAL (SYNCHRONIZING SYSTEM) OPERATION				
		1 No - Double voltmeter analog type 0 - 500V				
		1 No - Double frequency meter analog type 45-55Hz				
		1 No - Synchronoscope analog type				
		1 No - Auto / Manual switch rotary				
		1 No - DG selectors switch (1 to 5) position				
		1 No - Check Synchronizing Relay				

		2 Nos. - Dark Lamp	1	Set	22669822	22669822
		Sub Total Rs.				2,26,69,822.00
	SH-13.B.2	RISING MAINS & LT PANELS				
13.B.2.0 1		Supplying, installation, testing & commissioning by suspension on ceiling/along the wall, testing and commissioning of following capacity Sandwich Type Rising Mains for use on 3 Phase 4 wire 415 V, 50Hz A.C supply with metal clad enclosure having IP-54 rating after fixing the tap off boxes and all accessories, made of 1.6 mm thick steel sheet duly powder coated in convenient sections complete with 4 Nos. aluminium bus bars having current density of 130A/sq.cm at nominal current rating, necessary joints, elbow joints & expansion joints and bends, fire barrier at each floor, provision of tapping at every meter, 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, connecting to earthing system etc. as required complete.				
	i)	5000 Amps, Isc= 50KA for 1 sec	180	Mtr.	39589	7126020
13.B.2.0 2		Supplying, installation, testing & commissioning of following capacity End Feed Unit for the existing Sandwich Type rising mains for use on 3 phase 4 wire 415V, 50 Hz A.C. supply made with 1.6 mm thick steel sheet enclosure (IP-54) duly powder coated including with ACB complete with necessary joints including clamping bracket, steel fasteners, connecting to earthing system etc. as required.				
	i)	5000 Amps, Isc= 50KA for 1 sec	4	Each	901579	3606316
13.B.2.0 3		Supplying, installing, testing & commissioning of following capacity Plug In/ Tap Off Box on the existing Sandwich type 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 (but without MCCB) complete etc. as required.				
	i)	800 amps 50KA SC for 1 sec	26	Set	16500	429000
	ii)	630 amps 50KA SC for 1 sec	8	Set	13081	104648
	iii)	400 amps 35KA SC for 1 sec	10	Set	9075	90750
13.B.2.0 4		Providing and fixing following rating and breaking capacity MCCB in existing cubicle panel board including drilling holes in cubicle panel, making connections, etc. as required complete as per specifications.				
	i)	800 amps 50KA, TP MCCB	26	Set	29684	771784
	ii)	630 amps 50KA, TP MCCB	8	Set	24350	194800
	iii)	400 amps 35KA, TP MCCB	10	Set	18862	188620
13.B.2.0 5		FLOOR LT PANELS				

		Supply, Installation, Testing and Commissioning of LT panel cubicle type, made out of 14 swg CRCA sheet steel, totally enclosed, IP 54, protection free standing, floor mounting, dust and vermin proof ,indoor, compartmentalised, powder coated painting suitable for operation on 3 Phase and neutral, 415v, 50 Hz AC supply system with busbars extensible on both sides, interconnections with suitable size of copper lead/ solid aluminium strips, control circuit with breaker control switch & auto/ manual selector switch, spring charging indication, ammeter, ammeter selector switches voltmeter, voltmeter selector switches, indicating lamps CT's, multifunction meters internally wired, interlocking and having following incomer & Bus coupler Air circuit breakers and outgoing Air circuit breaker/ Moulded case circuit breaker complete with releases for protection all as shown on drawing including supply & installation complete as required items and as per specifications: All the EDO ACB's shall have Ethernet port including necessary communication port interconnection wiring required to interconnect with BMS system shall be carried out by the panel supplier.				
		Nothing extra shall be paid.				
A		BASEMENT FLOOR PANELS				
a)		INCOMER				
	i)	1 No. MCCB, 200A, FP, 35 kA with Thermal Magnetic release complete with all protection including earth fault as required.				
	ii)	Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				
	iii)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON', 'OFF', 'TRIP' & spring charged lamps.				
b)		Bus Bars				
		300 Amps TPN Aluminium Bus bar.				
c)		Outgoing				
	i)	2 Nos.RCCB, 63A, FP, 300 mA Sensitivity				
	ii)	4 Nos.RCCB, 40A, FP, 300 mA Sensitivity				
	iii)	1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	3	Set	100959	302877
B		FLOOR PANELS (Ground Floor) L.H.S Shaft				
a)		INCOMER				
	i)	1 No. FP 630A Auto transfer switch and 1 no MCCB, 630A, FP, 35 kA with microprocessor release complete with all protection including earth fault as required.				
	ii)	Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				
	iii)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON', 'OFF', 'TRIP' & spring charged lamps.				
b)		Bus Bars				
		800 Amps TPN Aluminium Bus bar.				

c)		Outgoing				
	i)	3 Nos. MCCB, 125A, FP, 35 kA with Thermal Magnetic release.				
	ii)	10 Nos. MCB, 63A, FP, 10 kA				
	iii)	4 Nos. MCB, 25A, DP, 10 kA				
	iv)	1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	1	Set	400685	400685
C		FLOOR PANELS (First & Second Floor) L.H.S Shaft				
a)		INCOMER				
	i)	1 No. FP 630A Auto transfer switch and 1 no MCCB, 630A, FP, 35 kA with microprocessor release complete with all protection including earth fault as required.				
	ii)	Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				
	iii)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON', 'OFF', 'TRIP' & spring charged lamps.				
b)		Bus Bars				
		800 Amps TPN Aluminium Bus bar.				
c)		Outgoing				
	i)	5 Nos. MCCB, 125A, FP, 35 kA with Thermal Magnetic release.				
	ii)	4 Nos. MCB, 63A, FP, 10 kA				
	iii)	2 Nos. MCB, 40A, FP, 10 kA				
	iv)	1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	2	Set	425354	850708
D.1		FLOOR PANELS (Third Floor) L.H.S Shaft				
a)		INCOMER				
	i)	1 No. FP 630A Auto transfer switch and 1 no MCCB, 630A, FP, 35 kA with microprocessor release complete with all protection including earth fault as required.				
	ii)	Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				
	iii)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON', 'OFF', 'TRIP' & spring charged lamps.				
b)		Bus Bars				
		800 Amps TPN Aluminium Bus bar.				
c)		Outgoing				

	i)	2 Nos. MCCB, 250A, FP, 35 kA with Thermal Magnetic release.				
	ii)	1 Nos. MCCB, 125A, FP, 35 kA with Thermal Magnetic release.				
	iii)	4 Nos. MCB, 63A, FP, 10 kA				
	iv)	2 Nos. MCB, 40A, FP, 10 kA				
	v)	1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	1	Set	401119	401119
D.2		FLOOR PANELS (Fourth Floor) L.H.S Shaft				
a)		<u>INCOMER</u>				
	i)	1 No. FP 400A Auto transfer switch and 1 no MCCB, 400A, FP, 35 kA with microprocessor release complete with all protection including earth fault as required.				
	ii)	Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				
	iii)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON' , 'OFF', 'TRIP' & spring charged lamps.				
b)		<u>Bus Bars</u>				
		500 Amps TPN Aluminium Bus bar.				
c)		<u>Outgoing</u>				
	i)	2 Nos. MCCB, 125A, FP, 35 kA with Thermal Magnetic release.				
	ii)	2 Nos. MCB, 63A, FP, 10 kA				
	iii)	3 Nos. MCB, 40A, FP, 10 kA				
	iv)	1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	1	Set	309724	309724
E		FLOOR PANELS (Fifth Floor) L.H.S Shaft				
a)		<u>INCOMER</u>				
	i)	1 No. FP 800A Auto transfer switch and 1 no MCCB, 800A, FP, 35 kA with microprocessor release complete with all protection including earth fault as required.				

	ii)	Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				
	iii)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON' , 'OFF', 'TRIP' & spring charged lamps.				
b)		Bus Bars				
		1000 Amps TPN Aluminium Bus bar.				
c)		Outgoing				
i)		8 Nos. MCCB, 125A, FP, 35 kA with Thermal Magnetic release.				
ii)		4 Nos. MCB, 63A, FP, 10 kA				
iii)		2 Nos. MCB, 40A, FP, 10 kA				
iv)		1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	1	Set	717146	717146
F		FLOOR PANELS (Sixth to tenth Floor) L.H.S Shaft				
a)		INCOMER				
i)		1 No. FP 800A Auto transfer switch and 1 no MCCB, 800A, FP, 35 kA with microprocessor release complete with all protection including earth fault as required.				
ii)		Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				
iii)		1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON' , 'OFF', 'TRIP' & spring charged lamps.				
b)		Bus Bars				
		1000 Amps TPN Aluminium Bus bar.				
c)		Outgoing				
i)		8 Nos. MCCB, 125A, FP, 35 kA with Thermal Magnetic release.				
ii)		1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	5	Set	664330	3321650
G		FLOOR PANELS (Ground to Third Floor) R.H.S Shaft				
a)		INCOMER				

	i)	1 No. FP 400A Auto transfer switch and 1 no MCCB, 400A, FP, 35 kA with microprocessor release complete with all protection including earth fault as required.				
	ii)	Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				
	iii)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON' , 'OFF', 'TRIP' & spring charged lamps.				
b)		Bus Bars				
		500 Amps TPN Aluminium Bus bar.				
c)		Outgoing				
	i)	10 Nos. MCB, 63A, FP, 10 kA				
	ii)	8 Nos. MCB, 40A, FP, 10 kA				
	iv)	1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	4	Set	308854	1235416
H		FLOOR PANELS (Fourth Floor) R.H.S Shaft				
a)		INCOMER				
	i)	1 No. FP 800A Auto transfer switch and 1 no MCCB, 800A, FP, 35 kA with microprocessor release complete with all protection including earth fault as required.				
	ii)	Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control				
	iii)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON' , 'OFF', 'TRIP' & spring charged lamps.				
b)		Bus Bars				
		1000 Amps TPN Aluminium Bus bar.				
c)		Outgoing				
	i)	2 Nos. MCCB, 400A, FP, 35 kA with microprocessor release.				
	ii)	2 Nos. MCCB, 250A, FP, 35 kA with Thermal Magnetic release.				
	iii)	2 Nos. MCCB, 125A, FP, 25 kA with Thermal Magnetic release.				
	iv)	2 Nos. MCB, 63A, FP, 10 kA				
	v)	2 Nos. MCB, 40A, FP, 10 kA				

	vi)	1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	1	Set	681718	681718
I		FLOOR PANELS (Fifth to Tenth Floor) R.H.S Shaft				
a)		INCOMER				
	i)	1 No. FP 800A Auto transfer switch and 1 no MCCB, 800A, FP, 35 kA with microprocessor release complete with all protection including earth fault as required.				
	ii)	Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				
	iii)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON' , 'OFF', 'TRIP' & spring charged lamps.				
b)		Bus Bars				
		1000 Amps TPN Aluminium Bus bar.				
c)		Outgoing				
	i)	2 Nos. MCCB, 400A, FP, 35 kA with microprocessor release.				
	ii)	2 Nos. MCCB, 250A, FP, 35 kA with Thermal Magnetic release.				
	iii)	2 Nos. MCCB, 125A, FP, 35 kA with Thermal Magnetic release.				
	iv)	2 Nos. MCB, 40A, FP, 10 kA				
	v)	1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	6	Set	675632	4053792
J		FIRE/WATER SUPPLY PANEL				
a)		INCOMER				
	i)	2 Nos. MCCB, 400A, FP, 35 kA with microprocessor type release complete with all protection including earth fault as required etc. complete.				
		Each Incomer shall have one set of the following items:				
	ii)	Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				

	iii)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON' , 'OFF', 'TRIP' & spring charged lamps.				
b)		<u>Bus Bars</u>				
		500 Amps TPN Aluminium Bus bar.				
c)		<u>Accessories for Electrical Interlocking</u>				
i)		1 Set of Suitable arrangement, interconnection required for electrical interlock among 2 Nos Incomers.				
d)		<u>Outgoing</u>				
i)		3 Nos. MCCB, 100A, FP, 25 kA with Thermal Magnetic release.				
ii)		8 Nos. MCB, 63/40A, FP, 10 kA				
vii)		1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	1	Set	244519	244519
K		<u>EXTERNAL LIGHTING PANEL</u>				
a)		<u>INCOMER</u>				
i)		1 No. MCCB, 160A, FP, 35 kA with microprocessor release complete with all protection including earth fault as required etc. complete.				
ii)		Intelligent multi function digital meter to read V,A,KVA, KW, KVAR, PF, Hz etc with communication facility (RS485 port) and LED display with required Nos CTs, 15 VA, class 1.0 and control circuit wiring with HRC control fuses.				
iii)		1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON' , 'OFF', 'TRIP' & spring charged lamps.				
b)		<u>Bus Bars</u>				
		200 Amps TPN Aluminium Bus bar.				
c)		<u>Outgoing</u>				
i)		6 Nos. MCB, 63A, FP, 10 kA.				
iii)		1 Set Rotary operating mechanism and 'ON' (Red) indication lamp (LED type) including terminal extension spreaders for all the MCCB's.	2	Set	87701	175402
13.B.2.0 6		<u>1200 KVAR CAPACITOR PANEL</u>				

		Supply, Installation, Testing and Commissioning of Automatic Power Factor Corrector Panel, 1200 kVAR (6 x 100 + 12 x 50 KVAR active capacitors (+2 Spare compartment for providing 1 x 100 KVAR & 1 x 50 KVAR capacitors in future), with thyristor switching 3ph, 415v, totally enclosed, free standing, floor mounting, dust and vermin proof, cubicle type to be fabricated out of 14 gauge CRCA Sheet steel, with provision for capacitor mounted inside the panel with Bus bars, interconnections, adequate number of louvers and powder coated with approved shade including supply & installation of following components and as per technical specifications. etc. complete. All the EDO ACB's shall have RS 485 com port. The necessary communication port interconnection wiring required to interconnect with BMS system shall be carried out by the panel supplier. Nothing extra shall be paid.				
A		INCOMER				
	i)	1 No. 2500 Amps, 50 kA, 4 Pole ACB, with				
	ii)	3000Amps TPN Aluminium Bus bar.				
	iii)	1 Set of Digital Voltmeter of suitable range for 3 phase, 4 wire operation with LED display and built-in selector switch along with 3 nos of HRC control fuses control wiring.				
	iv)	1 Set of Indication Lamps, LED type, R,Y,B and breaker 'ON', 'OFF' & 'TRIP' set of SP MCB's.				
	v)	1 Set of Digital Ammeter of suitable range for 3 phase 4 wire operation with LED display and selector switch and suitable CT ratio programmable and auto ranging along with 3 numbers of class 1.0, 15 VA CTs with RS 485 PORT				
	vi)	1 No. Auto / Manual selector switch.				
	vii)	1No. Microprocessor based intelligent, 14 step APFC relay with PF display.				
B		OUTGOING				
	i)	6 Nos. 100 kVAR Heavy duty capacitor units.				
	ii)	12 Nos. 50 kVAR Heavy duty capacitor units.				
	iii)	6 Nos. 200Amp Three Pole Microprocessor Based MCCB 50 KA				
	iv)	12Nos.100Amp Three Pole Microprocessor Based				
	v)	Thyristor's with control circuit and fuses etc.complete as required.				
	vi)	3 Sets of Auxilary Control contractors.				
	vii)	20 Sets of Start/Trip push buttons (LED type) - (18 + 2 Spares)				

	viii)	20 Sets of Indicating lamps (LED type) for capacitor ON (Green) & capacitor OFF (Red) - (18 + 2 Spares)				
	ix)	20 Sets A/M Selector Switch.				
	x)	2 Sets of Axial flow fans with thermostat.				
	xi)	1 Set of Space heater.				
	xii)	1 Set of Rotary operating mechanism and terminal extension / spreaders for all the MCCB's.				
	xiii)	Complete in all respect including all interconnections from the bus bars to MCCB and MCCB to contactor and contactor to terminal blocks of Capacitor. Automatic Switching "ON" and "OFF" capacitor panel described as above	2	Set	2490722	4981444
		Sub Total Rs.			Rs.	30188138
	SH-13.B.3	CABLES & CABLE TRAYS				
		(Note : All cables shall be FRLS Type)				
13.B.3.0 1		Supply and laying of following sizes of 1.1 KV grade multi-core aluminium conductor XLPE / PVC insulated and PVC sheathed armoured power cable conforming to IS 7098 (Part-1) with upto date amendments as required.				
	a)	3.5 Core x 400 Sqmm	4922	Mtr	1896	9332112
	b)	3.5 Core x 300 Sqmm	678	Mtr	1411	956658
	c)	3.5Core x 120 Sqmm	269	Mtr	750	201750
	d)	3.5 Core x 70 Sqmm	105	Mtr	532	55860
	e)	3.5 Core x 50 Sqmm	103	Mtr	448	46144
	f)	4 Core x 25 Sqmm	806	Mtr	364	293384
13.B.3.0 2		Supplying & making outdoor end termination with cast resin compound including aluminium lugs and other jointing materials for following size of PVC insulated and PVC sheathed/XLPE aluminium conductor cable of 1.1 KV grade as required etc. complete.				
	a)	3.5 Core x 400 Sqmm	194	No.	2948	571912
	b)	3.5 Core x 300 Sqmm	36	No.	2568	92448
	c)	3.5 Core x 120 Sqmm	8	No.	1485	11880
	d)	3.5 Core x 70 Sqmm	2	No.	1372	2744
	e)	3.5 Core x 50 Sqmm	2	No.	1248	2496
	f)	4 Core x 25 Sqmm	36	No.	1167	42012

13.B.3.0 3		Supply, fabricating and installing following size of perforated GI (hot-dip galvanised) cable trays (factory made), including horizontal and vertical bends, reducers, tees, cross members and other accessories as required and duly suspended from the ceiling with M.S suspenders including painting of mild steel items complete of following sizes etc. as required complete.				
	a)	225 mm width x 50 mm depth x 1.6 mm thickness	699	Mtr	689	481611
	b)	450 mm width x 50 mm depth x 2.0 mm thickness	195	Mtr	1202	234390
	c)	600 mm width x 50 mm depth x 2.0 mm thickness	118	Mtr	1525	179950
	d)	1000 mm width x 50 mm depth x 2.0 mm thickness	139	Mtr	2304	320256
13.B.3.0 4		Supply, fabricating & installing following size of ladder type GI ladder type, factory made, cable trays including runners, rungs and other accessories of suitable design, size, thickness & having suitable spacing. Cable trays above 750 mm. shall be supported by 50mm x 50mm x 6mm MS angle suspended with 10 mm dia. threaded MS rod, hardware including painting of mild steel items etc. complete of following sizes etc. as required.				
	a)	1000 mm wide	120	Mtr	1020	122400
	b)	1500 mm wide	88	Mtr	1211	106568
13.B.3.0 5		Supply and installing following size of under floor GI raceways made out of 1.6mm thick sheet steel, standard length 2.5 meters, 1/3 compartment complete with jointing sleeves and other accessories under floor installation including cutting and chasing the floor, making good the same, placing in position and cleaning from inside complete of following sizes etc. as required.				
	a)	75mm x 38mm x 1.6mm - 1 compartment	25	Mtr	2243	56075
13.B.3.0 6		Supply & installing following size of under floor access outlet made out of 1.6mm thick pre-galvnised GI sheet with all accessories including necessary cutting and chasing of floor and making good the same, placing in position, cleaning from inside etc. as required complete.				
	a)	250mm x 250mm x 60-75 mm -3 Compartments	2	No.	2278	4556
13.B.3.0 7		Supply & installing following size of raised floor access outlet made out of 1.6mm thick pre-galvanised GI sheet with all accessories including necessary cutting and chasing of floor and making good the same, placing in position, cleaning from inside etc. as required complete.				
	a)	250mm x 250mm x 80 mm -1Trap -3 Compartments	1	No.	6006	6006

13.B.3.0 8		Providing and laying of following dia RCC pipe NP2 class (light duty) in Ground complete with RCC collars, jointing with cement mortar 1:2 (1 cement:2 fine sand) including trenching (75mm deep) and refilling etc. required for crossing road/walls etc. complete.				
	a)	100 mm dia	20	Mtr	460	9200
	b)	250 mm dia	15	Mtr	615	9225
	c)	300 mm dia	30	Mtr	749	22470
		Sub Total Rs.				13162107
SH-13.B.4 INTERNAL WIRING						
	NOTE	Circuit wiring : Rates quoted below shall be inclusive of cost of providing necessary circuit wiring from DBs to switch boards with 3x2.5 sq. mm. and necessary steel conduits as required. All wires shall be of FRLS type.				
13.B.4.0 1		Providing Wiring for light point/ fan point/ exhaust fan point/ call bell point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable including surface / recessed steel conduit, with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc as required complete.	494	Point	1064	525616
13.B.4.0 2		Same as Item No. 13.8.01 above but LOOP POINT i.e. wiring of point looped from first point with 3 x 1.5 sq. mm PVC insulated copper conductor FRLS wire (controlling switch in item no. 13.8.01) etc complete.	445	Point	902	401390
13.B.4.0 3		Providing Wiring for light point with 2.5 Sqmm. FRLS PVC insulated copper conductor cable including surface/recessed steel conduit controlled through the existing MCB and earthing the point with 2.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc. as required (The cost of MCB has been taken elsewhere in the tender) etc complete.	228	Point	1277	291156
13.B.4.0 4		Same as item No. 13.8.03 above but LOOP POINT i.e. wiring of point looped from first point with 3 x 2.5 sq. mm PVC insulated copper conductor FRLS wire etc complete.	1668	Point	840	1401120
13.B.4.0 5		Providing Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable including surface / recessed steel conduit, 2 way modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core cable etc as required complete.	245	Point	1131	277095

13.B.4.0 6		Supply and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 3 pin 5/6 amps modular socket outlet and 5/6 amps modular switch, connection etc. as required (For light plugs to be used in non residential buildings) complete.	10	Nos	352	3520
13.B.4.0 7		Supply and fixing suitable size GI box 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 complete.	126	Nos	434	54684
13.B.4.0 8		Supplying and fixing 20 amps, 240 volts, SPN industrial type, socket outlet, with 2 pole and earth, metal enclosed plug top along with 20 amps "C" curve, SP, MCB, in sheet steel enclosure, on surface or in recess, with chained metal cover for the socket out let and complete with connections, testing and commissioning etc. as required complete.	32	Point	1080	34560
13.B.4.0 9		Providing Wiring for power plug with 2 x 4sq.mm, FRLS PVC insulated copper conductor, single core, cable including surface /recessed medium class PVC conduit along with 1 No. 4 sq.mm FRLS insulated copper wire for loop earthing as required etc complete.	2551	Rm	231	589373
13.B.4.1 0		Supplying & fixing of 3 Nos. 5/15 amp modular socket (shuttered) outlet Controlled by 1 No. 1 way single pole 16/15 amps modular type switch with indicator, polycarbonate white cover plate and earthing the 3rd pin painting etc. as required complete.	2	Point	1513	3026
13.B.4.1 1		Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required	30	No.	28	840
13.B.4.1 2		Providing, laying and fixing following dia G.I Pipe (Medium Class) in ground complete with G.I Fittings including trenching and re-filling etc. as required complete.				
	a)	100 mm	80	Mtr.	976	78080
	b)	150 mm	60	Mtr.	1479	88740
13.B.4.1 3		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 etc complete.				
	a)	40mm	37	Mtr.	256	9472
	b)	25 mm	36	Mtr.	145	5220

13.B.4.1 4		Providing Wiring for submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed steel conduit as required etc complete.				
	a)	2 X 6 sq. mm + 1 X 6 sq. mm earth wire	35	Mtr	312	10920
	b)	2 x 10 sq. mm + 1 x 10 sq.mm earth wire.	269	Mtr	374	100606
	c)	4 x 6 sq. mm + 2 x 6 sq.mm earth wire.	1504	Mtr	464	697856
	d)	4 x 10 sq. mm + 2 x 10 sq.mm earth wire.	1202	Mtr	587	705574
		Sub Total Rs.				5278848
SH-13.B..5 DISTRIBUTION BOARDS						
13.B.5.0 1		Supplying and fixing following way , single pole and neutral, sheet steel, MCB distribution board, 240 V, on Surface/ recessed, complete with tinned copper busbar, earth bar, din bar, interconnections, powder painted including earthing etc. as required complete. (But without MCB/RCCB/Isolator)				
	a)	8 way, (Double door)	5	No.	1543	7715
	b)	12 way,(Double door)	9	No.	1800	16200
13.B.5.0 2		Supplying and fixing following ways surface/recessed mounting, vertical type , 415 V , TPN MCB distribution board of sheet steel, dust protected, duly powder painted, inclusive of 200A, tinned copper busbar, common neutral link, earth bar, din bar fore mounting MCBs (but without MCBs and incomer) as required etc complete.				
	a)	8 way (4 + 24), Double door	33	No.	6790	224070
	b)	12 way (4 + 36), Double door	30	No.	8617	258510
13.B.5.0 3		Supplying and fixing 5 amps to 32 amps rating, 240/415 volts, "C" curve, miniature circuit breaker suitable for inductive load of following poles in the existing MCB DB complete with connections, testing and commissioning etc. as required complete.				
	a)	Single Pole, C-curve	1313	No.	174	228462
13.B.5.0 4		Supplying and fixing following rating, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current upto 300 milli amperes in the existing MCB DB complete with connections, testing and commissioning etc. as required complete.				
	a)	40 amps	33	No.	2302	75966
	b)	63 amps	30	No.	2435	73050

13.B.5.0 5		Supply and fixing following rating, double pole (single phase and neutral, 240 volts, residual current circuit breaker (RCCB) with earth leakage protection having a sensitivity current upto 300 milli Amperes in the existing MCB DB complete with connections testing commissioning etc. as required complete.				
	a)	25 Amps	104	No.	1690	175760
	b)	40 Amps	99	No.	1837	181863
13.B.5.0 6		Supplying and fixing single pole blanking plates in the existing MCB DB complete etc. as required etc complete.	171	No.	7	1197
		Sub Total Rs.				1242793
SH-13.B.6		LIGHT FIXTURES AND FANS				
13.B.6.0 1		Supply and fixing of following LED lighting fixtures complete with all accessories such as Colour Corrected LED, electronic drivers, reflector etc. complete as required as approved. (All lamps with high colour rendering index more than 85)				
	a)	20W LED 1200mm length tube light surface mounted light fitting with extruded aluminium housing and robust construction.(Cat No.- BN021C LED20S- PSU GR S2, Philips or equiv.)	160	Nos	454	72640
	b)	32 W LED surface mounted of size 1200mm x 75 mm tube light fitting with high transitivity opal diffuser for diffused lighting. (Cat No.- SM270C LED 30S 6500 PSU WH, Philips or Equiv.)	625	Nos	2937	1835625
13.B.6.0 2		Supply and fixing of following LED lighting fixtures complete with all accessories such as Colour Corrected LED, electronic drivers, reflector etc. complete as required as approved. (All lamps with high colour rendering index more than 85). The sample is to be submitted for approval.				
	a)	6 W LED recessed down lighter with reliable heat management technology for long lasting efficient solution.(Cat No.- DN091B LED6S- 6500 PSU WH, Philips or Equiv.)	39	Nos	1230	47970
	b)	12W LED recessed light fitting with reliable heat management technology for long lasting efficient solution.(Cat No.- DN 393B LED12S-6500 PSU WH, Philips or Equiv.)	1334	Nos	2365	3154910
	c)	12W LED Surface mounted light fitting with diffusers.(Cat No- SM250C LED12S- 6500 PSU WH, Philips or Equiv.)	370	Nos	1892	700040
	d)	6W LED Spot light fitting with adjustable option.(Cat No.- DN311B LED 6S-4000 PSU MB WH, Philips or Equiv.)	209	Nos	2402	502018

e)	70 W LED Suspended Light Fitting complete with all accessories as required.(Cat No.- BY201P LED78S CW PSU HE PC, Philips or Equiv.)	157	Nos	7279	1142803
f)	8W LED wall mounted Bulkhead light fitting as required.(Cat No.- Cat No- WT202W LED6S NW PSU S2 PC, Philips or Equiv.)	116	Nos	1182	137112
g)	30W LED recessed Light Fixture with powder coated aluminium housing & brackets as required.(Cat No. RS271B LED40/830 PSU-E MB WH, Philips or equiv.)	39	Nos	3252	126828
h)	7 W LED Ramp light fitting with IP 67 Protection as required.(Cat No. BBG 150 LED50/WW PSU 220-240V IP 67, Philips or Equiv.)	111	Nos	5173	574203
13.B.6.0 3	Supply and fixing of 1200 mm ceiling fan with double ball bearing and aluminium blades with modular type fan step regulator suitable for 220V, 50Hz, AC supply, of make as per the list of approved makes as required etc complete.	34	No	2298	78132
13.B.6.0 4	Providing and fixing circular/ hexagonal cast iron or M.S. sheet box for ceiling fan clamp, of internal dia 140mm, 73mm 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 3.3mm dia round headed screws, one lock at the corners. Clamp shall be made of 12mm dia M.S bar bent to shape as per standard drawing etc complete.	34	No	130	4420
13.B.6.0 5	Supplying & fixing of extra down rod of 10 cm. length, G.I. Pipe, 15mm dia., heavy gauge, including, painting etc. as required. (Note: More than 5 cm. length shall be rounded off to the nearest 10 cm. and 5 cm. or less shall be ignored.)	34	No	29	986
Sub Total Rs.					8377687
SH-13.B.7 LT METERING					
13.B.7.0 1	Supply ,Installation , testing and Commissioning of Prepaid meter keypad operated DUAL Source(Electricity & DG) Three Phase 10-60A, 50 Hz, Class 1 .0 electronic energy meter with RS 232 Optical port communication and Consumer Interface Unit(CIU) for in home display with graphical display unit as per latest IS 15884:2010 complete as required.	40	Nos	10898	435920
13.B.7.0 2	Supply ,Installation , testing and Commissioning of Prepaid meter keypad operated DUAL Source(Electricity & DG) Three Phase 125A, 50 Hz, Class 1 .0 , CT operated electronic energy meter with RS 232 Optical port communication and Consumer Interface Unit(CIU) for in home display with graphical display unit as per latest IS 15884:2010 complete as required.	12	Nos	33840	406080

13.B.7.0 3		Supply ,Installation , testing and Commissioning of SMPS device for pulse signal generation having input supply as 1PH 2Wire,230/240 VAC,50 Hz,5A and output as 12VDC with for DG register switching from main to DG as per required etc complete.	4	Nos	4015	16060
13.B.7.0 4		Supply, testing & commissioning of base Computer Software" (BCS) for meter data histories downloading & temper analysis purposes as required	1	Nos	78769	78769
13.B.7.0 5		Supply, testing & commissioning of System architect Design and deployment of web based vending server for one time installation for designing, programming of meters with DCU and server, tariff designing etc. complete as required.	52	Nos	225	11700
13.B.7.0 6		Token transaction charge -vending charges-from consumer per year to maintain of Web based Vending server for recharge token, 24 x 7 services, MIS reports generation etc. complete as required.	52	Nos	360	18720
		Sub Total Rs.			Rs.	967249
SH-13.B.8		U P S				
13.B.8.0 1		Supply, installation, testing and commissioning of following sizes Double Conversion Type IGBT based, ON-LINE UPS System (1 phase input and 1 phase-out put) with in-built static and maintenance bypass along with sealed lead acid batteries (maintenance free) suitable for 30 minutes backup facility on full load with racks & connectors (including suitable size copper cable connection between UPS and battery bank) as required etc complete.				
	a)	5 KVA - 230 V output	11	Nos	88343	971773
		Sub Total Rs.				971773
SH-13.B.9		DATA & TELEPHONE SYSTEM				
13.B.9.0 1		Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess as required etc complete.				
	a)	1 or 2 module (75mm x 75mm)	10	No.	213	2130
	b)	4 module (125mm x 75mm)	10	No.	252	2520
13.B.9.0 2		Supplying & fixing following sizes polycarbonate modular type shuttered face plate (for Data Points) as required etc complete.				
	a)	For Single Data jack	10	No.	94	940
	b)	For Double Data jack	10	No.	97	970
13.B.9.0 3		Supply & fixing Cat 6 UTP jack with strain relief and bend limiting boot as required etc complete.	10	No.	323	3230

13.B.9.0 4		Supplying and drawing of UTP 4 Pair CAT 6 LAN Cable in the existing surface/recessed steel/PVC conduit as required etc complete.	36	Mtr	43	1548
13.B.9.0 5		Supply & laying Cat 5E UTP 4 pair cable (24 Gauge solid copper conductor insulated with HDPE) as required etc complete.	37	Mtr	40	1480
13.B.9.0 6		Supply & fixing Cat 6 RJ 45 UTP patch cords, with snagless boots colour matching, 1mtr length as required etc complete.	10	No.	304	3040
13.B.9.0 7		Supply & fixing Cat 6 RJ 45 UTP patch cords, with snag less boots colour matching, 2 mtr length as required etc complete.	10	No.	363	3630
13.B.9.0 8		Supplying & fixing suitable size metal flush box (for Telephone Points) including painting etc complete as required etc complete.	10	No.	150	1500
13.B.9.0 9		Supply, installation, connecting and testing of 1 No. RJ-11 telephone socket (Jack type) outlet with modular cover plate etc. complete as required.	10	No.	187	1870
13.B.9.1 0		Supply, installation, connecting and testing of 2 Nos. RJ-11 telephone socket (Jack type) outlet with modular cover plate etc. complete as required.	10	No.	190	1900
13.B.9.1 1		Supply & installation of Krone type telephone tag block of following sizes in sheet metal enclosure of suitable dimensions fabricated out of 16 SWG sheet steel with castle key lock, hinged type cover including termination of telephone cables, making connections, painting of box etc. complete as required.				
	a)	10 Pair	10	No.	772	7720
	b)	20 Pair	7	No.	1420	9940
	c)	30 Pair	5	No.	2225	11125
	d)	100 Pair	3	No.	6245	18735
13.B.9.1 2		Supply and laying of PVC Insulated and PVC sheathed, 0.60mm dia, annealed, tinned, electrolytic copper conductor armoured telephone cable with G.I strip armouring conforming to ITD specifications S/WS-113C and S/WS 114, (Armouring and outer sheath conforming IS :1554 (Part -I)) on surface / existing cable tray / raceway/ steel conduit etc. complete as required.				
	a)	10 Pair	82	Mtr	83	6806
	b)	20 Pair	45	Mtr	125	5625
	c)	30 Pair	828	Mtr	259	214452
	d)	100 Pair	60	Mtr	462	27720
13.B.9.1 3		Supply, installation, connecting and testing of 1 No. TV Co-axial socket outlet with modular cover plate, metal flush box etc. complete as required.	5	No.	239	1195

13.B.9.1 4	Supplying and drawing co-axial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface/ recessed steel/ PVC conduit as required etc complete.	37	Mtr	29	1073
	Sub Total Rs.				329149
	TOTAL OF SUB HEAD - 13.B			Rs.	83187566.40

SH - 14 : Addressable Fire Detection, Alarm & Public Addressing System.					
S.No.	Description	Qty.	Unit	Rate (in Rs.)	Amount (in Rs.)
14.1	Supply, installation, testing and commissioning of the following items complete with junction boxes as per specifications & complete as required. Detectors below false ceiling shall have anchoring arrangement of the base with the false ceiling with use of a round /square plate 16 gauge plate mounted above false ceiling to which the base shall be screwed.				
14.1.01	Analogue Addressable Photo Electric type Smoke Detector with mounting base etc. complete as required.	600	Each	2926.00	17,55,600.00
14.1.02	Analogue Addressable Photo Electric type Smoke Detector with Fault Isolator mounting base etc. complete as required.	80	Each	5036.00	4,02,880.00
14.1.03	Analogue Addressable Rate of Rise cum Fixed Temperature Heat Detector with mounting base etc. complete as required.	75	Each	2764.00	2,07,300.00
14.1.04	Analogue Addressable Multi criteria detector with Photo Electric and Rate of Rise type for both Smoke and heat applications, mounting base etc complete.	980	Each	3172.00	31,08,560.00
14.1.05	Analogue Addressable Multi criteria detector with Photo Electric and Rate of Rise type for both Smoke and heat applications, with Fault Isolator mounting base etc. complete.	20	Each	5301.00	1,06,020.00
14.1.06	Analogue addressable Beam type detector including mounting base with LED etc. and Address Switch to programme the detectors, complete as required.	10	Each	65378.00	6,53,780.00
14.1.07	Addressable Manual Call Box made of polycarbonate with plastic break glass front. MCB shall be recessed in wall with size of 75 x 120. The MCB shall have "IN CASE OF FIRE BREAK GLASS" imprinted on the fascia.	86	Each	3981.00	3,42,366.00
14.1.08	Water flow/damper supervisory switch with 2NO + 2NC auxiliary contact with Addressable Input Module for connecting to Switch	175	Each	6785.00	11,87,375.00
14.1.09	Output Module for tripping of AHU / Dampers / Fans as required.	55	Each	3102.00	1,70,610.00
14.1.10	Supplying, fixing, testing and commissioning of Fault Isolator Unit	35	Each	2861.00	1,00,135.00
14.1.11	Supplying, fixing, testing and commissioning of Piezo electronic Hooters/ Sounders of 90 dBA sound level at 10 feet from the device with strobe including Control Module complete with ceiling/ wall mounting arrangements	86	Each	6251.00	5,37,586.00

S.No.	Description	Qty.	Unit	Rate (in Rs.)	Amount (in Rs.)
14.1.12	Supplying, fixing, testing and commissioning of Response Indicator with twin transparent LED that shall glow red in case of fire	675	Each	204.00	1,37,700.00
14.2	Supply, Installation, connecting, testing and commissioning of micro processor based Logic driven Network (with Network card as required) on Peer to Peer Analogue Addressable 1-10 Loop (each loop accessing not less than 120 addressable detectors) Fire Alarm Control Panel. The Panel shall be able to give pin point location of all Fire/Fault conditions of addressable units via the address codes for each unit. The Panel shall also be able to automatically switch off all Control Switches when ever any Alarm is triggered. The Panel shall be coupled to the PA System and have sealed maintenance free batteries of required capacity of 24 volts capable of running for a minimum of 12 hours with battery charger, rectifier, Loop cards, Keypad operation, L C D unit to indicate Fire /Fault Signal of individual unit, built in built / external printer to log all incoming data etc complete in all respects.				
	The Panel shall also have Logic hardware and software built into it for initiating specific AHU tripping, time delay operation of hooter, subsequent operation of speakers. Panel shall have provide data output on Modbus for Building management System Platform. One shall be able to read any Fire / Fault message from any Panel and any panel shall be able to read the data of any networked panel. However, configuring /programming shall be from the panel itself etc complete.				
a	10 Loop Panel	4	Set	648600.00	25,94,400.00
14.3	Providing, installing, testing and commissioning of Networked Repeater Panel for Fire Alarm System with piezo sounder, LCD alpha numeric character display with accept / reset buttons for alarm address of any sensor / field device. The Repeater Panel shall only provide field device address with number etc complete.	10	Set	80738.00	8,07,380.00
14.4	Providing, installing, testing and commissioning of Power supply unit with 25 AH SMF battery of 2 x 12 Volts for 15 minute back up complete in wall mounted MS cabinet unit etc complete.	1	Each	5389.00	5,389.00
14.5	Providing, fixing, testing & commissioning of Talk Back Handset Receiver with hands free dialling with speaker phone, push button digits DTMF type with Instruction Table etched on acrylic sheet and mounted on wall etc complete.	86	Each	11840.00	10,18,240.00

S.No.	Description	Qty.	Unit	Rate (in Rs.)	Amount (in Rs.)
14.6	Providing, installing, testing and commissioning of PA System Operator Console complete with 3 x 500 W + 1 x 250 W channel mixing Amplifiers (in addition to another 500 W amplifier as hot standby) with 2 channels, 1 no carded gooseneck micro phone, 1 no CD Player deck MP3 format, a 10 zone Floor Selector Console, a Change over Panel for connection to the Fire Alarm Panel, a Mains Panel, a standby battery of required capacity and a Monitor Panel all pre wired and rack mounted complete in all respects & as per specifications. PA System shall be coupled to the Fire Alarm System etc complete.	1	Set	384675.00	3,84,675.00
14.7	Providing, installing, testing and commissioning of Ceiling mounted baffle speaker of 6 Watt each complete as per detailed specifications.	100	Each	1019.00	1,01,900.00
14.8	Providing, installing, testing and commissioning of Wall mounted baffle speaker of 15 Watt each complete as per detailed specifications.	75	Each	1458.00	1,09,350.00
14.9	Wiring for fire alarm system with following FRLS PVC insulated copper conductor 1100 volts grade stranded "FRLS" Signal / Power wires as required in existing conduits etc complete.				
a)	2 x 1.5 sqmm, Class 2 Annealed Copper conductor, Mica Glass (fire resistant) tape with low smoke zero halogen (LSZH) cross- linkable flame retardant insulation etc complete.	35100	RM	105.00	36,85,500.00
14.10	Supplying and fixing 24/0.2 two core twin twisted speaker wire in existing conduit etc complete.	4600	RM	56.00	2,57,600.00
14.11	Supply, and fixing of MS conduits in following sizes including cost of junction boxes, bends, elbows, sockets, tees and MS flexible conduit to connect from ceiling to false ceiling etc. laying in slab, cutting chases and making good or surface mounted including all fixing hardware as per specification etc complete.				
a)	20 mm dia	3400	RM	128.00	4,35,200.00
b)	25 mm dia	31100	RM	145.00	45,09,500.00
14.12	Supply & Installation of Safety signs Auto-Glo, (list of design attached), based on acrylic, single sided wall pasted size 12" x 6". Samples is to be submitted for approval.	400	Nos.	810.00	3,24,000.00
					
					
	6054 H, R, PT				
					
	6053 H, R, PT				
					
	6055 H, R, PT				
					
	6441 H, R, PT				
	SAFETY S				
	Total Of Fire Alarm Work				2,29,43,046.00

SH - 15 : Fire Fighting System					
S.N	Description	Qty	Unit	Rate	Amount
SH-15.1 : FIRE PUMPS & EQUIPMENTS (WET RISER SYSTEM)					
15.1.1	Supply installation, testing and commissioning of electrically driven fire-pump & Sprinkler system suitable for automatic operation consisting of the following :				
a)	Horizontally mounted end suction centrifugal pump, suitable for operation on 415 volts $\pm$ 10%, 3 phase, 50 HZ A.C supply, complete with flexible coupling and coupling guard as required. Fire pump having C.I. body, bronze impeller and S.S. Shaft with mechanical seal, capable for delivering 2880 Lpm water at <u>95 mts.</u> head to ensure a minimum pressure of 3.5kg/cm ² at the farthest hydrant. Complete with necessary pressure gauge with gun metal shut off cock on delivery side. The pump should meet the condition of Local fire Authority).				
b)	Squirrel cage induction motor, TEFC type suitable for operation on 415 volts, 3 phase 50 HZ A.C supply, for the above pump with synchronous speed of 2900 RPM.				
c)	Common base plate for (a) and (b) from M.S. Channel for required size.				
d)	Including suitable cement concrete foundation with cement concrete plaster complete with antivibration arrangement of cushy foot mountings.	2	SET	4,13,680.00	8,27,360.00
15.1.2	Supply, installation, testing and commissioning of Diesel Engine driven fire pump suitable for automatic operation comprising of the following :				
a)	Horizontally mounted end suction centrifugal pump, suitable for operation on 415 volts $\pm$ 10%, 3 phase, 50 HZ A.C supply, complete with flexible coupling and coupling guard as required. Fire pump having C.I. body, bronze impeller and S.S. Shaft with mechanical seal, capable for delivering <u>2850</u> LPM of water at <u>95 mts.</u> head to ensure a minimum pressure of 3.5kg/cm ² at the farthest hydrant. Complete with necessary pressure gauge with gun metal shut off cock on delivery side. The pump should meet the condition of Local fire Authority).				

S.N	Description	Qty	Unit	Rate	Amount
b)	Air Cooled Diesel engine of speed 1800 RPM for the above pump with automatic starting mechanism and other accessories including fuel tank (fabricated from 3mm MS sheet painting with two coats of synthetic enamel paint over a coat of primer) capacity 200 lts (fitted with Magnetic oil level indicator, MH with cover drain valve, Air vent hydraulic pumps including structural supports (painted with approved shade), 2 Nos. x 12 volt battery, heat exchanger with necessary piping connections & fittings flexible coupling, coupling guard & exhaust pipe as per drawing complete as required.				
c)	Common base plate for (a) and (b) from M.S. channel of required size.				
d)	Including suitable cement concrete foundation with plaster, Antivibration arrangement of cushy foot mountings.				
e)	24 volts, 180 AH Lead battery - Exide make (12 volts-2 Nos) with boost / trickle charger for starting the engine automatically as required.	1	SET	8,56,908.00	8,56,908.00
15.1.3	Supply, installation, testing and commissioning of jockey pump comprising of the following :				
a)	Horizontally mounted end suction centrifugal pump, suitable for operation on 415 volts $\pm$ 10%, 3 phase, 50 HZ A.C supply, complete with flexible coupling and coupling guard as required. Fire pump having C.I. body, bronze impeller and S.S. Shaft with mechanical seal, capable for delivering 280 LPM of water at 95mts.head to ensure a minimum pressure of 3.5kg/cm ² at the farthest hydrant. Complete with necessary pressure gauge with gun metal shut off cock on delivery side. The pump should meet the condition of Local fire Authority).				
b)	Squirrel cage induction motor TEFC type for operation on 415 V, 3 phase 50 HZ AC supply for the above pump with a synchronous speed of 2900 R.P.M. with flexible coupling and coupling guard etc. as required.				
c)	Common base plate for (a) and (b) from M.S. channel as required size.				
d)	Including suitable cement concrete foundation with plaster, Ant vibration arrangement of cushy foot mounting.	1	SET	2,95,485.00	2,95,485.00

S.N	Description	Qty	Unit	Rate	Amount
15.1.4	Providing, fixing, testing and commissioning of pressure vessel (450 mm dia & 2000 mm height) for pressurization of fire system complete with pressure switches with isolation valves, pressure gauge with isolation valve, valves at outlet / drain to operate as per operating sequences including 25 mm dia drain valve, air release valve with stop cock on the top Duly painted from inside and outside complete as required.	1	No.	26,308.00	26,308.00
15.1.5	Supply, installation, testing and commissioning of Down Comer pump of Diesel operated of capacity 900 LPM of water to ensure a minimum pressure of 3.5kg/cm2 at the farthest hydrant.	1	SET	1,96,990.00	1,96,990.00
	NOTE :				
	Contractor shall include in his rates for providing level controllers, switches, wiring, cabling from level controller to panel etc. complete as required to operate the system automatic/manual and pump shall be protected against running dry.. Nothing extra shall be paid on this account.				
	TOTAL OF SUBHEAD 15.1				22,03,051.00

S.N	Description	Qty	Unit	Rate	Amount
15.2. PIPING, HYDRANT AND ACCESSORIES & SPRINKLER SYSTEM					
15.2.1	Supplying, fixing, testing and commissioning of water pipes of following sizes of MS'C' class along with necessary clamps, vibration isolators and fittings such as bends, tees, etc, but excluding valves, strainers, gauges etc. adequately supported on rigid supports duly painted/ buried in ground excavation and refilling etc., as per specification and as required complete in all respect.				
	For Fire System - M.S. 'C' Heavy class pipe				
a)	25 mm dia	18500	RM	510.00	94,35,000
b)	32 mm dia	3650	RM	600.00	21,90,000
c)	40 mm dia	3500	RM	673.00	23,55,500
d)	50 mm dia	1850	RM	857.00	15,85,450
e)	65 mm dia	1375	RM	1046.00	14,38,250
f)	80 mm dia	1355	RM	1210.00	16,39,550
g)	100 mm dia	1885	RM	1564.00	29,48,140
h)	150 mm dia	3500	RM	2091.00	73,18,500
i)	200 mm dia	60	RM	3249.00	1,94,940
15.2.2	Providing and fixing Chrome finish quartzoid bulb sprinklers of size 15mm dia (Pendent / upright / side wall) to be Operated at 68 Deg C. Including two piece of adjustable C.P. Rosette complete as required.				
a)	Pendent type	775	Nos.	295	2,28,625
b)	Upright type	5045	Nos.	345	17,40,525
c)	Side wall extended type	40	Nos.	357	14,280
d)	Concealed type	1	Nos.	1108	1,108
15.2.3	Providing and fixing of 15 mm dia Spare Sprinkler each of above type to operate at 68 deg. C neatly kept a wooden cabinet with suitable shelves having full glass front door and locking arrangement and one spanner properly fixed in the cabinet painting with enamel paint of approved make and shade to the approval of engineer.	1	SET	3,725.00	3,725
15.2.4	Providing and fixing Orifice plate made out of 8mm thick stainless plate for pipe to reduce pressure upto 3.5 kg/sqcm complete in all respects.				
a)	80 mm dia	20	NOS.	1,428.00	28,560
b)	100 mm dia	20	NOS.	1,804.00	36,080
c)	150 mm dia	60	NOS.	2,104.00	1,26,240
15.2.5	Providing and fixing gun metal ball valve suitable for pressure 15 Kg/Cm2 and confirming to IS: 318 of the following size including providing necessary union / flange etc. complete.				
a)	25 mm dia	175	NOS.	1,168.00	2,04,400
b)	32 mm dia	1	NOS.	1,728.00	1,728
c)	40 mm dia	1	NOS.	2,962.00	2,962
d)	50 mm dia	50	NOS.	4,333.00	2,16,650

S.N	Description	Qty	Unit	Rate	Amount
15.2.6	Supplying, fixing, testing & commissioning of following sizes Butterfly valves (Manual) with CI body SS disc nitrile sheet & I-ring & PN 16 pressure rating as specified etc complete.				
a)	65 mm dia	1	NOS.	2,487	2,487
b)	80 mm dia	20	NOS.	2,644	52,880
c)	100 mm dia	10	NOS.	3,612	36,120
d)	150 mm dia	50	NOS.	4,772	2,38,600
e)	200 mm dia	2	NOS.	10,110	20,220
f)	250 mm dia	4	NOS.	15,394	61,576
15.2.7	Supplying, fixing, testing & commissioning of following NON - Return Valve with dual plate of CI body SS plates vulcanized NBR seal flanges end & PN 16 pressure rating as specified etc complete.				
a)	80 mm dia	2	NOS.	2,752	5,504
b)	150 mm dia	7	NOS.	6,288	44,016
15.2.8	Providing & fixing 150 mm dia installation Control Valve assembly comprising of vertical wet alarm valve, including 150 mm butterfly valve, hydraulic alarm motor & gong , 15 mm dia .Test valve and all necessary trimming connections including 2 nos. pressure gauge as per manufacturer 's catalogue (UL/FM/LPC/TAC listed approved) etc complete.				
a)	150 mm dia	4	NO.	46040	1,84,160
15.2.9	Providing & fixing single acting air release valve with brass gate valve, flanges/ union, Suitable for sprinkler/ wet riser system with all necessary connections etc complete.				
a)	25 mm dia	2	NOS.	6,971.00	13,942
15.2.1	Providing & fixing Air Cushion tank (Air - vessel) 250 mm dia x 1.0 M high with dished top made of minimum 6 mm thick M.S Sheet pipe/ plate complete with 25 mm dia brass . Air Valve (Ball type) 25 mm dia stopcock. Nipple tees. Elbows and all accessories as required including fixing brackets etc complete.				
a)	25 mm dia	19	NOS.	18,041.00	3,42,779
15.2.11	Providing & fixing double flanged flexion rubber expansion joint with unit control of standard length as per manufacturers specs. Tested to a pressure of 15Kg/Sqcm including rubber gaskets, flanges, nuts, bolts and washers complete as required.				
a)	65 mm dia	10	NOS.	1,053.00	10,530
b)	80 mm dia	20	NO.	1,184.00	23,680
c)	100 mm dia	10	NO.	1,315.00	13,150
d)	150 mm dia	20	NO.	1,578.00	31,560
e)	200 mm dia	1	NOS.	2,630.00	2,630

S.N	Description	Qty	Unit	Rate	Amount
15.2.12	Providing and fixing C.I. Y- strainer with bronze perforated sheet basket tested to a pressure of 15 Kg/sqcm including rubber gasket, flanges, nuts, bolts and washers, complete as required.				
a)	250 mm dia	2	NO.	25180	50,360
15.2.13	Supply, Installation, Testing & Commissioning of Double headed, Gunmetal ISI marked oblique pattern hydrant landing valve with 80 mm dia flange inlet and 63 mm dia instantaneous type female out let complete with gunmetal cap and G.I chain twist release type plug and all accessories as per IS:5290-1983 (Type A) etc complete.	134	Each	12,312.00	16,49,808
15.2.14	Providing & fixing swinging type First Aid hose reel in red colour with 36 mts long and 20 mm dia heavy duty rubber water hose, 20 mm dia globe valve stop cock, terminating with G.M. coupling & nozzle of 5mm outlet with shut off valve conforming to IS 8090-1976 complete with drum and brackets for fixing on wall, bolts & nuts conforming to IS:884-1969 complete as required.	134	NOS.	6,796.00	9,10,664
15.2.15	Providing & fixing Controlled Percolating (CP) Hose ISI marked (IS:8423) 63mm dia x 15m long complete with instantaneous type gunmetal 63mm dia ISI marked Male & Female couplings (IS:903) bound and riveted to hose pipe with copper rivets and 1.5mm copper wire. bursting pressure not less than 22 Kg/Sqcm. (two nos. for each hydrant-valve) etc complete.	48	Each	8,125.00	3,90,000
15.2.16	Providing & fixing Non per coating flexible hose (RRL type – A) ISI marked (IS:636 Type A) 63 mm dia x 15 m long complete with ISI marked Male and female coupling (IS:903) bound and riveted to hose pipe with copper rivets and 1.5 Sq.mm. copper wire. bursting pressure not less than 22 Kg/Sqcm. (two nos. for each hydrant-valve) etc complete.	488	Each	8,865.00	43,26,120
15.2.17	Providing & Fixing Gun-metal 63 mm dia short size branch pipes with 20 mm dia nozzle with 63 mm instantaneous coupling ISI marked (IS:903) etc complete.	134	Each	1,847.00	2,47,498
15.2.18	Providing and fixing standard fireman's axe with heavy rubber handle. etc complete.	134	NOS.	308.00	41,272
15.2.19	Providing and fixing inlet breeching having C.I. body four way gun metal 63 mm dia instantaneous inlets conforming to IS 903 fitted with non return valves, 25 mm dia gun metal drain cock, blank cap, brass chains and 150 mm dia flanges with all accessories suitable for local fire tender complete as required.	2	NO.	7,834.00	15,668

S.N	Description	Qty	Unit	Rate	Amount
15.2.20	Providing & fixing Gunmetal fire Bridge Suction hose coupling (Draw out Connection) with nut for female coupling as per IS:902-1974 complete with 100mm dia. 1 No C.I Foot valve flanged (to be connected to static water tank)	1	Each	5,104.00	5,104
15.2.21	Providing and fixing weather proof cabinet of size not less than 0.75 x 0.6 x 0.25 mtr made out of M.S. sheet not less than 1.5 mm thick having central opening and 4 mm thick glazed glass doors (Two nos.) suitably marked on the outside with the letters "FIRE HOSE" including necessary locking arrangement and painting in red colour suitable to accommodate, external yard hydrant valve, 2 nos 15 mtr long Hose pipe, branch pipe, nozzle and fire man's axe. It shall be mounted on boundary wall complete as required.	12	NOS.	9,696.00	1,16,352
15.2.22	Providing and fixing 4mm thick glass door of size 2.1m x 0.9m with anodized aluminium frame of size 0.10 x 0.05 M with centre opening for fire hose cabinet. Suitable marked on the outside with the letters "FIRE HOSE" including locking arrangement. All aluminium work to be in Red P.O. colour etc complete.	122	NOS.	8,550.00	10,43,100
15.2.23	Providing and fixing suction & delivery headers of required length fabricated from 6mm thick M.S. rolled and welded pipe suitable for 15 Kg/Sqcm working pressure with end flange connections having inlet&outlet flanged connections as per drawing. 150 mm dia pressure gauge with stop cock. Including supports from wall, floors & ceiling complete as required.				
a)	150 mm dia	20	RM	3,390.00	67,800
b)	200 mm dia	10	RM	5,696.00	56,960
c)	250 mm dia	10	RM	6,390.00	63,900
d)	300 mm dia	10	RM	7,486.00	74,860
15.2.24	Providing and laying Cement concrete for anchor / thrust blocks of 1:4:8 [1 cement : 4 fine aggregate : 8 coarse aggregate, 40mm nominal size as per standard design etc complete.	5	CUM	5,262.00	26,310
15.2.25	Providing and fixing Fire Extinguishers (A, B, C type powder) complete with all accessories as per manufacturers specifications etc complete.				
a)	Capacity 2 Kg	150	NOS.	924.00	1,38,600
b)	Capacity 5 Kg	150	NOS.	1,600.00	2,40,000
c)	Capacity 9 Kg	150	NOS.	2,093.00	3,13,950
15.2.26	Supplying, fixing, testing & commissioning of ISI marked fire extinguisher Mech. Foam type capacity 50 litres with gunmetal cap and nozzle, trolley mounted and complete in all respects including initial fill.	2	Each	10,958.00	21,916

S.N	Description	Qty	Unit	Rate	Amount
15.2.27	Supplying, fixing, testing & commissioning of ISI marked (IS: 10204) portable fire extinguisher Mech. Foam type capacity 9 litres with gunmetal cap and nozzle and complete in all respects including initial fill and wall suspension.	50	Each	2,770.00	1,38,500
15.2.28	Supplying, fixing, testing & commissioning of ISI marked (IS:2878) Fire and wall suspension bracket, Extinguisher, Trolley mounted carbon-dioxide type capacity 22.5 Kg. Flat base including valve, discharge hose of not less than 10mm dia 1m long complete in all respects including wheeled trolley, carrying handle and initial fill with CO2 gas as per IS: 307-1996 filled to a filling ratio of not more than 0.667 etc complete..	2		15,407.00	30,814
15.2.29	Providing & fixing Electrically operated Flow indicating Switches with threaded connection for a minimum flow of 90 lpm for indicating water flow in sprinkler's branch line with necessary junction box installed complete with tee glands and other accessories as per specifications.				
a)	150 mm dia	42	NO.	8,155.00	3,42,510
15.2.30	Providing and fixing 25 mm dia inspection & testing assembly with gunmetal valve sight gas, valve & connected to drain line etc complete.	42	NOS.	8,719.00	3,66,198
15.2.31	Providing and fixing in position the industrial type pressure gauges with gun metal/ brass valves complete as required	188	Each	959	1,80,292
15.2.32	Approval of fire system from local fire authority at initial & various other stages of works, including preparation of report / drawings as per local fire authority. Contractor shall include cost of all works which are not explicitly mentioned above but are mandatory to have fire authority approval etc complete.	1	L.S.	15000	15,000
15.2.33	Providing & fixing cast iron foot valve complete with flange.- 200mm dia. etc complete.	2	NOS.	10,784.00	21,568
TOTAL OF SUBHEAD 15.2					4,36,89,171.00
TOTAL OF SUB HEAD 15					4,58,92,222.00

SH - 16 : CCTV Surveillance System.					
S.No.	Description	Qty.	Unit	rate	Amount (Rs.)
SH-16	Supplying, installation, testing & commissioning of CCTV Surveillance System complete with all accessories, components and required to make the system fully functional and comprising of the following equipment all as specified.				
16.1	Supplying, installation, testing & commissioning of NVR-32 -CH, 100fps recording, MPEG4/ JPEG, D1 (100/120ips)/ Half D1 (200/ 240ips)/ CIF (400/480ips), 1 Audio In/Out, 2 Relay Out, Network available (Remote View S/W), along with 8 TB SATA HDD, including suitable rack complete all as specified with 230VAC power supply complete in all respects as per specifications & as required.	3	Each	55890	1 67 670.00
	IP PTZ Camera for outdoor				
16.2	Supplying, installation, testing & commissioning of 1/1.8" Sony Starlight sensor,1080P@25/30fps, Effective pixels 1984 (H) x 1225 (V) approx. 2.43M pixels, 30x Optical Zoom (4.3 mm–129 mm), 16X Digital Zoom, IR distance 120-180meters, Speed 0.05°~400°/s, Smart VQD(Video Quality Diagnosis), Smart Facial Detection, Smart IR Dual Light System (Optional), Internal storage: SDHC card(64GB), TVS 6000V, Lightning/Surge 2000V Protection, IP66 waterproof Low Illumination: 0.002 Lux, It can provide color picture at night (Including POE Switch)	4	Each	110000	4 40 000.00
	IP Outdoor varifocal Bullet				
16.3	Supplying, installation, testing & commissioning of 3MP H.265 Motorized IR Bullet Camera Up to 2048X1536 High Resolution 50Hz: 25fps (2048x1536), 50fps (1920x1080), 60Hz: 30fps (2048x1536), 60fps (1920x1080), WDR, 3D DNR, HLC, Triple Streams Smart VQD(Video Quality Diagnosis), Smart Facial Detection, Smart IR, Dual Light System (Optional), 19 Kinds of IVA Functions, Defog Motorized Lens, On-board Storage, up to 64GB, Alarm I/O 2/1, Audio I/O 1/1, Ethernet, CVBS, 485/232, MicroSD 64G Card, USB, TVS 6000V, Lightning/Surge 2000V Protection, IP67 (Including POE Switch)	6	Each	7340	44 040.00

	IP Fix Dome				
16.4	Supplying, installation, testing & commissioning of 1.3MP, 1/3" CMOS sensor, 2.8mm HD fixed focus lens, ICR dual filter switch, 20-30 meters effective IR distance, Support Triple-stream transmission, Main stream-Maximum resolution: 960P 30fps; Second stream D1@15fps, Third stream: CIF@10fps, Support WDR, backlight compensation, HLC, 3D noise reduction and image flip, Support IVA, include tripwire and boundary detection, Support digital anti-shake, scene mode setting, Support time mode setting, Dual-core backup, Support ROI, Support image superposition, IPV6, MTU setup, multicast, heartbeat, black and white list, SNMP, Support P2P mobile phone, it can add IP by QR code, Support POE (Including POE Switch)	62	Each	5530	3 42 860.00
16.5	Supplying, installation, testing & commissioning of CAT-6 in the existing surface / recessed steel conduit as required.	8000	mtr	43	3 44 000.00
16.6	Supplying, installation, testing & commissioning of Viewing station complete as specified including following accessories as required etc complete.	2	Each	203975	4 07 950.00
a.	Supply, installation, testing and commissioning of Operator work station with PC having Intel i3, 2.4 GHz including Serial ports (RS232) and USB ports and following accessories etc. all as specified.				
b.	500 Gigabytes (minimum) of hard disk space				
c.	DVD Combo Drive				
d.	32" LCD colour monitor 2 nos.				
e.	Optical Mouse with 2 Mouse Pads				
f.	Standard Key Board				
g.	Latest Windows Operating System(Windows NT)				
h.	10/100 MBPS PCI LAN card.				
i.	Latest laser jet printer A4 size.				
j.	1000 VA UPS with a maintenance free battery of half hour backup at full load.				
16.7	Supplying, installation, testing & commissioning of biometric & card attendance reader station including suitable box, all accessories complete as specified complete etc. as required.	1	Each	9850	9 850.00
16.8	Supply, and fixing of MS conduits in following sizes including cost of junction boxes, bends, elbows, sockets, tees and MS flexible conduit to connect from ceiling to false ceiling etc. laying in slab, cutting chases and making good or surface mounted including all fixing hardware.				
a)	25 mm dia	8000	RM	145	11 60 000.00
Total of Subhead 16 (Rs.)					29 16 370.00

SH-17 : HVAC System					
S.N	Description	Qty	Unit	Rate	Amount
SH-17	HVAC WORKS				
17.1	Section 17.1: HIGH SIDE				
17.1.1	WATER CHILLING UNIT				
	Supply, installation, testing and commissioning of Screw type water chilling unit of 380 TR actual capacity at the parameters indicated below. complete with Semi-hermetic / hermetic Helical Rotary Screw compressors, motor, insulated chiller, water cooled condenser, vibration isolators, integral refrigerant piping and wiring, flow switches at chiller and condenser outlets, first charge of refrigerant and lubricant, microprocessor based control panel, accessories as required and called for, automatic and safety controls and all mounted on a steel frame as per specifications. Quoted rate shall include wiring, cabling, control wiring, cable tray etc. from AC panel to each equipments. Motor shall be suitable for 415 ± 10% V, 50Hz, 3ph AC supply as per specification and drawings. VFD shall be installed at only one Chiller.				
	Chiller				
	Chilled water in : 54° F				
	Chilled water out : 44° F				
	Chilled water flow rate: 912 USGPM				
	Fouling Factor : 0.0005 (FPS)				
	Condenser				
	Condenser water in : 90° F				
	Condenser water out : 97.5° F				
	Condenser water flow rate: 1520 USGPM				
	Fouling Factor : 0.001 (FPS)	5	Nos.	69,20,284	3,46,01,420.00
17.1.2	PUMPS				
	Supply, installation, testing and commissioning of End suction back pull out pumps complete with motor, base frame, vibration isolators and other accessories (except suction and discharge shut off valves, suction strainer, discharge check valves and drain piping which are covered under separate item). Pumps shall have mechanical seal and Bronze Impeller. The pump motor shall be suitable for 415 Volts ± 10%, 50 cycles, 3 phase power supply. The quoted price shall include cost of thermal insulation and cladding for chilled water pumps, earthing, control wiring, main cable from electrical panel to the unit with cable tray and necessary accessories, as well as M.S base frame for mounting both pump and motor. Pumps shall be complete as per specifications and shall have operating parameters as given below etc complete:				
17.1.2.1	Primary Chilled water pumps				
	Water flow rate : 912 USGPM				
	Head : 40ft				
	Motor HP : 15 HP	5	Nos.	1,35,116	6,75,580.00
	(1 No. standby pump included in above quantity)				
17.1.2.2	Secondary Chilled water pumps for Shopping & Office areas (with VFD & Microprocessor Panel, sensor, transformer, controller etc.)				

S.N	Description	Qty	Unit	Rate	Amount
	Water flow rate : 1638 USGPM				
	Head : 80ft				
	Motor HP : 50 HP	3	Nos.	6,86,193	20,58,579.00
	(1 No. standby pump included in above quantity)				
17.1.2.3	Secondary Chilled water pumps for Multiplex (with VFD & Microprocessor Panel, sensor, transformer, controller etc.)				
	Water flow rate : 372 USGPM				
	Head : 80ft				
	Motor HP : 12.5 HP (suggested)	2	Nos.	3,52,291	7,04,582.00
	(1 No. standby pump included in above quantity)				
17.1.2.4	Condenser water pumps				
	Water flow rate : 1520 USGPM				
	Head : 80ft				
	Motor HP : 50 HP	5	Nos.	1,35,116	6,75,580.00
	(1 No. standby pump included in above quantity)				
17.1.3	COOLING TOWER				
	Supply, installation, testing and commissioning of induced draft cooling towers (400 TR). Each tower shall be complete with VFDs, distribution system, fillings, louvers, Hot dipped galvanised ladder, axial flow fan and motor. Motor (IP:55) shall be suitable for 415 ± 10% volts, 50 cycles, 3 phase power supply. Isolator enclosed in weather proof panel complete with cabling & earthing shall be included control wiring and main cable from electrical panel to unit with cable tray, conduit and necessary accessories etc. Tower shall be selected on the basis of water temperature in of 97.5°F & water temperature out of 90°F, ambient wet bulb temp. of 83°F. The Cooling Tower shall be complete in all respect with level switch and associated wiring as per specifications and the capacity of each Cooling tower shall be as follows etc complete:				
17.1.3.1	Capacity: To Cool 1520 USGPM of water at parameters indicated above				
	Motor capacity for each CT: 2x10 HP	4	Nos.	6,92,544	27,70,176.00
17.1.4	Hot Water Generator				
	Supply, installation, testing & commissioning of Hot Water Generator complete in all respect with all accessories and mountings as per specifications etc complete.				
17.1.4.1	Capacity : 400 KW For Space Heating				
	Water temp in at 45° C & temp. out at 55° C with flow rate of 250 USGPM.	2	Nos.	5,26,039	10,52,078.00
17.1.5	Scale Preventor				
	Supply, installation, testing and commissioning of Non Chemical Water Treatment System - Scale Guard ,Screw end/Flanged end type ,with pipe dia of 300 mm,Stainless Steel casing complete with all fittings etc complete.				
17.1.5.1	Capacity: 1520 USGPM	4	Nos.	5,06,942	20,27,768.00
	TOTAL FOR SECTION A				4,45,65,763.00

S.N.	Description						Qty	Unit	Rate	Amount
17.2	Section 17.2: LOW SIDE									
17.2.1	Air Handling Units & Treated Fresh Air Units									
	Supply, installation, testing and commissioning of double skin modular construction, draw through Ceiling Suspended (CS) / Floor Mounted Horizontal type (FM) Air Handling Units of 0.6 mm thick Plain GSS Sheet from inside & 0.6 mm thick Preplasticized GSS Sheet from Outside with 25 mm thick puf insulation in between them. AHU Shall be complete with DIDW Centrifugal fan (Plug fan/Belt driven), Squirrel cage induction motor, cooling coil (Copper tubes and Aluminium fins), Cu header, pre-filter (Washable Synthetic fibre of efficiency 90% down to 10 micron) and Fine filters (of 99% efficiency down to 3 micron), drain pan, V belt drive, fireproof double canvass connection and other accessories as per specifications (except water shut off valves, drain piping, Thermometer and pressure gauges which are covered under separate item). Motor shall be suitable for 415 ± 10% volts, 50 cycle, 3 Phase AC supply as indicated below etc complete.									
Tag. No.	Airconditioned Space	CFM (TYPE)	TR	No. of Rows	SP (mm)	HP / Phase				
Ground Floor										
1	Atrium & Coridor 1	8,000	24.0	4	55	7.5/3	1	Nos.	1,92,573	1,92,573.00
2	Atrium & Coridor 2	13,000	37.0	4	55	10.0/3	1	Nos.	3,09,764	3,09,764.00
3	Atrium & Lobby	3,500	8.00	4	55	3.0/3	1	No	1,09,761	1,09,761.00
First Floor										
1	Atrium & Coridor 1	6,000	18.30	4	55	5.0/3	1	No	1,72,762	1,72,762.00
2	Atrium & Coridor 2	12,000	34.00	4	55	7.5/3	1	No	2,98,888	2,98,888.00
Second Floor										
1	Corridor 1	4,000	10.50	4	55	3.0/3	1	No	1,22,804	1,22,804.00
2	Corridor 2	9,000	27.00	4	55	7.5/3	1	No	2,56,682	2,56,682.00
Third Floor										
1	Corridor 1	4,000	10.50	4	55	3.0/3	1	No	1,22,804	1,22,804.00
2	Corridor 2	9,000	27.00	4	55	7.5/3	1	No	2,56,682	2,56,682.00
Ground Floor										
1	TFA (Showroom 1,	1,500	6.0	8	60	1.0/3	1	No.	62,509	62,509.00
2	TFA (Shop 1 to 10)	1,500	6.0	8	60	1.0/3	1	No.	62,509	62,509.00
First & Second Floor										
1	TFA (Showroom 1,	1,500	6.0	8	60	1.0/3	2	Nos.	69,031	1,38,062.00
2	TFA (Shop 1 to 13)	2,000	8.0	8	60	1.5/3	2	Nos.	69,031	1,38,062.00
Third Floor										
1	TFA (Shop 1 to 13)	2,000	8.0	8	60	1.5/3	1	Nos.	69,031	69,031.00
Fourth Floor										
1	TFA (Common Area, Office) Multiplex	2,000	8.0	8	60	1.5/3	2	Nos.	69,031	1,38,062.00
Fifth Floor										
1	TFA (Common Area, Office & Proj. Rooms) Multiplex	3,000	12.0	8	60	2.0/3	1	No.	1,24,896	1,24,896.00

17.2.2	Variable Frequency Drive (VFD)					
	Variable Frequency Drive (VFD) as per specifications and drawings.					
a	7.5 KW	1	Nos.	41,614	41,614.00	
b	5.5 KW	4	Nos.	36,996	1,47,984.00	
c	4.0 KW	1	Nos.	31,933	31,933.00	
d	2.2 KW	3	Nos.	26,719	80,157.00	
	TOTAL				28,77,539.00	

S.N	Description	Qty	Unit	Rate	Amount
17.2.3	FAN COIL UNITS (Ceiling Suspended type)				
	Supply, installation, testing and commissioning of ceiling suspended type fan coil units complete with fan motor, cooling coil, filter plenum with filters, supports etc. as per specification and drawings etc complete.				
17.2.3.1	1200 CFM (3.0 TR)	2	Nos.	23,467	46,934.00
17.2.3.2	1000 CFM (2.5 TR)	1	No.	20,919	20,919.00
17.2.3.3	800 CFM (2.0 TR)	2	Nos.	14,415	28,830.00
17.2.3.4	600 CFM (1.5 TR)	3	Nos.	16,172	48,516.00
17.2.3.5	400 CFM (1.0 TR)	2	Nos.	11,251	22,502.00
17.2.4	FAN COIL UNITS CONTROLS				
	Supply, installation, testing and commissioning of controls for fan coil units consisting of 2-way motorized spring return valves, wiring etc complete.				
17.2.4.1	Water Flow Rate 7.2 USGPM	2	Nos.	4,799	9,598.00
17.2.4.2	Water Flow Rate 6.0 USGPM	1	No.	4,799	4,799.00
17.2.4.3	Water Flow Rate 4.8 USGPM	2	Nos.	4,553	9,106.00
17.2.4.4	Water Flow Rate 3.6 USGPM	3	Nos.	4,307	12,921.00
17.2.4.5	Water Flow Rate 2.4 USGPM	2	Nos.	4,184	8,368.00
17.2.5	Sensors				
17.2.5.1	CO Sensor	2	Nos.	12,145	24,290.00
17.2.5.2	CO2 Sensor	2	Nos.	15,627	31,254.00
17.2.6	Air washer - Double Skin				
	Supply, installation, testing and commissioning of double skin Air washer unit with 200 mm thick impregnated cellulose paper media (Celdek pads) of imported Origin (Munter's make) of minimum 90% efficiency, factory assembled, distribution header, GI 'B' class piping, makeup, quickfill and drain connections, Butterfly/Gate valves for Pumps, make up, drain & quickfill connections of Sump, 2 Nos. pumps of suitable capacity (1W +1 S), Y strainers and necessary fittings etc.. The quoted price shall also include GI frame and supporting structure for Celdek pads, washable synthetic fibre filters (of 90% efficiency down to 10 micron) and SS(16 gauge) sump,TEFC Motor (IP:55) Control panel complete with necessary Switchgear, Starters, metering, power and control wiring between Control panel and Motor/Pump etc. & drive unit complete with Pulley, Belts, Fresh air Louvers with bird screen(GI construction) as per specification etc complete.				
17.2.6.1	Duty: Kitchen supply (Food Court)				
	Air Qty :13,500 CFM				
	Static Pressure : 40 mm wg				
	Fan Motor HP : 7.5 HP				
	Pump Motor HP : 1.0 HP	1	No.	1,99,251	1,99,251
17.2.7	Scrubber (Double Skin)				

S.N	Description	Qty	Unit	Rate	Amount
	Providing and fixing of Double skin kitchen scrubber having 24G G.I. sheet metal fan section,with powder coated 24G G.I. sheet encloser, pre filter section for removal of oil grease, followed by intaks louvers, impingement plate section, high pressure water atomisation section, mist eliminator and outlet cone section, expansion chamber, nozzles, strainer, belt drive with guard, gasket tight access door, eliminators, water circulation pump, isolation valve for pumps, vibration isolators for blower distribution panel etc. complete as per specifications and drawings.				
17.2.7.1	Duty: Kitchen Exhaust (Food Court)				
	Air Qty : 15,000 CFM				
	Static Pressure : 50 mm wg				
	Fan Motor HP : 7.5 HP				
	Pump Motor HP: 1.0 HP	1	No.	3,47,178	3,47,178.00
17.2.8	AXIAL FLOW FANS				
	Supply, installation, testing and commissioning of direct driven Axial Flow Fans as shown in drawings and as per specifications. Each fan shall be complete with totally enclosed fan cooled motor (IP:55), motor mount and vibration isolators. Fan motor shall be suitable for 3 Phase, 415 +/- 10% V, 50 Hz AC supply.(Motor speed shall not exceed 900 rpm) etc complete.				
17.2.8.1	Basement 3				
(a)	Duty : Smoke Exhaust (Zone 1)				
	Air Quantity : 23,000 CFM				
	Static Pressure : 20 mm wg				
	Motor Rating : 12.5 HP.				
	Noise level not exceeding 76 DB at 3 Mtr.	3	Nos.	82,263	2,46,789.00
(b)	Duty : Smoke Exhaust (Zone 2)				
	Air Quantity : 32,000 CFM				
	Static Pressure : 20 mm wg				
	Motor Rating : 20 HP.				
	Noise level not exceeding 78 DB at 3 Mtr.	4	Nos.	1,09,782	4,39,128.00
17.2.8.2	Basement 2				
(a)	Duty : Smoke Exhaust (Zone 1)				
	Air Quantity : 23,000 CFM				
	Static Pressure : 20 mm wg				
	Motor Rating : 12.5 HP.				
	Noise level not exceeding 76 DB at 3 Mtr.	3	Nos.	82,263	2,46,789.00
(b)	Duty : Smoke Exhaust (Zone 2)				
	Air Quantity : 32,000 CFM				
	Static Pressure : 20 mm wg				
	Motor Rating : 20 HP				
	Noise level not exceeding 78 DB at 3 Mtr.	4	Nos.	1,09,782	4,39,128.00
17.2.8.3	Basement 1				
(a)	Duty : Smoke Exhaust (Zone 1)				
	Air Quantity : 29,500 CFM				

S.N	Description	Qty	Unit	Rate	Amount
	Static Pressure : 20 mm wg				
	Motor Rating : 12.5 HP.				
	Noise level not exceeding 78 DB at 3 Mtr.	3	Nos.	1,02,743	3,08,229.00
					-
(b)	Duty : Smoke Exhaust (Zone 2)				
	Air Quantity : 30,500 CFM				
	Static Pressure : 20 mm wg				
	Motor Rating : 20 HP				
	Noise level not exceeding 78 DB at 3 Mtr.	5	Nos.	1,09,782	5,48,910.00
17.2.8.4	Duty : DG Room Exhaust				
	Air Quantity : 20,000 CFM				
	Static Pressure : 20 mm wg				
	Motor Rating : 10 HP				
	Noise level not exceeding 73 DB at 3 Mtr.	1	Nos.	60,504	60,504.00
17.2.8.5	Duty : Smoke Exhaust (Atrium)				
	Air Quantity : 5000 CFM				
	Static Pressure : 20 mm wg				
	Motor Rating : 3 HP				
	Noise level not exceeding 69 DB at 3 Mtr.	3	Nos.	24,344	73,032.00
17.2.8.6	Duty : Smoke Exhaust (Atrium)				
	Air Quantity : 2500 CFM				
	Static Pressure : 20 mm wg				
	Motor Rating : 2 HP (Suggested)				
	Noise level not exceeding 65 DB at 3 Mtr.	6	Nos.	19,708	1,18,248.00
17.2.8.7	Duty : Smoke Exhaust (Auditoriums)				
	Air Quantity : 12000 CFM				
	Static Pressure : 20 mm wg				
	Motor Rating : 7.5 HP (Suggested)				
	Noise level not exceeding 73 DB at 3 Mtr.	3	Nos.	46,562	1,39,686.00
17.2.9	CENTRIFUGAL FANS				
	Supply, installation, testing and commissioning of Double inlet double width centrifugal Fans as per specifications and as shown on drawings. Each fan shall be completed with totally enclosed fan cooled motor (IP:55), belt drive, pulley mounted on motor and fan shafts, belt guard, motor mounts and vibration isolators. Fan motor shall be suitable for 3 Phase, 415 ± 10% V, 50 Hz AC supply. Fan capacities as indicated below etc complete:				
17.2.9.1	Duty : Normal Exhaust and Fresh Air for Basement 3 (Zone 1)				
	Capacity : 46,000 CFM				
	Static Pressure : 40 mm wg				
	Motor Rating : 25 HP				
	Noise level not exceeding 74 DB at 3 Mtr.	2	Nos.	3,06,081	6,12,162.00

S.N	Description	Qty	Unit	Rate	Amount
17.2.9.2	Duty : Normal Exhaust and Fresh Air for Basement 3 (Zone 2)				
	Capacity : 43,000 CFM				
	Static Pressure : 40 mm wg				
	Motor Rating : 25 HP				
	Noise level not exceeding 70 DB at 3 Mtr.	4	Nos.	3,05,601	12,22,404
17.2.9.3	Duty : Normal Exhaust and Fresh Air for Basement 2 (Zone 1)				
	Capacity : 46,000 CFM				
	Static Pressure : 40 mm wg				
	Motor Rating : 25 HP				
	Noise level not exceeding 74 DB at 3 Mtr.	2	Nos.	3,06,081	6,12,162.00
17.2.9.4	Duty : Normal Exhaust and Fresh Air for Basement 2 (Zone 2)				
	Capacity : 43,000 CFM				
	Static Pressure : 40 mm wg				
	Motor Rating : 25 HP				
	Noise level not exceeding 70 DB at 3 Mtr.	4	Nos.	3,05,601	12,22,404.00
17.2.9.5	Duty : Normal Exhaust for Basement 1 (Zone 1)				
	Capacity : 58,500 CFM				
	Static Pressure : 40 mm wg				
	Motor Rating : 30 HP				
	Noise level not exceeding 74 DB at 3 Mtr.	1	No.	4,06,673	4,06,673.00
17.2.9.6	Duty : Fresh Air for Basement 1 (Zone 1)				
	Capacity : 36,000 CFM				
	Static Pressure : 40 mm wg				
	Motor Rating : 15 HP				
	Noise level not exceeding 72 DB at 3 Mtr.	1	No.	1,84,997	1,84,997.00
17.2.9.7	Duty : Normal Exhaust and Fresh Air for Basement 1 (Zone 2)				
	Capacity : 60,000 CFM				
	Static Pressure : 40 mm wg				
	Motor Rating : 30 HP				
	Noise level not exceeding 72 DB at 3 Mtr.	4	Nos.	5,00,129	20,00,516.00
17.2.10	HEAT RECOVERY UNIT (HRU)				
	Providing and fixing of heat recovery type treated fresh air unit complete with fresh air inlet section & exhaust air inlet sections with dampers, filter section, fan, motor, connecting fram, base frame for both the fresh air & exhaust air section. Heat recovery wheel, wheel drive arrangement with belt and motor, purge sector etc. as per specifications and drawings etc complete.				
17.2.10.1	Office area (Fourth to Tenth Floor)				
	Air Quantity : 21,250 CFM				
	Motor rating : 10 HP				
	Location : On Terrace	2	Nos	22,98,574	45,97,148.00

S.N	Description	Qty	Unit	Rate	Amount
17.2.10.2	Office area (Sixth to Tenth Floor)				
	Air Quantity : 15,500 CFM				
	Motor rating : 10 HP				
	Location : On Terrace	1	No	18,96,201	18,96,201.00
17.2.11	INLINE FAN for TOILET VENTILATION				
	Supply, installation, testing and commissioning of inline ducted Fans as shown in drawings. Fan motor shall be suitable for single phase, 50 Hz AC supply. The capacity of the fan given as under:-				
17.2.11.1	Air Quantity : 2000 CFM				
	Static Pressure : 25 mm wg				
	Motor rating : 750 Watt				
	Location : Ground Floor	1	No	18,704	18,704.00
17.2.11.2	Air Quantity : 1800 CFM				
	Static Pressure : 25 mm wg				
	Motor rating : 750 Watt				
	Location : Ground Floor	1	No	18,704	18,704.00
17.2.11.3	Air Quantity : 1300 CFM				
	Static Pressure : 20 mm wg				
	Motor rating : 500 Watt				
	Location : Ground to Third Floor	4	Nos.	17,350	69,400.00
17.2.11.4	Air Quantity : 1200 CFM				
	Static Pressure : 20 mm wg				
	Motor rating : 500 Watt				
	Location : Ground to Tenth Floor	11	Nos.	17,350	1,90,850.00
17.2.11.5	Air Quantity : 1900 CFM				
	Static Pressure : 25 mm wg				
	Motor rating : 750 Watt				
	Location : First to Third Floor	3	Nos.	18,704	56,112.00
17.2.11.6	Air Quantity : 2300 CFM				
	Static Pressure : 25 mm wg				
	Motor rating : 750 Watt				
	Location : First to Third Floor	3	Nos.	25,594	76,782.00
17.2.11.7	Air Quantity : 1600 CFM				
	Static Pressure : 25 mm wg				
	Motor rating : 750 Watt				
	Location : Fourth to Tenth Floor	7	Nos.	17,350	1,21,450.00
17.2.11.8	Air Quantity : 1350 CFM				
	Static Pressure : 25 mm wg				
	Motor rating : 750 Watt				
	Location : Fourth Floor	1	No	17,350	17,350.00

S.N	Description	Qty	Unit	Rate	Amount
17.2.11.9	Air Quantity : 700 CFM				
	Static Pressure : 15 mm wg				
	Motor rating : 300 Watt				
	Location : Fourth Floor	1	No	8,798	8,798.00
17.2.12	Propeller Fans				
	Supply, installation, testing and commissioning of direct driven Propeller fans for exhaust air as shown on drawings and as per specifications. Each fan shall be complete with permanent split capacitor or shaded pole motor, mounting plate, accessories like wire guard, bird screen and fixed louvers for weather protection as required. Fan capacities and Electrical characteristics shall be as follows etc complete:				
17.2.12.1	Duty : AC Plant Room Exhaust				
	Air Quantity : 3800 CFM				
	Static Pressure : 10 mm wg				
	Motor rating : 750 Watt	3	Nos.	7,998	23,994.00
17.2.12.2	Duty : Pump Room Exhaust				
	Air Quantity : 3800 CFM				
	Static Pressure : 10 mm wg				
	Motor rating : 750 Watt	3	Nos.	7,998	23,994.00
17.2.13	FAN SECTION				
	Supply, Installation, Testing and commissioning of single skin Fan Section as shown in drawing and as per specifications. Each unit shall be complete with casing (16G) DIDW centrifugal fan, belt drive, motor, louvers etc. Fan motor shall be suitable for 3 Phase, 415 ± 10% V, 50 Hz AC supply and noise level at 3 mtr as specified.				
17.2.13.1	Duty: Lift Well Pressurisation				
	Air Quantity : 33,600 CFM				
	Static Pressure : 50 mm wg				
	Motor Rating : 20.0 HP				
	Location : Terrace Floor	2	Nos.	3,26,183	6,52,366.00
	Noise level not exceeding 71 db at 3 mtr.				
17.2.13.2	Duty: Lift Well Pressurisation				
	Air Quantity : 22,400 CFM				
	Static Pressure : 50 mm wg				
	Motor Rating : 12.5 HP				
	Location : Terrace Floor	1	No.	2,41,087	2,41,087.00
	Noise level not exceeding 64 db at 3 mtr.				
17.2.13.3	Duty: Staircase Pressurisation				
	Air Quantity : 9800 CFM				
	Static Pressure : 30 mm wg				
	Motor Rating : 7.5 HP				
	Location : Terrace Floor	3	Nos.	99,188	2,97,564.00
	Noise level not exceeding 61 db at 3 mtr.				
17.2.13.4	Duty: Staircase Pressurisation				
	Air Quantity : 6300 CFM				
	Static Pressure : 30 mm wg				

S.N	Description	Qty	Unit	Rate	Amount
	Motor Rating : 7.5 HP				
	Location : Terrace of Fifth Floor	1	No.	75,341	75,341.00
	Noise level not exceeding 60 db at 3 mtr.				
17.2.13.5	Duty: Lift Lobby Pressurisation				
	Air Quantity : 8400 CFM				
	Static Pressure : 30 mm wg				
	Motor Rating : 7.5 HP				
	Location : Terrace	3	Nos.	88,051	2,64,153.00
	Noise level not exceeding 61 db at 3 mtr.				
17.2.14	EXPANSION TANK				
	Providing and installation of expansion tank, fabricated out of 6 mm thick M.S. plate construction, duly insulated as per the specifications and shall be complete with 50mm dia outlets for system connection and overflow, make up connection, overflow connection, drain connection, drain valve, vent connections, valves and fittings as required. Expansion tank shall be complete with insulation as per specifications etc complete.				
	SIZE : 1000 mm X 1000 mm X 1000 mm (high)	1	No.	36,915	36,915.00
(CHILLED WATER / CONDENSER WATER / DRAIN)					
17.2.15	CONDENSER WATER				
	Supplying, fixing, testing and commissioning of condenser water pipes of following sizes of MS 'C' class along with necessary clamps, vibration isolators and fittings such as bends,tees etc.but excluding valves, strainers, gauges etc. adequately supported on rigid supports duly painted/buried in ground excavation and refilling etc. as per specification and as required complete in all respect. Note:-The Pipes size 150mm & below shall be M.S. 'C' class as per IS : 1239 and pipes size above 150mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35mm thick M.S. Sheet for pipes upto 350 mm dia. And from minimum 7mm thick MS sheet for pipes of 400 mm dia and above etc complete.				
17.2.15.1	600 mm dia MS Pipes	650	RMT	5,266	34,22,900.00
17.2.15.2	300 mm dia MS Pipes	110	RMT	4,621	5,08,310.00
17.2.15.3	100 mm dia MS Pipes	25	RMT	1,564	39,100.00
17.2.15.4	65 mm dia MS Pipes	25	RMT	1,046	26,150.00
17.2.16	Supplying, fixing, testing and commissioning of following valves, gauges and strainers for condenser water circulation as per specifications etc complete.				
	BUTTERFLY VALVE (MANUAL) with C I body SS disc nitrile sheet & O - ring & PN 16 pressure rating as specified.				
17.2.16.1	300 mm dia	30	Nos.	12,633	3,78,990.00
17.2.16.2	100 mm dia	3	Nos.	3,612	10,836.00
17.2.16.3	65 mm dia	12	Nos.	2,487	29,844.00
17.2.17	Providing and fixing in position the following balancing valves as per specifications:				

S.N	Description	Qty	Unit	Rate	Amount
	300 mm dia	5	Nos.	52,970	2,64,850.00
17.2.18	Providing and fixing of NON - RETURN VALVE with dual plate of CI body SS plates vulcanized NBR seal flanged end & PN 16 pressure rating as specified.				
	300 mm dia	5	Nos.	16,084	80,420.00
17.2.19	Providing and fixing of Y strainer as per specifications of following sizes:				
	300 mm dia	5	Nos.	14,218	71,090.00
17.2.20	Providing and fixing in position the following Flexible coupling (with control rods) for the condenser water pumps.				
	300 mm dia	10	Nos.	17,871	1,78,710.00
17.2.21	Providing and fixing in position the following water flow switch of 32 mm dia as per specifications:	4	Nos.	868	3,472.00
17.2.21	CHILLED WATER PIPING				
	Supplying, laying/ fixing, testing and commissioning of following nominal sizes of chilled water piping plumbing inside the building (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges etc.) duly insulated with fire retardant quality expanded polystyrene moulded pipe section of density 20 kg/cu.m after a thick coat of cold setting adhesive(CPRX compound) wrapping with 500g polythene faced hessain and finally applying 0.63mm aluminium sheet cladding complete with type3, grade 1 roofing feltstrip(as per IS:1322 as amended up to date) at joints repairing of damage to building etc. as per specifications and as required complete in all respect. Note:-The Pipes of sizes 150 mm & below shall be M.S. 'C' class as per IS : 1239 and pipes size above 150 mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35 mm thick M.S. Sheet for pipes upto 350 mm dia. and from minimum 7mm thick MS sheet for pipes of 400 mm dia and above.				
17.2.21.1	450 mm dia MS Pipes	425	RM	10,559	44,87,575.00
17.2.21.2	400 mm dia MS Pipes	35	RM	10,296	3,60,360.00
17.2.21.3	350 mm dia MS Pipes	65	RM	6,429	4,17,885.00
17.2.21.4	300 mm dia MS Pipes	180	RM	5,503	9,90,540.00
17.2.21.5	250 mm dia MS Pipes	150	RM	4,724	7,08,600.00
17.2.21.6	200 mm dia MS Pipes	45	RM	3,829	1,72,305.00
17.2.21.7	150 mm dia MS Pipes	350	RM	2,556	8,94,600.00
17.2.21.8	125 mm dia MS Pipes	105	RM	2,271	2,38,455.00
17.2.21.9	100 mm dia MS Pipes	680	RM	1,807	12,28,760.00
17.2.21.10	80 mm dia MS Pipes	600	RM	1,363	8,17,800.00
17.2.21.11	65 mm dia MS Pipes	820	RM	1,093	8,96,260.00
17.2.21.12	50 mm dia MS Pipes	2120	RM	974	20,64,880.00
17.2.21.13	40 mm dia MS Pipes	770	RM	806	6,20,620.00
17.2.21.14	32 mm dia MS Pipes	630	RM	658	4,14,540.00
17.2.21.15	25 mm dia MS Pipes	380	RM	548	2,08,240.00
17.2.21.16	20 mm dia MS Pipes	120	RM	440	52,800.00

S.N	Description	Qty	Unit	Rate	Amount
17.2.22	PICB Valve (Pressure Independent Control & Balancing Valve)				
	Supply, Installation, Testing and Commissioning of following sizes electronic, self-balancing, pressure independent type dynamic balancing valve with integrated 2 way modulating control valve in a single body. The actuator shall be capable of accepting upto 10V DC and upto 20 mA electric signal and shall provide similar transduced feedback output to control system. Maximum close off pressure shall not be less than 6 Bar for upto 50 mm valves and 7 Bar for 65 mm & above. Valves should have pressure rating of 25 Bar minimum etc complete.				
17.2.22.1	88 - 55 USGPM	5	Nos.	95,092	4,75,460.00
17.2.22.2	55 - 35 USGPM	1	Nos.	56,248	56,248.00
17.2.22.3	35 - 14 USGPM	13	Nos.	44,195	5,74,535.00
17.2.22.4	8 - 4.5 USGPM (For FCU)	5	Nos.	13,226	66,130.00
17.2.22.5	4 - 2 USGPM (For FCU)	5	Nos.	9,642	48,210.00
17.2.23	Supplying, fixing, testing and commissioning of following valves, strainers, gauges in the chilled water plumbing duly insulated as per specifications as of the connected piping and adequately supported as per specifications etc complete.				
	BUTTERFLY VALVE (MANUAL) with C I body SS Disc, Nitrile Rubber Seal & O- Ring PN 16 pressure rating for hot water & chilled water circulation as specified etc complete.				
17.2.23.1	300 mm dia	8	Nos	12,633	1,01,064.00
17.2.23.2	250 mm dia	24	Nos	10,455	2,50,920.00
17.2.23.3	150 mm dia	24	Nos	5,748	1,37,952.00
17.2.23.4	125 mm dia	6	Nos	5,139	30,834.00
17.2.23.5	80 mm dia	4	Nos	3,236	12,944.00
17.2.23.6	65 mm dia	6	Nos	3,013	18,078.00
17.2.23.7	50 mm dia	4	Nos	2,777	11,108.00
17.2.23.8	40 mm dia	16	Nos	2565	41,040.00
17.2.24	Supplying, fixing, testing and commissioning of following BALANCING VALVE WITH BUILT IN MEASURING FACILITY with C I body flanged construction with EPDM coated disc with long pitch with protected out pipe insulation & PN 16 pressure rating for chilled / hot water circulation as specified etc complete.				
17.2.24.1	300 mm dia	4	Nos	52,970	2,11,880.00
17.2.24.2	250 mm dia	10	Nos	42,274	4,22,740.00
17.2.24.3	150 mm dia	12	Nos	23,323	2,79,876.00
17.2.24.4	125 mm dia	3	Nos	17,532	52,596.00
17.2.24.5	80 mm dia	2	No	9,084	18,168.00
17.2.25	Supplying, fixing, testing and commissioning of following NON - RETURN VALVE with dual plate of C I body SS plates vulcanized NBR seal flanged end & PN 16 pressure rating for chilled / hot water circulation including insulation as specified etc complete.				
17.2.25.1	300 mm dia	3	Nos	16,084	48,252.00
17.2.25.2	250 mm dia	5	Nos	10,356	51,780.00
17.2.25.3	150 mm dia	2	Nos	7,274	14,548.00

S.N	Description	Qty	Unit	Rate	Amount
17.2.26	Supplying, fixing, testing and commissioning of following Y - STRAINER of Ductile CI Body flanged ends with stainless steel strainer for chilled / hot water circulation including insulation as specified etc complete.				
17.2.26.1	300 mm dia	3	Nos	14,218	42,654.00
17.2.26.2	250 mm dia	5	Nos	12,187	60,935.00
17.2.26.3	150 mm dia	2	Nos	12,940	25,880.00
17.2.26.4	80 mm dia	2	Nos	6,245	12,490.00
17.2.26.5	65 mm dia	3	Nos	5,442	16,326.00
17.2.26.6	50 mm dia	2	Nos	4,413	8,826.00
17.2.26.7	40 mm dia	8	Nos	3,126	25,008.00
17.2.27	Providing and fixing in position the following Ball Valves with Strainer duly insulated as per specifications and drawings etc complete.				
17.2.27.1	32 mm dia	11	Sets	2,474	27,214.00
17.2.27.2	25 mm dia	3	Sets	860	2,580.00
17.2.27.3	20 mm dia	7	Sets	783	5,481.00
17.2.28	Providing and fixing in position the following Ball Valves without strainer duly insulated as per specifications and drawings etc complete.				
17.2.28.1	32 mm dia	11	Nos.	1,390	15,290.00
17.2.28.2	25 mm dia	3	Nos.	843	2,529.00
17.2.28.3	20 mm dia	7	Nos.	654	4,578.00
17.2.29	Providing and fixing in position the following Flexible coupling (with control rods) for the chilled water pumps etc				
17.2.29.1	300 mm dia	6	Nos.	17,871	1,07,226.00
17.2.29.2	250 mm dia	10	Nos.	16,595	1,65,950.00
17.2.29.3	150 mm dia	4	Nos.	14,680	58,720.00
17.2.30	Providing and fixing in position the following descaling valves for condensing and chilling units as per specification etc complete.				
17.2.30.1	32 mm dia Valve	8	Nos.	3,479	27,832.00
17.2.31	Providing and fixing in position the following water flow switch as per specifications etc complete.				
17.2.31.1	32 mm dia	4	Nos.	868	3,472.00
17.2.32	Supplying, fixing, testing and commissioning of following 2-way butterfly motorized valve ON/OFF with BMS				
17.2.32.1	450 mm dia	2	Nos.	1,88,745	3,77,490.00
17.2.32.2	300 mm dia	13	Nos.	94,792	12,32,296.00
17.2.32.3	250 mm dia	5	Nos.	87,736	4,38,680.00
17.2.33	Supply, installation, testing and commissioning of cooling thermostats for various Air Handling Units and Fan Coil Units as per specifications including all accessories ,mountings,wiring between thermostat & unit, terminations etc complete.				
17.2.33.1	Proportional thermostats for Air Handling Units	19	Nos.	5,043	95,817.00
17.2.33.2	Snap acting thermostates for Fan Coil Units	10	Nos.	4,021	40,210.00

S.N	Description	Qty	Unit	Rate	Amount
17.2.34	Providing and fixing in position the following Drain Valves (For Drain) duly insulated as per specifications and drawings etc complete.				
17.2.34.1	25 mm dia	19	Nos.	1,889	35,891.00
17.2.34.2	20 mm dia	20	Nos.	1,483	29,660.00
17.2.35	Providing and fixing in position the following Purge Valves duly insulataed as per specifications and drawings etc complete.				
17.2.35.1	25 mm dia	19	Nos.	1,889	35,891.00
17.2.35.2	20 mm dia	10	Nos.	1,541	15,410.00
17.2.36	Providing and fixing in Auto air vents of following size etc complete.				
17.2.36.1	25 mm dia.	35	Nos.	1,702	59,570.00
17.2.37	Providing and fixing in BTU Meters for AHUs				
	As per Requirement				
17.2.37.1	90-58 USGPM	1	Nos	84,548	84,548.00
17.2.37.2	58-49 USGPM	1	Nos	56,274	56,274.00
17.2.37.3	50-40 USGPM	1	Nos	53,131	53,131.00
17.2.37.4	39-17 USGPM	2	Nos	39,706	79,412.00
17.2.37.5	16-6 USGPM	1	Nos	24,926	24,926.00
17.2.37.6	5-2 USGPM	1	Nos	22,021	22,021.00
17.2.38	DRAIN PIPING				
	Providing and fixing in position the following GI medium class cut to required length and installed with screw joints including the necessary fittings (bends, tees, unions, sockets etc) duly insulated with 25 mm thick TF quality thermocole pipe section as per specifications etc complete.				
17.2.38.1	40 mm dia	990	RMT	217	2,14,830.00
17.2.38.2	32 mm dia	670	RMT	186	1,24,620.00
17.2.38.3	25 mm dia	480	RMT	146	70,080.00
17.2.39	Providing and fixing in position industrial type pressure gauges with Gun metal Globe/Ball valves for isolation and necessary fittings, for the ease of maintenance and operation as per specification etc complete.	38	Nos.	957	36,366.00
17.2.40	Providing and fixing in position stem type mercury-in-glass filled industrial thermometers as per specification etc complete.	38	Nos.	702	26,676.00
17.2.41	Providing and fixing in position dial type mercury-in-glass filled industrial thermometers etc complete.	28	Nos.	1,532	42,896.00
17.2.42	AIR DISTRIBUTION				
	Supply, installation, balancing and commissioning of factory fabricated GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, splitter dampers, vanes,hangers, supports etc. as per approved drawings and specifications of following sheet thickness as required etc complete.				
17.2.42.1	0.63 MM (24 gauge) Galvanized Sheet Steel Ducting	4720	Sqm.	826	38,98,720.00
17.2.42.2	0.8 MM (22 gauge) Galvanized Sheet Steel Ducting	1900	Sqm.	968	18,39,200.00

S.N	Description	Qty	Unit	Rate	Amount
17.2.42.3	1.0 MM (20 gauge) Galvanized Sheet Steel Ducting	2550	Sqm.	1,278	32,58,900.00
17.2.42.4	1.25 MM (18 gauge) Galvanized Sheet Steel Ducting	4690	Sqm.	1,416	66,41,040.00
17.2.43	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 etc complete.	25	Sqm.	5,463	1,36,575.00
17.2.44	Supply, installation, testing and balancing of square shape ceiling diffusers of approved shade with removable core as per specifications including any framework required for fixing of diffuser. (Vendor to get a sample approved from Client/consultants before procurement) etc complete.				
17.2.44.1	Extruded aluminium construction, powder coated with volume control damper	7	Sqm.	9,963	69,741.00
17.2.44.2	Extruded aluminium construction, powder coated without volume control damper	7	Sqm.	6,627	46,389.00
17.2.45	Supply, installation, testing and commissioning of extruded aluminium powder coated supply / return air grills of approved shade and make as per specifications including any framework required for fixing of grills etc complete.				
17.2.45.1	Extruded aluminium construction, single louvered, powder coated with volume control damper.	1	Sqm.	7,435	7,435.00
17.2.45.2	Extruded aluminium construction, single louvered, powder coated without volume control damper for return air.	1	Sqm.	4,829	4,829.00
17.2.45.3	Extruded aluminium construction, single louvered, powder coated without volume control damper for exhaust air etc complete.	1	Sqm.	4,992	4,992.00
17.2.46	Supply, installation, testing and commissioning of extruded aluminium powder coated linear grills of approved shade and make as per specifications including any framework required for fixing of linear grills etc complete.				
17.2.46.1	100 mm wide Linear Grills	1180	RMT	505	5,95,900.00
17.2.47	Supply, installation, testing and commissioning of extruded M.S. powder coated supply/exhaust air grills of approved shade and make etc complete.				
17.2.47.1	Single Louvered fresh air grills with dampers	63	Sqm.	8,715	5,49,045.00
17.2.47.2	Single Louvered exhaust air grills without dampers	106	Sqm.	5,385	5,70,810.00
17.2.48	Supply, installation and balancing of extruded aluminium powder coated air louvers complete with aluminium wire mesh birdscreen & volume control dampers as per specifications etc complete.				
17.2.48.1	Fresh air louvers	50	Sqm.	13,415	6,70,750.00
17.2.48.2	Exhaust air louvers(without volume control dampers)	80	Sqm.	7,846	6,27,680.00
17.2.49	Supply, installation and balancing of extruded M.S. powder coated air louvers complete with aluminium wire mesh birdscreen & volume control dampers as per specifications etc complete.				
17.2.49.1	Fresh air louvers	57	Sqm.	10,779	6,14,403.00

S.N	Description	Qty	Unit	Rate	Amount
17.2.49.2	Exhaust air louvers(without volume control dampers)	40	Sqm.	7,362	2,94,480.00
17.2.50	FIRE DAMPERS				
17.2.50.1	Providing and fixing of motorised combination fire & smoke dampers of approved make of atleast 120 minutes fire rating as per the specifications. The fire damper shall be complete with electronic temperature sensor and electrically operated actuator, interconnection wiring between AHU & dampers. The fire damper shall be located in the supply / return air ducts.The control panel will be such located that the reset can be done easily etc complete.	20	Sqm.	8,665	1,73,300.00
	Accessories for fire dampers				
17.2.50.2	Providing and fixing of Control panel actuator, including spring type actuator with smoke sensor and remote indication of fire damper position etc complete.	100	Nos.	8,077	8,07,700
17.2.51	INSULATION				
	Supply, Installation, Testing & Commissioning of external thermal insulation with closed cell cross-linked polythelene foam with self adhesive and density for insulation of ducts as per specifications & drawings etc complete.				
17.2.51.1	12 mm thick	3466	Sqm.	508	17,60,728.00
17.2.51.2	18 mm thick	480	Sqm.	809	3,88,320.00
17.2.52	Supply and fixing of Acoustic lining inside the ducts as per specifications and as shown on drawings etc complete.				
17.2.52.1	25 mm thick	400	Sqm.	1,678	6,71,200.00
17.2.53	Supply and fixing of Underdeck insulation with Thermocoal material as per specifications etc complete.				
17.2.53.1	25 mm thick	4700	Sqm	263	12,36,100.00
	TOTAL FOR SECTION B				6,95,74,318.00

Sub-Head- 17.3 : Preamble to BOQ for MV Panels					
1	Supporting rigid steel framework.				
2	Cubicle types 2mm thick CRCA				
3	Complete with inter connections and distribution busbars.				
4	Proper bonding to earth.				
5	Embossed PVC plates on boards, showing circuit diagrams.				
6	Padlocking of panel doors.				
7	Padlocking of MCCB's handle in off position.				
8	Providing cable supports within cable Alley.				
9	ACBs for all incomers shall have LED indication for fault type, Microprocessor failure and LCD display for curves & parameters.				
10	TPN ACB mean 3 pole & neutral				
11	TPN MCCB mean 3 pole & neutral				
12	ACB's shall have minimum 35 MVA breaking capacity.				
13	MCB's shall have 10 KA breaking capacity.				
14	All motor feeders' MCCB / MCB shall be suitable for motor duty application.				
15	All DOL & Star-Delta Starters shall be provided with SPPR (single phase preventor relay) and 2 nos. of Aux.Contacts for Remote operation/monitor.				
16	All MCCB's shall be provided with Extended Rotatry operating handle.				
17	The Panel fabricator shall provide Al./ Copper Bus-bars link from Breakers wherever more than two nos. of cables are terminated in the breakers.				
18	All breakers in panels shall have a fault level as indicated in BoQ.				
19	All MCBs in Panel shall be suitable for motor duty application.				
S.N	Description	Qty		Unit	Amount
	Section-17.3 : MV Panels				
	Design, Fabrication, Supply, Erection,Testing and commissioning of Powder coated Main Distribution Panel fabricated out of 2 mm thick CRCA sheet steel in cubical, compartmentalised, free standing floor /wall mounted, dust and vermin proof, with reinforcement of suitable size angle iron, channel, T-iron or flats as required. Cable gland plates shall be provided on top as well as bottom of the panels. Panels shall be treated with all anti-corrosive process before painting as per specification. Panels shall be suitable for 415V, 3-Phase, Four wire, 50 Hz supply complete with earth bus and lifting hooks as required in case of large panels. Approval shall be taken for each panel before fabrication. (All hardware's like nuts and bolts used shall be Galvanized and Zinc passivated)				
17.3.1	AC Panel				
A	INCOMERS 2 Nos. Each 1250A				
i)	2 No.1250A FP ACB with inbuilt O/L, S/C and E/F electronic release				
B	METERING & INDICATION				
i)	2 No. flush mounting multifunction meter				

S.N	Description	Qty		Unit	Amount
ii)	6 nos 1250/5A Class 1.0, 10 VA Burden CT's for metering				
iii)	2 set of ON/OFF/TRIP indicating lamps along with 2A SP MCB backup protection.				
C	BUS COUPLER:-				
i)	1 No.1250A FP ACB				
D	INTERLOCKING.				
i)	Incomers & Bus couplers shall be electrically & mechanically interlocked.				
E	BUS-BAR				
i)	2 Sets of 1500A TPN Aluminium Bus Bar with colour coded PVC Sleeves				
D	OUTGOINGS				
i)	5 Nos. 800A TPN MCCB (50KA)				
ii)	7 Nos. 125A TPN MCCB (35KA)				
iii)	6 Nos. 40A/63A TPN MCCB (35KA)				
iv)	12 Nos. 40A TPN MCB				
v)	6 Nos. S/D starter with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 50 HP Motor.				
vi)	4 Nos. S/D starter with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 15 HP Motor.				
vii)	9 Nos. S/D starter with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for upto 12.5 HP Motor.				
viii)	2 Nos. space for S/D starter with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for upto 12.5 HP Motor.				
	Supply, Installation, testing & commissioning of A.C. Panel as described above	1	Set	26,79,000	26,79,000
17.3.2	Ventilation Panel-B1 Z1 (Typical For B2 Z1, B3 Z1)				
A	INCOMER				
	1 nos. 160 A TPN MCCB (25KA) with E/f Module & Core Balancing type CT (CBCT) complete.				
B	METERING & INDICATION				
i)	1 set of R,Y,B phase indicating lamps				
ii)	1 Set of Breaker ON-OFF-TRIP indication Lamps.				
iii)	1 set of Digital Multifunction meter for Voltage, Current & KW with selector switch. Each with 3nos. Of 2A SP MCB & 3nos				
C	BUS BAR:-				
	1 Set of 200A, TPN Al.bus bar with colour coded PVC sleeves				
D	OUTGOINGS				
i)	4 Nos. 63A TP MCB				
ii)	3 Nos. 63A/80A TP MCCB (25KA)				
iii)	1 sets of S/D starter each with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 30 HP Motor.				
iv)	1 set of S/D starter each with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 20 HP Motor.				
v)	3 sets of S/D starter each with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 12.5 HP Motor.				
vi)	1 set of Space for S/D starter each with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for upto 20 HP Motor.				

S.N	Description	Qty		Unit	Amount
	Supply, Installation, testing & commissioning of Vent. Panel as described above	3	Set	2,49,500	7,48,500
17.3.3	Ventilation & Press. Panel-B1 Z2 (Typical For B2 Z2, B3 Z2)				
A	INCOMER				
	1 nos. 400 A TPN MCCB (25KA) with E/f Module & Core Balancing type CT (CBCT) complete.				
B	METERING & INDICATION				
i)	1 set of R,Y,B phase indicating lamps				
ii)	1 Set of Breaker ON-OFF-TRIP indication Lamps.				
iii)	1 set of Digital Multifunction meter for Voltage, Current & KW with selector switch. Each with 3nos. Of 2A SP MCB & 3nos				
C	BUS BAR:-				
	1 Set of 500A, TPN Al.bus bar with colour coded PVC sleeves				
D	OUTGOINGS				
i)	12 No. 63A/80A TPN MCCB (25KA)				
ii)	4 sets of S/D starter each with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 30 HP Motor.				
iii)	6 set of S/D starter each with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 20 HP Motor.				
iv)	1 set of Space for S/D starter each with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for upto 20 HP Motor.				
	Supply, Installation, testing & commissioning of Vent.& Press.Panel as described above	3	Set	7,24,000	21,72,000
17.3.4	Pressurization fan Panel				
A	INCOMER				
i)	1 No. 200A TPN MCCB (25 KA)				
B	METERING & INDICATION				
i)	1 Sets of R,Y,B phase indicating lamps				
ii)	1 Nos. (0-500V) Voltmeter with VSS with 3 nos. 2A SP MCB				
iii)	1 Nos. (0-200A) Ammeter with ASS with 3 nos. 200/5A CT's				
C	BUS-BAR				
i)	1 Sets of 250A TPN Aluminium Bus Bar with colour coded PVC Sleeves				
D	OUTGOINGS				
i)	3 nos. 63A/80A TP MCCB (25kA)				
ii)	2 Nos. 40A/63A TP MCB				
iii)	10 Nos. 10A/32A TP MCB				
iv)	2 set of S/D starter each with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 20 HP Motor.				
v)	7 set of DOL starter each with self illuminated Push button for ON & OFF and suitable rating of contactor and O/L relays, suitable for 7.5 HP Motor.				
vi)	1 no. Space For DOL starter complete with Contactor & O/L relay suitable for upto 7.5 HP motor				
	Supply, Installation, testing & commissioning of Pressurization fan Panel as described above.	1	Set	2,55,500	2,55,500
17.3.5	Ventilation & AHU Panel				

S.N	Description	Qty		Unit	Amount
A	INCOMER				
i)	2 No.800A TPN MCCB with inbuilt O/L, S/C and E/F electronic release				
B	METERING & INDICATION				
i)	1 setof R,Y,B phase indicating lamps				
ii)	1 Set of Breaker ON-OFF-TRIP indication Lamps.				
iii)	1 set of Digital Multifunction meter for Voltage, Current & KW with selector switch. Each with 3nos. Of 2A SP MCB & 3nos				
C	BUS COUPLER:-				
i)	1 No.630A TPN MCCB				
D	BUS BAR:-				
	2 Sets of 1000A, TPN Al.bus bar with colour coded PVC sleeves				
E	INTERLOCKING.				
i)	Incomers & Bus couplers shall be electrically & mechanically interlocked.				
F	OUTGOINGS				
i)	3 Nos. 400A TPN MCCB (35KA)				
ii)	2 Nos. 200A/250A TPN MCCB (35KA)				
iii)	3 Nos. 125A/160A TPN MCCB (35KA)				
iv)	5 Nos. 100A TPN MCCB (35KA)				
	Supply, Installation, testing & commissioning of Vent.& AHU Panel-3 as described above	1	Set	8,73,500	8,73,500
	Sub Total Rs.				67,28,500.00

Section- 17.4 :Preambles to BOQ for L.T Cables					
1	Termination of Submain wire with crimping lugs in Meter Board is in the scope of Internal Electrical works.				
2	Effecting adequate and proper connections at terminations.				
3	Providing all fixing accessories such as clamping devices nuts, bolts and screws.				
4	Providing sealing compound, thimble, crimping lugs etc. at joints and termination as called for.				
5	Wherever the cables are of aluminium and bus bars of copper or vice versa bimetallic lugs shall be used.				
6	Sealing of Cutouts & Sleeves after cable laying with fire-proof materials.				
7	Bidder shall measure the lengths and confirm the same before execution.				
8	All cables shall be FRLS Type				
S.N	Description	Qty	Unit	Rate	Amount
	Section 17.4 : L.T Cables				
17.4.1	Laying & fixing of one number PVC insulated & PVC sheathed/ XLPE Aluminium/ Copper conductor cable of 1.1 KV grade of size not exceeding 35sq.mm on Cable Tray as required etc complete.	7,675	Mtr.	29.00	2,22,575.00
17.4.2	Laying & fixing of one number PVC insulated & PVC sheathed/ XLPE Aluminium/ Copper conductor cable of 1.1 KV grade of size exceeding 95 sq.mm but not exceeding 185 sq.mm on Cable Tray as required etc complete.	2,075	Mtr.	82.00	1,70,150.00
17.4.3	Laying & fixing of one number PVC insulated & PVC sheathed/ XLPE Aluminium/ Copper conductor cable of 1.1 KV grade of size exceeding 185 sq.mm but not exceeding 400 sq.mm on Cable Tray as required etc complete.	200	Mtr.	132.00	26,400.00
11.4.4	Supplying & making of end terminations with brass compression gland and Al. lugs for following sizes of PVC insulated and PVC sheathed/ XLPE Al. conductor cable of 1.1 KV grade as required etc complete.				
a)	3 x 10 sq.mm.	68	Each	185.00	12,580.00
b)	3 x 16 sq.mm.	52	Each	195.00	10,140.00
c)	3 x 25 sq.mm.	44	Each	195.00	8,580.00
d)	3 x 35 sq.mm.	20	Each	248.00	4,960.00
e)	3.5 x 25 sq.mm.	8	Each	219.00	1,752.00
f)	3.5 x 150 sq.mm.	10	Each	487.00	4,870.00
g)	3.5 x 185 sq.mm.	12	Each	616.00	7,392.00
h)	3.5 x 240 sq.mm.	16	Each	709.00	11,344.00
i)	4 x 10 sq.mm.	2	Each	192.00	384.00

S.N	Description	Qty	Unit	Rate	Amount
17.4.5	Supply of following sizes of XLPE/ PVC insulated Aluminum/ Copper conductor strip/ wire Armoured, overall PVC sheathed 1.1 KV grade cables conforming to relevant IS code and technical specifications etc complete.				
17.4.5.1	XLPE insulated Al. Ar.Cable				
a)	3.5C x 240 sq.mm.	200	RM	1295.00	2,59,000.00
b)	3.5C x 185 sq.mm.	800	RM	1020.00	8,16,000.00
c)	3.5C x 150 sq.mm.	800	RM	840.00	6,72,000.00
d)	3.5C x 25 sq.mm.	250	RM	205.00	51,250.00
e)	4C x 10 sq.mm.	50	RM	155.00	7,750.00
f)	3C x 35 sq.mm.	275	RM	220.00	60,500.00
g)	3C x 25 sq.mm.	1,200	RM	175.00	2,10,000.00
h)	3C x 16 sq.mm.	1,500	RM	145.00	2,17,500.00
i)	3C x 10 sq.mm.	3,000	RM	135.00	4,05,000.00
j)	3C x 6 sq.mm.	800	RM	120.00	96,000.00
k)	3C x 4 sq.mm.	200	RM	105.00	21,000.00
1.2	PVC insulated Cu. Flexible. Cables				
a)	1C x 185 Sq.mm.	475	RM	2455.00	11,66,125.00
b)	4C x 16 Sq.mm.	200	RM	875.00	1,75,000.00
c)	4C x 35 Sq.mm.	200	RM	1935.00	3,87,000.00
17.4.6	Supply and making End termination with brass Single/ Double compression gland including providing and crimping of aluminum/copper solderless lugs/ferrules for XLPE/PVC insulated armoured power aluminum/copper conductor cables 1.1 KV grade of following sizes etc complete.:				
	Single Compression Gland for Cu. Cable				
a)	3C/ 4C x 4/6 Sq.mm.	30	Each	100.00	3,000.00
b)	1C x 185 Sq.mm.	24	Each	185.00	4,440.00
17.4.7	Supply, Fabricating and Installation of following size of perforated M.S. cable Trays including horizontal & vertical bends, reducers, tees, cross members, and other accessories as required and duly suspended from the ceiling with MS suspenders and including painting with powder coating etc. as required etc complete.				
a)	150 mm width x 50 mm depth x 1.6 mm thickness	50	Metre	405.00	20,250.00
b)	300 mm width x 50 mm depth x 1.6 mm thickness	50	Metre	475.00	23,750.00
17.4.8	Supply, Fabricating and Installation of following size of Hot Dip Galvanized Ladder Type cable Trays including horizontal & vertical bends, reducers, tees, cross members, and other accessories as required and duly suspended from the ceiling with MS suspenders and including painting with powder coating as required etc complete.				
a)	150 mm width x 40 mm depth x 1.6 mm thickness	50	Metre	295.00	14,750.00
b)	300 mm width x 50 mm depth x 2.0 mm thickness	50	Metre	470.00	23,500.00
	Sub Total Rs.				51,14,942.00

SH 18 : LIFT & ESCALATOR

S.No	Description of Item	Qty.	Unit	Rate (Rs)	Amount (Rs)
SH-18	LIFTS & ESCALATORS				
18.01	Supplying, installation, testing & commissioning of 16 passenger (1088 kg) machine room less lifts having contract speed of 1.5 MPS serving different floors in the lift shaft as per detailed specifications enclosed and as under :- (i) Speed :- 1.5 MPS (ii) Floors :- 1st,2nd,3rd Basement, Ground to Tenth floor (iii) Travel :- 50 Meters (approx.) (iv) Stops & opening :- Fourteen stops and Fourteen openings (all on same side) (v) Controller :- A.C variable voltage & variable frequency. (vi) Automatic rescue device complete with dry maintenance free batteries as required. (vii) Operation:- Microprocessor based Triplex selective collective with attendant. (viii) Power :- 415 V, 3 phase, 50 Hz, 4 wires system (ix) Type of doors (a) Car :- Power operated, centre opening horizontal sliding Stainless steel, Scratch proof Finish. (b) Landing doors :- Stainless steel doors Hairline finished. (x) Shaft Size:- About 2000 mm wide x 2700 mm deep. (xi) Car Flooring:- Pre polished Granite Flooring with approved colour. (xiii) Safety feature:- Infrared curtains and two hour fire rating as required. (xiv) Over load warning indicator as required. (xv) Energy efficient Lift motor of suitable HP with class F insulation and S-4 duty cycle as required. a. A hand rail not less than 600 mm long at 900 mm above floor level to be fixed adjacent to control panel in the car. b. Voice announcement system in the car to announce the position of the elevator in the hoistway as the car passes or stops at a floor served by the elevator. c. Mirror : Half Height, Full width at rear.	6	Nos.	2835185	17011110
18.02	Supplying, installation, testing & commissioning of minimum 1000 kg Goods machine room less lift having contract speed of 0.5 MPS in the existing lift shaft as per detailed specifications enclosed and as under :- (i) Speed :- 0.5 MPS (ii) Floors :- 1st,2nd,3rd Basement, Ground to Tenth floor (iii) Travel :- 50 Meters (approx.) (iv) Stops & opening :- Fourteen stops and Fourteen openings (all on same side) (v) Controller :- A.C variable voltage & variable frequency. (vi) Automatic rescue device complete with dry maintenance free batteries as required. (vii) Operation:- Microprocessor based Duplex selective collective with attendant. (viii) Power :- 415 V, 3 phase, 50 Hz, 4 wires system	2	Nos.	2511980	5023960

S.No	Description of Item	Qty.	Unit	Rate (Rs)	Amount (Rs)
18.03	(ix) Type of doors (a) Car :- Power operated, centre opening horizontal sliding duly Powder coated. (b) Landing doors :- Powder coated finish of approved shade. (x) Shaft Size:- About 2000 mm wide x 2700 mm deep (xi) Car Flooring:- SS Chequered Plate Flooring with approved Design. (xii) Energy efficient Lift motor of suitable HP with class F insulation and S-4 duty cycle as required (xiii) Over load warning indicator as required (xiv) Safety feature:- Infrared curtains and two hour fire rating as required. Supplying, installation, testing & commissioning of Escalator having contract speed of 0.5 MPS serving different floors as per detailed specifications enclosed and as under :- (i) Power Supply :- AC 3 Ph, 50 Hz or 60 Hz (ii) Lighting Power Supply :- AC Single Ph, 50 Hz or 60 Hz (iii) Rated Speed :- 0.5 MPS (iv) Control System :- A.C variable voltage & variable frequency. (v) Transport Capacity (person/hr) - 4500 (vi) Inclination at 35 Degree (vii) Indoor environment. (viii) Automatic oilier available. (ix) Max rise (mm) is 35:4200 (a) Step width (mm) - 1000 (b) Escalator width (mm) - 1550 (x) Between Moving Handrails (mm) - 1240 (xi) Between Skirt Guards (mm) - 1010 (xii) Truss width (mm) - 1500 (xiii) Floor opening (mm) - 1650 (xiv) Safety Features (a) Stop- Buzzer Key Switch (b) Anti-Slip Floor Plate (c) Step with Anti-Slip Grooves (d) Demarcation Line (e) Stepped Demarcation Line (f) Step Demarcation Lighting (g) Comb Light (h) Horizontal Three steps (i) Warning system on Moving Handrail Inlet (Inlet Sensor) (j) Warning system on outer Deck (outer deck Sensor) (k) Directional Indicator on Handrail Inlet Cap (l) Directional Indicator at comb level (comb-side LED Indicator) (xv) Finish and decorative components (a) Balustrade:- Transparent tempered glass panel Under handrail lighting, Stainless steel hairline Panel (b) Skirt Guard :- Fluoropolymer coating, Skirt guard lighting (c) Deck Board:- Stainless steel hairline (d) Step:- Aluminium alloy step Tread, Aluminium alloy cleat Riser, yellow Demarcation Line. (e) Floor Plate:- Decorative Panel (Embossed stainless steel) (f) Moving Handrail:- Rubber, Polyurethane. (g) Handrail Inlet Cap:- Resin	6	Nos.	2770000	16620000
	TOTAL CARRIED OVER TO SUMMARY			Rs.	38655070.00

SH 19 : SITC Of DG Set

S.No	Description of Item	Qty.	Unit	Rate (Rs)	Amount (Rs)
SH-19	DG SET & ACCESSORIES				
19	D.G. SETS				
19.01	Supply, installation, testing and commissioning of Diesel Generator Set with Acoustic Enclosure comprising of Water Cooled Inbuilt Radiator type turbocharged after cooled Diesel Engine with rated capacity of suitable BHP at 1500 RPM, direct electronic fuel injection type vertical 4stroke, 12/16 cylinder, electronic governor, synchronized power command control module (Make-Cummins or equiv.) coupled to 1000 KVA (800 KW at 0.8 power factor) brushless type 415V, 50 Hz, self exciting alternator with residential silencer, complete with suitable size of stainless steel bellows and flexible coupling, suitable batteries, 990Ltrs day fuel / Inbuilt tank, spring loaded, cushy pads and foundation bolts etc. complete with all accessories conforming to specifications as required at site.	4	Nos	7728000	30912000.00
19.02	EXHAUST PIPING Supply, installation, testing and commissioning of following sizes MS exhaust piping heavy duty conforming to class - B as per IS : 1239 complete with all accessories such as bends, flanges, stainless steel flexible bellows etc, and fixing / supporting arrangement etc.as required. (MS Structure support for supporting DG Set Exhaust Piping shall be paid extra)				
	a) 350 mm dia MS pipe	305	Mtr.	5355	1633275.00
	b) 250 mm dia MS pipe	200	Mtr.	4020	804000.00
	c) SS Bellow 350 mm dia	8	Nos	30037	240296.00
19.03	INSULATION Supply and fixing of 150 mm thick glass wool having thermal conductivity 0.034 K Cal/Hr-Sqm degree C/M and density not less than 24Kg /m ³ respectively with 24 SWG aluminium cladding (around the existing exhaust pipe) suitable for higher temperature complete with fixing arrangement as required at site	416	Sq.Mtrs	2395	996320.00
19.04	Supplying and laying of following sizes of 1.1 KV grade PVC insulated copper conductor armoured stranded Control Cable complete as required and as per specifications.				
	i) 16 core, 2.5 Sq.mm. Cu. Conductor cable	386	Mtr.	714	275604.00
19.05	CONTROL CABLE END TERMINATION Supplying and making end termination with brass compression gland and Copper lugs for following size of PVC sheathed copper conductor armoured control cable of 1.1 KV gland as required.				
	i) 16 core, 2.5 Sq.mm. Cu. Conductor cable	8	Set	561	4488.00
	TOTAL OF SUBHEAD - 19			Rs.	34865983.00

S.No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
SH-20	SOLAR POWER SYSTEM 150 KWp (ON GRID ROOF TOP)				
20.01	Supply, Installation, Testing and Commissioning of 150 KwP ON GRID Solar Photovoltaic Power Plant conforming to MNRE specifications as amended, consisting of Mono/Poly Crystalline silicon solar cells, net metering facility, necessary protections, earthing, mounted on Aluminium/GI structure of suitable strength with following components complete as required:-				
	a). Solar Photovoltaic Module of capacity 330Wp or above, <u>manufactured in India</u> , conforming to IS14286/IEC61215,IS/IEC61730-Part-1,IS/IEC61730-Part-2.Solar Photovoltaic Module conversion efficiency shall not be less than 16.5%. PV modules used in solar power plants / systems must be warranted for their out put peak watt capacity, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.				
	b). Power Conditioning Unit (PCU) of 350-800 VDC Input voltage range and 400V AC, three phase, 4wire, 50Hz+/-2.5Hz, output voltage suitable to generate AC Power with efficiency not less than 97%, total harmonic distortion less than 3% and suitable for ambient temperature from 0 to 50 degree C. The PCU shall adjust the voltage and frequency level to suit the Grid Voltage Frequency.				
	c). Data Monitoring System complete with accessories.				
	d). Fixing of Array junction box & Main junction box with IP65 protection and termination arrangement for incoming and out going cable along with glands, lugs and other accessories etc. as required.				
	e). Lightning and surge voltage protection.				
	f). Connections & Interconnections by supplying & fixing required size XLPE insulated copper conductor 1.1 Kv grade armoured power and control cables between solar modules, main power cable to grid supply PCU unit along with supplying & fixing of necessary channel/conduit lugs and other accessories etc. As required.				
	Note - The makes shall be MNRE approved and as approved by the Employer.				
	Total as per above.	1	Job	8250000	8250000
	TOTAL OF SUBHEAD - 20				82 50 000.00

SH - 21 : Building Management Services					
S.N.	Description	Qty.	Unit	Rate	Amount
SH-21	Building Management System (BMS)				
	Note : a) The items are to be read in conjunction with the specifications of BMS.				
	b). The details drawing is to be submitted by contractor				
21.01	Supply, Installation, Testing & Commissioning of BMS Workstation with minimum PC configuration Intel Core i7-1450, 2.8 GHz, 1TB HDD, 8 GB RAM, 16X DVD drive, 21 " WLED flat panel colour monitor, optical mouse, keyboard, and Colour inkjet printer of A4 size. The system shall have 1000 VA UPS with 30 minutes back up time etc complete.	1	No.	1,20,428	1,20,428.00
21.02	SII/TIC of BMS Software with following requirement				
	Network Management Tool - shall be compatible with Microsoft Windows8/ latest compatible configuration and a complete set of integrated LONWORKS network/ BACnet management tools for working with LONWORKS/ BACnet/ ModBus networks. - 1 No.	1	Lot	3,66,768	3,66,768.00
	Graphical Programming Software - A set of tools for the development of the DDC control logic, point management, global properties such as alarm, trend and scheduling with 15 user licenses. - 1 No.				
	System programming software & hardware provided shall comply with the current release version. - 1 No.				
	Note : a) The contractor has to provide all warantee/gurantee card & software support for a period of 10 years.				
21.03	Supply, Installation, Testing & Commissioning of System Interface Controller (should be capable of connecting to TCP/IP network) and must provide hardware features as must provide the following hardware features as a minimum: a) One Ethernet Port -10 / 100 Mbps b) One RS-485 port c) One LONWORKS/ BACnet/ Modbus Interface Port – 78KB TP/FT-10 d) Battery Backup e) Flash memory for long term data backup and the controller must contain a hard disk with at least 1 gigabyte storage capacity) f) capable of Calendar functions,Scheduling, Trending,Alarm monitoring and routing,Time synchronization, Integration of LONWORKS controller data,Integration of BACnet MS/TP and BACnet IP controllers.	1	Lot	4,28,810	4,28,810
	g. Digital Electrical Meters Integration - 1 No.				
	h. Chiller Integration- 1 No.				
	i. DG Integration- 1 No.				
	j. FAS Integration(included in Item 2 b) - 1 No.				

S.N.	Description	Qty.	Unit	Rate	Amount
21.04	S/I/T/C of BACnet/ IP DDC Controllers with Enclosures panels and must provide following hardware features: a) shall have a minimum of 64K of Non-volatile Flash memory for control applications and 128K non-volatile flash memory for storage b) 16 bit A to D resolution c) Outputs shall have an adjustable range of 2 seconds to 15 minutes d) All controllers shall be LONMARK/ BACnet/ BTL Certified/ Compliant. e) Each controller shall be provided with a XIF file that is fixed from the manufacture & such XIF file shall be a part of the manufactures normal product offering.				
I	HVAC				
i	AHUs (Maximum 5 nos. AHUs per DDC)	1	Lot	76,75,232	76,75,232.00
ii	Ventilation System	1	Lot	11,42,253	11,42,253.00
iii	Plant Room	1	Lot	1,50,965	1,50,965.00
II	Electricals				
i	Main LT & HT panel	1	Lot	77,230	77,230.00
ii	DG's	1	Lot	90,429	90,429.00
iii	Internal Lighting	1	Lot	1,85,911	1,85,911.00
iv	External Lighting	1	Lot	90,213	90,213.00
III	Water Supply & Fire Fighting System	1	Lot	1,80,319	1,80,319.00
IV	Lifts	1	Lot	90,106	90,106.00
21.05	S/I/T/C of Field Equipments				
a.	Oil Level Transmitter	1	No.	46,212	46,212.00
b.	Electro magnetic Type Flow Meter	1	No.	2,77,585	2,77,585.00
c.	Flow Switch	12	Nos.	2,798	33,576.00
d.	Immersion Type Temp Sensor	15	Nos.	2,487	37,305.00
e.	Differential Pressure Air Flow switch for AHU runs status and Filter Status	154	Nos.	3,523	5,42,542.00
f.	Differential Pressure Water Flow Switch for Pumps	26	Nos.	13,988	3,63,688.00
g.	Duct Temperature Senosr	150	Nos.	1,347	2,02,050.00
h.	Current Relay	78	Nos.	4,974	3,87,972.00
i.	Level Switch with High/Low	20	Nos.	7,357	1,47,140.00
j.	Pressure Transmitter for water	2	Nos.	20,723	41,446.00
k.	LUX Sensor	5	Nos.	19,583	97,915.00
l.	Occupancy Sensor	25	Nos.	15,024	3,75,600.00
m.	Ambient Temp Sensor	1	No.	47,456	
n.	Ambient Humidity Sensor	1	No.		47,456.00
o.	Voltage Transducer	1	No.	6,113	6,113.00
21.06	S/I/T/C of Portable operator terminal	1	No.	50,253	50,253.00
21.07	Cables & conduit				
a.	Supply, Installation, Testing & Commissioning of Communication Cables CAT 5e/CAT 6 to interconnect all the controllers, to the intermediate Bus duct and to the work station etc complete.	3000	RM	43	1,29,000.00

S.N.	Description	Qty.	Unit	Rate	Amount
21.08	Supply, Installation, Testing & Commissioning of following sizes of FRLS PVC insulated copper conductor, single core cable in the existing surface / recessed steel / PVC conduit as required etc complete.				
	2 X 1.5 mm ²	10000	RM	36	3,60,000.00
21.09	Supply, Installation, Testing & Commissioning of following sizes of PVC conduit along with accessories in surface / recess including cutting the wall & making good the same in case of recessed conduit as required etc complete.				
a.	20 mm Conduit	2200	RM	74	1,62,800.00
b.	25 mm Conduit	6500	RM	79	5,13,500.00
21.10	Supply, Installation, Testing & Commissioning of following size of perforated M.S. cable trays including horizontal and vertical bends, reducers, tees, cross members and other accessories as required and duly suspended from the ceiling with M.S. suspenders and including painting with powder coating etc. as required etc complete.				
	150 mm width X 50 mm depth X 1.6 mm thickness.	500	RM	466	2,33,000.00
	TOTAL OF SUBHEAD - 21 (Rs.)				1,46,53,817.00

SUMMARY SHEET

S.No.	Subhead	Amount (Rs.)
1	EARTHWORK	130584486.17
2	PLAIN & R/F CEM. CONCRETE	662064708.72
3	BRICKWORK / AAC BLOCK	31783231.64
4	STEEL WORK	43890900.58
5	ALUMINIUM DOORS, WINDOWS, GLAZING & STRUCTURAL GLAZING	
5.A	ALUMINIUM DOORS, WINDOWS & GLAZING	24485926.55
5.B	STRUCTURAL GLAZING	56414460.80
6	WOODWORK	9579465.90
7	FLOORING	92479562.50
8	FINISHING	68422791.62
9	ROOFING & WATERPROOFING	36208479.56
10	MISCELLANEOUS	10477138.50
11	ROADS & PATHWAYS	15618047.84
12	SANITARY & PLUMBING (INTERNAL, EXTERNAL, W.T.O, S.T.O, BOREWELL, ETC.)	59203833.09
13	ELECTRICAL WORKS (INCLUDING INTERNAL ELECTRIFICATION LAN CABLING, SUBSTATION, STREET LIGHTING & UPS)	
13.A	EXTERNAL ELECTRICAL WORKS INCLUDING HT, ELECTRICAL SUBSTATION AND EXTERNAL LIGHTING	44620056.00
13.B	INTERNAL ELECTRICAL WORKS INCLUDING UPS	83187566.40
14	FIRE ALARM AND PA SYSTEM	22943046.00
15	FIRE FIGHTING SYSTEM	45892222.00
16	CCTV system	2916370.00
17	HVAC System	128861062.00
18	Lift & Escalators	38655070.00
19	DG Set and allied works	34865983.00
20	Solar Power Plant	8250000.00
21	BMS System	14653817.00
TOTAL		1666058225.87