

**BOQ TYPE-6**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	<b>Earth work in excavation</b> by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (exceeding 1.5 m in width or 10 sqm on plan), including disposal of excavated earth, lead upto 50m and lift upto 1.5 m, disposed earth to be levelled and neatly dressed.		
	All kinds of soil	630.02	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	630.02	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 8 KM	19.56	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	51.65	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	51.35	Cum
7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	44.40	Sqm

7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	44.40	Sqm
8	Making plinth protection 50 mm 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.	87.86	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	36.61	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	97.62	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		
11	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		

<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	95.50	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	113.46	Cum
<b>13</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	28755.00	Kg
<b>14</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	132.36	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	0.00	Sqm
	Suspended floors, roofs, landings, balconies and access platform	413.92	Sqm
	Shelves (Cast in situ)	5.75	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	535.67	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	297.66	Sqm
	Stairs, (excluding landings) except spiral-staircases	24.01	Sqm
	Weather shade, Chajjas, corbels etc., including edges	42.78	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
<b>15</b>	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)	14.28	Cum
<b>16</b>	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :Cement mortar 1:6 (1 cement : 6 coarse sand)		
	Ground Floor	41.23	Cum
	First Floor	0.00	Cum

17	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	62.84	Sqm
	First Floor	0.00	Sqm
18	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	62.84	Sqm
19	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	85.85	Cum
20	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
21	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	64.99	Rmt
22	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per approved by E/I.	64.99	Rmt
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
23	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	22.00	Each
24	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	108.00	Each
25	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 : 250x16 mm.	22.00	NOS

26	Providing and fixing bright finished brass handles with screws etc. complete: 125 mm	123.00	Each
27	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	10.00	Each
28	Providing and fixing aluminium dye cast tubular type universal hydraulic door closer (having brand logo with ISI, IS : 3564, embossed on the body, door weight upto 35 kg to 80 kg and door width from 700 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	22.00	NOS
29	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Teak wood	1.45	Cum
30	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	25.08	Sqm
31	25 mm thick (for cupboard) including ISI marked nickel plated bright finished M.S. Piano hinges IS : 3818 marked with necessary screws	4.32	Sqm
32	Providing and fixing wire gauge shutters using galvanized M.S. wire gauge of average width of aperture 1.4 mm in both directions with wire of dia 0.63 mm, for doors, windows and clerestory windows with hinges and necessary screws : 35 mm thick shutters		
	With ISI marked stainless steel butt hinges of required size Second class teak wood	59.71	Sqm
33	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).	25.08	Sqm

34	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	51.43	Sqm
35	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	60.00	Rmt
36	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	9.60	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
37	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	2.40	Sqm
38	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. including priming coat with approved steel primer all complete.		
	Fixed to openings /wooden frames with rawl plugs screws etc.	617.16	Kg

39	Providing & fixing fly proof wire gauze to windows, clerestory windows & doors with M.S. Flat 15x3 mm and nuts & bolts complete.		
	Stainless steel (grade 304) wire gauze of 0.5 mm dia wire and 1.4 mm aperture on both sides	59.71	Sqm
40	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	51.43	Sqm
41	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	6.62	Sqm
42	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	87.36	Kg
43	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters. 80x1.25 mm M.S. laths with 1.25 mm thick top cover	0.00	SQM
44	Providing and fixing ball bearing for rolling shutters.	0.00	No
	<b>SUB TOTAL</b>		

	<b>FLOORING, DEDO &amp; CLADDING</b>		
45	Providing and laying rectified Glazed Ceramic floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.	23.74	Sqm
46	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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. Colour shade & make approved by Architect-in-Charge.	94.75	Sqm
47	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete. ( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	269.32	Sqm
48	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 40 mm thick with 20 mm nominal size stone aggregate	56.70	Sqm



49	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	113.95	Sqm
50	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) : 25 mm thick	4.00	Sqm
51	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm.	5.75	Sqm
52	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.	9.58	Rmt
53	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	1.00	Each
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
54	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	281.52	Sqm

55	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	631.13	Sqm
56	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
57	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	58.57	Sqm
58	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	212.52	Rmt
59	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	1061.96	Sqm
60	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	455.99	Sqm
61	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	1061.96	Sqm
62	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	49.63	Sqm
63	French spirit polishing : Two or more coats on new works including a coat of wood filler	111.14	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		

64	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	385.38	Sqm

65	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>EXTRA ITEMS</b>		
66	<p><b>Type 6 Kitchen Size: 3500Wx2500Lx600D mm. with Tall Unit</b></p> <p>Material Specs : Carcass : Prelam MDF with both side lamination</p> <p>For wet areas like Sink, Carcass will be BWR ply</p> <p>Shutters : All MDF except sink area, In sink area, shutters will be in MDF</p> <p>Hinges/ channels : Hafele/ Hettich.</p> <p>The Seller / Company should be ISO 9001:2015, ISO-14001:2015, ISO-37001:2016, OHSAS 18001:2007, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, GREEN GUARD, INDIAN DESIGN MARK, AIOTA, FSC, BIFMA Level- 1 certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1 certified and an official product link/screenshot of the product listing's must be provided from <a href="http://www.bifma.org">www.bifma.org</a></p> <p>all complete as per specifications and direction of Engineer-in-Charge.</p>	1.00	Nos

**BOQ TYPE-5**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
<b>1</b>	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	3961.36	Cum
<b>2</b>	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
<b>3</b>	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	3060.48	Cum
<b>4</b>	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	900.88	Cum
<b>5</b>	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	157.38	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
<b>6</b>	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	243.28	Cum

7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	138.81	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	138.81	Sqm
8	Making plinth protection 50 mm 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.	322.56	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	134.40	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	358.40	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	1247.09	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	2793.37	Cum
<b>13</b>	Extra for R.C.C./ B.M.C/ R.M.C. work above floor V level for each four floors or part thereof.		
	5th Floor to 8th Floor	991.29	Cum
<b>14</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>15</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	582327.63	Kg
<b>16</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	128.80	Sqm
	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	752.30	Sqm

	Suspended floors, roofs, landings, balconies and access platform	8009.16	Sqm
	Shelves (Cast in situ)	262.57	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	8298.29	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	5384.72	Sqm
	Stairs, (excluding landings) except spiral-staircases	514.08	Sqm
	Weather shade, Chajjas, corbels etc., including edges	241.76	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	800.92	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
17	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)	37.05	Cum
18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	77.10	Cum
	First Floor	71.09	Cum
	Second Floor	71.09	Cum
	Third Floor	71.09	Cum
	Fourth Floor	71.09	Cum
	Fifth Floor	71.09	Cum
	Sixth Floor	71.09	Cum
	Seventh Floor	71.09	Cum
	Terrace Floor	0.00	Cum
19	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	1.85	Cum
	First Floor	22.51	Cum



	Second floor	22.51	Cum
	Third Floor	22.51	Cum
	Fourth Floor	22.51	Cum
	Fifth Floor	22.51	Cum
	Sixth Floor	22.51	Cum
	Seventh Floor	22.51	Cum
	Terrace Floor	0.00	Cum
<b>20</b>	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	0.00	Sqm
	First Floor	252.74	Sqm
	Second floor	252.74	Sqm
	Third Floor	252.74	Sqm
	Fourth Floor	252.74	Sqm
	Fifth Floor	252.74	Sqm
	Sixth Floor	252.74	Sqm
	Seventh Floor	252.74	Sqm
	Terrace Floor	0.00	Sqm
<b>21</b>	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	1769.18	Sqm
<b>22</b>	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Ground Floor	21.57	Cum
	First Floor	158.29	Cum
	Second floor	158.30	Cum
	Third Floor	158.30	Cum
	Fourth Floor	158.30	Cum
	Fifth Floor	158.30	Cum
	Sixth Floor	158.30	Cum
	Seventh Floor	158.30	Cum
	Terrace Floor	130.24	Cum

23	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above floor V level, for each four floors or part thereof by mechanical means.		
	5th to 8th FL	842.90	Cum
24	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	358.40	Rmt
25	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	358.40	Rmt
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
26	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	540.00	Each
27	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	640.00	Each
	150 X10 mm	640.00	Each
28	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	640.00	Each
29	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	428.00	Each
30	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Teak wood	13.04	Cum
31	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	665.28	Sqm

32	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
33	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. 1.0 mm thick	1330.56	Sqm
34	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).	0.00	Sqm
35	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	0.00	Sqm

36	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately.</p> <p><del>Note:- Structural design proof checked from a Government</del></p>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	1253.04	Sqm
37	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	105.84	Sqm

38	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	779.20	Rmt
39	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	260.40	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
40	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	16306.56	Kg
41	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	14.40	Sqm
42	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		

	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
43	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	1358.88	Sqm
44	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	105.84	Sqm
45	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	7469.68	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
46	52 mm thick cement concrete flooring with concrete hardener topping, under layer 40 mm thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix : 2 graded stone aggregate 6 mm nominal size) by volume, hardening compound mixed @ 2 litre per 50 kg of cement or as per manufacturer's specifications. This includes cost of cement slurry, but excluding the cost of nosing of steps etc. complete.	1065.96	Sqm

47	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	1415.61	Sqm
48	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	1457.40	Sqm
49	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	4645.06	Sqm
50	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	464.51	Sqm
51	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm

52	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	652.70	Sqm
53	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) : 25 mm thick	600.09	Sqm
54	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect-in-Charge.		
	Area of slab over 0.50 sqm.	351.14	Sqm
55	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.	437.64	Rmt
56	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	28.00	Each



57	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
58	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	8057.97	Sqm
59	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	12884.75	Sqm
60	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
61	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
62	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	670.00	Kg
63	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	215.04	Sqm
64	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	2867.20	Rmt
65	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	28951.89	Sqm

66	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	7442.85	Sqm
67	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	28951.89	Sqm
68	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	28.80	Sqm
69	French spirit polishing : Two or more coats on new works including a coat of wood filler	564.88	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		
70	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terracesetc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..		

	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	1189.09	Sqm
71	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	740.29	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		

72	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main 'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to form grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre painted with polyester baked paint for all heights as per</p>		
	<p>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 &gt; 85%, non- combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity &lt;0.043 w/ mK. Colour shade &amp; make approved by Architect-in-Charge.</p>	616.91	Sqm
	<b>SUB TOTAL</b>		
	<b>EXTRA ITEMS</b>		

73	<p><b>Type 5 Kitchen Size: 3350Wx1860Lx600D mm. &amp; Size: 2650Wx600D mm.</b></p> <p>Material Specs : Carcass : Prelam MDF with both side lamination</p> <p>For wet areas like Sink, Carcass will be BWR ply</p> <p>Shutters : All MDF except sink area, In sink area, shutters will be in MDF</p> <p>Hinges/ channels : Hafele/ Hettich.</p> <p>The Seller / Company should be ISO 9001:2015, ISO-14001:2015, ISO-37001:2016, OHSAS 18001:2007, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, GREEN GUARD, INDIAN DESIGN MARK, AIOTA, FSC, BIFMA Level- 1 certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1 certified and an official product link/screenshot of the product listing's must be provided from <a href="http://www.bifma.org">www.bifma.org</a></p> <p>all complete as per specifications and direction of Engineer-in-Charge.</p>	28.00	Nos

**BOQ TYPE-4**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	2706.00	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	1882.14	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	823.86	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	128.01	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	193.00	Cum

7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	102.80	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	102.80	Sqm
8	Making plinth protection 50 mm 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.	229.44	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	95.60	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	254.93	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

11	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
A	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
B	Concrete of M30 grade with minimum cement content of 350 kg /cum	1092.89	Cum
12	All works above plinth level upto floor V level		
A	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
B	Concrete of M30 grade with minimum cement content of 350 kg /cum	2064.83	Cum
13	Extra for R.C.C./ B.M.C/ R.M.C. work above floor V level for each four floors or part thereof.		
	5th Floor to 8th Floor	897.80	Cum
	9th Floor to 12th Floor	467.47	Cum
14	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
15	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	448229.55	Kg
16	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	179.20	Sqm



	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	237.08	Sqm
	Suspended floors, roofs, landings, balconies and access platform	6411.15	Sqm
	Shelves (Cast in situ)	185.64	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	9505.22	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	4779.00	Sqm
	Stairs, (excluding landings) except spiral-staircases	345.60	Sqm
	Weather shade, Chajjas, corbels etc., including edges	292.59	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	641.12	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
17	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)	17.42	Cum
18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	6.74	Cum
	First Floor	40.25	Cum
	Second Floor	40.25	Cum
	Third Floor	40.25	Cum
	Fourth Floor	40.25	Cum
	Fifth Floor	40.25	Cum
	Sixth Floor	40.25	Cum
	Seventh Floor	40.25	Cum
	Eight Floor	40.25	Cum
	Terrace Floor	0.00	Cum

19	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	22.48	Cum
	First Floor	40.59	Cum
	Second floor	40.59	Cum
	Third Floor	40.59	Cum
	Fourth Floor	40.59	Cum
	Fifth Floor	40.59	Cum
	Sixth Floor	40.59	Cum
	Seventh Floor	40.59	Cum
	Eight Floor	40.59	Cum
	Terrace Floor	0.00	Cum
20	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	0.00	Sqm
	First Floor	241.17	Sqm
	Second floor	241.17	Sqm
	Third Floor	241.17	Sqm
	Fourth Floor	241.17	Sqm
	Fifth Floor	241.17	Sqm
	Sixth Floor	241.17	Sqm
	Seventh Floor	241.17	Sqm
	Eight Floor	241.17	Sqm
	Terrace Floor	0.00	Sqm
21	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	1929.36	Sqm
22	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Ground Floor	14.71	Cum
	First Floor	111.64	Cum
	Second floor	111.64	Cum
	Third Floor	111.64	Cum

	Fourth Floor	111.64	Cum
	Fifth Floor	111.64	Cum
	Sixth Floor	111.64	Cum
	Seventh Floor	111.64	Cum
	Eight Floor	111.64	Cum
	Terrace Floor	114.90	Cum
23	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above floor V level, for each four floors or part thereof by mechanical means.		
	5th to 8th FL	880.86	Cum
	9th to 12th FL	114.90	Cum
24	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	254.93	Rmt
25	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per approved by E/I.	254.93	Rmt
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
26	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	588.00	Each
27	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	1096.00	Each
	150 X10 mm	1096.00	Each
28	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	1096.00	Each
29	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	628.00	Each
30	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Teak wood	12.76	Cum

31	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	592.32	Sqm
32	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
33	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. 1.0 mm thick	1184.64	Sqm
34	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).	0.00	Sqm
35	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	0.00	Sqm

36	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately.</p> <p><del>Note:- Structural design proof checked from a Government</del></p>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	1455.74	Sqm
37	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	100.32	Sqm

38	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	880.00	Rmt
39	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	295.68	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
40	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	18672.72	Kg
41	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	5.04	Sqm
42	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		

	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
43	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	1556.06	Sqm
44	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	100.32	Sqm
45	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	11055.20	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
46	52 mm thick cement concrete flooring with concrete hardener topping, under layer 40 mm thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix : 2 graded stone aggregate 6 mm nominal size) by volume, hardening compound mixed @ 2 litre per 50 kg of cement or as per manufacturer's specifications. This includes cost of cement slurry, but excluding the cost of nosing of steps etc. complete.	777.50	Sqm

47	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	1491.60	Sqm
48	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	3214.57	Sqm
49	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	3761.68	Sqm
50	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	376.17	Sqm
51	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm



52	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	413.37	Sqm
53	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) : 25 mm thick	494.33	Sqm
54	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect-in-Charge.		
	Area of slab over 0.50 sqm.	303.42	Sqm
55	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.	353.60	Rmt
56	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	32.00	Each

57	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
58	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	7822.76	Sqm
59	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	12889.95	Sqm
60	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
61	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
62	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	640.00	Kg
63	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	75.66	Sqm
64	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	4080.00	Rmt
65	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	27123.86	Sqm

66	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	6418.62	Sqm
67	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	27123.86	Sqm
68	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
69	French spirit polishing : Two or more coats on new works including a coat of wood filler	553.02	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		
70	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terracesetc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..		

	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	873.90	Sqm
71	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	602.02	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		

72	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to form grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre</p> <p><del>painted with polyester baked paint for all heights as per</del></p>		
	<p>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 &gt; 85%, non- combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity &lt;0.043 w/ mK. Colour shade &amp; make approved by Architect-in-Charge.</p>	501.68	Sqm
	<b>SUB TOTAL</b>		
	<b>EXTRA ITEMS</b>		

73	<p><b>Type 4 Kitchen Size: 3235Wx1019Lx600D mm. &amp; Size: 2000Wx600D mm.</b></p> <p>Material Specs : Carcass : Prelam MDF with both side lamination</p> <p>For wet areas like Sink, Carcass will be BWR ply</p> <p>Shutters : All MDF except sink area, In sink area, shutters will be in MDF</p> <p>Hinges/ channels : Hafele/ Hettich.</p> <p>The Seller / Company should be ISO 9001:2015, ISO-14001:2015, ISO-37001:2016, OHSAS 18001:2007, ISO-45001:2018, ISO-50001:2018, GRIHA, GREENPRO, GREEN GUARD, INDIAN DESIGN MARK, AIOTA, FSC, BIFMA Level- 1 certified. The Bidder should also be a member of BIFMA and One or more products of the OEM should be certified as BIFMA COMPLAINT as well as BIFMA LEVEL-1 certified and an official product link/screenshot of the product listing's must be provided from <a href="http://www.bifma.org">www.bifma.org</a></p> <p>all complete as per specifications and direction of Engineer-in-Charge.</p>	32.00	Nos

**BOQ TYPE-3 (S+14)**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
<b>1</b>	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	2109.51	Cum
<b>2</b>	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
<b>3</b>	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	1278.90	Cum
<b>4</b>	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	830.61	Cum
<b>5</b>	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	77.26	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
<b>6</b>	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	112.66	Cum

7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	86.73	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	86.73	Sqm
8	Making plinth protection 50 mm 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.	196.29	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	81.79	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	218.10	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		



<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	1000.15	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	2661.73	Cum
<b>13</b>	Extra for R.C.C./ B.M.C/ R.M.C. work above floor V level for each four floors or part thereof.		
	5th Floor to 8th Floor	686.40	Cum
	9th Floor to 12th Floor	686.40	Cum
	13th Floor to 16th Floor	385.42	Cum
<b>14</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>15</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	534698.95	Kg
<b>16</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	265.20	Sqm

	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	1358.02	Sqm
	Suspended floors, roofs, landings, balconies and access platform	6987.37	Sqm
	Shelves (Cast in situ)	199.92	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	9990.22	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	5797.32	Sqm
	Stairs, (excluding landings) except spiral-staircases	774.00	Sqm
	Weather shade, Chajjas, corbels etc., including edges	273.17	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	698.74	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
17	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)	22.57	Cum
18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	8.91	Cum
	First Floor	57.64	Cum
	Second Floor	57.64	Cum
	Third Floor	57.64	Cum
	Fourth Floor	57.64	Cum
	Fifth Floor	57.64	Cum
	Sixth Floor	57.64	Cum
	Seventh Floor	57.64	Cum
	Eight Floor	57.64	Cum
	Nineth Floor	57.64	Cum
	Tenth Floor	57.64	Cum
	Eleventh Floor	57.64	Cum
	Twelfth Floor	57.64	Cum
	Thirteenth Floor	57.64	Cum
	Fourteenth Floor	57.64	Cum
	Terrace Floor	0.00	Cum

<b>19</b>	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	0.00	Cum
	First Floor	19.90	Cum
	Second floor	19.90	Cum
	Third Floor	19.90	Cum
	Fourth Floor	19.90	Cum
	Fifth Floor	19.90	Cum
	Sixth Floor	19.90	Cum
	Seventh Floor	19.90	Cum
	Eight Floor	19.90	Cum
	Nineth Floor	19.90	Cum
	Tenth Floor	19.90	Cum
	Eleventh Floor	19.90	Cum
	Twelfth Floor	19.90	Cum
	Thirteenth Floor	19.90	Cum
	Fourteenth Floor	19.90	Cum
	Terrace Floor	0.00	Cum
<b>20</b>	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	0.00	Sqm
	First Floor	32.43	Sqm
	Second floor	32.43	Sqm
	Third Floor	32.43	Sqm
	Fourth Floor	32.43	Sqm
	Fifth Floor	32.43	Sqm
	Sixth Floor	32.43	Sqm
	Seventh Floor	32.43	Sqm
	Eight Floor	32.43	Sqm
	Nineth Floor	32.43	Sqm
	Tenth Floor	32.43	Sqm
	Eleventh Floor	32.43	Sqm
	Twelfth Floor	32.43	Sqm
	Thirteenth Floor	32.43	Sqm
	Fourteenth Floor	32.43	Sqm
	Terrace Floor	0.00	Sqm

21	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	454.02	Sqm
22	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Ground Floor	19.76	Cum
	First Floor	92.36	Cum
	Second floor	92.36	Cum
	Third Floor	92.36	Cum
	Fourth Floor	92.36	Cum
	Fifth Floor	92.36	Cum
	Sixth Floor	92.36	Cum
	Seventh Floor	92.36	Cum
	Eight Floor	92.36	Cum
	Ninth Floor	92.36	Cum
	Tenth Floor	92.36	Cum
	Eleventh Floor	92.36	Cum
	Twelfth Floor	92.36	Cum
	Thirteenth Floor	92.36	Cum
	Fourteenth Floor	92.36	Cum
	Terrace Floor	97.65	Cum
23	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above floor V level, for each four floors or part thereof by mechanical means.		
	5th to 8th FL	444.92	Cum
	9th to 12th FL	0.00	Cum
24	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	218.10	Rmt
25	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per approved by E/I.	218.10	Rmt

	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
26	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	624.00	Each
27	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	1312.00	Each
	150 X10 mm	1312.00	Each
28	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	1312.00	Each
29	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	656.00	Each
30	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Saal wood	17.83	Cum
31	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
32	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	845.28	Sqm
33	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. 1.0 mm thick	0.00	Sqm
34	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).	845.28	Sqm

35	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	0.00	Sqm
36	Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape & size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash & mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification & direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 & IS: 16231 shall be paid separately. <del>Note:- Structural design proof checked from a Government</del>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	1962.93	Sqm

37	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	226.80	Sqm
38	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	1187.20	Rmt
39	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	403.20	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
40	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	26276.76	Kg
41	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	11.34	Sqm

42	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		
	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
43	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	2189.73	Sqm
44	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	226.80	Sqm
45	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	10212.88	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
46	52 mm thick cement concrete flooring with concrete hardener topping, under layer 40 mm thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix : 2 graded stone aggregate 6 mm nominal size) by volume, hardening compound mixed @ 2 litre per 50 kg of cement or as per manufacturer's specifications. This includes cost of cement slurry, but excluding the cost of nosing of steps etc. complete.	543.40	Sqm



47	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	1563.66	Sqm
48	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	985.32	Sqm
49	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	4004.56	Sqm
50	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	400.46	Sqm
51	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm

52	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) : 25 mm thick	47.70	Sqm
53	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	760.38	Sqm
54	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect-in-Charge.		
	Area of slab over 0.50 sqm.	299.68	Sqm
55	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.	333.20	Rmt
56	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	0.00	Each

57	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
58	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	7665.33	Sqm
59	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	15380.49	Sqm
60	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
61	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
62	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	631.00	Kg
63	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	130.86	Sqm
64	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	4798.20	Rmt
65	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	30033.20	Sqm

66	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	9407.47	Sqm
67	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	30033.20	Sqm
68	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
69	French spirit polishing : Two or more coats on new works including a coat of wood filler	772.82	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		
70	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terracesetc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..		

	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	589.85	Sqm
71	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	735.84	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		

72	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre painted with polyester baked paint for all heights as per</p>		
	<p>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 &gt; 85%, non- combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity &lt;0.043 w/ mK. Colour shade &amp; make approved by Architect-in-Charge.</p>	613.20	Sqm

**BOQ TYPE-3(S+13)**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
<b>1</b>	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	2109.51	Cum
<b>2</b>	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
<b>3</b>	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	1278.90	Cum
<b>4</b>	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	830.61	Cum
<b>5</b>	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	77.26	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
<b>6</b>	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	112.66	Cum

7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	86.73	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	86.73	Sqm
8	Making plinth protection 50 mm 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.	196.29	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	81.79	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	218.10	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		



<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	1000.15	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	2595.39	Cum
<b>13</b>	Extra for R.C.C./ B.M.C/ R.M.C. work above floor V level for each four floors or part thereof.		
	5th Floor to 8th Floor	716.16	Cum
	9th Floor to 12th Floor	716.16	Cum
	13th Floor to 16th Floor	222.80	Cum
<b>14</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>15</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	515883.59	Kg
<b>16</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	265.20	Sqm

	Walls (any thickness) including attached pilasters, buttermesses, plinth and string courses etc.	1280.50	Sqm
	Suspended floors, roofs, landings, balconies and access platform	6524.31	Sqm
	Shelves (Cast in situ)	199.92	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	9342.30	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	5430.12	Sqm
	Stairs, (excluding landings) except spiral-staircases	722.40	Sqm
	Weather shade, Chajjas, corbels etc., including edges	253.65	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	652.43	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
17	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)	22.57	Cum
18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	8.91	Cum
	First Floor	57.64	Cum
	Second Floor	57.64	Cum
	Third Floor	57.64	Cum
	Fourth Floor	57.64	Cum
	Fifth Floor	57.64	Cum
	Sixth Floor	57.64	Cum
	Seventh Floor	57.64	Cum
	Eight Floor	57.64	Cum
	Nineth Floor	57.64	Cum
	Tenth Floor	57.64	Cum
	Eleventh Floor	57.64	Cum
	Twelfth Floor	57.64	Cum
	Thirteenth Floor	57.64	Cum
	Terrace Floor	0.00	Cum

<b>19</b>	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	0.00	Cum
	First Floor	19.90	Cum
	Second floor	19.90	Cum
	Third Floor	19.90	Cum
	Fourth Floor	19.90	Cum
	Fifth Floor	19.90	Cum
	Sixth Floor	19.90	Cum
	Seventh Floor	19.90	Cum
	Eight Floor	19.90	Cum
	Nineth Floor	19.90	Cum
	Tenth Floor	19.90	Cum
	Eleventh Floor	19.90	Cum
	Twelfth Floor	19.90	Cum
	Thirteenth Floor	19.90	Cum
	Terrace Floor	0.00	Cum
<b>20</b>	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	0.00	Sqm
	First Floor	32.43	Sqm
	Second floor	32.43	Sqm
	Third Floor	32.43	Sqm
	Fourth Floor	32.43	Sqm
	Fifth Floor	32.43	Sqm
	Sixth Floor	32.43	Sqm
	Seventh Floor	32.43	Sqm
	Eight Floor	32.43	Sqm
	Nineth Floor	32.43	Sqm
	Tenth Floor	32.43	Sqm
	Eleventh Floor	32.43	Sqm
	Twelfth Floor	32.43	Sqm
	Thirteenth Floor	32.43	Sqm
	Terrace Floor	0.00	Sqm
<b>21</b>	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	421.59	Sqm

22	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Ground Floor	19.76	Cum
	First Floor	92.36	Cum
	Second floor	92.36	Cum
	Third Floor	92.36	Cum
	Fourth Floor	92.36	Cum
	Fifth Floor	92.36	Cum
	Sixth Floor	92.36	Cum
	Seventh Floor	92.36	Cum
	Eight Floor	92.36	Cum
	Nineth Floor	92.36	Cum
	Tenth Floor	92.36	Cum
	Eleventh Floor	92.36	Cum
	Twelfth Floor	92.36	Cum
	Thirteenth Floor	92.36	Cum
	Terrace Floor	97.65	Cum
23	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above floor V level, for each four floors or part thereof by mechanical means.		
	5th to 8th FL	444.92	Cum
	9th to 12th FL	0.00	Cum
24	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	218.10	Rmt
25	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	218.10	Rmt
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		

26	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	580.00	Each
27	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	1220.00	Each
	150 X10 mm	1220.00	Each
28	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	1220.00	Each
29	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	610.00	Each
30	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Saal wood	16.59	Cum
31	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
32	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	786.51	Sqm
33	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. 1.0 mm thick	0.00	Sqm
34	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).	786.51	Sqm

35	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	0.00	Sqm
36	Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape & size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash & mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification & direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 & IS: 16231 shall be paid separately. <del>Note:- Structural design proof checked from a Government</del>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	1825.88	Sqm

37	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	210.60	Sqm
38	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	1102.40	Rmt
39	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	374.40	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
40	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	24437.76	Kg
41	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	11.34	Sqm

42	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		
	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
43	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	2036.48	Sqm
44	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	210.60	Sqm
45	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	9493.20	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		



46	52 mm thick cement concrete flooring with concrete hardener topping, under layer 40 mm thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix : 2 graded stone aggregate 6 mm nominal size) by volume, hardening compound mixed @ 2 litre per 50 kg of cement or as per manufacturer's specifications. This includes cost of cement slurry, but excluding the cost of nosing of steps etc. complete.	543.40	Sqm
47	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	1451.97	Sqm
48	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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. Colour shade & make approved by Architect-in-Charge.	914.94	Sqm
49	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete. ( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	3718.52	Sqm

50	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	371.85	Sqm
51	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
52	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) : 25 mm thick	47.70	Sqm
53	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	713.92	Sqm
54	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm.	377.11	Sqm

55	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.	0.00	Rmt
56	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	0.00	Each
57	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
58	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	7071.38	Sqm
59	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	14251.75	Sqm
60	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
61	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
62	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	583.00	Kg
63	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	130.86	Sqm
64	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	4798.20	Rmt

65	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	27847.44	Sqm
66	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	8792.41	Sqm
67	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	27847.44	Sqm
68	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
69	French spirit polishing : Two or more coats on new works including a coat of wood filler	718.93	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		

70	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: (a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement : 5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement : 4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. "All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	589.85	Sqm

71	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	683.28	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
72	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyester baked paint for all heights as per</p>		

	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. Colour shade & make approved by Architect-in-Charge.	569.40	Sqm

**BOQ TYPE-2**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	2513.95	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	1659.84	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	854.11	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	64.50	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	124.00	Cum



7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	66.34	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	66.34	Sqm
8	Making plinth protection 50 mm 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.	158.53	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	66.05	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	176.14	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	967.49	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	1522.73	Cum
	Extra for R.C.C./ B.M.C/ R.M.C. work above floor V level for each four floors or part thereof.		
	5th Floor to 8th Floor	586.09	Cum
	9th Floor to 12th Floor	278.66	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	339706.97	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	121.06	Sqm

	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	1138.69	Sqm
	Suspended floors, roofs, landings, balconies and access platform	4164.23	Sqm
	Shelves (Cast in situ)	82.00	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	4770.36	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	3104.40	Sqm
	Stairs, (excluding landings) except spiral-staircases	495.00	Sqm
	Weather shade, Chajjas, corbels etc., including edges	274.68	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	416.42	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
16	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)	22.77	Cum
17	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	19.25	Cum
	First Floor	25.77	Cum
	Second Floor	25.77	Cum
	Thirsd Floor	25.77	Cum
	Fourth Floor	25.77	Cum
	Fifth Floor	25.77	Cum
	Sixth Floor	25.77	Cum
	Seventh Floor	25.77	Cum
	Eight Floor	25.77	Cum
	Ninth Floor	25.77	Cum
	Tenth Floor	25.77	Cum
18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm		
	Ground Floor	0.00	Cum

	First Floor	4.23	Cum
	Second Floor	4.23	Cum
	Thirsd Floor	4.23	Cum
	Fourth Floor	4.23	Cum
	Fifth Floor	4.23	Cum
	Sixth Floor	4.23	Cum
	Seventh Floor	4.23	Cum
	Eight Floor	4.23	Cum
	Ninth Floor	4.23	Cum
	Tenth Floor	4.23	Cum
<b>19</b>	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	First Floor	128.99	Sqm
	Second Floor	128.99	Sqm
	Third Floor	128.99	Sqm
	Fourth Floor	128.99	Sqm
	Fifth Floor	128.99	Sqm
	Sixth Floor	128.99	Sqm
	Seventh Floor	128.99	Sqm
	Eight Floor	128.99	Cum
	Ninth Floor	128.99	Cum
	Tenth Floor	128.99	Cum
<b>20</b>	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	1160.91	Sqm
	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above floor V level, for each four floors or part thereof by mechanical means.		
	5th to 8th FL	60.00	Cum
	9th to 12th FL	0.00	Cum
<b>21</b>	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	813.81	Cum

22	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
23	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	176.14	Rmt
24	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	176.14	Rmt
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
25	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	288.00	Each
26	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	288.00	Each
	150 X10 mm	288.00	Each
27	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	288.00	Each
28	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Saal wood	11.12	Cum
28	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	568.80	Sqm
29	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).	568.80	Sqm

30	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately.</p> <p><del>Note:- Structural design proof checked from a Government</del></p>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	577.80	Sqm
31	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	54.00	Sqm

32	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	400.00	Rmt
33	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	134.40	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
34	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	6933.60	Kg
35	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	8.19	Sqm
36	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		

	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
37	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	631.80	Sqm
38	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	54.00	Sqm
39	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, channells, plates etc. including welding grinding buffing, polishing and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	1206.05	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
40	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	522.80	Sqm



41	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	996.50	Sqm
42	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	2225.10	Sqm
43	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	222.51	Sqm
44	52 mm thick cement concrete flooring with concrete hardener topping, under layer 40 mm thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix : 2 graded stone aggregate 6 mm nominal size) by volume, hardening compound mixed @ 2 litre per 50 kg of cement or as per manufacturer's specifications. This includes cost of cement slurry, but excluding the cost of nosing of steps etc. complete.	344.65	Sqm

45	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	391.40	Sqm
46	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) : 25 mm thick	485.10	Sqm
47	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm.	28.60	Sqm
48	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.	164.00	Rmt
49	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	44.00	Each

50	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
51	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	12570.62	Sqm
52	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.		
53	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
54	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	9.00	Kg
55	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	105.68	Sqm
56	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	0.00	Rmt
57	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	16734.85	Sqm
58	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	5403.84	Sqm

59	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	16734.85	Sqm
60	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	577.80	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		
61	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		

	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	350.48	Sqm
62	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	327.78	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		

63	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre</p> <p><del>painted with polyester baked paint for all heights as per</del></p>		
	<p>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 &gt; 85%, non- combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity &lt;0.043 w/ mK. Colour shade &amp; make approved by Architect-in-Charge.</p>	303.50	Sqm

**UG PG HOSTEL (BOYS)**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
<b>1</b>	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	4080.32	Cum
<b>2</b>	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
<b>3</b>	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	4080.32	Cum
<b>4</b>	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 8 KM	975.92	Cum
<b>5</b>	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	186.20	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
<b>6</b>	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	308.30	Cum
<b>7</b>	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	123.36	Sqm

7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	123.36	Sqm
8	Making plinth protection 50 mm 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.	265.44	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	110.60	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding delivery and application)		
	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface		
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	294.93	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		
11	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		



<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	1265.30	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	2308.38	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	495520.02	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	193.61	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	1121.47	Sqm
	Suspended floors, roofs, landings, balconies and access platform	4788.31	Sqm
	Shelves (Cast in situ)	50.44	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	8308.04	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	4519.20	Sqm
	Stairs, (excluding landings) except spiral-staircases	818.78	Sqm
	Weather shade, Chajjas, corbels etc., including edges	135.67	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	478.83	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
<b>16</b>	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)	5.28	Cum

<b>17</b>	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	156.63	Cum
	First Floor	163.21	Cum
	Second Floor	164.06	Cum
	Third Floor	156.45	Cum
	Fourth Floor	156.45	Cum
	Fifth Floor	156.45	Cum
	Sixth Floor	156.45	Cum
	Seventh Floor	156.45	Cum
	Terrace Floor	0.00	Cum
<b>18</b>	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	6.07	Cum
	First Floor	2.58	Cum
	Second Floor	2.58	Cum
	Third Floor	2.58	Cum
	Fourth Floor	2.58	Cum
	Fifth Floor	2.58	Cum
	Sixth Floor	2.58	Cum
	Seventh Floor	2.58	Cum
	Terrace Floor		Cum
<b>19</b>	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	203.54	Sqm
	First Floor	167.51	Sqm
	Second Floor	167.51	Sqm
	Third Floor	167.51	Sqm
	Fourth Floor	167.51	Sqm

	Fifth Floor	167.51	Sqm
	Sixth Floor	167.51	Sqm
	Seventh Floor	167.51	Sqm
	Terrace Floor		Sqm
20	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	1376.10	Sqm
21	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	1398.40	Cum
22	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
23	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	294.93	Rmt
24	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	294.93	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	<b>STRUCTURAL GLAZING WORK</b>		
25	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). for ACP & STRUCTURAL GLAZING WORK	318.26	KG

26	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.		

	<p>(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 ll inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&amp;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</p>		
	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		

	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM E- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM E-330-10 testing method for arange upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	42.44	SQM

27	<p>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.25.2)</p> <p>For payment, only the actual area of glass on</p>		
	<p>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.</p> <p>(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.</p>	42.44	SQM
28	<p>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.</p>	4.24	SQM
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		

29	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	582.00	Each
30	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	606.00	Each
	150 X10 mm	606.00	Each
31	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	1212.00	Each
32	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	598.00	Each
33	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineer-in-charge complete.		
	355X19 MM	0.00	Each
	510X19 MM	0.00	Each
34	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Saal wood	13.98	Cum
35	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
36	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	582.12	Sqm



37	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. 1.0 mm thick	0.00	Sqm
38	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).	582.12	Sqm
39	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	124.74	Sqm
40	Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape & size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash & mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification & direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 & IS: 16231 shall be paid separately. Note:- Structural design proof checked from a Government		

	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	1319.18	Sqm
41	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	182.70	Sqm
42	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	800.00	Rmt
43	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	268.80	Sqm

44	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 <sup>2</sup> ) suitable for mounting 120 min Fire Rated Glazed Door Shutters. The frame shall be filled with Mineral wool Insulation having density min 96Kg/m <sup>3</sup> . The frame will have a provision of G.I.Anchor fastners 14 nos ( 5 each on vertical style & 4 on 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).	105.60	RMT
45	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 <sup>2</sup> ) duly filled mineral wool insulation having density min 96 kg/m <sup>3</sup> 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).	61.20	SQM

46	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 <sup>2</sup> ) 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 shallnot be more than 1100x2200 mm (w x h) or 2.42 sqm.	3.06	SQM
47	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.	16.00	EACH
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
48	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	4176.90	Kg
49	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	9.45	Sqm

50	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		
	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
51	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	307.44	Sqm
52	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	182.70	Sqm
53	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, channells, plates etc. including welding grinding buffing, polishing and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	8900.48	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		

54	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	694.63	Sqm
55	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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. Colour shade & make approved by Architect-in-Charge.	3349.57	Sqm
56	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete. ( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	4594.62	Sqm
57	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	459.46	Sqm
58	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm

59	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	0.00	Sqm
60	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) : 25 mm thick	2198.45	Sqm
61	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm.	134.56	Sqm
62	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.	81.65	Rmt
63	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	42.00	Each

64	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	114.12	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
65	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	488.06	Sqm
66	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	17856.55	Sqm
67	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
68	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
69	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	58.00	Kg
70	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	225.88	Sqm
71	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	1505.88	Rmt
72	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	18344.62	Sqm



73	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	5302.18	Sqm
74	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	18344.62	Sqm
75	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
76	French spirit polishing : Two or more coats on new works including a coat of wood filler	601.38	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		
77	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terracesetc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..		

	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	1378.03	Sqm
78	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	655.81	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		

79	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre</p> <p><del>painted with polyester baked paint for all heights as per</del></p>		
	<p>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 &gt; 85%, non- combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity &lt;0.043 w/ mK. Colour shade &amp; make approved by Architect-in-Charge.</p>	2128.56	Sqm

**UG PG HOSTEL (GIRLS)**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
<b>1</b>	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	4080.32	Cum
<b>2</b>	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
<b>3</b>	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	4080.32	Cum
<b>4</b>	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	840.28	Cum
<b>5</b>	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	186.20	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
<b>6</b>	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	308.30	Cum
<b>7</b>	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	123.36	Sqm

7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	123.36	Sqm
8	Making plinth protection 50 mm 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.	265.44	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	110.60	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding delivery and application)		
	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface		
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	294.93	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		
11	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		

<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	1131.86	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	1684.70	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	383472.59	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	1960.78	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	1019.40	Sqm
	Suspended floors, roofs, landings, balconies and access platform	4831.35	Sqm
	Shelves (Cast in situ)	39.25	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	6534.16	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	3500.50	Sqm
	Stairs, (excluding landings) except spiral-staircases	614.09	Sqm
	Weather shade, Chajjas, corbels etc., including edges	107.39	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	483.14	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
<b>16</b>	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)	5.28	Cum

17	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	156.63	Cum
	First Floor	163.21	Cum
	Second Floor	164.06	Cum
	Third Floor	156.45	Cum
	Fourth Floor	156.45	Cum
18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	6.07	Cum
	First Floor	2.58	Cum
	Second Floor	2.58	Cum
	Third Floor	2.58	Cum
	Fourth Floor	2.58	Cum
	Terrace Floor		Cum
19	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	203.54	Cum
	First Floor	167.51	Cum
	Second Floor	167.51	Cum
	Third Floor	167.51	Cum
	Fourth Floor	167.51	Cum
	Terrace Floor		Cum
20	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	1041.08	Sqm

21	Brick work with common burnt clay machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	1100.88	Cum
22	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
23	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	294.93	Rmt
24	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per approved by E/I.	294.93	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	<b>STRUCTURAL GLAZING WORK</b>		
25	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). for ACP & STRUCTURAL GLAZING WORK	318.26	KG
26	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:		



	<p>a) Structural analysis &amp; 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 &amp; drainage and protection against fire hazard including:</p>		
	<p>(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.</p>		
	<p>(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.</p>		

	<p>(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 ll inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&amp;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</p>		
	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		

	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM-330-10 testing method for range upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	42.44	SQM
27	<p>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.25.2)</p> <p>For payment, only the actual area of glass on</p>		

	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. (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.	42.44	SQM
28	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.	4.24	SQM
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
29	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	436.00	Each
30	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	454.00	Each
	150 X10 mm	454.00	Each
31	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	908.00	Each
32	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	448.00	Each
33	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	0.00	Each
	510X19 MM	0.00	Each

34	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Saal wood	10.51	Cum
35	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
36	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	647.51	Sqm
37	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. 1.0 mm thick	0.00	Sqm
38	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).	647.51	Sqm
39	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	93.56	Sqm

40	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately.</p> <p><del>Note:- Structural design proof checked from a Government</del></p>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	1002.77	Sqm
41	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	137.03	Sqm

42	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	600.00	Rmt
43	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	201.60	Sqm
44	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 <sup>2</sup> ) suitable for mounting 120 min Fire Rated Glazed Door Shutters. The frame shall be filled with Mineral wool Insulation having density min 96Kg/m <sup>3</sup> . The frame will have a provision of G.I.Anchor fastners 14 nos ( 5 each on vertical style & 4 on 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).	79.20	RMT

45	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 <sup>2</sup> ) duly filled mineral wool insulation having density min 96 kg/m <sup>3</sup> 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).	45.90	SQM
46	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 <sup>2</sup> ) 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 shallnot be more than 1100x2200 mm (w x h) or 2.42 sqm.	2.30	SQM
47	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.	12.00	EACH
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		



48	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	3328.38	Kg
49	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	9.45	Sqm
50	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		
	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
51	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	230.59	Sqm
52	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	137.03	Sqm

53	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	6695.52	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
54	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	528.39	Sqm
55	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	2536.55	Sqm
56	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	3480.84	Sqm

57	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	348.08	Sqm
58	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
59	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	0.00	Sqm
60	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) : 25 mm thick	1722.39	Sqm
61	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm.	114.22	Sqm

62	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.	24.65	Rmt
63	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	42.00	Each
64	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	114.12	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
65	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	475.11	Sqm
66	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	13491.09	Sqm
67	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
68	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
69	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	57.00	Kg
70	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	225.88	Sqm
71	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	1505.88	Rmt

72	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	13966.20	Sqm
73	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	4235.54	Sqm
74	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	13966.20	Sqm
75	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
76	French spirit polishing : Two or more coats on new works including a coat of wood filler	451.04	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		

77	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: (a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement : 5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement : 4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. "All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	1378.03	Sqm

78	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	467.70	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
79	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyester baked paint for all heights as per</p>		

	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. Colour shade & make approved by Architect-in-Charge.	1545.02	Sqm



**BOQ DIPLOMA BOYS HOSTEL**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	1782.38	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	1782.38	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	83.18	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	110.58	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	132.97	Cum
7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	82.83	Sqm

<b>7b</b>	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	82.83	Sqm
<b>8</b>	Making plinth protection 50 mm 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.	159.93	Sqm
<b>9</b>	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	66.64	litre
<b>10</b>	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
<b>a</b>	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	177.70	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	351.90	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	573.31	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	130406.68	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	267.25	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	104.60	Sqm
	Suspended floors, roofs, landings, balconies and access platform	1744.08	Sqm
	Shelves (Cast in situ)	27.26	Sqm

	Lintels, beams, plinth beams, girders, bressumers and cantilevers	2131.96	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	1124.40	Sqm
	Stairs, (excluding landings) except spiral-staircases	102.96	Sqm
	Weather shade, Chajjas, corbels etc., including edges	44.15	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
<b>16</b>	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)	26.54	Cum
<b>17</b>	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	82.24	Cum
	First Floor	89.78	Cum
	Second Floor	85.23	Cum
	Terrace Floor	0.00	Cum
<b>18</b>	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	9.42	Cum
	First Floor	3.97	Cum
	Second Floor	18.00	Cum
	Terrace Floor		Cum
<b>19</b>	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	116.14	Cum
	First Floor	91.34	Cum
	Second Floor	91.34	Cum
	Terrace Floor		Cum

20	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	298.82	Sqm
21	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	297.23	Cum
22	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
23	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	214.50	Rmt
24	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	214.50	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	<b>STRUCTURAL GLAZING WORK</b>		
25	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). for ACP & STRUCTURAL GLAZING WORK	388.99	KG
26	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:		

	<p>a) Structural analysis &amp; 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 &amp; drainage and protection against fire hazard including:</p>		
	<p>(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.</p>		
	<p>(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.</p>		

	<p>(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 ll inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&amp;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</p>		
	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		

	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM-330-10 testing method for range upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	51.87	SQM
27	<p>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.25.2)</p> <p>For payment, only the actual area of glass on</p>		



	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. (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.	51.87	SQM
28	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.	5.19	SQM
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
29	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	133.00	Each
30	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	157.00	Each
	150 X10 mm	157.00	Each
31	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	323.00	Each
32	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	120.00	Each
33	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	0.00	Each
	510X19 MM	0.00	Each

34	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Saal wood	5.63	Cum
35	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
36	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	285.06	Sqm
37	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. 1.0 mm thick	0.00	Sqm
38	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).	285.06	Sqm
39	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	0.00	Sqm

40	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately.</p> <p><del>Note:- Structural design proof checked from a Government</del></p>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	333.38	Sqm
41	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	27.75	Sqm

42	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	185.00	Rmt
43	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	62.16	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
44	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	4333.50	Kg
45	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	9.45	Sqm
46	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		

	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
47	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	361.13	Sqm
48	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	27.75	Sqm
49	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	613.44	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
50	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	376.95	Sqm

51	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	464.89	Sqm
52	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	1132.68	Sqm
53	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	113.27	Sqm
54	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
55	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	0.00	Sqm

56	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) : 25 mm thick	466.22	Sqm
57	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect-in-Charge.		
	Area of slab over 0.50 sqm.	49.59	Sqm
58	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.	59.41	Rmt
59	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	4.00	Each
60	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
61	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	128.70	Sqm
62	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	3756.94	Sqm

63	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	2094.11	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
64	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
65	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	0.00	Kg
66	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	119.66	Sqm
67	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	199.44	Rmt
68	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	3885.64	Sqm
69	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	1632.08	Sqm
70	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	3885.64	Sqm
71	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	243.87	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		



72	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	834.43	Sqm

73	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	150.79	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
74	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyester baked paint for all heights as per</p>		

	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. Colour shade & make approved by Architect-in-Charge.	208.11	Sqm
	<b>SUB TOTAL</b>		
	<b>EXTRA ITEMS</b>		
75	Supply and installation of FRP (Glass Fiber reinforced plastic) Wall murals and FRP Jali ,FRP fountains,along with accessories & sets of Bolts as per drawing provided by Architect. FRP product made by admixtures consisting of a matrix usually polyster Resin, Slica Sand and reinforcement of glass fibers, in addition with hardners and acclerators,pigment for colouring,also includes ms pipe support for framing work held with fastners of anchor and other accessories, Execution of work is done with skilled workers of height for installation Finishing & Painting of FRP products.		
	Supply and Installation of FRP Jali with accessories and set of bolts.	0.00	SQM
	<b>SUB TOTAL</b>		
	<b>For without GST &amp; CESS on DSR ((Amount*.735*1.11/1.07))*1.03</b>		

**BOQ DIPLOMA GIRLS HOSTEL**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	1782.38	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	1782.38	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	83.18	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	110.58	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	132.97	Cum
7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	82.83	Sqm

<b>7b</b>	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	82.83	Sqm
<b>8</b>	Making plinth protection 50 mm 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.	159.93	Sqm
<b>9</b>	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	66.64	litre
<b>10</b>	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
<b>a</b>	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	177.70	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	351.90	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	573.31	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	130406.68	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	267.25	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	104.60	Sqm
	Suspended floors, roofs, landings, balconies and access platform	1744.08	Sqm
	Shelves (Cast in situ)	27.26	Sqm

	Lintels, beams, plinth beams, girders, bressumers and cantilevers	2131.96	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	1124.40	Sqm
	Stairs, (excluding landings) except spiral-staircases	102.96	Sqm
	Weather shade, Chajjas, corbels etc., including edges	44.15	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
<b>16</b>	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)	26.54	Cum
<b>17</b>	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	82.24	Cum
	First Floor	89.78	Cum
	Second Floor	85.23	Cum
	Terrace Floor	0.00	Cum
<b>18</b>	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	9.42	Cum
	First Floor	3.97	Cum
	Second Floor	18.00	Cum
	Terrace Floor		Cum
<b>19</b>	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	116.14	Cum
	First Floor	91.34	Cum
	Second Floor	91.34	Cum
	Terrace Floor		Cum

20	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	298.82	Sqm
21	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	297.23	Cum
22	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
23	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	214.50	Rmt
24	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	214.50	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	<b>STRUCTURAL GLAZING WORK</b>		
25	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). for ACP & STRUCTURAL GLAZING WORK	388.99	KG
26	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:		



	<p>a) Structural analysis &amp; 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 &amp; drainage and protection against fire hazard including:</p>		
	<p>(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.</p>		
	<p>(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.</p>		

	<p>(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 ll inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&amp;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</p>		
	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		

	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM-330-10 testing method for range upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	51.87	SQM
27	<p>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.25.2)</p> <p>For payment, only the actual area of glass on</p>		

	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. (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.	51.87	SQM
28	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.	5.19	SQM
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
29	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	133.00	Each
30	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	157.00	Each
	150 X10 mm	157.00	Each
31	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	323.00	Each
32	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	120.00	Each
33	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	0.00	Each
	510X19 MM	0.00	Each

34	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Saal wood	5.63	Cum
35	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
36	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	285.06	Sqm
37	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. 1.0 mm thick	0.00	Sqm
38	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).	285.06	Sqm
39	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	0.00	Sqm

40	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately.</p> <p><del>Note:- Structural design proof checked from a Government</del></p>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	333.38	Sqm
41	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	27.75	Sqm

42	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	185.00	Rmt
43	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	62.16	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
44	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	4333.50	Kg
45	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	9.45	Sqm
46	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		

	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
47	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	361.13	Sqm
48	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	27.75	Sqm
49	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	613.44	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
50	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	376.95	Sqm



51	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	464.89	Sqm
52	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	1132.68	Sqm
53	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	113.27	Sqm
54	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
55	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	0.00	Sqm

56	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) : 25 mm thick	466.22	Sqm
57	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect-in-Charge.		
	Area of slab over 0.50 sqm.	49.59	Sqm
58	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.	59.41	Rmt
59	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	4.00	Each
60	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
61	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	128.70	Sqm
62	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	3756.94	Sqm

63	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	2094.11	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
64	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
65	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	0.00	Kg
66	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	119.66	Sqm
67	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	199.44	Rmt
68	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	3885.64	Sqm
69	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	1632.08	Sqm
70	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	3885.64	Sqm
71	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	243.87	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		

72	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	834.43	Sqm

73	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	150.79	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
74	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyester baked paint for all heights as per</p>		

	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. Colour shade & make approved by Architect-in-Charge.	208.11	Sqm

**RESEARCH RESEARCH BOYS HOSTEL**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
<b>1</b>	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	1976.21	Cum
<b>2</b>	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
<b>3</b>	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	1976.21	Cum
<b>4</b>	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	0.00	Cum
<b>5</b>	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	99.02	Cum
<b>SUB TOTAL</b>			
	<b>CONCRETE WORK</b>		
<b>6</b>	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	110.02	Cum
<b>7</b>	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	93.93	Sqm

7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	93.93	Sqm
8	Making plinth protection 50 mm 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.	136.55	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	56.90	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	151.72	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		
11	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		



<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	409.48	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	882.24	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	182318.34	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	351.37	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	372.60	Sqm
	Suspended floors, roofs, landings, balconies and access platform	2261.30	Sqm
	Shelves (Cast in situ)	40.56	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	4509.55	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	1559.66	Sqm
	Stairs, (excluding landings) except spiral-staircases	298.52	Sqm
	Weather shade, Chajjas, corbels etc., including edges	63.36	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	226.13	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
<b>16</b>	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)	3.43	Cum

17	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	102.10	Cum
	First Floor	102.10	Cum
	Second Floor	102.71	Cum
	Third Floor	102.71	Cum
	Terrace Floor	0.00	Cum
18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	5.10	Cum
	First Floor	5.81	Cum
	Second Floor	6.51	Cum
	Third Floor	6.51	Cum
	Terrace Floor		Cum
19	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	27.36	Sqm
	First Floor	27.36	Sqm
	Second Floor	30.78	Sqm
	Third Floor	30.78	Sqm
20	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	116.28	Sqm
21	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	290.47	Cum

22	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
23	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	151.72	Rmt
24	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per approved by E/I.	151.72	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	<b>STRUCTURAL GLAZING WORK</b>		
25	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). for ACP & STRUCTURAL GLAZING WORK	346.95	KG
26	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:		

	<p>a) Structural analysis &amp; 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 &amp; drainage and protection against fire hazard including:</p>		
	<p>(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.</p>		
	<p>(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.</p>		

	<p>(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 ll inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&amp;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</p>		
	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		

	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM E-330-10 testing method for range upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	46.26	SQM
27	<p>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.25.2)</p> <p>For payment, only the actual area of glass on</p>		

	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. (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.	46.26	SQM
28	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.	4.63	SQM
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
29	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	114.00	Each
30	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	126.00	Each
	150 X10 mm	126.00	Each
31	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	252.00	Each
32	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	92.00	Each
33	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	0.00	Each
	510X19 MM	0.00	Each

34	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Saal wood	3.93	Cum
35	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
36	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	153.45	Sqm
37	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. 1.0 mm thick	0.00	Sqm
38	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).	153.45	Sqm
39	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	0.00	Sqm



40	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately.</p> <p><del>Note:- Structural design proof checked from a Government</del></p>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	642.86	Sqm
41	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	30.60	Sqm

42	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	170.00	Rmt
43	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	57.12	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
44	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	1971.00	Kg
45	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	9.45	Sqm
46	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		

	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
47	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	673.46	Sqm
48	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	30.60	Sqm
49	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	2589.76	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
50	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	463.20	Sqm

51	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
52	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	734.40	Sqm
53	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	767.04	Sqm
54	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
55	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	0.00	Sqm

56	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) : 25 mm thick	1480.11	Sqm
57	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect-in-Charge.		
	Area of slab over 0.50 sqm.	36.72	Sqm
58	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.	68.00	Rmt
59	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	42.00	Each
60	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
61	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	2635.87	Sqm
62	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	3505.97	Sqm

63	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
64	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
65	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	221.00	Kg
66	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	91.03	Sqm
67	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	606.90	Rmt
68	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	6141.84	Sqm
69	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	2585.68	Sqm
70	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	8727.52	Sqm
71	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
72	French spirit polishing : Two or more coats on new works including a coat of wood filler	170.12	Sqm
	<b>SUB TOTAL</b>		

	<b>WATER PROOFING</b>		
73	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	749.65	Sqm

74	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	162.24	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
75	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyester baked paint for all heights as per</p>		



	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. Colour shade & make approved by Architect-in-Charge.	176.80	Sqm

**RESEARCH RESEARCH GIRLS HOSTEL**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
<b>1</b>	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	1976.21	Cum
<b>2</b>	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
<b>3</b>	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	1976.21	Cum
<b>4</b>	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	0.00	Cum
<b>5</b>	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	99.02	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
<b>6</b>	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	110.02	Cum
<b>7</b>	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	93.93	Sqm

7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	93.93	Sqm
8	Making plinth protection 50 mm 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.	136.55	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	56.90	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	151.72	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	409.48	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	690.81	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	153697.93	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	351.37	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	350.46	Sqm
	Suspended floors, roofs, landings, balconies and access platform	1675.41	Sqm
	Shelves (Cast in situ)	40.56	Sqm

	Lintels, beams, plinth beams, girders, bressumers and cantilevers	3611.72	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	1250.48	Sqm
	Stairs, (excluding landings) except spiral-staircases	223.89	Sqm
	Weather shade, Chajjas, corbels etc., including edges	46.98	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	167.54	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
16	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)	3.43	Cum
17	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	102.10	Cum
	First Floor	102.10	Cum
	Second Floor	102.71	Cum
	Terrace Floor	0.00	Cum
18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	6.63	Cum
	First Floor	5.81	Cum
	Second Floor	6.51	Cum
	Terrace Floor		Cum
19	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	27.36	Cum

	First Floor	27.36	Cum
	Second Floor	30.78	Cum
20	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	85.50	Sqm
21	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	223.43	Cum
22	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
23	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	151.72	Rmt
24	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per approved by E/I.	151.72	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	<b>STRUCTURAL GLAZING WORK</b>		
25	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). for ACP & STRUCTURAL GLAZING WORK	346.95	KG

26	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.		

	<p>(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 ll inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&amp;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</p>		
	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		



	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM E-330-10 testing method for range upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	46.26	SQM
27	<p>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.25.2)</p> <p>For payment, only the actual area of glass on</p>		

	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. (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.	46.26	SQM
28	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.	4.63	SQM
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
29	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	84.00	Each
30	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	93.00	Each
	150 X10 mm	93.00	Each
31	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	186.00	Each
32	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	68.00	Each
33	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	0.00	Each
	510X19 MM	0.00	Each

34	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Saal wood	2.90	Cum
35	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
36	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	153.45	Sqm
37	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. 1.0 mm thick	0.00	Sqm
38	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).	153.45	Sqm
39	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	0.00	Sqm

40	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately.</p> <p><del>Note:- Structural design proof checked from a Government</del></p>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	484.49	Sqm
41	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	22.50	Sqm

42	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	125.00	Rmt
43	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	42.00	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
44	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	1479.60	Kg
45	Providing and fixing 1mm thick M.S. sheet door with frame of 40x40x6 mm angle iron and 3 mm M.S. gusset plates at the junctions and corners, all necessary fittings complete, including applying a priming coat of approved steel primer.		
	Using M.S. angels 40x40x6 mm for diagonal braces	9.45	Sqm
46	Providing and fixing M.S. Tubular frames for doors, windows, ventilators and cupboard with rectangular/ L-Type sections, made of 1.60 mm thick M.S. Sheet, joints mitred, welded and grinded finish, with profiles of required size, including fixing of necessary butt hinges and screws and applying a priming coat of approved steel primer.		

	Fixing with 15x3 mm lugs 10 cm long embedded in cement concrete block 15x10x10 cm of C.C. 1:3:6 (1 Cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size)	0.00	Kg
47	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	506.99	Sqm
48	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	673.46	Sqm
49	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	1953.28	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
50	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	351.60	Sqm

51	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
52	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	540.00	Sqm
53	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	564.00	Sqm
54	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
55	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	0.00	Sqm

56	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) : 25 mm thick	1122.46	Sqm
57	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect-in-Charge.		
	Area of slab over 0.50 sqm.	27.30	Sqm
58	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.	50.00	Rmt
59	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	42.00	Each
60	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
61	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	1960.75	Sqm
62	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	2660.19	Sqm



63	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
64	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
65	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	166.00	Kg
66	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	91.03	Sqm
67	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	606.90	Rmt
68	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	4620.95	Sqm
69	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	2032.65	Sqm
70	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	6653.60	Sqm
71	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
72	French spirit polishing : Two or more coats on new works including a coat of wood filler	125.54	Sqm
	<b>SUB TOTAL</b>		

	<b>WATER PROOFING</b>		
73	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	749.65	Sqm

74	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	106.08	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
75	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyester baked paint for all heights as per</p>		

	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. Colour shade & make approved by Architect-in-Charge.	130.00	Sqm

**BOQ ADMIN BLOCK**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	6829.63	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	5777.01	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	2554.36	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	290.66	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	503.98	Cum
7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	151.36	Sqm

7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	151.36	Sqm
8	Making plinth protection 50 mm 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.	225.68	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	94.03	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	250.76	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		
11	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		

A	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
B	Concrete of M30 grade with minimum cement content of 350 kg /cum	2447.90	Cum
12	All works above plinth level upto floor V level		
A	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
B	Concrete of M30 grade with minimum cement content of 350 kg /cum	2748.32	Cum
13	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
14	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	693247.58	Kg
15	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	749.56	Sqm
	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	2317.80	Sqm
	Suspended floors, roofs, landings, balconies and access platform	1740.15	Sqm
	Shelves (Cast in situ)	5.60	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	7602.67	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	5337.68	Sqm
	Stairs, (excluding landings) except spiral-staircases	646.80	Sqm
	Weather shade, Chajjas, corbels etc., including edges	303.72	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	174.01	Sqm
16	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc., including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured).	8174.85	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
17	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)	28.34	Cum

18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	266.75	Cum
	First Floor	235.07	Cum
	Second Floor	284.19	Cum
	Third Floor	200.46	Cum
	Terrace Floor	0.00	Cum
19	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	9.69	Cum
	First Floor	16.19	Cum
	Second Floor	16.31	Cum
	Third Floor	48.82	Cum
	Terrace Floor		Cum
20	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	19.88	Cum
	First Floor	17.79	Cum
	Second Floor	16.48	Cum
	Third Floor	10.74	Cum
	Terrace Floor		Cum
21	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	791.41	Sqm
22	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		



	Above plinth level upto floor V level	1243.73	Cum
23	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
24	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	250.76	Rmt
25	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	250.76	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	<b>STRUCTURAL GLAZING WORK</b>		
26	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). for ACP & STRUCTURAL GLAZING WORK	1320.00	KG
27	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:		

	<p>a) Structural analysis &amp; 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 &amp; drainage and protection against fire hazard including:</p>		
	<p>(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.</p>		
	<p>(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.</p> <p>(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.</p>		

	<p>(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 ll inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&amp;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</p>		
	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		

	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM E- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM E-330-10 testing method for a range upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	176.00	SQM
28	<p>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 strengthened 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.25.2)</p> <p>For payment, only the actual area of glass on</p>		

	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. (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.	176.00	SQM
29	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 Engineer-in-Charge.	17.60	SQM
30	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.		
	Upto 5mm depth and 5 mm width	152.00	RMT
31	Providing and fixing 12mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double acting hydraulic floor 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 etc. to be paid separately)	19.20	Sqm
(a)	Providing and fixing Stainless steel 304 Grade H- type pull handle of size min 32 mm dia and 1200mm long of approved make including SS screws, including making holes of required size in shutter etc. complete as per direction of Engineer-in-Charge.	8.00	Each
(b)	Providing and fixing SS Bottom patch Lock with cylinder of approved make including necessary screws etc.	4.00	Each

(c)	Providing and fixing SS floor mounted half dome door stopper of dia 45mm including necessary screws etc.	8.00	Each
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
32	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	265.00	Each
33	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	358.00	Each
	150x10 mm	358.00	Each
34	Providing and fixing bright finished brass handles with screws etc. complete: 125 mm	716.00	Each
35	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	358.00	Each
36	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	0.00	Each
	510X19 MM	0.00	Each
37	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Second class teak wood	11.29	Cum
38	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	626.16	Sqm
39	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm

40	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. 1.0 mm thick	0.00	Sqm
41	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).	626.16	Sqm
42	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	0.00	Sqm
43	Doors : Providing and Fixing fixing of sound reducing doors with 38db Noise reduction property as per the specification- Supply & installation of teak wood door frame of section 100x75 mm with one coat of anti-termite. Door shutter consisting of 77mm thick door shutter having 38 db acoustical rating having in fill of 50mm thk resin bonded glass wool of 24 kg/cum density with FR acrylic sealant sandwich between two 9 mm thk (starpan or approved equiv. make ) calcium silicate board having density 1150kg/um and thermal conductivity 0.14 w/m k faced with 3.4 mm thk commercial ply 1mm thk laminate on both sides with heat activated intumescent fire seal strip of size 10mmx4mm mounted in the grooves having hardwood lipping. including marshall acoustic seals around the jamb and head on frame rebates, which is adjustable to seal for noise, light and smoke for maximum gap of 8mm between frame and shutter. Along with all the Hardware & accessories like Heavy duty door closer, Panic bar, Dead lock, Hinges, Handle, Vision panel etc.	0.00	SQM

44	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners</p> <p>of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately. Note:- Structural design proof</p>		
	Three track three panels sliding window with two glazed & one wire mesh panels with Aluminium channel for roller track, wool pile, nylon rollers with SS 304 body. Using R3 series with frame (98mm & above) x (40mm & above) & both glazed and fly screen sash (30mm & above) x (55mm & above) with zinc alloy (zamak) powder coated handle on every glazed panel along with multi-point locking system. (Height upto 1.8m).	0.00	Sqm
45	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	862.92	Sqm



46	Providing and fixing factory made single extruded WPC (Wooden Polymer composite) solid door/window/clerestory windows and other frames/ chowkhat comprising of virgin PVC polymer of k value 58-60, calcium carbonates and natural fibres and non toxic additive fabricated with miter joints after applying PVC solvents cement and screwed with full bod threaded star SS screws having minimum frame density of 750kg/cum. <b>(Frame Size 45 x 85mm)</b>	237.60	Rmt
47	Providing and fixing factory made single extruded <b>WPC</b> (Wooden Polymer Composite) solid plain flush door shutter of nrequired size comprising of virigin polymer of K value 58-60 , calcium carbonate and natural fibres and non toxic additives , min. compressive strenght of 50N/mm2 and resistance to spread of flame of class A category with property of being termite proof / Water Proof and fire retardent and fixing with stainless steel butt hinges of required size as per direction of Engineer in Charge. <b>(35mm Thick)</b>	77.76	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
48	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	10480.32	Kg
49	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	892.08	Sqm
50	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	18.72	Sqm

51	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessorries such as nuts, bolts, fasteners etc.	829.44	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
52	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	312.28	Sqm
53	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
54	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	3791.78	Sqm

55	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	1582.40	Sqm
56	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
57	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	2108.93	Sqm
58	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) : 25 mm thick	39.60	Sqm
59	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm.	169.19	Sqm

60	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.	0.00	Rmt
61	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	8.00	Each
62	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
63	Providing and fixing of <b>12 MM Thick Engineer wooden flooring</b> , classification of use 32/23 with a surface abrasion resistance of class AC5 (average 4500 cycles), impact resistance of Class IC2, resistance to cigarette burn with a rating of 5(EN 438-2:05), swelling after 24 hrs in warm water is less then 12%, Modulus of rupture of 53.3 newton/mm2, Internal bond 1.78 newton/mm2, surface soundness 1.01 newton/mm2(EN 13329:2000) with a 0.2 mm thick wear layer on top of a High Density Fiber substrate core (density ~ 948.3 Kgs/M3) of plank size 1200 mm X 120 mm having Lock & Fold locking arrangement and Aqua Seal edges for better spill resistance. Surface finish will be Embossed in Register (EIR) or Hand Sculpted (HS). Underlayment for laminate flooring made of natural color foam. laminate flooring comes with accessories like end profile, transition profile, reducer, stair nosing and T profile. all complete as per drawing, specification and direction as approved by the Architect/ Engineer -in-Charge.	307.49	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
64	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	3842.15	Sqm

65	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	9169.60	Sqm
66	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
67	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
68	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	329.00	Kg
69	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	225.68	Sqm
70	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	250.76	Rmt
71	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	14751.90	Sqm
72	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	2265.23	Sqm
73	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	14751.90	Sqm
74	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
75	French spirit polishing : Two or more coats on new works including a coat of wood filler	338.72	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		

76	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement : 5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	2592.17	Sqm

77	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	402.92	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
78	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre painted with polyster baked paint for all heights as per</p>		

	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. Colour shade & make approved by Architect-in-Charge.	281.15	Sqm
79	Providing and fixing Aluminium Clip in Metal Ceiling System of 600x600/300x1200 mm or more module which includes providing and fixing 'C' wall angle of size 20x30x20 mm made of 0.7 mm thick pre painted steel along the perimeter of the room with help of nylon sleeves and wooden screws at 300 mm center to centre, suspending the main C carrier of size 10x38x10 mm 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 1000 mm c/c. Inverted triangle shaped Spring Tee having height of 24 mm and width of 34 mm made of GI steel 0.45 mm thick is then fixed to the main C carrier and in direction perpendicular to it at 600 mm centers with help of suspension brackets. Wherever the main C carrier and spring T have to join, C carrier and spring T		
	Aluminium Metal Ceiling Clip in plain Beveled edge global white color tiles of size 600x600/300x1200mm or more and 0.7 mm thick with 25 mm height, made of Aluminium sheet having powder coating (both sides inclusive) electro statically polyester powder coated of thickness 60 microns (minimum)	1042.57	SQM
	<b>SUB TOTAL</b>		
	<b>EXTRA ITEMS</b>		
80	Supply and installation of FRP (Glass Fiber reinforced plastic) Wall murals and FRP Jali ,FRP fountains,along with accessories & sets of Bolts as per drawing provided by Architect. FRP product made by admixtures consisting of a matrix usually polyster Resin, Slica Sand and reinforcement of glass fibers, in addition with hardners and acclerators,pigment for colouring,also includes ms pipe support for framing work held with fastners of anchor and other accessories, Execution of work is done with skilled workers of height for installation Finishing & Painting of FRP products.		
	Supply and Installation of FRP Jali with accessories and set of bolts.	576.00	SQM




**BOQ ACADEMIC BLOCK**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
<b>1</b>	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	6278.06	Cum
<b>2</b>	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
<b>3</b>	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	2323.15	Cum
<b>4</b>	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	4110.90	Cum
<b>5</b>	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	474.10	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
<b>6</b>	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	532.56	Cum

7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	223.26	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	223.26	Sqm
8	Making plinth protection 50 mm 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.	245.25	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	102.19	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL anti-termite treatment		
	Along the external wall below concrete or masonry apron using chemical emulsion @ 2.25 litres per linear metre including drilling and plugging holes etc.		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	272.50	Rmt
			.
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	1875.68	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	4037.93	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	828327.62	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	1009.43	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	2916.50	Sqm
	Suspended floors, roofs, landings, balconies and access platform	6831.07	Sqm
	Shelves (Cast in situ)	52.66	Sqm

	Lintels, beams, plinth beams, girders, bressumers and cantilevers	10844.04	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	3479.28	Sqm
	Stairs, (excluding landings) except spiral-staircases	1082.04	Sqm
	Arches, domes, vaults up to 6 m span	1570.00	Sqm
	Weather shade, Chajjas, corbels etc., including edges	0.00	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	683.11	Sqm
16	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc., including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured).	11696.43	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
17	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)	132.36	Cum
18	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)	231.20	Cum
19	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	255.59	Sqm
	First Floor	255.59	Sqm
	Second Floor	255.59	Sqm
	Third Floor	255.59	Sqm
20	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	1022.36	Sqm
21	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	3305.57	Cum

22	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
23	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	299.87	Rmt
24	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	299.87	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
25	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately)		
	powder coated aluminium (minimum thickness of powder coating 50 micron)	3093.32	Kg
	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) Powder coated aluminium (minimum thickness of powder coating 50 micron)	5413.31	Kg

26	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): With float glass panes of 5.50 mm thickness	518.71	Sqm
27	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineer-in-charge complete.		
	355X19 MM	488.00	Each
	510X19 MM	488.00	Each
28	Providing and fixing 12 mm thick prelaminated particle board flat pressed three layer or graded wood particle board conforming to IS: 12823 Grade I Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of engineer-in-charge Pre-laminated particle board with decorative lamination on both sides	254.62	Sqm
29	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 palte etc. complete as per the direction of Engineer-in-charge. With stainless steel cover plate minimum 1.25 mm thickness.		
	Floor Spring	0.00	Each
	STRUCTURAL GLAZING WORK		

30	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). for ACP & STRUCTURAL GLAZING WORK	2748.23	KG
31	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.		



	<p>(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.</p> <p>(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.</p>		
	<p>(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 ll inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&amp;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</p>		

	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		
	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM E- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM E-330-10 testing method for arange upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	366.43	SQM

32	<p>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 strengthened 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.25.2)</p> <p>For payment, only the actual area of glass on</p>		
	<p>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.</p> <p>(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/m<sup>2</sup> degree K etc. The properties of performance glass shall be decided by technical sanctioning authority as per the site requirement.</p>	366.43	SQM
33	<p>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.</p>	36.64	SQM
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
34	<p>Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.</p>	332.00	Each

35	Providing and fixing bright finished S.S tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	772.00	Each
	150 X10 mm	772.00	Each
36	Providing and fixing bright finished S.S handles with screws etc. complete: 125 mm	1300.00	Each
37	Providing and fixing bright finished S.S hanging type floor door stopper with necessary screws, etc. complete.	528.00	Each
38	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Second class teak wood	4.76	Cum
39	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	257.04	Sqm
40	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. 1.0 mm thick	0.00	Sqm
41	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).	257.04	Sqm

42	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners</p> <p>of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately. Note:- Structural design proof</p>		
	Three track three panels sliding window with two glazed & one wire mesh panels with Aluminium channel for roller track, wool pile, nylon rollers with SS 304 body. Using R3 series with frame (98mm & above) x (40mm & above) & both glazed and fly screen sash (30mm & above) x (55mm & above) with zinc alloy (zamak) powder coated handle on every glazed panel along with multi-point locking system. (Height upto 1.8m).	818.07	Sqm
43	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	0.00	Sqm

44	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	560.00	Rmt
45	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	188.16	Sqm
46	Doors : Providing and Fixing fixing of sound reducing doors with 38db Noise reduction property as per the specification-Supply & installation of teak wood door frame of section 100x75 mm with one coat of anti-termite. Door shutter consisting of 77mm thick door shutter having 38 db acoustical rating having in fill of 50mm thk resin bonded glass wool of 24 kg/cum density with FR acrylic sealant sandwich between two 9 mm thk (starpan or approved equiv. make ) calcium silicate board having density 1150kg/um and thermal conductivity 0.14 w/m k faced with 3.4 mm thk commercial ply 1mm thk laminate on both sides with heat activated intumescent fire seal strip of size 10mmx4mm mounted in the grooves having hardwood loping. including marshall acoustic seals around the jamb and head on frame rebates, which is adjustable to seal for noise, light and smoke for maximum gap of 8mm between frame and shutter. Along with all the Hardware & accessories like Heavy duty door closer, Panic bar, Dead lock, Hinges, Handle, Vision panel etc.	20.40	SQM

47	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 <sup>2</sup> ) suitable for mounting 120 min Fire Rated Glazed Door Shutters. The frame shall be filled with Mineral wool Insulation having density min 96Kg/m <sup>3</sup> . The frame will have a provision of G.I.Anchor fastners 14 nos ( 5 each on vertical style & 4 on 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).	0.00	RMT
48	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 <sup>2</sup> ) duly filled mineral wool insulation having density min 96 kg/m <sup>3</sup> 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).	0.00	SQM

49	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 <sup>2</sup> ) 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 shallnot be more than 1100x2200 mm (w x h) or 2.42 sqm.	0.00	SQM
50	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.	2.00	EACH
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
51	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	8462.52	Kg
52	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with : 5.5 mm thick glass panes	818.07	sqm
53	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	0.00	Sqm



54	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	1430.08	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
55	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	668.08	Sqm
56	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	1811.16	Sqm
57	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 800 x 800 mm) Colour shade & make approved by Architect-in-Charge.	4338.57	Sqm

58	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	4053.07	Sqm
59	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm.	641.11	Sqm
60	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.	104.56	Rmt
61	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	108.00	Each
62	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	259.54	Sqm

63	Providing and fixing of <b>12 MM Thick Engineer wooden flooring</b> , classification of use 32/23 with a surface abrasion resistance of class AC5 (average 4500 cycles), impact resistance of Class IC2, resistance to cigarette burn with a rating of 5(EN 438-2:05), swelling after 24 hrs in warm water is less than 12%, Modulus of rupture of 53.3 newton/mm2, Internal bond 1.78 newton/mm2, surface soundness 1.01 newton/mm2(EN 13329:2000) with a 0.2 mm thick wear layer on top of a High Density Fiber substrate core (density ~ 948.3 Kgs/M3) of plank size 1200 mm X 120 mm having Lock & Fold locking arrangement and Aqua Seal edges for better spill resistance. Surface finish will be Embossed in Register (EIR) or Hand Sculpted (HS). Underlayment for laminate flooring made of natural color foam. laminate flooring comes with accessories like end profile, transition profile, reducer, stair nosing and T profile. all complete as per drawing, specification and direction as approved by the Architect/ Engineer -in-Charge.	374.15	Sqm
64	Providing and supplying ' <b>Optra Acoustical Wall Paneling</b> ' with square edges made of fibre glass substrate 25mm thick and wrapped on the front side with an acoustically transparent and fire -resistant fabric with an option of colours as per the choice of the Architect/ Person in-charge of size 1200x600 or 600x600 mm providing a minimum sound absorption level of 0.90 NRC to be affixed to wall using Wall panel impalers and construction adhesives as per the instructions laid down by the manufacturer as per the approved design as approved by the Architect/ Engineer -in-Charge NSI	194.96	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
65	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	269.88	Sqm
66	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	2561.64	Sqm
67	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	2561.64	SQM

68	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
69	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	22.00	Kg
70	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	5393.16	Sqm
71	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	28412.59	Sqm
72	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	5393.16	Sqm
73	French spirit polishing		
	Two or more coats on new work	206.39	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		

74	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	3057.89	Sqm

75	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	601.27	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
76	<p>Providing and fixing <b>GI Clip in Metal Ceiling System of 600x600 mm</b> module which includes providing and fixing 'C' wall angle of size 20x30x20 mm made of 0.5 mm thick pre painted steel along the perimeter of the room with help of nylon sleeves and wooden screws at 300 mm center to centre, suspending the main C carrier of size 10x38x10 mm 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 1000 mm c/c. Inverted triangle shaped Spring Tee having height of 24 mm and width of 34 mm made of GI steel 0.45 mm thick is then fixed to the main C carrier and in direction perpendicular to it at 600 mm 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</p>		
	<p>GI Metal Ceiling Clip in plain Beveled edge global white color tiles of size 600x600 and 0.5 mm thick with 25 mm height, made of G I sheet having galvanizing of 100 gms/sqm (both sides inclusive) and 20% perforation area with 1.8 mm 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</p>	1548.31	Sqm

77	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main 'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to form grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre painted with polyester baked paint for all heights as per</p>		
	<p>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 &gt; 85%, non- combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity &lt;0.043 w/ mK. Colour shade &amp; make approved by Architect-in-Charge.</p>	668.08	Sqm

# BOQ LIBRARY

BOQ LIBRARY			
		DSR 2023	
S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	3197.75	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	2986.04	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	893.33	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	151.47	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	218.59	Cum



7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	88.47	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	88.47	Sqm
8	Making plinth protection 50 mm 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.	144.88	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	60.37	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	160.97	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	848.15	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	1154.31	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	255257.08	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	475.50	Sqm
	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	150.82	Sqm
	Suspended floors, roofs, landings, balconies and access platform	1269.63	Sqm
	Shelves (Cast in situ)	9.02	Sqm

	Lintels, beams, plinth beams, girders, bressumers and cantilevers	4230.79	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	1857.03	Sqm
	Stairs, (excluding landings) except spiral-staircases	324.00	Sqm
	Weather shade, Chajjas, corbels etc., including edges	29.10	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	126.96	Sqm
16	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc., including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured).	3311.88	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
17	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)	20.33	Cum
18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	119.74	Cum
	First Floor	93.82	Cum
	Second Floor	78.66	Cum
	Terrace Floor	0.00	Cum
19	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	38.52	Cum
	First Floor	12.66	Cum
	Second Floor	12.66	Cum
	Terrace Floor		Cum

20	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	334.95	Sqm
21	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	312.79	Cum
22	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
23	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	160.97	Rmt
24	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per approved by E/I.	160.97	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
25	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately)		
	powder coated aluminium (minimum thickness of powder coating 50 micron)	0.00	Kg

	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) Powder coated aluminium (minimum thickness of powder coating 50 micron)	0.00	Kg
26	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): With float glass panes of 5.50 mm thickness	0.00	Sqm
27	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	0.00	Each
	510X19 MM	0.00	Each
28	Providing and fixing 12 mm thick prelaminated particle board flat pressed three layer or graded wood particle board conforming to IS: 12823 Grade I Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of engineer-in-charge Pre-laminated particle board with decorative lamination on both sides	0.00	Sqm
29	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 palte etc. complete as per the direction of Engineer-in-charge. With stainless steel cover plate minimum 1.25 mm thickness.		
	Floor Spring	0.00	Each
	STRUCTURAL GLAZING WORK		

30	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). for ACP & STRUCTURAL GLAZING WORK	1173.00	KG
31	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.		

	<p>(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.</p> <p>(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.</p>		
	<p>(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 ll inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&amp;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</p>		

	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		
	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM E- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM E-330-10 testing method for arange upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	156.40	SQM



32	<p>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.25.2)</p> <p>For payment, only the actual area of glass on</p>		
	<p>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.</p> <p>(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.</p>	156.40	SQM
33	<p>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 Engineer-in-Charge.</p>	15.64	SQM
34	<p>Filling the gap in between aluminium frame &amp; adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.</p>		

	Upto 5mm depth and 5 mm width	268.40	RMT
35	Providing and fixing 12mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double acting hydraulic floor 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 etc. to be paid separately)	45.50	Sqm
(a)	Providing and fixing Stainless steel 304 Grade H- type pull handle of size min 32 mm dia and 1200mm long of approved make including SS screws, including making holes of required size in shutter etc. complete as per direction of Engineer-in-Charge.	4.00	Each
(b)	Providing and fixing SS Bottom patch Lock with cylinder of approved make including necessary screws etc.	2.00	Each
(c)	Providing and fixing SS floor mounted half dome door stopper of dia 45mm including necessary screws etc.	4.00	Each
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
36	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	82.00	Each
37	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	141.00	Each
	150x10 mm	141.00	Each
38	Providing and fixing bright finished brass handles with screws etc. complete: 125 mm	282.00	Each
39	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	141.00	Each
40	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	0.00	Each
	510X19 MM	0.00	Each

41	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Second class teak wood	7.36	Cum
42	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	265.84	Sqm
43	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
44	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. 1.0 mm thick	0.00	Sqm
45	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).	265.84	Sqm
46	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	156.10	Sqm

47	<p>Doors : Providing and Fixing fixing of sound reducing doors with 38db Noise reduction property as per the specification-Supply &amp; installation of teak wood door frame of section 100x75 mm with one coat of anti-termite. Door shutter consisting of 77mm thick door shutter having 38 db acoustical rating having in fill of 50mm thick resin bonded glass wool of 24 kg/cum density with FR acrylic sealant sandwich between two 9 mm thick (starpan or approved equiv. make ) calcium silicate board having density 1150kg/cum and thermal conductivity 0.14 w/m k faced with 3.4 mm thick commercial ply 1mm thick laminate on both sides with heat activated intumescent fire seal strip of size 10mmx4mm mounted in the grooves having hardwood lipping. including marshall acoustic seals around the jamb and head on frame rebates, which is adjustable to seal for noise, light and smoke for maximum gap of 8mm between frame and shutter. Along with all the Hardware &amp; accessories like Heavy duty door closer, Panic bar, Dead lock, Hinges, Handle, Vision panel etc.</p>	0.00	SQM

48	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners</p> <p>of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately. Note:- Structural design proof</p>		
	Three track three panels sliding window with two glazed & one wire mesh panels with Aluminium channel for roller track, wool pile, nylon rollers with SS 304 body. Using R3 series with frame (98mm & above) x (40mm & above) & both glazed and fly screen sash (30mm & above) x (55mm & above) with zinc alloy (zamak) powder coated handle on every glazed panel along with multi-point locking system. (Height upto 1.8m).	87.78	Sqm
49	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	0.00	Sqm

50	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness. The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat. Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	91.80	Rmt
51	Providing and fixing 30 mm thick Fiberglass Reinforced Plastic (F.R.P.) flush door shutter in different plain and wood finish made with fire retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate all around, with suitable wooden blocks inside at required places for fixing of fittings and polyurethane foam (PUF)/Polystyrene foam to be used as filler material throughout the hollow panel, casted monolithically with testing parameters of F.R.P. laminate conforming to table - 3 of IS: 14856, complete as per direction of Engineer-in-charge.	30.96	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
52	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	1053.36	Kg
53	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	104.88	Sqm
54	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	9.45	Sqm

55	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	2124.80	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
56	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	993.61	Sqm
57	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
58	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	2172.99	Sqm

59	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	583.13	Sqm
60	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
61	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	706.23	Sqm
62	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) : 25 mm thick	53.02	Sqm
63	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm.	58.33	Sqm



64	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.	0.00	Rmt
65	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	8.00	Each
66	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
67	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	1555.71	Sqm
68	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	3004.22	Sqm
69	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
	13 M TO 16 M	0.00	SQM
	16 M TO 19 M	0.00	SQM
70	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
71	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	138.00	Kg
72	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	144.88	Sqm

73	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	160.97	Rmt
74	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	5829.57	Sqm
75	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	1901.16	Sqm
76	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	5829.57	Sqm
77	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
78	French spirit polishing : Two or more coats on new works including a coat of wood filler	220.68	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		

79	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: (a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement : 5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement : 4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. "All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	1206.20	Sqm

80	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	87.43	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
81	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyester baked paint for all heights as per</p>		

	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. Colour shade & make approved by Architect-in-Charge.	2170.96	Sqm
82	Providing and fixing Aluminium Clip in Metal Ceiling System of 600x600/300x1200 mm or more module which includes providing and fixing 'C' wall angle of size 20x30x20 mm made of 0.7 mm thick pre painted steel along the perimeter of the room with help of nylon sleeves and wooden screws at 300 mm center to centre, suspending the main C carrier of size 10x38x10 mm 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 1000 mm c/c. Inverted triangle shaped Spring Tee having height of 24 mm and width of 34 mm made of GI steel 0.45 mm thick is then fixed to the main C carrier and in direction perpendicular to it at 600 mm centers with help of suspension brackets. Wherever the main C carrier and spring T have to join, C carrier and spring T		
	Aluminium Metal Ceiling Clip in plain Beveled edge global white color tiles of size 600x600/300x1200mm or more and 0.7 mm thick with 25 mm height, made of Aluminium sheet having powder coating (both sides inclusive) electro statically polyester powder coated of thickness 60 microns (minimum)	706.23	SQM

**BOQ MULTIPURPOSE HALL**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	2032.64	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	2032.64	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	1050.69	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	363.89	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	275.51	Cum
7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	105.96	Sqm

7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	105.96	Sqm
8	Making plinth protection 50 mm 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.	202.28	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	84.28	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	224.75	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		
11	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		

<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	642.47	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	421.85	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	143594.60	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	229.60	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	0.00	Sqm
	Suspended floors, roofs, landings, balconies and access platform	894.19	Sqm
	Shelves (Cast in situ)	37.48	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	1973.48	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	1351.23	Sqm
	Stairs, (excluding landings) except spiral-staircases	0.00	Sqm
	Weather shade, Chajjas, corbels etc., including edges	0.00	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	89.42	Sqm
<b>16</b>	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc., including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured).	16457.35	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
<b>17</b>	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)	36.42	Cum



18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	304.13	Cum
	Terrace Floor	0.00	Cum
19	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	0.00	Cum
	Terrace Floor		Cum
20	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	325.83	Sqm
21	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	325.83	Sqm
22	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	352.86	Cum
23	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm

24	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	224.75	Rmt
25	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per approved by E/I.	224.75	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	<b>STRUCTURAL GLAZING WORK</b>		
26	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). for ACP & STRUCTURAL GLAZING WORK	4001.03	KG
27	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 Dimensional 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.		
	(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 ll 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		

	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		
	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM E- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM E-330-10 testing method for range upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	533.47	SQM

28	<p>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.25.2)</p> <p>For payment, only the actual area of glass on</p>		
	<p>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.</p> <p>(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.</p>	533.47	SQM
29	<p>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 Engineer-in-Charge.</p>	53.35	SQM
30	<p>Filling the gap in between aluminium frame &amp; adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.</p>		

	Upto 5mm depth and 5 mm width	516.42	RMT
31	Providing and fixing 12mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double acting hydraulic floor 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 etc. to be paid separately)	38.25	Sqm
(a)	Providing and fixing Stainless steel 304 Grade H- type pull handle of size min 32 mm dia and 1200mm long of approved make including SS screws, including making holes of required size in shutter etc. complete as per direction of Engineer-in-Charge.	10.00	Each
(b)	Providing and fixing SS Bottom patch Lock with cylinder of approved make including necessary screws etc.	5.00	Each
(c)	Providing and fixing SS floor mounted half dome door stopper of dia 45mm including necessary screws etc.	10.00	Each
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
32	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	39.00	Each
33	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	45.00	Each
	150x10 mm	45.00	Each
34	Providing and fixing bright finished brass handles with screws etc. complete: 125 mm	90.00	Each
35	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	13.00	Each
36	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Second class teak wood	1.03	Cum

37	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	49.77	Sqm
38	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
39	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. 1.0 mm thick	0.00	Sqm
40	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).	49.77	Sqm
41	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	10.67	Sqm
42	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	4.86	Sqm

43	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	120.00	Rmt
44	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	40.32	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
45	Steel work in built up tubular (round, square or rectangular hollow tubes etc.) trusses etc., including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc. complete.		
	Hot finished welded type tubes	84328.75	Kg
46	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	4.86	Sqm
47	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	4.86	Sqm



48	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	646.80	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
49	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	173.10	Sqm
50	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
51	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	211.33	Sqm

52	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	800.43	Sqm
53	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 40 mm thick with 20 mm nominal size stone aggregate	1319.25	Sqm
54	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	718.97	Sqm
55	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) : 25 mm thick	16.85	Sqm
56	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm.	37.48	Sqm

57	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.	0.00	Rmt
58	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	15.00	Each
59	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	63.00	Sqm
60	Providing and fixing of <b>12 MM Thick Engineer wooden flooring</b> , classification of use 32/23 with a surface abrasion resistance of class AC5 (average 4500 cycles), impact resistance of Class IC2, resistance to cigarette burn with a rating of 5(EN 438-2:05), swelling after 24 hrs in warm water is less then 12%, Modulus of rupture of 53.3 newton/mm2, Internal bond 1.78 newton/mm2, surface soundness 1.01 newton/mm2(EN 13329:2000) with a 0.2 mm thick wear layer on top of a High Density Fiber substrate core (density ~ 948.3 Kgs/M3) of plank size 1200 mm X 120 mm having Lock & Fold locking arrangement and Aqua Seal edges for better spill resistance. Surface finish will be Embossed in Register (EIR) or Hand Sculpted (HS). Underlayment for laminate flooring made of natural color foam. laminate flooring comes with accessories like end profile, transition profile, reducer, stair nosing and T profile. all complete as per drawing, specification and direction as approved by the Architect/ Engineer -in-Charge.	1319.25	Sqm

61	Providing and supplying 'Optra Acoustical Wall Paneling' with square edges made of fibre glass substrate 25mm thick and wrapped on the front side with an acoustically transparent and fire -resistant fabric with an option of colours as per the choice of the Architect/ Person in-charge of size 1200x600 or 600x600 mm providing a minimum sound absorption level of 0.90 NRC to be affixed to wall using Wall panel impalers and construction adhesives as per the instructions laid down by the manufacturer as per the approved design as approved by the Architect/ Engineer -in-Charge NSI	1100.84	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
62	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	1446.60	Sqm
63	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	2127.37	Sqm
64	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
	13 M TO 16 M	0.00	SQM
	16 M TO 19 M	0.00	SQM
65	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
66	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	134.00	Kg
67	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	202.28	Sqm
68	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	0.00	Rmt

69	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	4468.17	Sqm
70	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	1667.84	Sqm
71	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	4468.17	Sqm
72	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
73	French spirit polishing : Two or more coats on new works including a coat of wood filler	30.90	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		

74	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre</p> <p><del>painted with polyester baked paint for all heights as per</del></p>		
	<p>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 &gt; 85%, non- combustible as per B.S. 476 part IV, 100% humidity resistance and also having thermal conductivity &lt;0.043 w/ mK. Colour shade &amp; make approved by Architect-in-Charge.</p>	173.10	Sqm

75	Providing and fixing Aluminium Clip in Metal Ceiling System of 600x600/300x1200 mm or more module which includes providing and fixing 'C' wall angle of size 20x30x20 mm made of 0.7 mm thick pre painted steel along the perimeter of the room with help of nylon sleeves and wooden screws at 300 mm center to centre, suspending the main C carrier of size 10x38x10 mm 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 1000 mm c/c. Inverted triangle shaped Spring Tee having height of 24 mm and width of 34 mm made of GI steel 0.45 mm thick is then fixed to the main C carrier and in direction perpendicular to it at 600 mm centers with help of suspension brackets. Wherever the main C carrier and spring T have to join, C carrier and spring T		
	Aluminium Metal Ceiling Clip in plain Beveled edge global white color tiles of size 600x600/300x1200mm or more and 0.7 mm thick with 25 mm height, made of Aluminium sheet having powder coating (both sides inclusive) electro statically polyester powder coated of thickness 60 microns (minimum)	2088.71	SQM
	<b>SUB TOTAL</b>		
	<b>EXTRA ITEMS</b>		

76	<p>Providing and Fixing of Multi cell Polycarbonate Panels 22mm thick with 5 cells - 6 walls structure over MS Supporting structures. Panel Width shall be 900 mm to ensure best performance for wind uplift. The panels shall be uniform in color with an integral Microcell core with softlite finish to give diffused light. In a cross section, the core shall be constructed of Microcell of max 4.5mm x 4.5mm and shall be rectangular in appearance. Panels shall be coextruded with UV Protection layers to filter harmful UV rays with thickness and concentration to last minimum 20 years (the UV should block more than 99% of the UVA and UVB through a clear panel). The weight of the panel only shall not be less than 3800 gram per square meter. Panel shall have U value not more than 1.5 W/m<sup>2</sup> K and UV transmission less than 0.1% with UV filtration test AS No.1067-1990. The panels shall have impact and shock resistance of D1-10J - M50,300J - M50,400J for Soft and Hard body impact test. Panel should achieve minimum sound absorption level 23 DB with third party Test certificate. Panel system shall have Vertical Standing Seam of 15mm at both sides and snap-on connector to interlock the panels with a grip-lock 2 tooth locking mechanism to ensure maximum uplift capability, water tightness and air tightness.</p>		
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	<p>Panels shall be fixed on Purlins (Paid Separately) with special SS Expansion fastener with design load 5000 Newtons per expansion fastener and polycarbonate U/2 connectors. Panel shall be sealed with additional End caps/Aluminium U-Profile (mill finish) at the ends. Panel should pass through Sandbag impact test ASTM E 695-03 after 25,000 hours of environmental exposure and Hailstone impact test ASTM E 822-81. The panel system shall pass water penetration test ASTM E -331. The panel to have classification under B S1 D0 for reaction to fire as per test standard EN 13501 – 1:2002 tested by an independent, recognized testing laboratory. Panels shall have Yellowness Index as per ASTM D-1925; the change shall not be more than 10 points after 60 months of exposure in comparison to original. The Colour of the panel shall change no more than 3 units of delta E as per ASTM D2244-89, E308-85 (AIR) after 60 months of exposure in comparison to original. The Light Transmission of panels shall not change more than 10% after exposure of 60 months in comparison to original. The panels shall pass the cyclone test in accordance with BCA 2009 and conforming to the methods of testing requirement as per AS 4040.3- 1992.</p>		
	<p>The Panels shall be manufactured with approved quality assurance as per ISO 9001 &amp; ISO 14001 and manufacturer should have successful project reference in Indian sub-continent at least 10 years old. Translucent polycarbonate system Materials and Products shall be manufactured by a company continuously and regularly employed in the manufacture of translucent systems using polycarbonate panel systems for a period of at least twenty (20) years and the panels shall be warranted for ten (10) years. Third party test certificates to be submitted along with the offer.</p>	1649.06	SQM

**BOQ GUEST HOUSE**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
<b>1</b>	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	2356.17	Cum
<b>2</b>	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	506.24	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
<b>3</b>	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	2951.81	Cum
<b>4</b>	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	161.33	Cum
<b>5</b>	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	168.22	Cum
<b>SUB TOTAL</b>			
	<b>CONCRETE WORK</b>		
<b>6</b>	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	268.41	Cum
<b>7</b>	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	123.77	Sqm

7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	123.77	Sqm
8	Making plinth protection 50 mm 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.	145.59	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	60.66	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	161.77	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		
11	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		

<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	371.97	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	369.05	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	100776.99	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	358.84	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	183.45	Sqm
	Suspended floors, roofs, landings, balconies and access platform	1251.95	Sqm
	Shelves (Cast in situ)	0.00	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	1981.09	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	833.04	Sqm
	Stairs, (excluding landings) except spiral-staircases	48.36	Sqm
	Weather shade, Chajjas, corbels etc., including edges	55.14	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	125.20	Sqm
<b>16</b>	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc., including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured).	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
<b>17</b>	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)	24.99	Cum

18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	196.17	Cum
	Terrace Floor		Cum
19	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry 100 mm/ 125 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) in super structure above plinth level up to floor V level in cement mortar 1:4 (1 cement : 4 coarse sand). The rate includes providing and placing in position 2 Nos 6 mm dia M.S. bars at every third course of masonry work.		
	Ground Floor	8.23	Cum
	Terrace Floor		Cum
20	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	191.60	Sqm
	Terrace Floor		Sqm
21	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	191.60	Sqm
22	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	233.83	Cum

23	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
24	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	161.77	Rmt
25	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	161.77	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	<b>STRUCTURAL GLAZING WORK</b>		
26	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). for ACP & STRUCTURAL GLAZING WORK	180.00	KG
27	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:		

	<p>(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 Dimensional 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.</p>		
	<p>(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.</p>		
	<p>(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 ll inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&amp;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</p>		

	<p>for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer- in-Charge. Note:- 1. The 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.</p> <p>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</p>		
	<p>Testing and Calibration Laboratories), Department of Science &amp; 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 NABL accredited lab or by any other accreditation body which operates in accordance with ISO / IEC 17011 and accredits labs as per ISO/ IEC 17025.1. Performance Laboratory Test for Air Leakage Test (-50pa to - 300pa) &amp; (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr</p> <p>2. Static Water Penetration Test. (50pa to 1500p) as per ASTM E- 331-09 testing method for a range up to 2000 ml.</p> <p>3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01- 05 testing method for a</p>		
	<p>range upto 2000 ml</p> <p>4. Structural Performance Deflection and deformation by static air pressure test (1.5 times design wind pressure without any failure) as per ASTM E-330-10 testing method for arange upto 50 mm</p> <p>5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4- 09 testing method for Qualitative test, Tests to be conducted on site.</p> <p>6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000 ml</p>	24.00	SQM



28	<p>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.25.2)</p> <p>For payment, only the actual area of glass on</p>		
	<p>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.</p> <p>(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.</p>	24.00	SQM
29	<p>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.</p>	2.40	SQM
30	<p>Filling the gap in between aluminium frame &amp; adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.</p>		

	Upto 5mm depth and 5 mm width	34.00	RMT
31	Providing and fixing 12mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double acting hydraulic floor 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 etc. to be paid separately)	22.00	Sqm
(a)	Providing and fixing Stainless steel 304 Grade H- type pull handle of size min 32 mm dia and 1200mm long of approved make including SS screws, including making holes of required size in shutter etc. complete as per direction of Engineer-in-Charge.	2.00	Each
(b)	Providing and fixing SS Bottom patch Lock with cylinder of approved make including necessary screws etc.	1.00	Each
(c)	Providing and fixing SS floor mounted half dome door stopper of dia 45mm including necessary screws etc.	2.00	Each
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
32	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	43.00	Each
33	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	139.00	Each
	150x10 mm	139.00	Each
34	Providing and fixing bright finished brass handles with screws etc. complete: 125 mm	184.00	Each
35	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	44.00	Each
36	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	116.00	Each
	510X19 MM	116.00	Each

37	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Second class teak wood	1.35	Cum
38	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	72.36	Sqm
39	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
40	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. 1.0 mm thick	0.00	Sqm
41	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).	72.36	Sqm
42	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	0.00	Sqm
43	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	97.20	Sqm

44	Providing and fixing factory made single extruded WPC (Wooden Polymer composite) solid door/window/clerestory windows and other frames/ chowkhat comprising of virgin PVC polymer of k value 58-60, calcium carbonates and natural fibres and non toxic additive fabricated with miter joints after applying PVC solvents cement and screwed with full bod threaded star SS screws having minimum frame density of 750kg/cum. <b>(Frame Size 45 x 85mm)</b>	80.00	Rmt
45	Providing and fixing factory made single extruded <b>WPC</b> (Wooden Polymer Composite) solid plain flush door shutter of nrequired size comprising of virigin polymer of K value 58-60 , calcium carbonate and natural fibres and non toxic additives , min. compressive strenght of 50N/mm2 and resistance to spread of flame of class A category with property of being termite proof / Water Proof and fire retardent and fixing with stainless steel butt hinges of required size as per direction of Engineer in Charge. <b>(35mm Thick)</b>	26.88	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
46	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	1128.60	Kg
47	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	94.05	Sqm
48	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	8.10	Sqm

49	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	126.72	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
50	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	56.20	Sqm
51	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
52	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	553.97	Sqm

53	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	317.00	Sqm
54	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 40 mm thick with 20 mm nominal size stone aggregate	752.05	Sqm
55	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	503.54	Sqm
56	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) : 25 mm thick	18.60	Sqm
57	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm.	26.28	Sqm

58	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.	0.00	Rmt
59	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	2.00	Each
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
60	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	1144.99	Sqm
61	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	1732.02	Sqm
62	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
	13 M TO 16 M	0.00	SQM
	16 M TO 19 M	0.00	SQM
63	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
64	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	105.00	Kg
65	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	145.59	Sqm
66	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	161.77	Rmt

67	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	4128.96	Sqm
68	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	1129.13	Sqm
69	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	4128.96	Sqm
70	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
71	French spirit polishing : Two or more coats on new works including a coat of wood filler	40.54	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		



72	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	1245.21	Sqm

73	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
74	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyester baked paint for all heights as per</p>		

	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. Colour shade & make approved by Architect-in-Charge.	56.20	Sqm
75	Providing 10 mm thick plaster of Paris (gypsum anhydrous) ceiling up to a height of 5 m above floor level, over first class kail wood strips 25x6 mm with 10 mm gap in between and reinforced with rabbit wire mesh fixed to wooden frame (frame work to be paid separately):		
	Flat surfaces	385.66	SQM
	Curved surfaces	0.00	SQM

**BOQ HEALTH CENTER**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	1421.00	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	1616.39	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	187.28	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	153.07	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	123.76	Cum

7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	98.54	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	98.54	Sqm
8	Making plinth protection 50 mm 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.	142.79	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	59.50	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	158.66	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	210.91	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	260.67	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	60824.46	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	232.00	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	90.40	Sqm
	Suspended floors, roofs, landings, balconies and access platform	1053.69	Sqm
	Shelves (Cast in situ)	6.51	Sqm

	Lintels, beams, plinth beams, girders, bressumers and cantilevers	620.79	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	682.56	Sqm
	Stairs, (excluding landings) except spiral-staircases	31.87	Sqm
	Weather shade, Chajjas, corbels etc., including edges	32.42	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	105.37	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
16	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)	64.92	Cum
17	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	147.49	Cum
	Terrace Floor	0.00	Cum
18	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	303.75	Sqm
19	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	303.75	Sqm
20	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	170.31	Cum

21	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
22	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	158.66	Rmt
23	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	158.66	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
24	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	89.00	Each
25	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	143.00	Each
		143.00	Each
26	Providing and fixing bright finished brass handles with screws etc. complete: 125 mm	286.00	Each
27	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	27.00	Each
28	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	20.00	Each
	510X19 MM	20.00	Each
29	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Second class teak wood	2.65	Cum



30	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	83.58	Sqm
31	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
32	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. 1.0 mm thick	0.00	Sqm
33	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).	83.58	Sqm
34	Providing and fixing glazed shutters for doors, windows and clerestory windows using 4 mm thick float glass panes (weight not less than 10 kg per sqm) fixing with ISI marked M.S. pressed butt hinges bright finished of required size with necessary screws. Second class teak wood 30 mm thick	28.79	Sqm

35	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately.</p> <p>Note:- Structural design proof checked from a Government</p>		
	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	82.01	Sqm
36	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	13.51	Sqm

37	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	54.60	Rmt
38	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	54.60	Sqm
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
39	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	996.84	Kg
40	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	83.07	Sqm
41	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	13.51	Sqm

42	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	148.32	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
43	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	99.24	Sqm
44	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
45	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	439.81	Sqm

46	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	242.67	Sqm
47	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
48	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	437.50	Sqm
49	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) : 25 mm thick	11.75	Sqm
50	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect in-Charge.		
	Area of slab over 0.50 sqm	14.99	Sqm

51	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.	10.85	Rmt
52	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	19.00	Each
53	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
54	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	1000.52	Sqm
55	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	1733.14	Sqm
56	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
	13 M TO 16 M	0.00	SQM
57	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
58	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	93.00	Kg
59	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	142.79	Sqm

60	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	158.66	Rmt
61	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	3787.35	Sqm
62	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	808.45	Sqm
63	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	3787.35	Sqm
64	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
65	French spirit polishing : Two or more coats on new works including a coat of wood filler	79.50	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		

66	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	1118.98	Sqm



67	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
68	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyester baked paint for all heights as per</p>		

	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. Colour shade & make approved by Architect-in-Charge.	99.24	Sqm
69	Providing and fixing GI Clip in Metal Ceiling System of 600x600 mm module which includes providing and fixing 'C' wall angle of size 20x30x20 mm made of 0.5 mm thick pre painted steel along the perimeter of the room with help of nylon sleeves and wooden screws at 300 mm center to centre, suspending the main C carrier of size 10x38x10 mm 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 1000 mm c/c. Inverted triangle shaped Spring Tee having height of 24 mm and width of 34 mm made of GI steel 0.45 mm thick is then fixed to the main C carrier and in direction perpendicular to it at 600 mm 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 :		
	GI Metal Ceiling Clip in plain Beveled edge global white color tiles of size 600x600 and 0.5 mm thick with 25 mm height, made of G I sheet having galvanizing of 100 gms/sqm (both sides inclusive) and electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending. Colour shade & make approved by Architect-in-Charge.	108.90	SQM

**BOQ FACILITY CENTER**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m		
	All kinds of soil	943.84	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	943.84	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 1 KM	45.59	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	70.42	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	104.14	Cum

7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	49.11	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	49.11	Sqm
8	Making plinth protection 50 mm 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.	116.24	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyrifos/ Lindane emulsifiable concentrate of 20%	48.43	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyrifos/ Lindane E.C. 20% with 1% concentration	129.15	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

<b>11</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	111.00	Cum
<b>12</b>	All works above plinth level upto floor V level		
<b>A</b>	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
<b>B</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	89.25	Cum
<b>13</b>	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
<b>14</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	28875.69	Kg
<b>15</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	101.50	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	135.54	Sqm
	Suspended floors, roofs, landings, balconies and access platform	469.40	Sqm
	Shelves (Cast in situ)	2.67	Sqm

	Lintels, beams, plinth beams, girders, bressumers and cantilevers	572.10	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	457.56	Sqm
	Stairs, (excluding landings) except spiral-staircases	0.00	Sqm
	Weather shade, Chajjas, corbels etc., including edges	6.35	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	46.94	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
16	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)	16.15	Cum
17	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).		
	Ground Floor	20.18	Cum
18	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	40.02	Sqm
19	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	40.02	Sqm
20	Brick work with common burnt clay machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	122.93	Cum

21	Providing and laying pressed clay tiles (as per approved pattern 20 mm nominal thickness of approved size) on roofs jointed with cement mortar 1:4 (1 cement : 4 coarse sand) mixed with 2% integral water proofing compound, laid over a bed of 20 mm thick cement mortar 1:4 (1 cement : 4 coarse sand) and finished neat complete.	0.00	Sqm
22	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	129.15	Rmt
23	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per apporoved by E/I.	129.15	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	STRUCTURAL GLAZING WORK		
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
24	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	0.00	Each
25	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	0.00	Each
		0.00	Each
26	Providing and fixing bright finished brass handles with screws etc. complete: 125 mm	0.00	Each
27	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	18.00	Each
28	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineerin-charge complete.		
	355X19 MM	30.00	Each
	510X19 MM	30.00	Each
29	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Saal wood	0.57	Cum

30	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	30.30	Sqm
31	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) nondecorative 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: 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	0.00	Sqm
32	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. 1.0 mm thick	0.00	Sqm
33	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).	30.30	Sqm



34	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners</p> <p>of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be paid separately. Note:- Structural design proof</p>		
	Three track three panels sliding window with two glazed & one wire mesh panels with Aluminium channel for roller track, wool pile, nylon rollers with SS 304 body. Using R3 series with frame (98mm & above) x (40mm & above) & both glazed and fly screen sash (30mm & above) x (55mm & above) with zinc alloy (zamak) powder coated handle on every glazed panel along with multi-point locking system. (Height upto 1.8m).	45.54	Sqm
35	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	3.15	Sqm

36	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	60.00	Rmt
37	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	10.08	Sqm
38	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.		
	80x1.25 mm M.S. laths with 1.25 mm thick top cover	45.90	Sqm
39	Providing and fixing ball bearing for rolling shutters.	18.00	Each
	<b>SUB TOTAL</b>		
	<b>M.S &amp; S.S WORK</b>		
40	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	48.69	Sqm

41	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	3.15	Sqm
42	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	0.00	Kg
	<b>SUB TOTAL</b>		
	<b>FLOORING,DEDO &amp; CLADDING</b>		
43	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	21.49	Sqm
44	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	0.00	Sqm

45	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 600 x 600 mm) Colour shade & make approved by Architect-in-Charge.	324.55	Sqm
46	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 600 x 600 mm)	127.18	Sqm
47	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
48	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	70.31	Sqm
49	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) : 25 mm thick	4.43	Sqm

50	Marble work gang saw cut (polished and machine cut) of thickness 18 mm 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).		
	Raj Nagar Plain white marble/ Udaipur green marble/ Zebra black marble.		
	Area of slab over 0.50 sqm	50.00	Sqm
51	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.	4.23	Rmt
52	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	0.00	Each
53	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	13.05	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
54	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	444.68	Sqm
55	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	899.98	Sqm
56	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	474.67	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for evey additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM

	13 M TO 16 M	0.00	SQM
57	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
58	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	42.00	Kg
59	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	77.49	Sqm
60	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	129.15	Rmt
61	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	1814.07	Sqm
62	Providing and applying Silicon Based transparent deep penetrating sealer liquid; on clay and stone products; to be applied directly @ one coat @1.5 litre/ 10 sqm for vertical surfaces; and applying the same with the help of synthetic fiber brush, roller or spray gun.	576.39	Sqm
63	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	1814.07	Sqm
64	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
65	French spirit polishing : Two or more coats on new works including a coat of wood filler	17.10	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		

66	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	518.60	Sqm

67	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		
68	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to from grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-painted with polyester baked paint for all heights as per</p>		



	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. Colour shade & make approved by Architect-in-Charge.	21.49	Sqm

**BOQ MAINTENANCE OFFICE**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	299.52	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	331.28	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 5 KM	31.76	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	32.22	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	28.61	Cum
7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	33.83	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	33.83	Sqm
8	Making plinth protection 50 mm 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.	38.45	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	24.03	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	64.08	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

11	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
A	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
B	Concrete of M30 grade with minimum cement content of 350 kg /cum	61.74	Cum
12	All works above plinth level upto floor V level		
A	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
B	Concrete of M30 grade with minimum cement content of 350 kg /cum	61.17	Cum
13	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
14	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	16962.53	Kg
15	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	64.40	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	0.00	Sqm
	Suspended floors, roofs, landings, balconies and access platform	214.42	Sqm
	Shelves (Cast in situ)	4.23	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	473.32	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	212.48	Sqm
	Stairs, (excluding landings) except spiral-staircases	0.00	Sqm
	Weather shade, Chajjas, corbels etc., including edges	19.69	Sqm
	Suspended floors, roofs, landings, balconies and access platform. with water proof ply 12 mm thick	21.44	Sqm
16	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc., including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured).	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
17	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)	24.15	Cum

18	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-I AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for separately).		
	Ground Floor	27.43	Cum
	First Floor	0.00	Cum
19	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	94.93	Sqm
	First Floor	0.00	Sqm
20	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	77.20	Cum
21	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	825.48	Sqm
22	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	64.08	Rmt
23	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per approved by E/I.	64.08	Rmt
	<b>SUB TOTAL</b>		
	<b>ALLUMINIUM WORK</b>		
	STRUCTURAL GLAZING WORK		
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
24	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	14.00	Each
25	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	134.00	Each
26	Providing and fixing bright finished brass handles with screws etc. complete: 125 mm	83.00	Each
27	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	17.00	Each
28	Providing and fixing 12mm thick frameless toughened glass door shutter of approved brand and manufacture, including providing and fixing top & bottom pivot & double acting hydraulic floor 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 etc. to be paid separately)	0.00	Sqm
(a)	Providing and fixing Stainless steel 304 Grade H- type pull handle of size min 32 mm dia and 1200mm long of approved make including SS screws, including making holes of required size in shutter etc. complete as per direction of Engineer-in-Charge.	0.00	Each
(b)	Providing and fixing SS Bottom patch Lock with cylinder of approved make including necessary screws etc.	0.00	Each
(c)	Providing and fixing SS floor mounted half dome door stopper of dia 45mm including necessary screws etc.	0.00	Each

29	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Second class teak wood	0.15	Cum
30	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	8.64	Sqm
31	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. 1.0 mm thick	17.28	Sqm
32	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).	8.64	Sqm
33	Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape & size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash & mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification & direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 & IS: 16231 shall be as per design approved by Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge.		
	Three track three panels sliding window with two glazed & one wire mesh panels with Aluminium channel for roller track, wool pile, nylon rollers with SS 304 body. Using R3 series with frame (98mm & above) x (40mm & above) & both glazed and fly screen sash (30mm & above) x (55mm & above) with zinc alloy (zamak) powder coated handle on every glazed panel along with multi-point locking system. (Height upto 1.8m).	0.00	Sqm
34	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	70.67	Sqm

35	Ventilator Casement window single panel with or without fixed panel with S.S. 304 friction hinges as per size and weight of sash, single point locking zinc alloy (zamak) powder coated handles.		
	Using R2 series with frame (39mm & above ) x (39mm & above) & sash /mullion (39mm & above) x (60mm & above). (Height upto 1.2 metre)	3.00	Sqm
36	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat , Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	20.00	Rmt
37	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	6.72	Sqm
<b>SUB TOTAL</b>			
<b>M.S &amp; S.S WORK</b>			
38	Steel work in built up tubular (round, square or rectangular hollow tubes etc.) trusses etc., including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding andbolted with special shaped washers etc. complete. Hot finished welded type tubes	0.00	Kg
39	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	73.67	Sqm
40	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	3.00	Sqm
41	Providing and fixing stainless steel (Grade 304) railing made of hallow tubes, chanells, plates etc. including welding grinding buffing, polising and making corvechare (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing 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 assessories such as nuts, bolts, fasteners etc.	104.40	Kg
<b>SUB TOTAL</b>			
<b>FLOORING,DEDO &amp; CLADDING</b>			
42	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	13.92	Sqm

43	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
44	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 800 x 800 mm) Colour shade & make approved by Architect-in-Charge.	128.12	Sqm
45	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 800 x 800 mm)	39.50	Sqm
46	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm
47	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	0.00	Sqm
48	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) : 25 mm thick	81.19	Sqm
49	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect-in-Charge.		
	Area of slab over 0.50 sqm.	10.79	Sqm
50	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.	7.05	Rmt
51	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	0.00	Each

52	Chequered Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	7.80	Sqm
	<b>SUB TOTAL</b>		
	<b>FINISHING (Plaster, paint etc)</b>		
53	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	243.05	Sqm
54	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	440.02	Sqm
55	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
56	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
57	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	23.00	Kg
58	15 mm cement plaster in single coat on plinth 1 cement: 4 coarse sand in plinth.	38.45	Sqm
59	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	64.08	Rmt
60	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	897.48	Sqm
61	Finishing walls with textured exterior paint of required shade :		
	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	307.58	Sqm
62	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	1205.06	Sqm
63	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
64	French spirit polishing : Two or more coats on new works including a coat of wood filler	6.67	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		



65	<p>Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: (a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement : 5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs.</p> <p>(c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..</p>		
	<p>(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement : 4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548</p> <p>(e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. "All above operations to be done in order and as directed and specified by the Engineer-in-Charge :</p>		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	244.76	Sqm
66	<p>Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :</p> <p>(a) First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.</p> <p>(b) Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours.</p> <p>The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.</p>	0.00	Sqm
	<b>SUB TOTAL</b>		
	<b>FALSE CEILING</b>		

69	<p>Providing and Fixing 15 mm thick densified tegular edged eco friendly light weight calcium silicate false ceiling tiles of approved texture 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 24x38 mm made from 0.33 mm thick (minimum) sheet, spaced 1200 mm centre to centre, and cross "T" of size 24x28 mm made out of 0.33 mm (Minimum) sheet, 1200 mm long spaced between main'T' at 600 mm centre to centre to form a grid of 1200x600 mm and secondary cross 'T' of length 600 mm and size 24 x28 mm made of 0.33 mm thick (Minimum) sheet to be inter locked at middle of the 1200x 600 mm panel to form grid of size 600x600 mm, 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 450 mm centre to centre with 25 mm long dry wall screws @ 230 mm interval and laying 15 mm thick densified edges calicum silicate ceiling tiles of approved texture 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 25x35x1.6 mm fixed to ceiling with 12.5 mm dia and 50 mm long dash fasteners, 4 mm G.I. adjustable rods with galvanised steel level clips of size 85 x 30 x 0.8 mm, spaced at 1200 mm centre to centre along main 'T', bottom exposed with 24 mm of all Tsections shall be pre-</p>		
	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. Colour shade & make approved by Architect-in-Charge.	12.93	Sqm
	<b>SUB TOTAL</b>		
	<b>For without GST &amp; CESS on DSR (Amount*.735*1.11/1.07)*1.03</b>		

**BOQ POLICE CHOWKI**

S.N.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
	<b>EARTH WORK</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	150.53	Cum
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.All kinds of soil		
	BELOW GROUND 1.5 TO 3.00 M	0.00	Cum
	BELOW GROUND 3.0 TO 4.5 M	0.00	Cum
3	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift upto 1.5 m.	156.41	Cum
4	Carriage of excavated earth work by mechanical means including loading, trasporting, unloading and neatly dressed at site within the campus or at site as approved by Engineer-in-Charge including all leads and lifts complete. UP TO 5 KM	5.88	Cum
5	Supplying and filling in plinth with sand under floors, including watering, ramming, consolidating and dressing complete.	10.07	Cum
	<b>SUB TOTAL</b>		
	<b>CONCRETE WORK</b>		
6	Providing and laying in position cement concrete of specified grade excluding the cost of <b>centering and shuttering</b> - All work up to plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	11.29	Cum
7	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	14.31	Sqm
7b	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5 mm nominal size derived from natural sources)	14.31	Sqm
8	Making plinth protection 50 mm 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.	26.76	Sqm
9	Supplying <b>chemical emulsion</b> in sealed containers including delivery as specified.		
	Chlorpyriphos/ Lindane emulsifiable concentrate of 20%	16.73	litre
10	Diluting and injecting chemical emulsion for POST-CONSTRUCTIONAL <b>anti-termite treatment</b> (excluding the cost of chemical emulsion) :		
a	Along external wall where the apron is not provided using chemical emulsion @ 7.5 litres / sqm of the vertical surface of the substructure to a depth of 300mm including excavation channel along the wall & rodding etc. complete:		
	With Chlorpyriphos/ Lindane E.C. 20% with 1% concentration	44.60	Metre
	<b>SUB TOTAL</b>		
	<b>REINFORCEMENT CONCRETE WORK</b>		

11	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete. Note: Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 1.10 times of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
A	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
B	Concrete of M30 grade with minimum cement content of 350 kg /cum	20.49	Cum
12	All works above plinth level upto floor V level		
A	Concrete of M25 grade with minimum cement content of 330 kg /cum	0.00	Cum
B	Concrete of M30 grade with minimum cement content of 350 kg /cum	28.02	Cum
13	Add for using extra cement in the items of design mix over and above the specified cement content therein.	0.00	Quintal
14	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	6112.07	Kg
15	Centering and shuttering including strutting, propping etc. and removal of form for :		
	Foundations, footings, bases of columns, etc. for mass concrete	28.56	Sqm
	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	50.40	Sqm
	Suspended floors, roofs, landings, balconies and access platform	66.96	Sqm
	Shelves (Cast in situ)	0.00	Sqm
	Lintels, beams, plinth beams, girders, bressumers and cantilevers	128.52	Sqm
	Columns, Pillars, Piers, Abutments, Posts and Struts	91.26	Sqm
	Stairs, (excluding landings) except spiral-staircases	0.00	Sqm
	Weather shade, Chajjas, corbels etc., including edges	33.06	Sqm
	<b>SUB TOTAL</b>		
	<b>BRICK WORK</b>		
16	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)	7.05	Cum
17	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :Cement mortar 1:6 (1 cement : 6 coarse sand)		
	Ground Floor	2.74	Cum
	First Floor	0.00	Cum
18	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)		
	Ground Floor	34.43	Sqm
	First Floor	0.00	Sqm

19	Brick work with wire cut machine moulded modular bricks of class designation 12.5 in exposed brick work including making horizontal and vertical grooves 10 mm wide 12 mm deep complete in cement mortar 1:6 (1 cement : 6 coarse sand).		
	Above plinth level upto floor V level	29.72	Cum
20	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry	34.43	Sqm
21	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	44.60	Rmt
22	C/O Apron drain of width 150mm and depth as per required of site but minimum 150 mm with neat finish & required slope as per approved by E/I.	44.60	Rmt
	<b>SUB TOTAL</b>		
	<b>WOOD &amp; UPVC WORK</b>		
23	Providing and fixing bright finished brass 100 mm mortice latch and lock with 6 levers and a pair of lever handles of approved quality with necessary screws etc. complete.	6.00	Each
24	Providing and fixing bright finished brass tower bolts (barrel type) with necessary screws etc. complete : 250x10 mm	12.00	Each
25	Providing and fixing bright finished brass handles with screws etc. complete: 125 mm	12.00	Each
26	Providing and fixing bright finished brass hanging type floor door stopper with necessary screws, etc. complete.	6.00	Each
27	Providing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position: Second class teak wood	0.16	Cum
28	Providing and fixing ISI marked flush door shutters conforming to IS : 2202 (Part I) decorative type, core of block board construction with frame of 1st class hard wood and well matched teak 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters. 35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	7.20	Sqm
29	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. 1.0 mm thick	14.40	Sqm
30	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).	7.20	Sqm

31	<p>Providing and fixing factory made uPVC glazed/wire mesh windows/doors comprising of lead free uPVC multi-chambered frame, sash and mullion/coupler (where ever required) extruded profiles having minimum wall thickness of 1.70 mm for Series R1 and R2 profiles and 2.10 mm for Series R3 and R4 profiles conforming to EN: 12608 in any shape, colour and design duly reinforced with galvanized mild steel section made of required shape &amp; size as per CPWD Specification, uPVC extruded glazing beads, interlocks and Inline sash adaptor (where ever required) of appropriate dimension, EPDM gasket, hardware, SS 304 grade fasteners</p> <p>of minimum 8 mm dia with countersunk head, comprising of matching polyamide PA6 grade sleeve for fixing frame to finished wall as per IS 1367 : Part 1 to 14, plastic packers, plastic caps and necessary stainless steel screws etc. Profile of frame, sash &amp; mullion (if required) shall be mitred cut and fusion welded/mechanically jointed duly sealed at all corners, including drilling of holes for fixing hardware and drainage of water etc. After fixing frame the gap between frame and adjacent finished wall shall be filled with weather proof silicon sealant over backer rod of approved size and quality, all complete as per approved drawing conforming to CPWD specification &amp; direction of Engineer-in-Charge. Section of steel reinforcement and cross sections of uPVC profiles to be as per design approved by Engineer-in-Charge. Wire mesh / Glazing of plain/ toughened/ laminated/ double glass unit with / without high performance coatings as per design requirements and conforming to IS: 3548 &amp; IS: 16231 shall be as per design approved by Engineer-in-Charge.</p>		
	Three track three panels sliding window with two glazed & one wire mesh panels with Aluminium channel for roller track, wool pile, nylon rollers with SS 304 body. Using R3 series with frame (98mm & above) x (40mm & above) & both glazed and fly screen sash (30mm & above) x (55mm & above) with zinc alloy (zamak) powder coated handle on every glazed panel along with multi-point locking system. (Height upto 1.8m).	0.00	Sqm
32	Two track two panels sliding door with Aluminium channel for roller track, wool pile, zinc alloy (zamak) powder coated handle on every panel along with multi-point locking system, adjustable nylon rollers with SS 304 body..		
	Using R4 series with frame (64mm & above) x (45mm & above) & sash (44mm & above) x (85mm & above). (Height above 2.5 metre).	19.26	Sqm
33	Providing and fixing Fiber Glass Reinforced plastic (FRP) Door Frames of cross-section 90 mm x 45 mm having single rebate of 32 mm x 15 mm to receive shutter of 30 mm thickness .The laminate shall be moulded with fire resistant grade unsaturated polyester resin and chopped mat . Door frame laminate shall be 2 mm thick and shall be filled with suitable wooden block in all the three legs. The frame shall be covered with fiber glass from all sides. M.S. stay shall be provided at the bottom to steady the frame.	10.00	Rmt
34	Providing and fixing to existing door frames. <b>30 mm thick Glass Fibre Reinforced Plastic (FRP) panelled door shutter</b> of required colour and approved brand and manufacture, made with fire - retardant grade unsaturated polyester resin, moulded to 3 mm thick FRP laminate for forming hollow rails and styles, with wooden frame and suitable blocks of seasoned wood inside at required places for fixing of fittings, cast monolithically with 5 mm thick FRP laminate for panels conforming to IS: 14856, including fixing to frames.	3.36	Sqm
<b>SUB TOTAL</b>			
<b>M.S &amp; S.S WORK</b>			
35	Steel work in built up tubular (round, square or rectangular hollow tubes etc.) trusses etc., including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer, including welding and bolted with special shaped washers etc. complete. Hot finished welded type tubes	0.00	Kg

36	Providing & fixing glass panes with putty and glazing clips in steel doors, windows, clerestory windows, all complete with :		
	5.5 mm thick glass panes	19.26	Sqm
37	Extra for providing frosted glass panes 4 mm thick (weight not less than 10 kg per sqm) instead of ordinary float glass panes 4 mm thick (weight not less than 10 kg per sqm) in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	1.26	Sqm
38	Providing and fixing in position collapsible steel shutters with vertical channels 20x10x2 mm and braced with flat iron diagonals 20x5 mm size, with top and bottom rail of T-iron 40x40x6 mm, with 40 mm dia steel pulleys, complete with bolts, nuts, locking arrangement, stoppers, handles, including applying a priming coat of approved steel primer.	15.09	Sqm
<b>SUB TOTAL</b>			
<b>FLOORING,DEDO &amp; CLADDING</b>			
39	Providing and laying matt finished vitrified tile of size 300x300x9.8mm having with water absorption less than 0.5% and conforming to IS: 15622 of approved make in all colours and shades in for outdoor floors such as footpath, court yard, multi modals location etc., laid on 20mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) in all shapes & patterns including grouting the joints with white cement mixed with matching pigments etc. Colour shade & make approved by Architect-in-Charge.	5.88	Sqm
40	Providing and fixing Ist quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by 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.Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
41	Providing and laying vitrified floor tiles in different sizes (thickness to be specified by the manufacturer) with water absorption less than 0.08% and conforming to IS : 15622, of approved make, in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement : 4 coarse sand), including grouting the joints with white cement and matching pigments etc., complete.( Size of Tile 800 x 800 mm) Colour shade & make approved by Architect-in-Charge.	33.18	Sqm
42	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make, in all colours & shade, in skirting, riser of steps, over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete. ( Size of Tile 800 x 800 mm)	29.02	Sqm
43	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 40 mm thick with 20 mm nominal size stone aggregate	0.00	Sqm

44	38 mm thick wood block flooring of first class teak wood laid over 25 mm thick leveling layer of cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 10 mm nominal size) to be paid separately, coated with a thin layer of hot bitumen penetration 80/25 (blown type) @ 2.45 kg per sqm, including fixing blocks in position after dipping in hot bitumen (blown type) up to half depth, planed, levelled smooth and finished complete. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
45	Providing and laying Polished Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building all complete as per the architectural drawings with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. Polished Granite stone slab colour of Black, Cherry/Ruby Red or equivalent	0.00	Sqm
46	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) : 25 mm thick	30.84	Sqm
47	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20mm thick base 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 edges to give high gloss finish etc. Colour shade & make approved by Architect-in-Charge.		
	Area of slab over 0.50 sqm.	5.42	Sqm
48	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.	5.03	Rmt
49	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite / stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	8.00	Each
50	Chequerred Precast Cement Concrete Tile 22 mm thick in footpath & courtyard, jointed with neat cement slurry mixed to match the shade of tiles, including rubbing and cleaning etc. complete, on 20 mm thick bed of cement mortar 1:4 (1 cement 4 coarse sand) light shade pigment using white cement. Colour shade & make approved by Architect-in-Charge.	0.00	Sqm
<b>SUB TOTAL</b>			
<b>FINISHING (Plaster, paint etc)</b>			
51	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) on Ruf Surface	40.13	Sqm
52	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand) ON Smooth Surface	155.56	Sqm
53	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) ON OUTER SURFACE		
	0 M TO 10 M	0.00	SQM
	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.		
	10 M TO 13 M	0.00	SQM
54	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm



55	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	5.00	Kg
56	15 mm cement plaster in single coat on plinth 1 cement: 4 course sand in plinth.	26.76	Sqm
57	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	44.60	Rmt
58	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	262.64	Sqm
59	Finishing walls with textured exterior paint of required shade :		
	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	198.39	Sqm
60	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	262.64	Sqm
61	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	0.00	Sqm
62	French spirit polishing : Two or more coats on new works including a coat of wood filler	6.79	Sqm
	<b>SUB TOTAL</b>		
	<b>WATER PROOFING</b>		
63	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..		
	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548 (e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test."All above operations to be done in order and as directed and specified by the Engineer-in-Charge :		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	72.05	Sqm

BILL OF QUANTITY OF PUMP HOUSE (CIVIL WORK)			
Sl. No.	DESCRIPTION	QTY	UNIT
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	196.00	Cum
2	<b>Filling available excavated earth</b> (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 up to 50 m and lift upto 1.5 m.	196.00	Cum
3	Carriage of material by mechanical transport including loading, unloading to 8 km.	33.52	Cum
4	Supplying and filling in plinth with crusher stone dust / coarse sand under floors including, watering, ramming and compacting in layers not exceeding 20cm in depth and dressing complete Note: - Maximum thickness of this layer shall be 20 cm.	18.06	Cum
5	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources : 8 graded stone aggregate 40 mm nominal size derived from natural sources)	14.37	Cum
6	Providing and laying damp-proof course 40mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5mm nominal size derived from natural sources)	10.49	Sqm
7	Extra for providing and mixing water proofing material in cement concrete work in doses by weight of cement as per manufacturer's specification.	2.73	per cement of 50kg
8	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	10.49	Sqm

<b>9</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete.		
	All works upto plinth level		
<b>I</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	16.26	Cum
<b>II</b>	All works above plinth level upto floor V level Concrete of M30 grade with minimum cement content of 350 kg /cum	17.83	Cum
<b>10</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	4527.89	KG
<b>11</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
<b>a</b>	Foundations, footings, bases of columns, etc. for mass concrete.	19.20	Sqm
<b>b</b>	Suspended floors, roofs, landings, balconies and access platform.	60.20	Sqm
<b>c</b>	Lintels, beams, plinth beams, girders, bressumers and cantilevers	98.67	Sqm
<b>d</b>	Columns, Pillars, Piers, Abutments, Posts and Struts.	64.80	Sqm
<b>e</b>	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc., including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured).	60.20	Sqm
<b>12</b>	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)	4.72	Cum
<b>13</b>	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).	36.35	Cum

14	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		
	300x16 mm	3.00	Each
15	Providing and fixing aluminium tower 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 necessary screws etc. complete		
	250x10 mm	18.00	Each
16	Providing and fixing aluminium handles, ISI marked, anodised (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		
	125 mm	18.00	Each
17	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (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.		
	Single rubber stopper	3.00	Each
18	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:		
	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	7.38	sqm
19	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, fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt 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) :		
	For fixed portion.		
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	123.84	Kg

20	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 PVC / neoprene gasket required (Fittings shall be paid for separately).		
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	48.60	Kg
21	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):		
	With float glass panes of 5 mm thickness	8.10	Sqm
22	Providing and fixing anodised aluminium grill (anodised transparent or dyed to required shade according to IS: 1868 with minimum anodic coating of grade AC 15) of approved design/pattern, with approved standard section and fixed to the existing window frame with C.P. brass/ stainless steel screws @ 200 mm centre to centre, including cutting the grill to proper opening size for fixing and operation of handles and fixing approved anodised aluminium standard section around the opening, all complete as per requirement and direction of Engineerin-charge. (Only weight of grill to be measured for payment).	40.50	Kg
23	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	0.00	kg
24	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.		
	80x1.25 mm M.S. laths with 1.25 mm thick top cover	0.00	Sqm
25	Providing and fixing ball bearing for rolling shutters.	0.00	Each
26	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		
	40 mm thick with 20 mm nominal size stone aggregate	41.27	Sqm

27	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) :		
	25 mm thick	13.02	Sqm
28	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.	1.30	Sqm
29	Providing and laying rectified Glazed Ceramic floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.	5.91	Sqm
30	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-inCharge, 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.	25.49	Sqm
31	12 mm cement plaster of mix :		
	1:6 (1 cement: 6 coarse sand)	143.81	Sqm
32	15 mm cement plaster on rough side of single or half brick wall of mix:		
	1:6 (1 cement: 6 coarse sand)	207.35	Sqm
33	6 mm cement plaster of mix :		
	1:3 (1 cement : 3 fine sand)	0.00	Sqm
34	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	14.00	PER BAG
35	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	66.16	RMT
36	Distempering with 1st quality acrylic distemper (ready mixed) having VOC (Volatile Organic Compound) content less than 50 grams/ltr of approved manufacturer, of required shade and colour complete, as per manufacturer's specification. Two or more coat on new work	593.37	Sqm

37	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone additives of required shade:		
	New work (Two or more coats applied @ 1.43 ltr/10 sqm over and including priming coat of exterior primer applied @ 2.20 kg/10 sqm)	172.78	Sqm
38	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	17.71	Sqm
39	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete	766.15	Sqm
40	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..		
	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548 (e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	67.37	Sqm

BILL OF QUANTITY OF ELECTRIC SUB STATION (CIVIL WORK)			
Sl. No.	DESCRIPTION	QTY	UNIT
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.		
	All kinds of soil	769.95	Cum
2	<b>Filling available excavated earth</b> (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 up to 50 m and lift upto 1.5 m.	769.95	Cum
3	Carriage of material by mechanical transport including loading, unloading to 8 km.	228.57	Cum
4	Supplying and filling in plinth with crusher stone dust / coarse sand under floors including, watering, ramming and compacting in layers not exceeding 20cm in depth and dressing complete Note: - Maximum thickness of this layer shall be 20 cm.	123.41	Cum
5	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level :		
	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources : 8 graded stone aggregate 40 mm nominal size derived from natural sources)	103.43	Cum
6	Providing and laying damp-proof course 40mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III) derived from natural sources : 4 graded stone aggregate 12.5mm nominal size derived from natural sources)	29.56	Sqm
7	Extra for providing and mixing water proofing material in cement concrete work in doses by weight of cement as per manufacturer's specification.	7.69	per cement of 50kg
8	Providing & applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7kg per square metre on damp proof course after cleaning the surface with brushes and finally with apiece of cloth lightly soaked in kerosene oil.	29.56	Sqm



<b>9</b>	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete.		
	All works upto plinth level		
<b>I</b>	Concrete of M30 grade with minimum cement content of 350 kg /cum	124.64	Cum
<b>II</b>	All works above plinth level upto floor V level Concrete of M30 grade with minimum cement content of 350 kg /cum	122.99	Cum
<b>10</b>	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete Thermo-Mechanically Treated bars of grade Fe-500D or more.	34261.73	KG
<b>11</b>	Centering and shuttering including strutting, propping etc. and removal of form for :		
<b>a</b>	Foundations, footings, bases of columns, etc. for mass concrete.	81.64	Sqm
<b>b</b>	Suspended floors, roofs, landings, balconies and access platform.	411.36	Sqm
<b>c</b>	Lintels, beams, plinth beams, girders, bressumers and cantilevers	942.45	Sqm
<b>d</b>	Columns, Pillars, Piers, Abutments, Posts and Struts.	177.00	Sqm
<b>e</b>	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc., including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured).	411.36	Sqm
<b>12</b>	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)	72.09	Cum
<b>13</b>	Providing and laying Autoclaved Aerated concrete(AAC) blocks masonry with 150mm to 300 mm thick with Grade-1 AAC blocks of density 551 to 650 kg/cum conforming to IS:2185 (Part 3) 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-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).	110.09	Cum

14	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		
	300x16 mm	10.00	Each
15	Providing and fixing aluminium tower 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 necessary screws etc. complete		
	250x10 mm	106.00	Each
16	Providing and fixing aluminium handles, ISI marked, anodised (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		
	125 mm	63.00	Each
17	Providing and fixing aluminium hanging floor door stopper, ISI marked, anodised (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.		
	Single rubber stopper	10.00	Each
18	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:		
	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws	3.68	sqm
19	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, fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt 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) :		
	For fixed portion.		
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	248.80	Kg

20	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 PVC / neoprene gasket required (Fittings shall be paid for separately).		
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	164.52	Kg
21	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):		
	With float glass panes of 5 mm thickness	27.42	Sqm
22	Providing and fixing anodised aluminium grill (anodised transparent or dyed to required shade according to IS: 1868 with minimum anodic coating of grade AC 15) of approved design/pattern, with approved standard section and fixed to the existing window frame with C.P. brass/ stainless steel screws @ 200 mm centre to centre, including cutting the grill to proper opening size for fixing and operation of handles and fixing approved anodised aluminium standard section around the opening, all complete as per requirement and direction of Engineerin-charge. (Only weight of grill to be measured for payment).	666.30	Kg
23	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.		
	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	1110.97	kg
24	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.		
	80x1.25 mm M.S. laths with 1.25 mm thick top cover	25.92	Sqm
25	Providing and fixing ball bearing for rolling shutters.	8.00	Each
26	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		
	40 mm thick with 20 mm nominal size stone aggregate	331.80	Sqm

27	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) :		
	25 mm thick	70.20	Sqm
28	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.	7.02	Sqm
29	Providing and laying rectified Glazed Ceramic floor tiles of size 300x300 mm or more (thickness to be specified by the manufacturer), of 1st quality conforming to IS : 15622, of approved make, in colours White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick cement mortar 1:4 (1 Cement: 4 Coarse sand), jointing with grey cement slurry @ 3.3 kg/ sqm including grouting the joints with white cement and matching pigments etc., complete.	9.36	Sqm
30	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS: 15622 (thickness to be specified by the manufacturer), of approved make, in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-inCharge, 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.	38.30	Sqm
31	12 mm cement plaster of mix : 1:6 (1 cement: 6 coarse sand)	451.67	Sqm
32	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand)	667.55	Sqm
33	6 mm cement plaster of mix : 1:3 (1 cement : 3 fine sand)	0.00	Sqm
34	Extra for providing and mixing water proofing material in cement plaster work in proportion recommended by the manufacturers.	42.00	PER BAG
35	Add for plaster drip course/ groove in plastered surface or moulding to R.C.C. projections	167.68	RMT
36	Distempering with 1st quality acrylic distemper (ready mixed) having VOC (Volatile Organic Compound) content less than 50 grams/ltr of approved manufacturer, of required shade and colour complete, as per manufacturer's specification. Two or more coat on new work	1021.55	Sqm

37	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone additives of required shade:		
	New work (Two or more coats applied @ 1.43 ltr/10 sqm over and including priming coat of exterior primer applied @ 2.20 kg/10 sqm)	512.67	Sqm
38	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	60.67	Sqm
39	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete	1534.22	Sqm
40	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations:(a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. (b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineerin- charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand ) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs. (c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge..		
	(d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. SUB HEAD : 22- WATER PROOFING 1548 (e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test.“All above operations to be done in order and as directed and specified by the Engineer-in-Charge :		
	With average thickness of 120 mm and minimum thickness at khurra as 65 mm.	418.87	Sqm

BUILDING NAME : MAIN GATE WITH SECURITY ROOM			
S.N.	DESCRIPTION	UNIT	QTY.
<b>A</b>	<b><u>EARTH WORKS</u></b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (exceeding 1.5 m in width or 10 sqm on plan), including disposal of excavated earth, lead upto 50m and lift upto 1.5 m, disposed earth to be levelled and neatly dressed. All kinds of soil	Cum	243.60
2	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials.		
	All kinds of soil		
	1.5 m to 3.0 m	Cum	57.00
3	Filling 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 up to 50 m and lift upto 1.5 m.	Cum	0.00
	<b>TOTAL (Carried Over to Summary of Civil Works )</b>		
<b>B</b>	<b><u>CONCRETE WORKS</u></b>		
1	1:4:8 (1 Cement : 4 coarse sand (zone-III) derived from natural sources: 8 graded stone aggregate 40 mm nominal size derived from natural sources)	Cum	9.36
2	Extra for providing and mixing water proofing material in cement concrete work in doses by weight of cement as per manufacturer's specification.	per 50kg cement	2.36
3	Applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7 kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	sqm	9.20
	<b>TOTAL (Carried Over to Summary of Civil Works )</b>		
<b>C</b>	<b><u>REINFORCED CEMENT CONCRETE WORK</u></b>		
1	Centering and shuttering including strutting, propping etc. and removal of form for :		
a	Foundations, footings, bases of columns, etc. for mass concrete.	SQM	33.60
b	Suspended floors, roofs, landings, balconies and access platform.	SQM	24.00
c	Columns, Pillars, Piers, Abutments, Posts and Struts.	SQM	89.68
d	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	SQM	113.00
e	Cornices and mouldings	SQM	13.04
2	Steel Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level & above plinth level.		
	Thermo-Mechanically Treated bars.	kg	5153.52

3	Providing and laying in position ready mixed or site batched design mix cement concrete for reinforced cement concrete work; using coarse aggregate and fine aggregate derived from natural sources, Portland Pozzolana / Ordinary Portland /Portland Slag cement, admixtures in recommended proportions as per IS: 9103 to accelerate / retard setting of concrete, to improve durability and workability without impairing strength; including pumping of concrete to site of laying, curing, carriage for all leads; but excluding the cost of centering, shuttering, finishing and reinforcement as per direction of the engineer-in-charge; for the following grades of concrete.		
	<b>Note:</b> Extra cement up to 10% of the minimum specified cement content in design mix shall be payable separately. In case the cement content in design mix is more than 110% of the specified minimum cement content, the contractor shall have discretion to either re-design the mix or bear the cost of extra cement.		
	All works upto plinth level		
	Concrete of <b>M25 grade</b> with minimum cement content of 330 kg /cum	CUM	39.73
	All works above plinth level upto floor V level		
	Concrete of <b>M25 grade</b> with minimum cement content of 330 kg /cum	CUM	20.90
	TOTAL (Carried Over to Summary of Civil Works )		
<b>D</b>	<b>BRICK WORK</b>		
1	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)	CUM	3.91
2	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor V level in all shapes and sizes in :		
	Cement mortar 1:6 (1 cement : 6 coarse sand)	Cum	30.11
	TOTAL (Carried Over to Summary of Civil Works )		
<b>E</b>	<b>STEEL WORK</b>		
1	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, gates and similar works.	Kg	2800.00
	TOTAL (Carried Over to Summary of Civil Works )		
<b>F</b>	<b>FINISHING WORK</b>		

1	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/appropriate Z sections and other sections of approved make conforming to IS: 733 and IS : 1285, fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required PVC/neoprene felt 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) :		
	For fixed portion.		
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	Kg	195.00
2	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 PVC / neoprene gasket required (Fittings shall be paid for separately).		
	Powder coated aluminium (minimum thickness of powder coating 50 micron)	Kg	97.11
3	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with PVC/ neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-incharge . (Cost of aluminium snap beading shall be paid in basic item):		
	With float glass panes of 5.5 mm thickness	Sqm	12.42
4	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineer-in-charge complete.		
	355X19 MM	No	4.00
	510X19 MM	No	4.00
5	Providing and fixing <b>12 mm thick prelaminated particle board</b> flat pressed three layer or graded wood particle board conforming to IS: 12823 Grade I Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of engineer-in-charge Pre-laminated particle board with decorative lamination on both sides	Sqm	2.52
6	Providing and fixing <b>double action hydraulic floor spring</b> 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 palte etc. complete as per the direction of Engineer-in-charge.		
	<b>With stainless steel cover plate</b> minimum 1.25 mm thickness.		
	Floor Spring	No	2.00



7	Providing and fixing anodised aluminium grill (anodised transparent or dyed to required shade according to IS: 1868 with minimum anodic coating of grade AC 15) of approved design/pattern, with approved standard section and fixed to the existing window frame with C.P. brass/ stainless steel screws @ 200 mm centre to centre, including cutting the grill to proper opening size for fixing and operation of handles and fixing approved anodised aluminium standard section around the opening, all complete as per requirement and direction of Engineer-in-charge. (Only weight of grill to be measured for payment).	Kg	39.60
8	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) : 25 mm thick	Sqm	57.20
9	<b>12 mm cement plaster in single coat</b> on smooth side of single or half brick wall for interior plastering upto floor two level including brick wall for interior plastering upto floor two level including internal rounded angles chamfers and/or rounded angles not exceeding 80mm in girth and finished even and smooth no. extra for mixing and additive. (iii) <b>1 cement : 6 C. sand INNER SURFACE</b>	Sqm	114.75
10	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand)	Sqm	173.40
11	Finishing walls with textured exterior paint of required shade : New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	Sqm	173.40
12	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	Sqm	461.55
13	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade : Two or more coats on new work	Sqm	160.00

**\*Note: Quantity for one gate with Guard Room**

### **BILL OF QUANTITY U G TANK**

S.N.	ITEM NO.	DESCRIPTION OF ITEM OF WORK	TOTAL QTY	UNIT
		<b>EARTH WORK</b>		
1	DSR	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan), including dressing of sides and ramming of bottoms, for all lift, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.	1437.64	CUM.
2	DSR	Extra for every additional lift of 1.5 m or part thereof in excavation / banking excavated or stacked materials. All kinds of soil		
		BELOW GROUND 1.5 TO 3.00 M	0.00	CUM.
		3.00- 4.50 M	0.00	CUM.
			0.00	CUM.
		<b>TOTAL</b>		
		<b>PCC WORK</b>		
3	DSR	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level : 1:4:8 (1 Cement : 4 coarse sand (zone-III) : 8 graded stone aggregate 40 mm nominal size)	30.43	CUM.
		<b>TOTAL</b>		
		<b>RCC WORK</b>		
4	DSR	Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including 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 Engineer-in-charge. (Note :- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/recoverable separately).		
	A	All works upto plinth level	130.10	CUM.

5	DSR	Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including 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 Engineer-in-charge. (Note :- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/recoverable separately).		
	A	All works above plinth level upto floor V level	71.09	CUM.
		<b>TOTAL</b>		
		<b>SHUTTERING WORK</b>		
6	DSR	<b>Centering and shuttering</b> including strutting, propping etc. and removal of form for :		
	DSR	Foundations, footings, bases of columns, etc. for mass concrete	30.96	Sqm
	DSR	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	483.48	Sqm
	DSR	Suspended floors, roofs, landings, balconies and access platform	296.95	Sqm
	DSR	Lintels, beams, plinth beams, girders, bressumers and cantilevers	174.81	Sqm
		<b>TOTAL</b>		
		<b>REINFORCEMENT STEEL WORK</b>		
7	DSR	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level. Thermo Mechanically Treated bars of grade Fe-500D or more.	15320.00	KG
	DSR	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level. Thermo-Mechanically Treated bars of grade Fe-500D or more.	8383.00	KG
		<b>TOTAL</b>		
		<b>230 MM BRICK WORK</b>		

	DSR	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 150 in foundation and plinth in: Cement mortar 1:6 (1 cement : 6 coarse sand)	0.00	CUM.
8	DSR	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 150 in superstructure above plinth level up to floor V level in all shapes and sizes in :Cement mortar 1:6 (1 cement : 6 coarse sand)	10.30	CUM.
		<b>TOTAL</b>		
		<b>MS WORK</b>		
9	DSR	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. In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	194.13	KG.
		<b>PLASTER WORK</b>		
11	DSR	12 mm cement plaster of mix: 1:6 (1 cement: 6 coarse sand) ON INNER SURFACE	264.32	SQM.
12	DSR	15 mm cement plaster on rough side of single or half brick wall of mix: 1:6 (1 cement: 6 coarse sand) <b>External plaster</b>	66.09	SQM.
		<b>TOTAL</b>		
		<b>PAINTING WORK</b>		
13	DSR	Finishing walls with Premium Acrylic Smooth exterior paint with Silicone additives of required shade : New work (Two or more coats applied @ 1.43 ltr/ 10 sqm over and including priming coat of exterior primer applied @ 2.20 kg/ 10 sqm)	380.98	SQM.
14	DSR	Wall painting with acrylic emulsion paint, having VOC (Volatile Organic Compound) content less than 50 grams/ litre, of approved brand and manufacture, including applying additional coats wherever required, to achieve even shade and colour. Two or more coats on new work	66.09	SQM.
15	DSR	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	447.08	Sqm

16	DSR	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade : Two or more coats on new work	31.06	Sqm
		<b>TOTAL</b>		
		<b>WATER PROOFING</b>		
17	DSR	<p>Providing and laying water proofing treatment to vertical and horizontal surfaces of depressed portions of W.C., kitchen and the like consisting of:</p> <p>(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.</p> <p>(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.</p> <p>(iii) IIIrd course of applying blown or residual bitumen applied hot at 1.7 kg. per sqm of area.</p> <p>(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).</p>	363.12	SQM
		<b>TOTAL</b>		
		<b>TOTAL CIVIL COST</b>		
		<b>For without GST &amp; CESS on DSR (Amount*.735*1.11/1.07)</b>		
		<b>COST IN LACS</b>	<b>SAY</b>	

BILL OF QUANTITY OF CC ROAD			
S.N.	Description of item	QTY	UNIT
1	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with lead upto 50 metres.	27066.00	Sqm
2	Construction of granular sub-base by providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, carriage of mixed material by tippers to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge. With material conforming to Grade-I (size range 75 mm to 0.075 mm) having CBR Value-30	2706.60	Cum.
3	Providing, laying, spreading and compacting graded stone aggregate (size range 53 mm to 0.075 mm ) to wet mix macadam (WMM) specification including premixing the material with water at OMC in for all leads & lifts, laying in uniform layers with mechanical paver finisher in sub- base / base course on well prepared surface and compacting with vibratory roller of 8 to 10 tonne capacity to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge.	2029.95	Cum.
4	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 40 mm nominal size in appropriate proportions as per approved & specified design criteria, providing dowel bars with sleeve/ tie bars wherever required, laying at site, spreading and compacting 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, construction & longitudinal joints (10 mm wide x 50 mm 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 prepared with batch mixing machine	4601.22	Cum
6	Providing and fixing in position pre-moulded joint filler in expansion joints.	29520.0	per cm depth per cm width per m
7	Providing and laying in position bitumen hot sealing compound for expansion joints etc.		
	Using grade 'A' sealing compound.	43968.0	per cm depth per cm width per m
8	Painting runway/taxi track/apron marking with adequate nos of coats to give uniform finish with road marking paint of superior make as approved by the Engineer-in-charge, i/c cleaning the surface of ail dirt, scales, oil, grease and other foreign material etc. and lining out complete.		
	New work (Two or more coats)	1477.5	Sqm
9	Providing and laying at or near ground level factory made kerb stone of M 25 grade cement concrete in position to the required line, level and curvature, jointed with cement mortar 1:3 (1 cement: 3 coarse sand), including making joints with or without grooves (thickness of joints except at sharp curve shall not to more than 5mm), including making drainage opening wherever required complete etc. as per direction of Engineer-in-charge (length of finished kerb edging shall be measured for payment). (Precast C.C. kerb stone shall be approved by Engineer-in-charge).	443.3	Sqm
10	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade :		
	Two or more coats on new work	4137.00	Sqm

11	Manufacturing, supplying and fixing retro reflective sign boards made up of 2 mm thick aluminium sheet, face to be fully covered with high intensity encapsulated type heat activated retro reflective sheeting conforming to type - IV of ASTM-D 4956-01 in blue and silver white or other colour combination including subject matter, message (bi-lingual), symbols and borders etc. as per IRC ; 67:2001, pasted on substrate by an adhesive backing which shall be activated by applying heat and pressure conforming to class -2 of ASTM-D- 4956-01 and fixing the same with suitable sized aluminium alloy rivets @ 20 cm c/c to back support frame of M.S. angle iron of size 25x25x3 mm along with theft resistant measures, mounted and fixed with 2 Nos. M.S. angles of size 35x35x5 mm to a vertical post made up to M.S. Tee section ISMT 50x50x6 mm welded with base plate of size 100x100x5 mm at the bottom end and including making holes in pipes, angles flats, providing & fixing M.S. message plate of required size, steel work to be painted with two or more coats of synthetic enamel paint of required shade and of approved brand & manufacture over priming coat of zinc chromate yellow primer (vertical MS-Tee support to be painted in black and white colours). Back side of aluminium sheet to be painted with two or more coats of epoxy paint over and including appropriate priming coat including all leads and lifts etc. complete as per drawing, specification and direction of Engineer--in-charge.		
12	Mandatory/ Regulatory sign boards of 900 mm diametre with support length of 3750 mm	2	No
13	Cautionary /warning sign boards of equilateral triangular shape having each side of 900 mm with support length of 3650 mm	2	Each

**ESTIMATE FOR THE PROPOSED CONSTRUCTION OF HORTICULTURE &  
FORESTRY UNIVERSITY AT GORAKHPUR (U.P)**

**ANALYSIS OF RATES**  
**PATH WAY**

<b>A</b>	<b>PATH WAY ROAD SIDE</b>						
<b>S.N.</b>	<b>Description of item</b>	<b>No.</b>	<b>Length</b>	<b>Width</b>	<b>Depth</b>	<b>QTY</b>	<b>Unit</b>
<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>
<b>1</b>	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in-charge. All kinds of soil						
		1	1.00	0.89	0.40	0.36	Cum.
					<b>Total</b>	<b>0.36</b>	Cum.
<b>2</b>	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work upto plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40mm nominal size).						
		1	1.00	0.89	0.10	0.09	Cum.
					<b>Total</b>	<b>0.09</b>	Cum.
<b>3</b>	Construction of granular sub-base by providing close graded Material conforming to specifications, mixing in a mechanical mix plant at OMC, carriage of mixed material by tippers to work site, for all leads & lifts, spreading in uniform layers of specified thickness with motor grader on prepared surface and compacting with vibratory power roller to achieve the desired density, complete as per specifications and directions of Engineer-in-Charge. With material conforming to Grade-I (size range 75 mm to 0.075 mm) having CBR Value-30						
		1	1.00	1.12	0.13	0.14	Cum.
					<b>Total</b>	<b>0.14</b>	Cum.



4	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in: Cement mortar 1:4 (1 cement : 4 coarse sand)						
		1	1.00	0.345	0.15	0.05	
		1	1.00	0.23	0.30	0.07	
					<b>Total</b>	<b>0.12</b>	Cum.
5	12 mm cement plaster of mix : 1 cement: 6 C. sand.	1	1.00		0.46	0.46	Sqm
6	Providing and laying 60mm thick facory made cement concrete interlocking paver block of M -30 grade made by block making machine with strong vibratory compaction, of approved size, design & shape, laid in required colour and pattern over and including 50mm thick compacted bed of coarse sand, filling the joints with line sand etc. all complete as per the direction of Engineer-in-charge.	1	1.00	1.12		1.12	Sqm
	<b>*1.5 M WIDE FOOTPATH QTY. PER RMT</b>						

**PAVER TRACK FOR SURFACE PARKING AREA**

S.N.	Description of item	No.	Length	Width	Depth	QTY	Unit
1	2	3	4	5	6	7	8
1	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth with lead upto 50 metres						
		1	7500.00			7500.00	Sqm
						0.00	Sqm
					<b>Total</b>	<b>7500.00</b>	<b>Sqm</b>
2	Providing & laying P.C.C. 1:4:8						
		1	7500.00		0.10	750.00	Cum.
						0.00	Cum.
					<b>Total</b>	<b>750.00</b>	<b>Cum.</b>
3	Providing and laying factory made chamfered edge Cement Concrete paver blocks in footpath, parks, lawns, drive ways or light traffic parking etc, 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 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 sand and cutting of paver blocks as per required size and pattern, finishing and sweeping extra sand. complete all as per direction of Engineer-inCharge.80 mm thick C.C. paver block of M-35 grade with approved colour design and pattern.						
		1	7500.00			7500.00	Sqm

HORTICULTURE & LANDSCAPING			
S. NO.	DESCRIPTION	UNIT	Qty
	<b>HORTICULTURE &amp; LANDSCAPING</b>		
1	Supplying and stacking of good earth at site including royalty and carriage upto 5 km (earth measured in stacks will be reduced by 20% for payment).	cum	991.00
2	Supplying and stacking at site dump manure from approved source, including carriage upto 1 km (manure measured in stacks will be reduced by 8% for payment)		
i	Screened through sieve of I.S. designation 20mm	cum	495.00
3	Mixing earth and sludge or manure in proportion specified or directed.	cum	1486.00
4	Grassing with selection No. 1/Doob grass including watering and maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds and fit for mowing including supplying good earth if needed (the grass and good earth shall be paid for separately).		
i	In rows 5 cm apart in either direction.	sqm	19816.00
5	Supplying & Stacking of Selection No.1/doob grass at site fresh & free from weeds having proper roots in green including loading, unloading, carriage and all taxes paid etc.and as per direction of officer in charge.	SQM	19816.00
6	Preparation of beds for hedging and shrubbery by excavating 60cm deep and trenching the excavated base to a further depth of 30cm, refilling the excavated earth after breaking clods and mixing with sludge or manure in the ratio of 8:1 (8 parts of stacked volume of earth after reduction by 20%: one part stacked volume of sludge or manure after reduction by 8%), flooding with water, filling with earth if necessary, watering and finally fine dressing, levelling etc. including stacking and disposal of materials declared unserviceable and surplus earth by spreading and leveling as directed, with in a lead of 50 m, lift upto 1.5 m complete.	cum	500.00

S. NO.	DESCRIPTION	UNIT	Qty
7	Providing and fixing M.S flat iron tree guard 6 cm dia and 2 m high, above ground consisting 4 nos 25X6 mm, 2.25 m long and 8 nos 25X3 mm 2m long verticals M.S flats, riveted to 3 nos 25X 6 mm M.S flat iron rings in two halves, fixing together at site with required six numbers of 8 mm dia and 30 mm long bolts, including painting twocoats with synthetic enamel paint of approved brand and manufacture over a coat of primer. One name plate of 1 mm thick M.S. sheet of size 250X100 mm shall be welded to the tree guard near the middle height and lettered CPWD/PWD/any other approved name. The tree guard shall be suitably fixed to the ground by embedding four legs of tree guard in pits of suitable dia and to a depth of 25 cm, refilling the pits with soil and ramming, complete in all respect as per satisfaction and direction of officer-in-charge.	NO	200.00
8	Excavating holes more than 0.10 cum & upto 0.5 cum including getting out the excavated soil, then returning the soil as required in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering etc, disposing of surplus excavated soil, as directed within a lead of 50 m and lift upto 1.5 m. All kinds of soil	NO	200
9	Providing and Displaying Ficus black vivion pillar Topiary (cylinder type) well developed with fresh & healthy 180 to 210 cm ht in 40 cm Cement Pot as per direction of the officer-in-charge.	Each	10
10	Providing and Displaying Ficus Nuda Topiary well developed with fresh & healthy 5 to 6 big ball specific size and shape 180 to 210 cm ht in 40 cm Cement Pot as per direction of the officer-in-charge.	EACH	10
11	Providing and Displaying Ficus resnold Topiary well developed with fresh & healthy 6 to 7 big ball specific size 210 to 240 cm ht in 45 cm Cement Pot as per direction of the officer-in-charge.	EACH	10
12	Detail of tree		
	Raphis palm 3' - 4' height	NOS.	100
	Foxtail palm 8' - 10' height	NOS.	100
	Tabebuia 2'-3' ht	NOS.	100
	Palm cycas Revoluta 2"-3" dia	NOS.	100
	Golden duranta ( hedge )	RMT	100
	Toparies height 5 - 6 ' height		
	Golden bottle brush	NOS.	80
	Casurina	NOS.	80
	Ficus Resonalt	NOS.	80
	Areca palm 4' - 5' height	NOS.	80

S. NO.	DESCRIPTION	UNIT	Qty
	Draceana varieties	NOS.	80
	Croton varieties	NOS.	80
	Deffenbachia	NOS.	80
	Aglonema	NOS.	80
	Fishtail palm	Nos.	80
	Champagne palm 1 - 2 m foliage	Nos.	80
<b>13</b>	SHRUS (have several woody item)		
	Coral Hibiscus 2'-3' ht	Nos.	50
	Massanda Pink 2'-3' ht	Nos.	50
	Kachnar 5'-6' ht	Nos.	50
	Bottle Brush 5'-6' ht	Nos.	50
	Ixora 2'-3' ht	Nos.	50
	Ficus black Tapor 3'-4' ht	Nos.	50
	Ficus Prestige Boll 3'-4' ht	Nos.	50
	Hamelia 2'-3' ht	Nos.	50
<b>14</b>	Ground edging Plant		
	Eranthemum	Rmt	100
	Verbena	Rmt	100
	Setcreasea	Rmt	100
	Verbena Mix	Rmt	100
<b>15</b>	SS planter 18" dia	Nos.	100
<b>16</b>	Electrical Lawn mover power Grass cutter & power weed shear	Nos.	5

**BUILDING NAME : BOUNDRY WALL**

S. NO.	DESCRIPTION OF ITEM OF WORK	QTY	UNIT
<b>A</b>	<b>EARTH WORKS</b>		
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains (exceeding 1.5 m in width or 10 sqm on plan), including disposal of excavated earth, lead upto 50m and lift upto 1.5 m, disposed earth to be levelled and neatly dressed. All kinds of soil	Cum	3928.19
<b>B</b>	<b>CONCRETE WORKS</b>		
2	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level : 1:4:8 (1 Cement : 4 coarse sand (zone-III) : 8 graded stone aggregate 40 mm nominal size)	Cum	234.55
3	Providing and laying damp-proof course 40mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand (zone-III): 4 graded stone aggregate 12.5mm nominal size)	sqm	0.00
<b>C</b>	<b>REINFORCED CEMENT CONCRETE WORK</b>		
1	Centering and shuttering including strutting, propping etc. and removal of form for :		
a	Foundations, footings, bases of columns, etc. for mass concrete.	SQM	1598.84
b	Suspended floors, roofs, landings, balconies and access platform.	SQM	0.00
c	Lintels, beams, plinth beams, girders, bressumers and cantilevers.	SQM	6732.87
d	Columns, Pillars, Piers, Abutments, Posts and Struts.	SQM	6806.99
e	Cornices and mouldings	SQM	0.00
<b>C</b>	<b>REINFORCED CEMENT CONCRETE WORK</b>		
4	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete upto plinth level.	kg	70640.09
	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level. Thermo-Mechanically Treated bars of grade Fe-500D or more.	kg	27986.92
5	Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including 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 Engineer-in-charge. (Note :- Cement content considered in this item is @ 330 kg/Cum. Excess/less cement used as per design mix is payable/recoverable separately).		
	All works upto plinth level.	CUM	793.72
	All works above plinth level upto floor V level.	CUM	210.66
<b>D</b>	<b>BRICK WORK</b>		
6	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)	Cum	388.76
7	Class-150 brick work in 1:6 cement and COARSE sand mortar in SUPERSTRUCTURE including supply of all materials, labour tools and plants, etc. Required for proper completion of the work	Cum	907.11
8	Half brick masonry with common burnt clay (non modular) bricks of class- 7.5 in superstructure above plinth level up to floor V level. Cement mortar 1:3 (1 cement : 3 coarse sand)	Sqm	0.00

<b>E</b>	<b>STEEL WORK</b>		
9	Structural steel work in single section, fixed with or without connecting plate, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	Kg	11268.40
<b>F</b>	<b>FINISHING WORK</b>		
10	12 mm cement plaster in single coat on rough side of single or half brick wall for interior plastering upto floor two level including internal rounded angles not exceeding 80mm in girth and finished even and smooth (i) 1 cement: 6 coarse sand	Sqm	13045.64
11	Providing and fixing sheet covering over expansion joints with iron screws as per design.		
	Aluminium fluted strips 3.15 mm thick. 200 mm wide	Rmt	535.60
12	Finishing walls with Acrylic Smooth exterior paint of required shade : New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including priming coat of exterior primer applied @ 2.20 kg/10 sqm)	Sqm	13045.64
13	Providing and applying white cement based putty of average thickness 1 mm, of approved brand and manufacturer, over the plastered wall surface to prepare the surface even and smooth complete.	Sqm	13045.64

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE 6			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>	<b>SANITARY INSTALLATIONS &amp; C.P FITTINGS</b>		
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestla type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, overflow arrangement with specials of standard make and mosquito proof coupling of approved municipal design complete, including painting of fittings and brackets,	6	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require:		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass pillar taps	7	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings complete.		
	Semi rigid pipe		
	32 mm dia	7	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	7	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets, cutting and making good the walls wherrerever required.		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	3	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each



7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required :		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions.		
	45 cm length		
	15 mm nominal bore	20	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by Engineer - in- charge.(K-26474IN-ER-0 kohler/Roca/American standard)	6	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	1	each
13	Providing and fixing 2 handle wall kitchen mixer in polished chrome of approved quality conforming to IS standards and weighing not less than 690 gms. ( for sink)( K-37315IN-4-CP- kohler/Roca/ American standard)		
	a) 15 mm nominal bore	3	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-23515IN-4-CP kolhar/Roca/ American standard)		
	a) 15 mm nominal bore	26	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System. (K-72326IN-4 CP - kohler/Roca/ American standard)	7	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each

17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	4	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	4	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	8	each
	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-charge.( K-75823IN-CP kohler/Roca/American standard)	8	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour, weighing not less than 105 gms.	5	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings arrangement of approved quality and colour.		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	4	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	6	each
<b>II C.I. SOIL WASTE &amp; VENT PIPES AND FITTINGS</b>			
24	Providing & fixing Cast Iron pipe soil, waste and vent pipes.		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	72	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	48	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	18	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	25	each

	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	16	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	25	No.
	b) for 75mm dia pipe.	16	No.
28	Providing & fixing cast iron coller.		
	a) 100mm dia.	25	No.
	b) 75mm dia.	16	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	8	No.
	a) 100mm inlet & 75mm outlet.	3	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	18	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree.Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	4	Each
	b) 75mm	4	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.		
	100x100x100mm	8	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugaly cast iron single equal plain junction of required degree.		
	100x100x100mm	4	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete :		
	100x100x75mm	2	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	2	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c.o.p.)		

	a) 100mm	2	Each
	b) 75mm	1	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	10	Each
	75 mm	8	Each
<b>III</b>	<b>INTERNAL RAIN WATER DRAINAGE WORK</b>		
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring / ground)		
	110 mm dia	6	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for thermal expansion.		
	110 mm	30	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring. (i) Double socketed pipes.		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal expansion. (Make : Astral )		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including jointing with seal ring conforming to IS:5382 leaving 10mm gap for thermal expansion.		
	Coupler		
	110 mm	10	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	5	Each
	75 mm Bend	0	Each
	Shoe (Plain)		

	110 mm Shoe	5	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams.	5	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete.		
	110 mm	5	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, punning, rounding the edges and making and finishing the outlet complete.	5	Each
<b>IV INTERNAL WATER SUPPLY WORKS</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	64	Rm.
	20mm dia nominal outer dia pipes	0	Rm.
	25mm dia nominal outer dia pipes	0	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	10	Metre
	25mm dia nominal bore	30	Metre
	32mm dia nominal bore	5	Metre
	40mm dia nominal bore	0	Metre
	50mm dia nominal bore	0	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge.		
	65mm dia nominal bore	0	Metre

	80mm dia nominal bore	0	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	5	Each
	32mm dia nominal bore	5	Each
	40mm dia nominal bore	2	Each
	50mm dia nominal bore	0	Each
	65mm dia nominal bore	0	Each
	80mm dia nominal bore	0	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :		
	15 mm nominal bore	2	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and longer valve life. The disc should be stainless steel to offer a good corrosion resistance, superior resistance to a broad range of chemical environments as well as very low co-efficient of friction and excellent resistance to impact and ultra-violet radiation. For temperatures and rust proof operation the valve disc should be stainless steel material. <b>(Make: Belmio)</b>		
	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Engineer Incharge- Make Oasis/ Filtrin/ Eureka Forbes	0	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	500L STORAGE TANK AND DRINKING FOUNTAIN	0	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE 5 (S+7)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>	<b>SANITARY INSTALLATIONS &amp; C.P FITTINGS</b>		
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestla type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors whereverrequired: W.C. pan with ISI marked white solid plastic seat and lid.	70	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	0	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	70	each

5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	70	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	14	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C.	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	168	each



11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	10	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	14	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	14	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22645IN-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	238	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	70	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (Kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge (For bath)		
	15 mm diameter	70	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	70	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS-8931.	0	each
	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	0	each

21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	70	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	70	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	0	each
<b>II</b>	<b>C.I. SOIL WASTE &amp; VENT PIPES AND FITTINGS</b>		
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	236	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	110	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	182	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	84	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	28	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		

	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	84	No.
	b) for 75mm dia pipe.	28	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	84	No.
	b) 75mm dia.	28	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	0	No.
	a) 100mm inlet & 75mm outlet.	56	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	210	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	56	Each
	b) 75mm	56	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	112	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	56	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	28	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	28	Nos.

36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :(c.o.p.)		
	a) 100mm	28	Each
	b) 75mm	14	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	28	Each
	75 mm	14	Each
<b>III</b>	<b>INTERNAL RAIN WATER DRAINAGE WORK</b>		
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	6	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	48	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each

40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	20	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	2	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	2	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams	2	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand)		
	110 mm	20	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	2	Each
<b>IV INTERNAL WATER SUPPLY WORKS</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testings of		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	616	Rm.
	20mm dia nominal outer dia pipes	693	Rm.
	25mm dia nominal outer dia pipes	462	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	70	Metre
	25mm dia nominal bore	95	Metre
	32mm dia nominal bore	45	Metre
	40mm dia nominal bore	50	Metre
	50mm dia nominal bore	20	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	10	Metre
	80mm dia nominal bore	0	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	20	Each
	32mm dia nominal bore	2	Each
	40mm dia nominal bore	4	Each
	50mm dia nominal bore	2	Each
	65mm dia nominal bore	1	Each
	80mm dia nominal bore	1	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	2	Nos.
	25 mm nominal bore	0	Nos.

49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc. lower valve		
	65 mm nominal bore	1	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE 4 (S+8)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>	<b>SANITARY INSTALLATIONS &amp; C.P FITTINGS</b>		
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedest type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	64	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	64	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	64	each



5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	64	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	16	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C.	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	160	each

11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	64	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	16	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	16	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-23515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	224	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	64	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge (For bath)		
	15 mm diameter	64	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	64	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931.	96	each
	15mm nominal bore		

20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	80	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	80	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	64	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	64	each
<b>II</b>	<b>C.I. SOIL WASTE &amp; VENT PIPES AND FITTING</b>		
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	396	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	220	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	160	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	112	each
	b)75mm		

	SS 304 grade coupling with EPDM rubber gasket	32	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	112	No.
	b) for 75mm dia pipe.	32	No.
28	Providing & fixing cast iron coller.		
	a) 100mm dia.	112	No.
	b) 75mm dia.	32	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	0	No.
	a) 100mm inlet & 75mm outlet.	80	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	192	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree.Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	96	Each
	b) 75mm	64	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	160	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugaly cast iron single equal plain junction of required degree.		
	100x100x100mm	80	Nos.
	75x75x75mm	0	Nos.

34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts 100x100x75mm	48	Nos.
35	Providing and fixing single unequal plain invert branch of required degree : 100x100x75mm	48	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c.o.p.)		
	a) 100mm	48	Each
	b) 75mm	16	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	32	Each
	75 mm	16	Each
<b>III</b>	<b>INTERNAL RAIN WATER DRAINAGE WORK</b>		
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	6	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	64	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring. (i) Double socketed pipes		
	75 mm	0	Metre

39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	25	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	2	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	2	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams	2	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand)		
	110 mm	26	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	2	Each

<b>IV</b>	<b>INTERNAL WATER SUPPLY WORKS</b>		
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testings of		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	576	Rm.
	20mm dia nominal outer dia pipes	648	Rm.
	25mm dia nominal outer dia pipes	432	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	60	Metre
	25mm dia nominal bore	95	Metre
	32mm dia nominal bore	45	Metre
	40mm dia nominal bore	50	Metre
	50mm dia nominal bore	20	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	9	Metre
	80mm dia nominal bore	9	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	20	Each
	32mm dia nominal bore	2	Each
	40mm dia nominal bore	4	Each
	50mm dia nominal bore	2	Each
	65mm dia nominal bore	1	Each
	80mm dia nominal bore	1	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	0	Nos.

	25 mm nominal bore	0	Nos.
49	<p>Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and longer valve life. The disc should be stainless steel to offer a good corrosion resistance, superior resistance to a broad range of chemical environments as well as very low co-efficient of friction and excellent resistance to impact and ultra-violet radiation. For temperatures and rust proof operation the valve disc should be stainless steel material</p>		
	65 mm nominal bore	1	Nos.



SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE 3 (S+14)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>	<b>SANITARY INSTALLATIONS &amp; C.P FITTINGS</b>		
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	56	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	56	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		

	Semi rigid pipe		
	32 mm dia	56	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	56	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	28	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C.	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	168	each

11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	56	each
	a) 15 mm nominal bore	224	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	56	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge (For bath)		
	15 mm diameter	28	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	28	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS-8931.	112	each
	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	84	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	84	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	28	each

23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	56	each
<b>II</b>	<b>C.I. SOIL WASTE &amp; VENT PIPES AND FITTINGS</b>		
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	588	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	280	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	140	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	196	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	56	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	196	No.
	b) for 75mm dia pipe.	56	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	196	No.
	b) 75mm dia.	56	No.
29	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 and floors :		

	a) 100mm inlet & 100mm outlet.	0	No.
	a) 100mm inlet & 75mm outlet.	140	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	168	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	168	Each
	b) 75mm	112	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	280	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	140	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	84	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	84	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :(c.o.p.)		
	a) 100mm	84	Each
	b) 75mm	28	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	56	Each
	75 mm	28	Each

<b>III</b>	<b>INTERNAL RAIN WATER DRAINAGE WORK</b>		
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	34	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	168	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	60	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	2	Each
	75 mm Bend	0	Each
	Shoe (Plain)		

	110 mm Shoe	2	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth or rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams	2	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand)		
	110 mm	68	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, punning, rounding the edges and making and finishing the outlet complete.	2	Each
<b>IV INTERNAL WATER SUPPLY WORKS</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testings of		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	560	Rm.
	20mm dia nominal outer dia pipes	630	Rm.
	25mm dia nominal outer dia pipes	420	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	60	Metre
	25mm dia nominal bore	95	Metre
	32mm dia nominal bore	45	Metre
	40mm dia nominal bore	50	Metre

	50mm dia nominal bore	20	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	11	Metre
	80mm dia nominal bore	11	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	20	Each
	32mm dia nominal bore	2	Each
	40mm dia nominal bore	4	Each
	50mm dia nominal bore	2	Each
	65mm dia nominal bore	1	Each
	80mm dia nominal bore	1	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in		
	65 mm nominal bore	1	Nos.



SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE 3 (S+13)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>	<b>SANITARY INSTALLATIONS &amp; C.P FITTINGS</b>		
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	52	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	52	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		

	32 mm dia	52	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	52	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	26	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P. brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I. clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		

	15 mm nominal bore	156	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	52	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	26	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	26	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22645IN-4-CP Kohler/ Roca/ American standard)		
	a) 15 mm nominal bore	208	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	52	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (Kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge (For bath)		
	15 mm diameter	26	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	26	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931.	104	each

	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-charge / K-75823IN-CP kohler/Roca/American	78	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour weighing not less	78	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	26	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	52	each
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	556	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	270	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	130	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	182	each
	b)75mm		

	SS 304 grade coupling with EPDM rubber gasket	52	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embedded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	182	No.
	b) for 75mm dia pipe.	52	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	182	No.
	b) 75mm dia.	52	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	0	No.
	a) 100mm inlet & 75mm outlet.	130	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	156	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	156	Each
	b) 75mm	104	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	260	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	130	Nos.
	75x75x75mm	0	Nos.

34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts 100x100x75mm	78	Nos.
35	Providing and fixing single unequal plain invert branch of required degree : 100x100x75mm	78	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :(c.o.p.)		
	a) 100mm	78	Each
	b) 75mm	26	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	52	Each
	75 mm	26	Each
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	31	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	156	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		

	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	55	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	2	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	2	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams	2	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand)		
	110 mm	63	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	2	Each

44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases <del>and making good the same including testings of</del>		
	Concealed work including cutting chases and <del>making good the walls etc.</del>		
	15mm dia nominal outer dia pipes	520	Rm.
	20mm dia nominal outer dia pipes	585	Rm.
	25mm dia nominal outer dia pipes	390	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	60	Metre
	25mm dia nominal bore	95	Metre
	32mm dia nominal bore	45	Metre
	40mm dia nominal bore	50	Metre
	50mm dia nominal bore	20	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	11	Metre
	80mm dia nominal bore	11	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	20	Each
	32mm dia nominal bore	2	Each
	40mm dia nominal bore	4	Each
	50mm dia nominal bore	2	Each
	65mm dia nominal bore	1	Each
	80mm dia nominal bore	1	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with <del>plastic floats complete</del>		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.



49	<p>Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc. lower valve</p>		
	65 mm nominal bore	1	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE 2 (S+10)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>	<b>SANITARY INSTALLATIONS &amp; C.P FITTINGS</b>		
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	24	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass pillar taps	24	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings complete		
	Semi rigid pipe		
	32 mm dia	24	each

5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete	24	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets, cutting and making good the walls wherrerever required		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	0	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	4	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required :		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floorswhereverrequired: One urinal basin with 5 litre white P.V.C.	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions.		
	45 cm length		
	15 mm nominal bore	96	each

11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by Engineer - in- charge.(K-26474IN-ER-0 kohler/Roca/American standard)	4	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	24	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	24	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gysar points of approved quality conforming to IS:8931 ( K-23515IN-4-CP kolhar/Roca/ American standard)		
	a) 15 mm nominal bore	120	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	24	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge (For bath)		
	15 mm diameter	24	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	24	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS-8931.	72	each
	15mm nominal bore		

20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-charge.( K-75823IN-CP kohler/Roca/American standard)	0	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour, weighing not less than 105 gms	48	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings arrangement of approved quality and colour		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms	24	each
23	Providing and Fixing Toilet Paper Holder: C.P. Brass	4	each
<b>II</b>	<b>C.I. SOIL WASTE &amp; VENT PIPES AND FITTINGS</b>		
24	Providing & fixing Cast Iron pipe soil, waste and vent pipes. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	236	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	140	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	0	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	168	each
	b)75mm		

	SS 304 grade coupling with EPDM rubber gasket	48	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	168	No.
	b) for 75mm dia pipe.	48	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	168	No.
	b) 75mm dia.	0	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	0	No.
	a) 100mm inlet & 75mm outlet.	0	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick bolts and nuts complete		
	a) 100mm	0	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	144	Each
	b) 75mm	96	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete		
	100x100x100mm	240	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	120	Nos.
	75x75x75mm	0	Nos.

34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete :		
	100x100x75mm	72	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	72	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c o n )		
	a) 100mm	72	Each
	b) 75mm	24	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	8	Each
	75 mm	4	Each
<b>III</b>	<b>INTERNAL RAIN WATER DRAINAGE WORK</b>		
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring / ground)		
	110 mm dia	12	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for thermal expansion.		
	110 mm	128	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring. (i) Double socketed pipes.		

	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal expansion. (Make : Astral )		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including jointing with seal ring conforming to IS:5382 leaving 10mm gap for thermal expansion.		
	Coupler		
	110 mm	45	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	4	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	4	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams.	4	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete.		
	110 mm	52	Each



43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, punning, rounding the edges and making	4	Each
<b>IV</b>	<b>INTERNAL WATER SUPPLY WORKS</b>		
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	528	Rm.
	20mm dia nominal outer dia pipes	0	Rm.
	25mm dia nominal outer dia pipes	0	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	60	Metre
	25mm dia nominal bore	95	Metre
	32mm dia nominal bore	45	Metre
	40mm dia nominal bore	50	Metre
	50mm dia nominal bore	20	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in		
	65mm dia nominal bore	11	Metre
	80mm dia nominal bore	11	Metre

47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	20	Each
	32mm dia nominal bore	4	Each
	40mm dia nominal bore	4	Each
	50mm dia nominal bore	2	Each
	65mm dia nominal bore	1	Each
	80mm dia nominal bore	1	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete .		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and longer valve life. The disc should be stainless steel to offer a good corrosion resistance, superior resistance to a broad range of chemical environments as well as very low co-efficient of friction and excellent resistance to impact and ultra-violet radiation. For temperatures and rust proof operation the valve disc should be stainless steel material		
	65 mm nominal bore	1	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
BOYS HOSTEL - UG & PG (G+5)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>	<b>SANITARY INSTALLATIONS &amp; C.P FITTINGS</b>		
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	96	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	131	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	128	each

5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	128	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	2	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	2	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C.	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	266	each

11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	96	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	64	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	2	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-25432IN-4-CP - Kohler)		
	a) 15 mm nominal bore	362	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	131	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge (For bath)		
	15 mm diameter	64	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	64	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931	161	each
	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	260	each

21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	160	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	64	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	96	each
<b>II</b>	<b>C.I. SOIL WASTE &amp; VENT PIPES AND FITTINGS</b>		
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	825	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	650	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	328	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	297	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	228	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		

	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	297	No.
	b) for 75mm dia pipe.	228	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	297	No.
	b) 75mm dia.	228	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	96	No.
	a) 100mm inlet & 75mm outlet.	161	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	288	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	96	Each
	b) 75mm	4	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	68	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	34	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	32	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	32	Nos.

36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :(c.o.p.)		
	a) 100mm	32	Each
	b) 75mm	1	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	0	Each
	75 mm	0	Each
<b>III</b>	<b>INTERNAL RAIN WATER DRAINAGE WORK</b>		
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	28	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	322	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring. (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each



40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	110	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	24	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	24	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams	24	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand)		
	110 mm	24	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	24	Each
<b>IV INTERNAL WATER SUPPLY WORKS</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testings of		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	1428	Rm.
	20mm dia nominal outer dia pipes	1607	Rm.
	25mm dia nominal outer dia pipes	1071	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	50	Metre
	25mm dia nominal bore	120	Metre
	32mm dia nominal bore	96	Metre
	40mm dia nominal bore	112	Metre
	50mm dia nominal bore	140	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	160	Metre
	80mm dia nominal bore	30	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	16	Each
	40mm dia nominal bore	8	Each
	50mm dia nominal bore	8	Each
	65mm dia nominal bore	15	Each
	80mm dia nominal bore	6	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in		

	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Enginner Incharge- Make Oasis/ Filtrin/ Eureka Forbes	14	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM	2	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
GIRLS HOSTEL - UG & PG (G+5)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>	<b>SANITARY INSTALLATIONS &amp; C.P FITTINGS</b>		
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedest type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with IS! marked white solid plastic seat and lid.	72	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	99	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	96	each

5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	96	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	2	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	2	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C.	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	202	each

11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	72	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	48	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	2	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	274	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	99	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge (For bath)		
	15 mm diameter	48	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	48	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931.	121	each
	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	100	each

21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	120	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	48	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	72	each
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	625	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	490	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	248	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	225	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	172	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embedded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		

	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	225	No.
	b) for 75mm dia pipe.	172	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	225	No.
	b) 75mm dia.	172	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	72	No.
	a) 100mm inlet & 75mm outlet.	73	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	0	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	72	Each
	b) 75mm	4	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	52	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	26	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	24	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	24	Nos.



36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :(c.o.p.)		
	a) 100mm	24	Each
	b) 75mm	1	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	0	Each
	75 mm	0	Each
<b>III</b>	<b>INTERNAL RAIN WATER DRAINAGE WORK</b>		
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	48	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	552	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring. (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each

40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	185	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	24	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	24	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams	24	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand)		
	110 mm	24	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	24	Each
<b>IV</b>	<b>INTERNAL WATER SUPPLY WORKS</b>		
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testings of		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	692	Rm.
	20mm dia nominal outer dia pipes	779	Rm.
	25mm dia nominal outer dia pipes	519	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	50	Metre
	25mm dia nominal bore	120	Metre
	32mm dia nominal bore	96	Metre
	40mm dia nominal bore	112	Metre
	50mm dia nominal bore	140	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	160	Metre
	80mm dia nominal bore	30	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	16	Each
	40mm dia nominal bore	8	Each
	50mm dia nominal bore	8	Each
	65mm dia nominal bore	15	Each
	80mm dia nominal bore	6	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with elastic floats complete :		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in		

	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of buidling. As per Enginner Incharge- Make Oasis/ Filtrin/ Eureka Forbes	12	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM	2	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE BOYS HOSTEL - DIPLOMA (G+3)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>	<b>SANITARY INSTALLATIONS &amp; C.P FITTINGS</b>		
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestla type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors whereverrequired: W.C. pan with ISI marked white solid plastic seat and lid.	26	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	26	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	26	each

5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	26	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	0	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	13	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floorswhereverrequired: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	52	each

11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	26	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	25	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	0	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-23515IN-4-CP kolhar/Roca/ American standard)		
	a) 15 mm nominal bore	78	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	26	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge (For bath)		
	15 mm diameter	13	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	13	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931	13	each
	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	75	each

21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	13	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	13	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	26	each
<b>II</b>	<b>C.I. SOIL WASTE &amp; VENT PIPES AND FITTINGS</b>		
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	352	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	282	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	65	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	126	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	101	each



27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	126	No.
	b) for 75mm dia pipe.	101	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	126	No.
	b) 75mm dia.	101	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	39	No.
	a) 100mm inlet & 75mm outlet.	65	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	78	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	39	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	26	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	13	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	13	Nos.

35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	13	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c.o.p.)		
	a) 100mm	13	Each
	b) 75mm	0	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	0	Each
	75 mm	0	Each
<b>III</b>	<b>INTERNAL RAIN WATER DRAINAGE WORK</b>		
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	20	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	230	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		

	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	80	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	24	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	24	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams	24	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand)		
	110 mm	24	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	24	Each
<b>IV INTERNAL WATER SUPPLY WORKS</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testings of		
	Concealed work including cutting chases and making good the walls etc.		

	15mm dia nominal outer dia pipes	472	Rm.
	20mm dia nominal outer dia pipes	522	Rm.
	25mm dia nominal outer dia pipes	348	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	32	Metre
	25mm dia nominal bore	80	Metre
	32mm dia nominal bore	64	Metre
	40mm dia nominal bore	64	Metre
	50mm dia nominal bore	80	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	140	Metre
	80mm dia nominal bore	30	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	16	Each
	40mm dia nominal bore	8	Each
	50mm dia nominal bore	8	Each
	65mm dia nominal bore	15	Each
	80mm dia nominal bore	6	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.

49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in		
	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Engineer Incharge- Make Oasis/ Filtrix/ Eureka Forbes	12	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM	2	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE GIRLS HOSTEL - DIPLOMA (G+2)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>	<b>SANITARY INSTALLATIONS &amp; C.P FITTINGS</b>		
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	26	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	26	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		

	Semi rigid pipe		
	32 mm dia	26	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	26	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	0	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	13	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required :		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		

	45 cm length		
	15 mm nominal bore	52	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	26	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	25	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	0	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-23515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	78	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	26	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge (For bath)		
	15 mm diameter	13	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	13	each
	150 mm diameter		



19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS-8931.	13	each
	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	39	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour weighing not less	13	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	13	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	26	each
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	208	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	166	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	65	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		

	SS 304 grade coupling with EPDM rubber gasket	78	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	65	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embedded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	78	No.
	b) for 75mm dia pipe.	65	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	78	No.
	b) 75mm dia.	65	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	39	No.
	a) 100mm inlet & 75mm outlet.	65	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	78	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree.Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	39	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	26	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		

	100x100x100mm	13	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	13	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	13	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :(c.o.p.)		
	a) 100mm	13	Each
	b) 75mm	0	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	0	Each
	75 mm	0	Each
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	20	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	230	Metre
	75 mm	0	Metre

38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	80	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	24	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	24	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams.	24	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand)		
	110 mm	24	Each

43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	24	Each
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testings of		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	280	Rm.
	20mm dia nominal outer dia pipes	306	Rm.
	25mm dia nominal outer dia pipes	204	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	32	Metre
	25mm dia nominal bore	80	Metre
	32mm dia nominal bore	64	Metre
	40mm dia nominal bore	64	Metre
	50mm dia nominal bore	80	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	140	Metre
	80mm dia nominal bore	30	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	16	Each
	40mm dia nominal bore	8	Each
	50mm dia nominal bore	8	Each

	65mm dia nominal bore	15	Each
	80mm dia nominal bore	6	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in		
	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Engineer Incharge- Make Oasis/ Filtrin/ Eureka Forbes	12	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		

	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM	2	Nos.
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SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE BOYS HOSTEL - RESEARCH HOSTEL (G+3)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	33	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	36	each



4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	33	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	0	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	0	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required:		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		

	45 cm length		
	15 mm nominal bore	33	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	33	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	0	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	0	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	99	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	33	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	33	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	33	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	34	each
	15mm nominal bore		

20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	33	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	33	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	33	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	33	each
<b>II</b>			
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	252	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	188	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	96	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	64	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	64	each

27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embedded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	64	No.
	b) for 75mm dia pipe.	64	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	64	No.
	b) 75mm dia.	64	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	32	No.
	a) 100mm inlet & 75mm outlet.	0	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	0	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	64	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	64	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	32	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	32	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		

	100x100x75mm	32	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c.o.p.)		
	a) 100mm	32	Each
	b) 75mm	0	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	8	Each
	75 mm	8	Each
<b>III</b>			
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	20	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	192	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each

40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	65	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	24	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	24	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	12	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	12	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	12	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	264	Rm.
	20mm dia nominal outer dia pipes	297	Rm.
	25mm dia nominal outer dia pipes	198	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	32	Metre
	25mm dia nominal bore	80	Metre
	32mm dia nominal bore	64	Metre
	40mm dia nominal bore	64	Metre
	50mm dia nominal bore	80	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	65mm dia nominal bore	140	Metre
	80mm dia nominal bore	30	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	16	Each
	40mm dia nominal bore	8	Each
	50mm dia nominal bore	8	Each
	65mm dia nominal bore	15	Each
	80mm dia nominal bore	6	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and		

	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Engineer Incharge- Make Oasis/ Filtrin/ Eureka Forbes	8	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	FOUNTAIN	2	Nos.
	<b>TOTAL FOR INTERNAL PLUMBING</b>		



SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE GIRLS HOSTEL - RESEARCH HOSTEL (G+2)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	25	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	28	each

4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	25	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	0	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	0	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required:		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		

	45 cm length		
	15 mm nominal bore	25	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	25	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	0	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	0	each
14	Providing and fixing angle valve in polished chrome for basin mixer and geyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	75	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	25	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	25	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	25	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	26	each
	15mm nominal bore		

20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	25	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	25	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	25	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	25	each
<b>II</b>			
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	204	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	156	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	72	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	48	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	48	each

27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embedded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	48	No.
	b) for 75mm dia pipe.	48	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	48	No.
	b) 75mm dia.	48	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	24	No.
	a) 100mm inlet & 75mm outlet.	0	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	0	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	48	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	48	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	24	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	24	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		

	100x100x75mm	24	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c.o.p.)		
	a) 100mm	24	Each
	b) 75mm	0	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	8	Each
	75 mm	8	Each
<b>III</b>			
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	20	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	192	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring. (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each

40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	65	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	24	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	24	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	12	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	12	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	12	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	264	Rm.
	20mm dia nominal outer dia pipes	297	Rm.
	25mm dia nominal outer dia pipes	198	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	32	Metre
	25mm dia nominal bore	80	Metre
	32mm dia nominal bore	64	Metre
	40mm dia nominal bore	64	Metre
	50mm dia nominal bore	80	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	65mm dia nominal bore	140	Metre
	80mm dia nominal bore	30	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	16	Each
	40mm dia nominal bore	8	Each
	50mm dia nominal bore	8	Each
	65mm dia nominal bore	15	Each
	80mm dia nominal bore	6	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and		



	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Enginner Incharge- Make Oasis/ Filtrin/ Eureka Forbes	8	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	FOUNTAIN	2	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE ADMINSTRATIVE BUILDING (G+3)			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	59	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass pillar taps	63	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings complete.		
	Semi rigid pipe		
	32 mm dia	63	each

5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws and washers complete.	63	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets, cutting and making good the walls wherrerever required		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	2	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required :		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floorswhereverrequired: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions.		
	45 cm length		
	15 mm nominal bore	4	each

11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by Engineer in-charge.(K-26474IN-ER-0 kohler/Roca/American standard)	59	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	0	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	2	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-23515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	189	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	63	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	0	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	0	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	12	each
	15mm nominal bore		

20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-charge.( K-75823IN-CP kohler/Roca/American standard)	31	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour, weighing not less than 105 gms	12	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings arrangement of approved quality and colour.		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	0	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	59	each
<b>II</b>			
24	Providing & fixing Cast Iron pipe soil, waste and vent pipes.		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	210	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	194	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	163	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	72	each

	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	66	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	72	No.
	b) for 75mm dia pipe.	66	No.
28	Providing & fixing cast iron coller.		
	a) 100mm dia.	72	No.
	b) 75mm dia.	66	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	64	No.
	a) 100mm inlet & 75mm outlet.	48	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	92	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree.Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	8	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.		
	100x100x100mm	8	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugaly cast iron single equal plain junction of required degree.		
	100x100x100mm	4	Nos.
	75x75x75mm	0	Nos.

34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete :		
	100x100x75mm	4	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	4	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c.o.p.)		
	a) 100mm	4	Each
	b) 75mm	14	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	0	Each
	75 mm	0	Each
<b>III</b>			
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring / ground)		
	110 mm dia	20	metre
	150 mm dia	20	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for thermal expansion		
	110 mm	192	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring. (i) Double socketed pipes.		
	75 mm	0	Metre

39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal expansion. (Make - Astral )		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including jointing with seal ring conforming to IS:5382 leaving 10mm gap for thermal expansion		
	Coupler		
	110 mm	65	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	24	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	24	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams.	12	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete.		
	110 mm	12	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, punning, rounding the edges and making and finishing the outlet complete.	12	Each
<b>IV</b>			



44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	484	Rm.
	20mm dia nominal outer dia pipes	334	Rm.
	25mm dia nominal outer dia pipes	156	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	32	Metre
	25mm dia nominal bore	168	Metre
	32mm dia nominal bore	294	Metre
	40mm dia nominal bore	336	Metre
	50mm dia nominal bore	50	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge.		
	65mm dia nominal bore	140	Metre
	80mm dia nominal bore	30	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	16	Each
	40mm dia nominal bore	8	Each
	50mm dia nominal bore	8	Each
	65mm dia nominal bore	15	Each
	80mm dia nominal bore	6	Each

48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete :		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and longer valve life. The disc should be stainless steel to offer a good corrosion resistance, superior resistance to a broad range of chemical environments as well as very low co-efficient of friction and excellent resistance to impact and ultra-violet radiation. For temperatures and rust proof operation the valve disc should be stainless steel material. <b>(Make: Belmio)</b>		
	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Engineer Incharge- Make Oasis/ Filtrin/ Eureka Forbes	8	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		

	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	500L STORAGE TANK AND DRINKING FOUNTAIN	3	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
MULTIPURPOSE HALL			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	18	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		

	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	22	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	22	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	22	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	2	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	1	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required:		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each

9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	48	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	18	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	1	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	2	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP Kohler/Roca/ American standard)		
	a) 15 mm nominal bore	66	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	22	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each



	b) 75mm dia centrifugally cast iron S & S pipe.	113	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	55	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	54	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	38	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embedded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	54	No.
	b) for 75mm dia pipe.	38	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	54	No.
	b) 75mm dia.	38	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	12	No.
	a) 100mm inlet & 75mm outlet.	20	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	54	Each
	b) 75mm	0	Nos.



31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	54	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	18	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	9	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	9	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	9	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :(c.o.p.)		
	a) 100mm	4	Each
	b) 75mm	0	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	2	Each
	75 mm	0	Each
<b>III</b>			
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	6	metre
	150 mm dia	0	metre

37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	30	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	10	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	24	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	24	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	12	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	12	Each

43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	5	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	216	Rm.
	20mm dia nominal outer dia pipes	243	Rm.
	25mm dia nominal outer dia pipes	162	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	32	Metre
	25mm dia nominal bore	80	Metre
	32mm dia nominal bore	60	Metre
	40mm dia nominal bore	75	Metre
	50mm dia nominal bore	35	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	5	Metre
	80mm dia nominal bore	0	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	16	Each

	40mm dia nominal bore	10	Each
	50mm dia nominal bore	10	Each
	65mm dia nominal bore	4	Each
	80mm dia nominal bore	1	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete .		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and		
	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Engineer Incharge- Make Oasis/ Filtrin/ Eureka Forbes	2	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		

	RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	FOUNTAIN	4	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE LIBRARY			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	18	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	21	each

4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	21	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	21	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	0	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	3	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required :		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		

10	Providing and fixing unplasticised PVC connection pipe with brass unions.		
	45 cm length		
	15 mm nominal bore	42	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall moutain type W.C. of quality and make as approved by	18	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	0	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	0	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	60	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	21	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	0	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	0	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	12	each



	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-charge (K-75823IN-CP kohler/Boca/American	33	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour, weighing not less	6	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	0	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	18	each
	<b>II</b>		
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	123	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	60	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	54	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	42	each
	b)75mm		

	SS 304 grade coupling with EPDM rubber gasket	24	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	42	No.
	b) for 75mm dia pipe.	24	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	42	No.
	b) 75mm dia.	24	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	21	No.
	a) 100mm inlet & 75mm outlet.	12	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	12	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree.Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	12	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	12	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	6	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		

	100x100x75mm	6	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	6	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c.o.p.)		
	a) 100mm	6	Each
	b) 75mm	0	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	12	Each
	75 mm	0	Each
<b>III</b>			
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	40	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	220	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring. (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each

40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	5	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	22	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	22	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	12	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	12	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	12	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	144	Rm.
	20mm dia nominal outer dia pipes	117	Rm.
	25mm dia nominal outer dia pipes	93	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	10	Metre
	25mm dia nominal bore	25	Metre
	32mm dia nominal bore	50	Metre
	40mm dia nominal bore	80	Metre
	50mm dia nominal bore	100	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	65mm dia nominal bore	30	Metre
	80mm dia nominal bore	2	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	16	Each
	40mm dia nominal bore	8	Each
	50mm dia nominal bore	8	Each
	65mm dia nominal bore	15	Each
	80mm dia nominal bore	6	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and		

	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Enginner Incharge- Make Oasis/ Filtrin/ Eureka Forbes	1	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	FOUNTAIN	2	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
MULTIPURPOSE HALL			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	18	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		

	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	22	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	22	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	22	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	2	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	1	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required:		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each



9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	48	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	18	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	1	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	2	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP Kohler/Roca/ American standard)		
	a) 15 mm nominal bore	66	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	22	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each



	b) 75mm dia centrifugally cast iron S & S pipe.	113	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	55	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	54	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	38	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embedded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	54	No.
	b) for 75mm dia pipe.	38	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	54	No.
	b) 75mm dia.	38	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	12	No.
	a) 100mm inlet & 75mm outlet.	20	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	54	Each
	b) 75mm	0	Nos.

31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	54	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	18	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	9	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	9	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	9	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :(c.o.p.)		
	a) 100mm	4	Each
	b) 75mm	0	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	2	Each
	75 mm	0	Each
<b>III</b>			
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	6	metre
	150 mm dia	0	metre

37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	30	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	10	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	24	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	24	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	12	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	12	Each

43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	5	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	216	Rm.
	20mm dia nominal outer dia pipes	243	Rm.
	25mm dia nominal outer dia pipes	162	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	32	Metre
	25mm dia nominal bore	80	Metre
	32mm dia nominal bore	60	Metre
	40mm dia nominal bore	75	Metre
	50mm dia nominal bore	35	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	5	Metre
	80mm dia nominal bore	0	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	16	Each

	40mm dia nominal bore	10	Each
	50mm dia nominal bore	10	Each
	65mm dia nominal bore	4	Each
	80mm dia nominal bore	1	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete .		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and		
	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Engineer Incharge- Make Oasis/ Filtrin/ Eureka Forbes	2	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		

	RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	FOUNTAIN	4	Nos.



SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE GUEST HOUSE			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	1	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	16	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	16	each

4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	16	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	2	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	2	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	1	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required:		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		

	45 cm length		
	15 mm nominal bore	32	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	16	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	0	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	0	each
14	Providing and fixing angle valve in polished chrome for basin mixer and geyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	48	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	16	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	58	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	58	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	102	each
	15mm nominal bore		

20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	18	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	16	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	58	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	16	each
<b>II</b>			
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	48	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	6	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	48	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	16	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	16	each

27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embedded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	16	No.
	b) for 75mm dia pipe.	16	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	16	No.
	b) 75mm dia.	16	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	58	No.
	a) 100mm inlet & 75mm outlet.	28	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	32	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	32	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	32	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	16	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	16	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		

	100x100x75mm	16	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c.o.p.)		
	a) 100mm	16	Each
	b) 75mm	0	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	32	Each
	75 mm	0	Each
<b>III</b>			
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	6	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	32	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring. (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each

40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	10	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	8	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	8	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	8	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	16	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	8	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	108	Rm.
	20mm dia nominal outer dia pipes	91	Rm.
	25mm dia nominal outer dia pipes	74	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	10	Metre
	25mm dia nominal bore	25	Metre
	32mm dia nominal bore	20	Metre
	40mm dia nominal bore	25	Metre
	50mm dia nominal bore	35	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	65mm dia nominal bore	15	Metre
	80mm dia nominal bore	0	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	12	Each
	40mm dia nominal bore	8	Each
	50mm dia nominal bore	5	Each
	65mm dia nominal bore	5	Each
	80mm dia nominal bore	1	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and		



	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Enginner Incharge- Make Oasis/ Filtrin/ Eureka Forbes	2	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	FOUNTAIN	2	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE HEALTH CENTER			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	22	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		

	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	0	each
4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	25	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	25	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	0	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required:		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each

9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	50	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	22	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	0	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	0	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP Kohler/Roca/ American standard)		
	a) 15 mm nominal bore	72	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	25	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (Kohler/Roca/ American standard)	0	each

17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	16	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	16	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	26	each
	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	28	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	13	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	16	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	22	each
<b>II</b>			
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	358	Rm.

	b) 75mm dia centrifugally cast iron S & S pipe.	60	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	68	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	123	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	24	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embedded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	123	No.
	b) for 75mm dia pipe.	24	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	123	No.
	b) 75mm dia.	24	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	22	No.
	a) 100mm inlet & 75mm outlet.	4	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	26	Each
	b) 75mm	0	Nos.

31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	26	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	26	Nos.
	75x75x75mm	26	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	13	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	13	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	13	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :(c.o.p.)		
	a) 100mm	13	Each
	b) 75mm	0	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	26	Each
	75 mm	0	Each
<b>III</b>			
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	48	metre
	150 mm dia	0	metre

37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	168	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each
40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	5	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	22	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	22	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	12	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	12	Each



43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	12	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	150	Rm.
	20mm dia nominal outer dia pipes	122	Rm.
	25mm dia nominal outer dia pipes	97	Rm.
45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	10	Metre
	25mm dia nominal bore	25	Metre
	32mm dia nominal bore	50	Metre
	40mm dia nominal bore	80	Metre
	50mm dia nominal bore	100	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC		
	65mm dia nominal bore	100	Metre
	80mm dia nominal bore	10	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	8	Each
	32mm dia nominal bore	11	Each

	40mm dia nominal bore	8	Each
	50mm dia nominal bore	26	Each
	65mm dia nominal bore	5	Each
	80mm dia nominal bore	6	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete .		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and		
	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Engineer Incharge- Make Oasis/ Filtrin/ Eureka Forbes	1	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		

	RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	FOUNTAIN	2	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
FACULTY CENTER			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	4	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	6	each

4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	6	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	6	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	0	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required:		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		

10	Providing and fixing unplasticised PVC connection pipe with brass unions.		
	45 cm length		
	15 mm nominal bore	12	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall moutain type W.C. of quality and make as approved by	4	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	0	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	0	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	16	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	6	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	6	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	6	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	6	each

	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	9	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	3	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	6	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	4	each
<b>II</b>			
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	30	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	18	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	16	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	11	each
	b)75mm		

	SS 304 grade coupling with EPDM rubber gasket	7	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	11	No.
	b) for 75mm dia pipe.	7	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	11	No.
	b) 75mm dia.	7	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	6	No.
	a) 100mm inlet & 75mm outlet.	3	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	6	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree.Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	0	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	0	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	0	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		



[illegible]

40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	5	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	22	Each
	75 mm Bend	4	Each
	Shoe (Plain)		
	110 mm Shoe	22	Each
	75 mm Shoe	6	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	12	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	12	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	12	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	39	Rm.
	20mm dia nominal outer dia pipes	32	Rm.
	25mm dia nominal outer dia pipes	26	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	10	Metre
	25mm dia nominal bore	25	Metre
	32mm dia nominal bore	10	Metre
	40mm dia nominal bore	50	Metre
	50mm dia nominal bore	20	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	65mm dia nominal bore	0	Metre
	80mm dia nominal bore	10	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	2	Each
	32mm dia nominal bore	5	Each
	40mm dia nominal bore	3	Each
	50mm dia nominal bore	4	Each
	65mm dia nominal bore	2	Each
	80mm dia nominal bore	0	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and		

	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Enginner Incharge- Make Oasis/ Filtrin/ Eureka Forbes	2	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	FOUNTAIN	2	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE MAINTENANCE			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	0	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	3	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	3	each

4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	4	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	3	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	4	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	4	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required:		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		

10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	8	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	3	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	0	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	1	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	11	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	3	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	1	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	1	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	3	each

	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	5	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	2	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	1	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	3	each
<b>II</b>			
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	0	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	3	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	3	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	8	each
	b)75mm		



	SS 304 grade coupling with EPDM rubber gasket	3	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	8	No.
	b) for 75mm dia pipe.	3	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	8	No.
	b) 75mm dia.	3	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	0	No.
	a) 100mm inlet & 75mm outlet.	3	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	0	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree.Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	4	Each
	b) 75mm	2	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	6	Nos.
	75x75x75mm	0	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	3	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x75mm	2	Nos.

35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	2	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c.o.p.)		
	a) 100mm	2	Each
	b) 75mm	1	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	2	Each
	75 mm	1	Each
<b>III</b>			
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	4	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	16	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each

40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	10	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	8	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	8	Each
	75 mm Shoe	0	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	8	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	7	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	4	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	32	Rm.
	20mm dia nominal outer dia pipes	36	Rm.
	25mm dia nominal outer dia pipes	24	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	5	Metre
	25mm dia nominal bore	12	Metre
	32mm dia nominal bore	16	Metre
	40mm dia nominal bore	10	Metre
	50mm dia nominal bore	20	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	65mm dia nominal bore	10	Metre
	80mm dia nominal bore	0	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	4	Each
	32mm dia nominal bore	4	Each
	40mm dia nominal bore	1	Each
	50mm dia nominal bore	1	Each
	65mm dia nominal bore	1	Each
	80mm dia nominal bore	1	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and		

	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Enginner Incharge- Make Oasis/ Filtrin/ Eureka Forbes	1	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	FOUNTAIN	1	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE POLICE CHOWKI			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	2	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	0	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	2	each

4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	2	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws	2	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets,		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	0	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required:		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floors wherever required: One urinal basin with 5 litre white P.V.C. automatic flushing cistern	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		

10	Providing and fixing unplasticised PVC connection pipe with brass unions		
	45 cm length		
	15 mm nominal bore	4	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by	0	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	0	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	0	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	4	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	2	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	2	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	2	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	4	each



	15mm nominal bore		
20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	2	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings	2	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	2	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	0	each
<b>II</b>			
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	10	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	6	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	6	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	4	each
	b)75mm		

	SS 304 grade coupling with EPDM rubber gasket	2	each
27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embeded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	4	No.
	b) for 75mm dia pipe.	2	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	4	No.
	b) 75mm dia.	2	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	4	No.
	a) 100mm inlet & 75mm outlet.	2	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	4	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree.Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	2	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		
	100x100x100mm	0	Nos.
	75x75x75mm	2	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	0	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts		

	100x100x75mm	2	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	2	Nos.
36	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts & nuts complete :( c.o.p.)		
	a) 100mm	2	Each
	b) 75mm	0	Each
37	Providing and fixing cast iron terminal guard.		
	100 mm	4	Each
	75 mm	0	Each
<b>III</b>			
36	Providing and laying cement concrete 1:5:10(1 cement : 5 coarse sand : 10 graded stone aggregate 20mm nominal size) around P.V.C Soil and waste pipe including bed concrete as per standard design(embedded in the flooring /		
	110 mm dia	6	metre
	150 mm dia	0	metre
37	Providing and fixing on wall face unplasticised-Rigid PVC rain water pipes conforming to IS: 13592 Type A including jointing with seal ring conforming to IS: 5382 leaving 10mm gap for		
	110 mm	20	Metre
	75 mm	0	Metre
38	Providing and fixing in floor and wall face Ringfit UPVC ASTRAL ULTRADRAIN Conventional system for soil and waste water pipes conforming to (HSN CODE: 3917) Type B including jointing with seal ring (i) Double socketed pipes		
	75 mm	0	Metre
39	Providing and fixing on wall face unplasticised - PVC moulded fittings/accessories for unplasticised Rigid PVC pipes including jointing with seal ring leaving 10 mm gap for thermal		
	g) Providing & fixing UPVC Coupler	0	Each
	i) 75mm dia		
	a) Providing & fixing UPVC 90° elbow		
	i) 75mm dia	0	Each

40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including		
	Coupler		
	110 mm	5	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	22	Each
	75 mm Bend	0	Each
	Shoe (Plain)		
	110 mm Shoe	22	Each
	75 mm Shoe	2	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	12	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	12	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse	12	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	6	Rm.
	20mm dia nominal outer dia pipes	6	Rm.
	25mm dia nominal outer dia pipes	6	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	10	Metre
	25mm dia nominal bore	25	Metre
	32mm dia nominal bore	10	Metre
	40mm dia nominal bore	50	Metre
	50mm dia nominal bore	20	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	65mm dia nominal bore	0	Metre
	80mm dia nominal bore	0	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	2	Each
	32mm dia nominal bore	5	Each
	40mm dia nominal bore	3	Each
	50mm dia nominal bore	4	Each
	65mm dia nominal bore	2	Each
	80mm dia nominal bore	0	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.
49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and		

	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Enginner Incharge- Make Oasis/ Filtrin/ Eureka Forbes	2	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	FOUNTAIN	1	Nos.

SCHEDULE OF QUANTITIES FOR PLUMBING WORKS			
TYPE FACULTY CENTER			
INTERNAL PLUMBING WORKS			
SL. NO	DESCRIPTION	QTY	UNIT
<b>I</b>			
1	Providing and fixing water closet squatting pan ( <b>Indian type W.C. pan</b> ) with 100mm sand cast Iron P or S trap, 10 litre low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS:7231, Parryware/Hindware/Seabird/Orient (Coral) with all fittings and fixtures complete including cutting and making good the walls and floors wherever required.		
	White Vitreous china Orissa pattern W.C. pan of size 580x440mm with integral type foot rests	2	each
2	Providing and fixing white vitreous china pedestals type water closet (European type) with seat and lid, 10 litre low level white vitreous china flushing cistern & C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, 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 walls and floors wherever required: W.C. pan with ISI marked white solid plastic seat and lid.	4	each
3	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever require.		
	a.) White Vitreous China Wash basin size 550x400 mm with a pair of 15mm C.P. brass	7	each

4	Providing and fixing P.V.C. waste pipe for sink or wash basin including P.V.C. waste fittings		
	Semi rigid pipe		
	32 mm dia	7	each
5	Providing and fixing 600x450mm bevelled edge mirror of superior glass (of approved quality) complete with 6mm thick hard board ground fixed to wooden cleats with C.P. brass screws and	7	each
6	Providing and fixing Stainless Steel AISI 304(18/8) kitchen sink as per IS : 13983 with C.I. brackets and stainless steel plug 40mm including painting of fittings and brackets, cutting		
	Kitchen sink with drain board Size 510x1040 mm bowl depth 250mm	0	each
	Kitchen sink without drain board Size 610x510 mm bowl depth 200 mm	0	each
7	Providing and fixing white vitreous china laboratory sink with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall <del>wherever required:</del>		
	Size 600x450x200 mm	0	each
8	Providing and fixing white vitreous china flat back or wall corner type urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I clamps complete, including painting of fittings and brackets, cutting and making good the walls and floorswhereverrequired: <del>One urinal basin with 5 litre white P.V.C. automatic flushing cistern</del>	0	each
9	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75x50cm deep and 1.8cm 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 (1cement: 2coarse sand: 4graded stone aggregate 6mm nominal size) as per direction of Engineer-in-charge and finished smooth.		
	Granite Stone of approved shade	0	Sqm.
	<b>CP Brass fittings</b>		
10	Providing and fixing unplasticised PVC connection <del>pipe with brass unions</del>		



	45 cm length		
	15 mm nominal bore	14	each
11	Providing and fixing Health faucet with white side spray, metal hose in polished chrome with flexible tube upto 1 metre long with S.S. triangular plate to European & Wall mount type W.C. of quality and make as approved by Engineer - in-	4	each
12	Providing and fixing 2-way bib tap in polished chrome (kohler/Roca/ American standard)		
	(a) 2-way bib tap ((K-25432IN-4-CP - Kohler)	0	each
13	Providing and fixing 2 handle Jaquar Wall Mounted Regular Kitchen Sink Mixer Florentine FLR-5309N with Swinging Spout in Chrome Finish FOR Kitchen		
	a) 15 mm nominal bore	0	each
14	Providing and fixing angle valve in polished chrome for basin mixer and gyser points of approved quality conforming to IS:8931 ( K-22515IN-4-CP kohler/Roca/ American standard)		
	a) 15 mm nominal bore	18	each
15	Pillar tap in polished chrome Basin Mixer with Popup Waste System Jaquar Table Mounted Regular Basin Mixer Opal Prime OPP-CHR-15011BPM - Chrome	7	each
16	Sink Mixer with Swinging Spout (Table Mounted Model) with 450mm Long Braided Hoses (kohler/Roca/ American standard)	0	each
17	Providing and fixing CP Brass diverter wall mixer of quality & make as approved by Engineer in charge. (For bath)		
	15 mm diameter	6	each
18	Providing and fixing Square showerhead with shower arm in polished chrome with 15 or 20mm inlet ( K-22645IN-CP kohler/Roca/ American standard)	6	each
	150 mm diameter		
19	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to IS:8931:	6	each
	15mm nominal bore		

20	Providing and fixing 350mm bottle trap without drain in polished chrome of approved quality & make and as per the direction of Engineer-in-	11	each
21	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of	3	each
22	Providing and fixing PTMT towel rail complete with brackets fixed to wooden cleats with CP brass screws with concealed fittings arrangement		
	450 mm long towel rail with total length of 495 mm, 78 mm wide and effective height of 88 mm, weighing not less than 170 gms.	6	each
23	Providing and Fixing Toilet Paper Holder:		
	C.P. Brass	4	each
<b>II</b>			
24	Providing & fixing Cast Iron pipe soil, waste and		
	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm dia centrifugally cast iron S & S pipe.	25	Rm.
	b) 75mm dia centrifugally cast iron S & S pipe.	20	Rm.
25	Providing and fixing GI pipes complete with GI fittings and clamps, including cutting and making good walls etc. ( for wash basin waste )		
	32mm dia nominal bore	18	Metre
26	Providing and fixing shielded coupling for Hubless centrifugally cast iron pipe.		
	100 mm		
	SS 304 grade coupling with EPDM rubber gasket	9	each
	b)75mm		
	SS 304 grade coupling with EPDM rubber gasket	7	each

27	Providing & fixing M.S. holder bat clamps of approved design to sand cast iron/centrifugally cast (Spun) iron S & S pipe embedded in & including cement concrete blocks 10x10x10cm. of 1:2:4 mix (1 cement : 2 coarse : 4 graded stone aggregate 20mm nominal		
	size). Including cost of cutting holes & making good the walls etc.		
	a) for 100mm dia pipe.	9	No.
	b) for 75mm dia pipe.	7	No.
28	Providing & fixing cast iron collar.		
	a) 100mm dia.	9	No.
	b) 75mm dia.	7	No.
29	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 and floors :		
	a) 100mm inlet & 100mm outlet.	6	No.
	a) 100mm inlet & 75mm outlet.	3	No.
30	Providing and fixing bend of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.		
	a) 100mm	6	Each
	b) 75mm	0	Nos.
31	Providing and fixing plain bend of required degree. Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905		
	a) 100mm	2	Each
	b) 75mm	0	Nos.
32	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.		
	100x100x100mm	0	Nos.
	75x75x75mm	2	Nos.
33	Providing and fixing centrifugally cast iron single equal plain junction of required degree.		
	100x100x100mm	0	Nos.
	75x75x75mm	0	Nos.
34	Providing and fixing single unequal junction of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete :		
	100x100x75mm	3	Nos.
35	Providing and fixing single unequal plain invert branch of required degree :		
	100x100x75mm	3	Nos.

[illegible]

40	Providing and fixing on wall face unplasticised PVC moulded fittings/accessories for unplasticised Rigid PVC rain water pipes conforming to IS:13592 Type A including jointing with seal ring		
	Coupler		
	110 mm	5	Each
	75 mm	0	Each
	Bend 87.5 degree		
	110 mm Bend	22	Each
	75 mm Bend	4	Each
	Shoe (Plain)		
	110 mm Shoe	22	Each
	75 mm Shoe	7	Each
41	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and	12	Each
42	Providing and fixing unplasticised-PVC pipe clips of approved design to unplasticised-PVC rain water pipes by means of 50x50x50 mm hard wood plugs, screwed with MS screws of required length including cutting brick work and fixing in cement mortar 1:4 (1 cement : 4 coarse sand) and making good the wall etc. complete		
	110 mm	12	Each
43	Making khurras 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC sheet 1m x 1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand)	12	Each
<b>IV</b>			
44	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and		
	Concealed work including cutting chases and making good the walls etc.		
	15mm dia nominal outer dia pipes	45	Rm.
	20mm dia nominal outer dia pipes	36	Rm.
	25mm dia nominal outer dia pipes	29	Rm.

45	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints.		
	<b>Internal work-Exposed on wall</b>		
	20mm dia nominal bore	10	Metre
	25mm dia nominal bore	25	Metre
	32mm dia nominal bore	10	Metre
	40mm dia nominal bore	50	Metre
	50mm dia nominal bore	20	Metre
46	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge.		
	65mm dia nominal bore	0	Metre
	80mm dia nominal bore	10	Metre
47	Providing and fixing gun metal gate valve with wheel of approved quality.		
	25mm dia nominal bore	2	Each
	32mm dia nominal bore	5	Each
	40mm dia nominal bore	3	Each
	50mm dia nominal bore	4	Each
	65mm dia nominal bore	2	Each
	80mm dia nominal bore	0	Each
48	Providing and fixing ball valve (brass) of approved quality, High or low pressure, with plastic floats complete.		
	15 mm nominal bore	0	Nos.
	25 mm nominal bore	0	Nos.

49	Providing and fixing motorized butterfly valves the valve should be able to operate with hot/cold water medium between 20---120 degree working temperature, the nominal pressure of the valve should be PN 16, leakage rate through the valve disc should be Rate-A Bubble tight to EN1266-1 with integrated flange sealing should ensure positive connection of the valve body seat ring and valve disc and provide a complete isolation of the media from the body. The disc casting should be precision machined and should give a smooth and close disc-to-seat relationship. The stem bearing should comprise of non corrosive PTFE bushing to completely isolate the valve seat from the body, resulting in increase control of the valve disc, lower valve seating torque and longer valve life. The disc should be stainless steel to offer a good corrosion resistance, superior resistance to a		
	65 mm nominal bore	1	Nos.
50	Supply of wall hanging <b>drinking online water cooler</b> with bottle filler facility, made by stainless steel top and heavy duty galvanized steel frame. With cooling capacity, ADA Compliant, size 472 mm Depth X 447mm width, flexible bubbler guard , operated between 50 to 120 PSI, Chiller unit Suitable to R134a Refrigerant, Adjustable thermostat control, suitable for 220-230v/50-60 hz A/C Supply Complete with all accessories which include MD-CU29, which is an EPA registered antimicrobial copper that fights off microorganisms which include MRSA and e-coli. The water Fountain shall possess NSF-USA, Green building, energy star saving certification, and to be placed at different location of building. As per Engineer Incharge- Make Oasis/ Filtrin/ Eureka Forbes	1	Nos.
51	<b>RO Plant 150 LPH (Liter per hour)</b>		
	PLANT CAPACITY - 150 LPH RECOVERY - 50% ELECTRICAL CONNECTION - 415 V, 3 PHASE, 50 HZ TDS - < 100 PPM		
	500L STORAGE TANK AND DRINKING FOUNTAIN	1	Nos.

<b>(COST OF EXTERNAL SEWERAGE, DRAINAGE &amp; EXTERNAL WATER SUPPLY</b>			
<b>S.N.</b>	<b>DESCRIPTION</b>	<b>QTY.</b>	<b>UNIT</b>
<b>I</b>	<b>COST OF SEWERAGE WORKS</b>		
1	Excavating trenches by mechanical / manual means of required for pipes, cables, etc including excavation for sockets and dressing of sides, ramming of bottoms, for all depths, including getting out the excavated soil and then returning the soil as required in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering etc and disposing of surplus excavated soil as directed within a lead of 50m.		
	<b>All kind of soil</b>		
	Pips cables etc exceeding 80mm dia but not exceeding 300mm dia	4000	metre
2	Providing and laying Non pressure NP 2 class (light duty) <b>RCC pipe</b> with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1cement : 2 fine sand ) including testing of joints etc. complete.		
	150 mm. dia. RCC Pipes	100.00	metre
	250 mm. dia. RCC Pipes	2500.00	metre
	300 mm. dia. RCC Pipes	1500.00	metre
3	Providing and laying cement concrete 1:5:10 (1 cement: 5 coarse sand : 10 graded stone aggregate 40mm nominal size) upto the haunches of pipes including bed concrete as per standard design		
	150 mm. dia.	100.00	metre
	250 mm. dia.	2500.00	metre
	300 mm. dia.	1500.00	metre



	Constructing brick masonry manhole in cement mortar 1:4 (1 cement :4 coarse sand) RCC top slab with 1:2:4 mix (1 cement :2 coarse sand :4 graded stone aggregate 20mm nominal size), foundation concrete 1:4:8 mix (1 cement :4 coarse sand :8 graded stone aggregate 40mm nominal size) inside plastering 12mm thick with cement mortar 1:3 (1 cement :3 coarse sand) finished with floating coat of neat cement and making channels in cement concrete 1:2:4 (1 cement :2 coarse sand :4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement complete as per standard design.		
4	Inside size <b>90x80</b> cms and 45cms deep including CI cover with frame (light duty) 455x610mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15kg).		
	With common burnt clay FPS (non modular) bricks of class designation 75		
	(i) For Sewer Line	70	each
5	Extra for depth for manholes:		
	Size 90x80cm with With common burnt clay FPS (non modular) bricks of class designation 7.5	12.00	metre
6	Inside size <b>90x120</b> cms and 90cms deep including CI cover with frame (MEDIUM duty) 455x610mm internal dimensions total weight of cover and frame to be not less than 116 kg (weight of cover 58 kg and weight of frame 58kg).		
	With common burnt clay FPS (non modular) bricks of class designation 75		
	(i) For Sewer Line	20.00	each
7	Extra for depth for manholes:		
	Size 90x120cm with With common burnt clay FPS (non modular) bricks of class designation 7.5	7.00	metre
9	Constructing brick masonry circular type manhole 0.91 m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement: 4 coarse sand), inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard design :		

	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 12mm thick cement plaster at the external surface shall be paid for separately) :		
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	150.00	each
10	Extra for depth for manholes:		
	Extra depth for circular type manhole 0.91m internal dia (at bottom) beyond 0.91 m to 1.67 m	25.00	metre
11	Constructing brick masonry circular manhole <b>1.22 m</b> internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) inside cement plaster 12mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement, all complete as per standard design:		
	1.68 m deep with SFRC Cover and frame (heavy duty HD-20 grade designation) 560mm 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 20mm nominal size) including centering, shuttering all complete. (Excavation, foot rests and 12mm thick cement plaster at the external surface shall be paid for separately):		
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	250.00	each
12	Extra depth for circular type manhole 1.22m internal dia (at bottom) beyond 1.68m to 2.29m		
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	30.00	metre

13	Constructing brick masonry circular manhole 1.52 m internal dia at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 40 mm nominal size) and making necessary channel in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) finished with a floating coat of neat cement, all complete as per standard design		
	2.30 m deep with SFRC Cover and frame (heavy duty HD- 20 grade designation) 560 mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182 kg. fixed in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) including centering, shuttering all complete. <b>(Excavation, foot rests and 12 mm thick cement plaster at the external surface shall be paid for separately) :</b>		
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	100.00	each
14	Extra depth for circular type manhole 1.52 m internal dia (at bottom) beyond 2.30 m :		
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	25.00	metre
15	<b>Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design :</b>	330.00	each
16	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30 cm in depth, 1.5 in width as well as 10 sqm on plan) including getting out and disposal of excavated earth lead upto 50 m and lift upto 1.5 m, as directed by Engineer-in-charge.		
	All kinds of soil	372.59	cum
	<b>TOTAL COST OF EX. SEWERAGE</b>		
	<b>COST OF EXTERNAL WATER SUPPLY WORKS</b>		
<b>II</b>	<b><u>RISING MAIN AND BYE PASS ARRANGEMENT</u></b>		

1	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge.		
	External work		
	65 mm nominal dia Pipes	300	RM
	80 mm nominal dia Pipes	1200	RM
	100 mm nominal dia Pipes	6000	RM
	<b>DISTRIBUTION SYSTEM</b>		
2	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) :		
	65mm nominal bore.	35.00	Nos.
3	Providing and fixing CI double acting air valve of approved quality		
	50mm nominal bore.	2.00	Nos.
	80mm nominal bore.	2.00	Nos.
	100mm nominal bore.	6.00	Nos.
4	Constructing <b>brick masonry chamber</b> 600 x 600 x 750 mm inside with F.P.S. brick work in cement mortar 1:4 (1 cement : 4 coarse sand) <b>for Sluice Valve / Air Valve</b> , with C. I. surface box 100 mm top diameter, 160 mm bottom diameter and 180mm deep (inside) with chained lid and RCC top slab with 1 : 2 : 4 mix (1 cement : 2 coarse sand : 4 grade 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	30.00	Each
	<b>TOTAL COST OF EX.WATER SUPPLY</b>		
	<b>III RAIN WATER DRAINAGE NETWORK</b>		

5	Excavating trenches by mechanical / manual means of required for pipes, cables, etc including excavation for sockets and dressing of sides, ramming of bottoms, for all depths, including getting out the excavated soil and then returning the soil as required in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering etc and disposing of surplus excavated soil as directed within a lead of 50m		
	<b>All kind of soil</b>		
	Pips cables etc exceeding 80mm dia but not exceeding 300mm dia	850.00	metre
	Pips cables etc exceeding 30mm dia but not exceeding 600mm dia	3,500	metre
6	Providing and laying Non pressure NP 2 class (light duty) <b>RCC pipe</b> with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1cement : 2 fine sand ) including testing of joints etc. complete.		
	150 mm. dia. RCC Pipes	100.00	metre
	250 mm. dia. RCC Pipes	750.00	metre
	300 mm. dia. RCC Pipes	2500.00	metre
	450 mm. dia. RCC Pipes	1000.00	metre
7	Providing and laying cement concrete 1:5:10 (1 cement: 5 coarse sand : 10 graded stone aggregate 40mm nominal size) upto the haunches of pipes including bed concrete as per standard design		
	150 mm. dia.	4350.00	metre
	Constructing brick masonry manhole in cement mortar 1:4 (1 cement :4 coarse sand) RCC top slab with 1:2:4 mix (1 cement :2 coarse sand :4 graded stone aggregate 20mm nominal size), foundation concrete 1:4:8 mix (1 cement :4 coarse sand :8 graded stone aggregate 40mm nominal size) inside plastering 12mm thick with cement mortar 1:3 (1 cement :3 coarse sand) finished with floating coat fo neat cement and making channels in cement concrete 1:2:4 (1 cement :2 coarse sand :4 graded stone aggregate 20mm nminal size) finished with a floating coat of neat cement complete as per standard design.		
8	Inside size <b>90x80</b> cms and 45cms deep including CI cover with frame (light duty) 455x610mm internal diamensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15kg).		
	With common burnt clay FPS (non modular) bricks of class designation 75		
	(i) For Sewer Line	5.00	each

9	Extra for depth for manholes:		
	Size 90x80cm with With common burnt clay FPS (non modular) bricks of class designation 7.5	2.00	metre
21	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	175.00	each
21	Constructing brick masonry road gully chamber 45x45x77.5 cm with bricks in cement mortar 1:4 (1 cement : 4 coarse sand ) with precast R.C.C. vertical grating complete as per standard design :		
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	300.00	each
21	Constructing brick masonry road gully chamber 110x50x77.5 cm with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) including 500x450 mm precast R.C.C. horizontal grating with frame and vertical grating complete as per standard design :		
	With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	50.00	each
10	Providing M.S. foot rests including fixing in manholes with 20x20x10 cm cement concrete blocks 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) as per standard design :	100.00	each
	<b>TOTAL COST OF EX. DRAINAGE</b>		

HVAC ESTIMATE -ACADEMIC BLOCK			
Sr.No	Description		TOTAL QTY
		Unit	
1	<b>OUTDOOR UNITS:</b>		
	Supply Installation, Testing & Commissioning of modular type Variable Refrigerant Flow/Variable Refrigerant Volume air cooled Outdoor units suitable for cooling and heating, having all hermetically sealed inverter type Scroll Compressor(s), minimum two compressors for above 14 HP modules, microprocessor based Controller, top discharge type condensing unit(s), with R 410 A Refrigerant, vibration isolators, with suitable foundation etc. complete as required. The unit shall deliver the rated capacity at AHRI Conditions and work even at 50°C ambient temperature without tripping. The unit shall be suitable to work on 400V +/- 10%, 3 Phase, 50Hz AC power supply. The unit shall be filled with first charge of the refrigerant and ready for use as required. The COP at AHRI conditions shall not be less than 3.1 and IEER not less than 6.5. (Design should be got approval before execution from engineer in charge) .		
1.1	20 HP	Nos.	12
1.2	18 HP	Nos.	15
1.3	16 HP	Nos.	4
1.4	12 HP	Nos.	5
2	<b>INDOOR UNIT-4-WAY FLOW CASSETTE:</b>		
	Supply, installation, testing and commissioning of following minimum capacity 4-way flow VRV/VRF Cassette Type Indoor ceiling mounted unit equipped with synthetic washable media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve, outer cabinet, drain pump, grill, necessary supports, vibration isolation, cord less remote control etc., suitable for operation on single phase 230 V ± 10%, 50Hz AC supply, complete, as required. The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of indoor unit will be at air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature. fresh air provision compatible for Remote Operation System .		
2.1	2.8 TR	Nos.	8
2.2	3.2 TR	Nos.	8
2.3	4.0 TR	Nos.	108
3	<b>AIR HANDLING UNITS</b>		

	Air Handling Units - Ceiling Suspended AHUs/Floor Mounted Ahu ,FINE Filter & PRE Filter etc		
	SITC of Air handling units complete with casing, sections & components as described below & in , vibration isolators all accessories and any other item required to make the system complete.		
	Orientation / Mounting: Ceiling Suspended/Floor Mounted		
	Casing: Double Skin (Thickness of Panels 25 mm)		
	Configuration: Draw Through for Cooling Coil & Heaters, Blow through for FINE Filter & PRE Filter		
	Location: Indoor		
	Units to be with Thermal Break Profile: yes		
	Filters: Pre - Filters (50 mm Thick)		
	Heating &Cooling Coil: Type - Dx Coil		
	Supply Air Fan - Type: Centrifugal, Blades: Forward Curved, Belt Driven, Fan Motor: Single Speed, Fan Motor Power Supply: 3 - Phase		
	Notes:		
	All Motors shall be of high efficiency with Efficiency Class IE2		
	All Dampers shall be of Extruded Aluminium Construction with Aerofoil Double Skin Blades.		
3.1	5600 CFM 65 MM S.P 4CC+2HC Row deep coil - 14.0TR	Nos.	2
4	Supply and installation AHU Kit having electronic expansion valve, controller and wire remote compatible with AHU to be installed under this work.	Nos.	2
5	Supply,Installation,testing and commissioning of corded /Cordless remote controls as per drawing and specifications	Nos.	124
6	Supply, Installation, Testing and Commissioning of Y/T/Multi Joints. Joints shall be of same Original Equipment Manufacturer (OEM) make as of ODUs and IDUs		
6.1	Indoor Units	Nos.	120
6.2	Outdoor Units Multi Joint	Nos.	12
7	Supply,Installation,testing and commissioning of Top of refrigerant gas	HP	634
8	<b>REFRIGERANT PIPE:</b>		



	Supply, Installation, testing and commissioning including vaccumiazation and Nitrogen testing of following nominal sizes of soft/hard drawn copper refrigerant piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastometric nitrile rubber tubular sleeves sections of specified thickness as given below for Suction and Liquid lines, all accessories as per specifications etc. as required :		
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8.1	6.4 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	160
8.2	9.5 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	960
8.3	12.7 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	320
8.4	15.86 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	1150
8.5	19.1 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	280
8.6	22.2 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	268
8.7	28.58 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	280
8.8	34.9 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	196
8.9	38.1 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	170
8.10.	41.27 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	160
11	Supply & fixing of control cum transmission wiring of 2 C X 1.5 Sq. mm Copper conductor cable alongwith conduite for looping between indoor & outdoor VRF system.	Rmt	4000
12	Supplying & erecting XLPE(IS:7098)(I)-88 ISI unarmoured copper cable 1.1 KV grade to be erected as directed of following size. 3C x 2.5 sq.mm	Rmt	1200
13	<b>Drain Piping :</b>		
	Supply,installation,testing and commissioning of CPVC pipes having thermal stability for condensate water including wrapping of 9mm thick class 0 nitrile rubber insulation with suitable adhesive with all CPVC plain and brass threaded fittings including the pipes with clamps 1metre spacing.This including jointing of pipes with one step CPVC solvent cement and testing of joints complete as per drg and specifications		
13.1	50 mm dia.	Rmt	140
13.2	40 mm dia.	Rmt	210
13.3	32mm dia.	Rmt	240
13.4	25 mm dia.	Rmt	650
14	Supply,installation testing and commissioning of AIR CURTAIN of following size as per approved make .		
14.1	1200 mm long (High flow type)	Nos	1
14.2	1500 mm long (High flow type)	Nos	1

15	<b>Axial Fan for "Exhaust Air (Emergency)"</b>		
	Supply installation, testing and commissioning of single piece long casing (Motor should completely be accommodated inside the fan casing) Vane Axial Fan (multi piece casing are not acceptable) in GSS/MS with powder coated, Al impeller with adjustable blade angles (Manually Adjustable at Site), bird screen ,gravity louvers, fire retardent flexible connection, necessary nut bolts and directly coupled TEFC Sq.cage induction motor (IE2) H Class insulation for Smoke Exhaust) suitable for 415V±10%, 50 Hz. 3 phase electric supply complete with required hardware etc. All offered fans pitch angle shall be AMCA Certified & Listed on AMCA website (Interpolation of pitch angle shall not be acceptable) and Fan Efficiency Grade ( Min FEG 71, lesser is not acceptable).Thickness of the casing shall not be less than: For Dia (300 to 650) mm – 2mm, Dia (700 to 1140) mm – 3 mm, Dia (1200 to 1400) mm – 4mm & Dia 1600 – 5 mm. All fans after assembly shall be dynamically trim-balanced to ISO1940 and AMCA 204/3 - G2.5 quality grade. Fan Casing should be provided with Special Designed Integral Straightening Vanes (Vanes should be integral part of casing, it should not be provided separately as an accessory) to reduced turbulence provide high performance & low noise level.		
	Fans for emergency application Tube axial are to be used. Sound level for emergency operation it should not exceed 88 Db(A)@ 3 meter (Room condition).Inc case of not achieving sound , attenuator has to be added. Outlet velocity of the fans should not exceed 18 m/s for emergency application.		
	Smoke and heat exhaust fans should be tested and certified for 250 Deg C for 2 hour in accordance to standard 'BSEN12101-3:2015 from TUV SUD PSB Singapore or equivalent internationally recognized fire laboratory		
15.1	10000 cfm ,25 mm E.S.P,	Nos	10
16	<b>PRESSURIZATION</b>		
	Supply, installation, testing and commissioning of floor mounted / ceiling hang Axial flow type supply air fan for Lift well, lobby & stairwell pressurization of following capacity with powder coated GSS/M.S. casing and aluminium alloy impellers with high efficiency aero-foil sections, blades, the impeller directly driven by TEFC induction motor (efficiency 1) and 'F' class insulation suitable for 3 Phase, 50 Hz, 415±10% Volt, TP isolator with M.S enclosure box complete as required and as per specifications. Fans should be statically & dynamically balanced.The fan static pressure shall be 20 mm WC static. as per site condition		
16.1	10000 CFM (for staircase)	Nos	3

16.2	3500 CFM (for lift)	Nos	8
17	<b>Propellar Type Fan</b>		
	Supply,installation,testing and commissioning of Propeller type free discharge exhaust fans complete with motor , fan ,exhaust Louvers as per drawings and specifications.		

17.1	200 mm dia	Nos	26
18	Inline Ducted Type Exhaust Fans		
	Supply, Installation, testing and Commissioning of ceiling / floor mounted Rectangular box type/circular type Inline fan, for toilet exhaust , ot exhaust , lab exhaust constructed of GSS duly powder coated as per detailed specifications, complete with forward curved SISW fan, motor and drive suitable for 220 ± 10% volts, 1 phase, 50 Hz A.C supply, with necessary canvas connection etc complete in all respects.		
18.1	500 cfm at 10 mm static	Nos.	10
18.2	200 cfm at 10 mm static	Nos.	2
19	<b>DUCTING , GRILLS, DIFFUSER AND DIFFUSER (AC+VENTILATION)</b>		
	Rectangular ductwork		
	Supply, installation, balancing and commissioning of fabricated at site 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 complete as required.		
19.1	Thickness 0.63mm sheet	Sqm	790
19.2	Thickness 0.80mm sheet	Sqm	390
19.3	Thickness 1.00 mm sheet	Sqm	160
19.4	Thickness 1.25 mm sheet	Sqm	120
20	<b>Duct Insulation</b>		
	Supplying and fixing of following thickness duly laminated aluminum foil of mat finish closed cell Nitrile rubber (Class "O") insulation on existing duct after applying suitable adhesive for Nitrile rubber. The joints shall be sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required.		
20.1	19mm	Sqm	1340
21	<b>Duct Accoustic Lining :</b>		

	Supply and fixing of acoustic lining of supply air duct and plenum with 25 mm thick resin bonded glass wool having density of 32 kg/m <sup>3</sup> , with 25 mm X 25 mm GI section of 1.25 mm thick, at 600 mm centre to centre covered with Reinforced Plastic tissue paper and 0.5 mm thick perforated aluminum sheet fixed to inside surface of ducts with cadmium plated nuts, bolts, stick pins, CPRX compound etc. complete as required and as per specifications.	Sqm	120
	<b>Grilles/Diffusers/Louvers/VCDs/FDs :</b>		
22	Supplying & fixing of powder coated extruded aluminium Return Air Grills with louvers but without volume control dampers complete as required.	SQM.	16
23	Supplying & fixing of powder coated extruded aluminium Supply Air Grills with aluminium volume control dampers complete as per specifications and size & shape as per site requirement and approved design.	Sqm	16
24	Supply, installation, testing and commissioning of flexible duct connections constructed of fire resistance flexible double canvas sleeve as per the drawings and specifications.	Sqm	180
25	Supply, installation, testing and commissioning of Volume control duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc, as per specifications.	SQM.	4
26	Supply, installation, testing and commissioning of Fire damper.in supply air duct / main branch and return air path as and where required of required sizes i/c control wiring the damper shall be motorised and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored . the spring return action shall be closed in the event of fire signal complete as required and as per specifications.		
26.1	Fire damper	Sqm	4
26.2	Actuator	each	10
27	Supply, installation, testing and commissioning of anodised aluminium Fresh air/Exhaust air louvers with bird screen as per specifications and drawings.	Sqm	4

28	Supply, installation, testing and commissioning of main panel board outdoor IP 55 type cubical Fully automatic DOL starter suitable for operating 3.7 kw motors/fan capacity, complete with contactors,Timer, overload protection relay, current sensing type single phase preventer, ON indications, push buttons, auto / manual / off selector switch,other accessories. complete as required.	Nos	10
29	Supply, installation, testing and commissioning of main panel board outdoor IP 55 type cubical Fully automatic DOL starter suitable for operating 5.5 kw motors/fan capacity, complete with contactors,Timer, overload protection relay, current sensing type single phase preventer, ON indications, push buttons, auto / manual / off selector switch,other accessories. complete as required.	Nos	21
	<b>VRV Unit Panel-FOR OUTDOOR UNITS ,FANS &amp; AHUS</b>		
30	Supply,installation,testing and commissioning		
	alised floor/wall mounted type made of 2 mm thick		
	steel sheet duly painted complete as per the		
	specifications and drawing and as detailed below :		
	1 no.500 Amps TPN MCCB incomer with KWH		
	meter, phase indicating lamps with control fuse &		
	toggle switch, voltmeter and selector switch, ammeter		
	with CTs and selector switch		

	4 nos. of 40 Amps TPN MCB outgoing with star delta starter		
	8 nos. 63Amp FP MCB + 63Amp. 300MAmp. FP RCCB		
	4 nos. of 63 Amps TPN MCB outgoing with star delta starter		
	2 nos. of 100 Amps TPN MCB outgoing with star delta starter	Nos.	4
31	Supply,installation,testing and commissioning of Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Copper conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe at road crossing or floor of following size of cable.		
31.1	(a) 3 core 2.5Sq. mm	Rmt	100
31.2	(a-1) 3 core 4 Sq. mm	Rmt	420
31.3	(b) 3 core 6 Sq. mm	Rmt	880
31.4	(c) 3 core 10 Sq. mm	Rmt	670
31.5	(d) 3 core 16 Sq. mm	Rmt	90
31.6	(E) 3 core 25 Sq. mm	Rmt	80
32	Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables		
32.1	3 1/2 core 240 Sq. mm	Rmt	310
33	Providing and fixing approved make Perforated C type cable tray. Made from sheet steel. The cable tray should be single or double bended as per required and as per IS 2062/1079 and shall be coated with hot dip galvanizing as per IS 2629/4759. with max 17.5% perforation with coupler plate / Fish plate and GI hardware like nut - bolt and washers etc. erection with necessary support( included) as per Specification and as per instruction of engineer in charge..		
33.1	100 X 50 X 1.6 mm Thick	Rmt	200
33.2	150 X 50 X 1.6 mm Thick	Rmt	260
33.4	300 X 50 X 2.0 mm Thick	Rmt	100
34	Earthing :		
	Supply,installation,testing and commissioning of following double earthing continuity conductor of Cu from Panels to respective equipment on surface or recess as per drawings and specifications.		
34.1	25 mm X 5 mm strip	Rmt	640
34.2	8 SWG wire	Rmt	640



## HVAC ESTIMATE -ADMIN BLOCK

Sr.No.	Description		TOTAL QTY
		Unit	
1	<b>OUTDOOR UNITS:</b>		
	Supply Installation, Testing & Commissioning of modular type Variable Refrigerant Flow/Variable Refrigerant Volume air cooled Outdoor units suitable for cooling and heating, having all hermetically sealed inverter type Scroll Compressor(s), minimum two compressors for above 14 HP modules, microprocessor based Controller, top discharge type condensing unit(s), with R 410 A Refrigerant, vibration isolators, with suitable foundation etc. complete as required. The unit shall deliver the rated capacity at AHRI Conditions and work even at 50°C ambient temperature without tripping. The unit shall be suitable to work on 400V +/- 10%, 3 Phase, 50Hz AC power supply. The unit shall be filled with first charge of the refrigerant and ready for use as required. The COP at AHRI conditions shall not be less than 3.1 and IEER not less than 6.5. (Design should be got approval before execution from engineer in charge) .		
1.1	20 HP	Nos.	4
1.2	18 HP	Nos.	4
1.3	16 HP	Nos.	7
1.4	14 HP	Nos.	4
1.5	12 HP	Nos.	12
1.6	10 HP	Nos.	1
2	<b>INDOOR UNIT-4-WAY FLOW CASSETTE:</b>		
	Supply, installation, testing and commissioning of following minimum capacity 4-way flow VRV/VRF Cassette Type Indoor ceiling mounted unit equipped with synthetic washable media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve, outer cabinet, drain pump, grill, necessary supports, vibration isolation, cord less remote control etc., suitable for operation on single phase 230 V ± 10%, 50Hz AC supply, complete, as required. The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of indoor unit will be at air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature. fresh air provision compatible for Remote Operation System .		
2.1	2.8 TR	Nos.	11

2.2	3.2 TR	Nos.	46
2.3	4.0 TR	Nos.	36
3	<b>INDOOR UNIT-HIGH WALL TYPE:</b>		
	Supply, installation, testing and commissioning of following minimum capacity VRV/VRF High wall type Indoor unit equipped with washable synthetic media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with DX copper coil, electronic expansion valve, outer cabinet, cordless remote control, drain pan, necessary accessories etc., suitable for operation on 230 V $\pm$ 10%, 50 Hz, single phase AC supply, complete as required. The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of indoor unit will be at air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature		
3.1	1.0 TR	Nos.	16
3.2	1.6 TR	Nos.	26
3.2	2.0 TR	Nos.	5
4	Supply,Installation,testing and commissioning of corded /Cordless remote controls as per drawing and specifications	Nos.	140
5	Supply, Installation, Testing and Commissioning of Y/T/Multi Joints. Joints shall be of same Original Equipment Manufacturer (OEM) make as of ODUs and IDUs		
5.1	Indoor Units	Nos.	134
5.2	Outdoor Units Multi Joint	Nos.	12
6	Supply,Installation,testing and commissioning of Top of refrigerant gas	HP	474
7	<b>REFRIGERANT PIPE:</b>		
	Supply, Installation, testing and commissioning including vaccumiazation and Nitrogen testing of following nominal sizes of soft/hard drawn copper refrigerant piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastometric nitrile rubber tubular sleeves sections of specified thickness as given below for Suction and Liquid lines, all accessories as per specifications etc. as required :		
7.1	6.4 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	220
7.2	9.5 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	880

7.3	12.7 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	358
7.4	15.86 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	1050
7.5	19.1 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	225
7.6	22.2 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	260
7.7	28.58 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	264
7.8	34.9 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	210
7.9	38.1 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	160
7.10.	41.27 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	124
8	Supply & fixing of control cum transmission wiring of 2 C X 1.5 Sq. mm Copper conductor cable alongwith conduite for looping between indoor & outdoor VRF system.	Rmt	3800
9	Supplying & erecting XLPE(IS:7098)(I)-88 ISI unarmoured copper cable 1.1 KV grade to be erected as directed of following size. 3C x 2.5 sq.mm	Rmt	1125
10	<b>Drain Piping :</b>		
	Supply,installation,testing and commissioning of of CPVC pipes having thermal stability for condensate water including wrapping of 9mm thick class 0 nitrile rubber insulation with suitable adhesive with all CPVC plain and brass threaded fittings including the pipes with clamps 1metre spacing.This including jointing of pipes with one step CPVC solvent cement and testing of joints complete as per drg and specifications		
10.1	50 mm dia.	Rmt	120
10.2	40 mm dia.	Rmt	131
10.3	32mm dia.	Rmt	195
10.4	25 mm dia.	Rmt	358
11	Supply,installation testing and commissioning of AIR CURTAIN of following size as per approved make .		
11.1	1200 mm long (High flow type)	Nos	1
11.2	1500 mm long (High flow type)	Nos	1

12	<b>Axial Fan for "Exhaust Air (Emergency)"</b>		
	Supply installation, testing and commissioning of single piece long casing (Motor should completely be accommodated inside the fan casing) Vane Axial Fan (multi piece casing are not acceptable) in GSS/MS with powder coated, Al impeller with adjustable blade angles (Manually Adjustable at Site), bird screen ,gravity louvers, fire retardent flexible connection, necessary nut bolts and directly coupled TEFC Sq.cage induction motor (IE2) H Class insulation for Smoke Exhaust) suitable for 415V±10%, 50 Hz. 3 phase electric supply complete with required hardware etc. All offered fans pitch angle shall be AMCA Certified & Listed on AMCA website (Interpolation of pitch angle shall not be acceptable) and Fan Efficiency Grade ( Min FEG 71, lesser is not acceptable).Thickness of the casing shall not be less than: For Dia (300 to 650) mm – 2mm, Dia (700 to 1140) mm – 3 mm, Dia (1200 to 1400) mm – 4mm & Dia 1600 – 5 mm. All fans after assembly shall be dynamically trim-balanced to ISO1940 and AMCA 204/3 - G2.5 quality grade. Fan Casing should be provided with Special Designed Integral Straightening Vanes (Vanes should be integral part of casing, it should not be provided separately as an accessory) to reduced turbulence provide high performance & low noise level.		
	Fans for emergency application Tube axial are to be used. Sound level for emergency operation it should not exceed 88 Db(A)@ 3 meter (Room condition).Incase of not achieving sound , attenuator has to be added. Outlet velocity of the fans should not exceed 18 m/s for emergency application.		
	Smoke and heat exhaust fans should be tested and certified for 250 Deg C for 2 hour in accordance to standard 'BSEN12101-3:2015 from TUV SUD PSB Singapore or equivalent internationally recognized fire laboratory		
12.1	10000 cfm ,25 mm E.S.P,	Nos	8
13	<b>PRESSURIZATION</b>		
	Supply, installation, testing and commissioning of floor mounted / ceiling hang Axial flow type supply air fan for Lift well, lobby & stairwell pressurization of following capacity with powder coated GSS/M.S. casing and aluminium alloy impellers with high efficiency aero-foil sections, blades, the impeller directly driven by TEFC induction motor (efficiency 1) and 'F' class insulation suitable for 3 Phase, 50 Hz, 415±10% Volt, TP isolator with M.S enclosure box complete as required and as per specifications. Fans should be statically & dynamically balanced.The fan static pressure shall be 20 mm WC static. as per site condition		
13.1	10000 CFM (for staircase)	Nos	3

13.2	3500 CFM (for lift)	Nos	4
14	<b>Propellar Type Fan</b>		
	Supply, installation, testing and commissioning of Propeller type free discharge exhaust fans complete with motor, fan, exhaust Louvers as per drawings and specifications.		
14.1	200 mm dia	Nos	35
15	<b>Inline Ducted Type Exhaust Fans</b>		
	Supply, Installation, testing and Commissioning of ceiling / floor mounted Rectangular box type/circular type Inline fan, for toilet exhaust, ot exhaust, lab exhaust constructed of GSS duly powder coated as per detailed specifications, complete with forward curved SISW fan, motor and drive suitable for 220 ± 10% volts, 1 phase, 50 Hz A.C supply, with necessary canvas connection etc complete in all respects.		
15.1	500 cfm at 10 mm static	Nos.	2
15.2	200 cfm at 10 mm static	Nos.	10
16	<b>DUCTING, GRILLS, DIFFUSER AND DIFFUSER (AC+VENTILATION)</b>		
	Rectangular ductwork		
	Supply, installation, balancing and commissioning of fabricated at site 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 complete as required.		
16.1	Thickness 0.63mm sheet	Sqm	160
16.2	Thickness 0.80mm sheet	Sqm	100
17	<b>Duct Insulation</b>		
	Supplying and fixing of following thickness duly laminated aluminum foil of mat finish closed cell Nitrile rubber (Class "O") insulation on existing duct after applying suitable adhesive for Nitrile rubber. The joints shall be sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required.		
17.1	19mm	Sqm	120
	<b>Grilles/Diffusers/Louvers/VCDs/FDs :</b>		

18	Supplying & fixing of powder coated extruded aluminium Return Air Grills with louvers but without volume control dampers complete as required.	SQM.	8
19	Supply,installation,testing and commissioning of flexible duct connections constructed of fire resistance flexible double canvas sleeve as per the drawings and specifications.	Sqm	248
20	Supply, installation, testing and commissioning of Fire damper.in supply air duct / main branch and return air path as and where required of required sizes i/c control wiring the damper shall be motorised and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored . the spring return action shall be closed in the event of fire signal complete as required and as per specifications.		
20.1	Fire damper	Sqm	2
20.2	Actuator	each	4
21	Supply, installation, testing and commissioning of anodised aluminium Fresh air/Exhaust air louvers with bird screen as per specifications and drawings.	Sqm	4
22	Supply, installation, testing and commissioning of main panel board outdoor IP 55 type cubical Fully automatic DOL starter suitable for operating 3.7 kw motors/fan capacity, complete with contactors,Timer, overload protection relay, current sensing type single phase preventer, ON indications, push buttons, auto / manual / off selector switch,other accessories. complete as required.	Nos	4
23	Supply, installation, testing and commissioning of main panel board outdoor IP 55 type cubical Fully automatic DOL starter suitable for operating 5.5 kw motors/fan capacity, complete with contactors,Timer, overload protection relay, current sensing type single phase preventer, ON indications, push buttons, auto / manual / off selector switch,other accessories. complete as required.	Nos	11
	<b>VRV Unit Panel-FOR OUTDOOR UNITS ,FANS &amp; AHUS</b>		
24	Supply,installation,testing and commissioning		
	alised floor/wall mounted type made of 2 mm thick		
	steel sheet duly painted complete as per the		
	specifications and drawing and as detailed below :		
	1 no.400 Amps TPN MCCB incomer with KWH		
	meter, phase indicating lamps with control fuse &		
	toggle switch, voltmeter and selector switch, ammeter		
	with CTs and selector switch		

	4 nos. of 40 Amps TPN MCB outgoing with star delta starter		
	6 nos. 63Amp FP MCB + 63Amp. 300MAmp. FP RCCB		
	6 nos. of 63 Amps TPN MCB outgoing with star delta starter		
	2 nos. of 100 Amps TPN MCB outgoing with star delta starter	Nos.	3
25	Supply,installation,testing and commissioning of Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Copper conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe at road crossing or floor of following size of cable.		
25.1	(a) 3 core 2.5Sq. mm	Rmt	90
25.2	(a-1) 3 core 4 Sq. mm	Rmt	160
25.3	(b) 3 core 6 Sq. mm	Rmt	540
25.4	(c) 3 core 10 Sq. mm	Rmt	480
25.6	(d) 3 core 16 Sq. mm	Rmt	80
25.7	(E) 3 core 25 Sq. mm	Rmt	70
26	Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables		
26.1	3 1/2 core 240 Sq. mm	Rmt	230
27	Providing and fixing approved make Perforated C type cable tray. Made from sheet steel. The cable tray should be single or double bended as per required and as per IS 2062/1079 and shall be coated with hot dip galvanizing as per IS 2629/4759. with max 17.5% perforation with coupler plate / Fish plate and GI hardware like nut - bolt and washers etc. erection with necessary support( included) as per Specification and as per instruction of engineer in charge..		
27.1	100 X 50 X 1.6 mm Thick	Rmt	140
27.2	150 X 50 X 1.6 mm Thick	Rmt	120
27.3	300 X 50 X 2.0 mm Thick	Rmt	60
28	Earthing :		
	Supply,installation,testing and commissioning of following double earthing continuity conductor of Cu from Panels to respective equipment on surface or recess as per drawings and specifications.		
28.1	25 mm X 5 mm strip	Rmt	410
28.2	8 SWG wire	Rmt	420

## HVAC ESTIMATE -LIBRARY BLOCK

Sr.No.	Description		TOTAL QTY
		Unit	
1	<b>OUTDOOR UNITS:</b>		
	Supply Installation, Testing & Commissioning of modular type Variable Refrigerant Flow/Variable Refrigerant Volume air cooled Outdoor units suitable for cooling and heating, having all hermetically sealed inverter type Scroll Compressor(s), minimum two compressors for above 14 HP modules, microprocessor based Controller, top discharge type condensing unit(s), with R 410 A Refrigerant, vibration isolators, with suitable foundation etc. complete as required. The unit shall deliver the rated capacity at AHRI Conditions and work even at 50°C ambient temperature without tripping. The unit shall be suitable to work on 400V +/- 10%, 3 Phase, 50Hz AC power supply. The unit shall be filled with first charge of the refrigerant and ready for use as required. The COP at AHRI conditions shall not be less than 3.1 and IEER not less than 6.5. (Design should be got approval before execution from engineer in charge) .		
1.1	20 HP	Nos.	1
1.2	18 HP	Nos.	2
1.3	16 HP	Nos.	17
1.4	14 HP	Nos.	1
2	<b>INDOOR UNIT-4-WAY FLOW CASSETTE:</b>		
	Supply, installation, testing and commissioning of following minimum capacity 4-way flow VRV/VRF Cassette Type Indoor ceiling mounted unit equipped with synthetic washable media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve, outer cabinet, drain pump, grill, necessary supports, vibration isolation, cord less remote control etc., suitable for operation on single phase 230 V $\pm$ 10%, 50Hz AC supply, complete, as required. The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of indoor unit will be at air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature. fresh air provision compatible for Remote Operation System .		
2.1	4.0 TR	Nos.	4
3	<b>INDOOR UNIT-HIGH WALL TYPE:</b>		



	Supply, installation, testing and commissioning of following minimum capacity VRV/VRF High wall type Indoor unit equipped with washable synthetic media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with DX copper coil, electronic expansion valve, outer cabinet, cordless remote control, drain pan, necessary accessories etc., suitable for operation on 230 V $\pm$ 10%, 50 Hz, single phase AC supply, complete as required. The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of indoor unit will be at air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature		
3.1	1.6 TR	Nos.	1
3.2	2.0 TR	Nos.	3
4	<b>AIR HANDLING UNITS</b>		
	Air Handling Units - Ceiling Suspended AHUs/Floor Mounted Ahu ,FINE Filter & PRE Filter etc		
	SITC of Air handling units complete with casing, sections & components as described below & in , vibration isolators all accessories and any other item required to make the system complete.		
	Orientation / Mounting: Ceiling Suspended/Floor Mounted		
	Casing: Double Skin (Thickness of Panels 25 mm)		
	Configuration: Draw Through for Cooling Coil & Heaters, Blow through for FINE Filter & PRE Filter		
	Location: Indoor		
	Units to be with Thermal Break Profile: yes		
	Filters: Pre - Filters (50 mm Thick)		
	Heating &Cooling Coil: Type - Dx Coil		
	Supply Air Fan - Type: Centrifugal, Blades: Forward Curved, Belt Driven, Fan Motor: Single Speed, Fan Motor Power Supply: 3 - Phase		
	Notes:		
	All Motors shall be of high efficiency with Efficiency Class IE2		
	All Dampers shall be of Extruded Aluminium Construction with Aerofoil Double Skin Blades.		
4.1	4800 CFM 65 MM S.P 4CC+2HC Row deep coil - 12.0TR	Nos.	20
5	Supply and installation AHU Kit having electronic expansion valve, controller and wire remote compatible with AHU to be installed under this work.	Nos.	20
6	Supply,Installation,testing and commissioning of corded /Cordless remote controls as per drawing and specifications	Nos.	8

7	Supply, Installation, Testing and Commissioning of Y/T/Multi Joints. Joints shall be of same Original Equipment Manufacturer (OEM) make as of ODU's and IDUs		
7.1	Indoor Units	Nos.	16
7.2	Outdoor Units Multi Joint	Nos.	8
8	Supply,Installation,testing and commissioning of Top of refrigerant gas	HP	342
9	<b>REFRIGERANT PIPE:</b>		
	Supply, Installation, testing and commissioning including vacuumization and Nitrogen testing of following nominal sizes of soft/hard drawn copper refrigerant piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastomeric nitrile rubber tubular sleeves sections of specified thickness as given below for Suction and Liquid lines, all accessories as per specifications etc. as required :		
9.1	6.4 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	40
9.2	9.5 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	180
9.3	12.7 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	160
9.4	15.86 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	258
9.5	19.1 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	100
9.6	22.2 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	110
9.7	28.58 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	120
9.8	34.9 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	81
9.9	38.1 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	96
9.10.	41.27 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	66
10	Supply & fixing of control cum transmission wiring of 2 C X 1.5 Sq. mm Copper conductor cable alongwith conduit for looping between indoor & outdoor VRF system.	Rmt	1200

11	Supplying & erecting XLPE(IS:7098)(I)-88 ISI unarmoured copper cable 1.1 KV grade to be erected as directed of following size. 3C x 2.5 sq.mm	Rmt	480
12	<b>Drain Piping :</b>		
	Supply,installation,testing and commissioning of of CPVC pipes having thermal stability for condensate water including wrapping of 9mm thick class 0 nitrile rubber insulation with suitable adhesive with all CPVC plain and brass threaded fittings including the pipes with clamps 1metre spacing.This including jointing of pipes with one step CPVC solvent cement and testing of joints complete as per drg and specifications		
12.1	50 mm dia.	Rmt	90
12.2	40 mm dia.	Rmt	120
12.3	32mm dia.	Rmt	280
12.4	25 mm dia.	Rmt	140
13	Supply,installation testing and commissioning of AIR CURTAIN of following size as per approved make .		
13.1	1200 mm long (High flow type)	Nos	1
13.2	1500 mm long (High flow type)	Nos	1
14	<b>Axial Fan for "Exhaust Air (Emergency)"</b>		
	Supply installation, testing and commissioning of single piece long casing (Motor should completely be accommodated inside the fan casing) Vane Axial Fan (multi piece casing are not acceptable) in GSS/MS with powder coated, Al impeller with adjustable blade angles (Manually Adjustable at Site), bird screen ,gravity louvers, fire retardent flexible connection, necessary nut bolts and directly coupled TEFC Sq.cage induction motor (IE2) H Class insulation for Smoke Exhaust) suitable for 415V±10%, 50 Hz. 3 phase electric supply complete with required hardware etc. All offered fans pitch angle shall be AMCA Certified & Listed on AMCA website (Interpolation of pitch angle shall not be acceptable) and Fan Efficiency Grade ( Min FEG 71, lesser is not acceptable).Thickness of the casing shall not be less than: For Dia (300 to 650) mm – 2mm, Dia (700 to 1140) mm – 3 mm, Dia (1200 to 1400) mm – 4mm & Dia 1600 – 5 mm. All fans after assembly shall be dynamically trim-balanced to ISO1940 and AMCA 204/3 - G2.5 quality grade. Fan Casing should be provided with Special Designed Integral Straightening Vanes (Vanesshould be integral part of casing, it should not be provided separately as an accessory) to reduced turbulence provide high performance & low noise level.		

	Fans for emergency application Tube axial are to be used. Sound level for emergency operation it should not exceed 88 Db(A)@ 3 meter (Room condition).Incase of not achieving sound , attenuator has to be added. Outlet velocity of the fans should not exceed 18 m/s for emergency application.		
	Smoke and heat exhaust fans should be tested and certified for 250 Deg C for 2 hour in accordance to standard 'BSEN12101-3:2015 from TUV SUD PSB Singapore or equivalent internationally recognized fire laboratory		
14.1	8000 cfm ,25 mm E.S.P,	Nos	10
15	<b>PRESSURIZATION</b>		
	Supply, installation, testing and commissioning of floor mounted / ceiling hang Axial flow type supply air fan for Lift well, lobby & stairwell pressurization of following capacity with powder coated GSS/M.S. casing and aluminium alloy impellers with high efficiency aero-foil sections, blades, the impeller directly driven by TEFC induction motor (efficiency 1) and 'F' class insulation suitable for 3 Phase, 50 Hz, 415±10% Volt, TP isolator with M.S enclosure box complete as required and as per specifications. Fans should be statically & dynamically balanced.The fan static pressure shall be 20 mm WC static. as per site condition		
15.1	10000 CFM (for staircase)	Nos	2
15.2	3500 CFM (for lift)	Nos	2
16	<b>Propellar Type Fan</b>		
	Supply,installation,testing and commissioning of Propeller type free discharge exhaust fans complete with motor , fan ,exhaust Louvers as per drawings and specifications.		
16.1	200 mm dia	Nos	4
17	<b>Inline Ducted Type Exhaust Fans</b>		
	Supply, Installation, testing and Commissioning of ceiling / floor mounted Rectangular box type/circular type Inline fan, for toilet exhaust , ot exhaust , lab exhaust constructed of GSS duly powder coated as per detailed specifications, complete with forward curved SISW fan, motor and drive suitable for 220 ± 10% volts, 1 phase, 50 Hz A.C supply, with necessary canvas connection etc complete in all respects.		
17.1	500 cfm at 10 mm static	Nos.	3
17.2	200 cfm at 10 mm static	Nos.	3
18	<b>DUCTING , GRILLS, DIFFUSER AND DIFFUSER (AC+VENTILATION)</b>		

	Rectangular ductwork		
	Supply, installation, balancing and commissioning of fabricated at site 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 complete as required.		
18.1	Thickness 0.63mm sheet	Sqm	650
18.2	Thickness 0.80mm sheet	Sqm	298
18.3	Thickness 1.00 mm sheet	Sqm	140
18.4	Thickness 1.25 mm sheet	Sqm	120
19	<b>Duct Insulation</b>		
	Supplying and fixing of following thickness duly laminated aluminum foil of mat finish closed cell Nitrile rubber (Class "O") insulation on existing duct after applying suitable adhesive for Nitrile rubber. The joints shall be sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required.		
19.1	19mm	Sqm	1100
20	<b>Duct Accoustic Lining :</b>		
	Supply and fixing of acoustic lining of supply air duct and plenum with 25 mm thick resin bonded glass wool having density of 32 kg/m <sup>3</sup> , with 25 mm X 25 mm GI section of 1.25 mm thick, at 600 mm centre to centre covered with Reinforced Plastic tissue paper and 0.5 mm thick perforated aluminum sheet fixed to inside surface of ducts with cadmium plated nuts, bolts, stick pins, CPRX compound etc. complete as required and as per specifications.	Sqm	120
	<b>Grilles/Diffusers/Louvers/VCDs/FDs :</b>		
21	Supplying & fixing of powder coated extruded aluminium Return Air Grills with louvers but without volume control dampers complete as required.	SQM.	8

22	Supplying & fixing of powder coated extruded aluminium Supply Air Grills with aluminium volume control dampers complete as per specifications and size & shape as per site requirement and approved design.	Sqm	8
23	Supply,installation,testing and commissioning of flexible duct connections constructed of fire resistance flexible double canvas sleeve as per the drawings and specifications.	Sqm	100
24	Supply, installation, testing and commissioning of Volume control duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc, as per specifications.	SQM.	2
25	Supply, installation, testing and commissioning of Fire damper.in supply air duct / main branch and return air path as and where required of required sizes i/c control wiring the damper shall be motorised and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored . the spring return action shall be closed in the event of fire signal complete as required and as per specifications.		
25.1	Fire damper	Sqm	3
25.2	Actuator	each	4
26	Supply, installation, testing and commissioning of anodised aluminium Fresh air/Exhaust air louvers with bird screen as per specifications and drawings.	Sqm	2
27	Supply, installation, testing and commissioning of main panel board outdoor IP 55 type cubical Fully automatic DOL starter suitable for operating 3.7 kw motors/fan capacity, complete with contactors,Timer, overload protection relay, current sensing type single phase preventer, ON indications, push buttons, auto / manual / off selector switch,other accessories. complete as required.	Nos	10
28	Supply, installation, testing and commissioning of main panel board outdoor IP 55 type cubical Fully automatic DOL starter suitable for operating 5.5 kw motors/fan capacity, complete with contactors,Timer, overload protection relay, current sensing type single phase preventer, ON indications, push buttons, auto / manual / off selector switch,other accessories. complete as required.	Nos	20
	<b>VRV Unit Panel-FOR OUTDOOR UNITS ,FANS &amp; AHUS</b>		
29	Supply,installation,testing and commissioning		
	alised floor/wall mounted type made of 2 mm thick		

	steel sheet duly painted complete as per the		
	specifications and drawing and as detailed below :		
	1 no.500 Amps TPN MCCB incomer with KWH		
	meter, phase indicating lamps with control fuse &		
	toggle switch, voltmeter and selector switch, ammeter		
	with CTs and selector switch		
	4 nos. of 40 Amps TPN MCB outgoing with star delta starter		
	4 nos. 63Amp FP MCB + 63Amp. 300MAmp. FP RCCB		
	6 nos. of 63 Amps TPN MCB outgoing with star delta starter		
	2 nos. of 100 Amps TPN MCB outgoing with star delta starter	Nos.	2
30	Supply,installation,testing and commissioning of Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Copper conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe at road crossing or floor of following size of cable.		
30.1	(a) 3 core 2.5Sq. mm	Rmt	60
30.2	(a-1) 3 core 4 Sq. mm	Rmt	120
30.3	(b) 3 core 6 Sq. mm	Rmt	210
30.4	(c) 3 core 10 Sq. mm	Rmt	299
30.5	(d) 3 core 16 Sq. mm	Rmt	40
30.6	(E) 3 core 25 Sq. mm	Rmt	30
31	Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables		
31.1	3 1/2 core 240 Sq. mm	Rmt	120
32	Providing and fixing approved make Perforated C type cable tray. Made from sheet steel. The cable tray should be single or double bended as per required and as per IS 2062/1079 and shall be coated with hot dip galvanizing as per IS 2629/4759. with max 17.5% perforation with coupler plate / Fish plate and GI hardware like nut - bolt and washers etc. erection with necessary support( included) as per Specification and as per instruction of engineer in charge..		
32.1	100 X 50 X 1.6 mm Thick	Rmt	80
32.2	150 X 50 X 1.6 mm Thick	Rmt	60
32.3	300 X 50 X 2.0 mm Thick	Rmt	40
33	Earthing :		
	Supply,installation,testing and commissioning of following double earthing continuity conductor of Cu from Panels to respective equipment on surface or recess as per drawings and specifications.		
33.1	25 mm X 5 mm strip	Rmt	260

33.2	8 SWG wire	Rmt	260



PROPOSED OF HORTICULTURE AND FORESTRY UNIVERSITY AT GORAKHPUR			
HVAC ESTIMATE -HEALTH CENTRE BLOCK			
Sr.No	Description		TOTAL QTY
		Unit	
1	<b>OUTDOOR UNITS:</b>		
	Supply Installation, Testing & Commissioning of modular type Variable Refrigerant Flow/Variable Refrigerant Volume air cooled Outdoor units suitable for cooling and heating, having all hermetically sealed inverter type Scroll Compressor(s), minimum two compressors for above 14 HP modules, microprocessor based Controller, top discharge type condensing unit(s), with R 410 A Refrigerant, vibration isolators, with suitable foundation etc. complete as required. The unit shall deliver the rated capacity at AHRI Conditions and work even at 50°C ambient temperature without tripping. The unit shall be suitable to work on 400V +/- 10%, 3 Phase, 50Hz AC power supply. The unit shall be filled with first charge of the refrigerant and ready for use as required. The COP at AHRI conditions shall not be less than 3.1 and IEER not less than 6.5. (Design should be got approval before execution from engineer in charge) .		
1.1	20 HP	Nos.	1
1.2	18 HP	Nos.	1
1.3	14 HP	Nos.	1
2	<b>INDOOR UNIT-4-WAY FLOW CASSETTE:</b>		
	Supply, installation, testing and commissioning of following minimum capacity 4-way flow VRV/VRF Cassette Type Indoor ceiling mounted unit equipped with synthetic washable media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with DX Copper coil, electronic expansion valve, outer cabinet, drain pump, grill, necessary supports, vibration isolation, cord less remote control etc., suitable for operation on single phase 230 V ± 10%, 50Hz AC supply, complete, as required. The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of indoor unit will be at air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature. fresh air provision compatible for Remote Operation System .		
2.1	2.8 TR	Nos.	8
2.2	3.2 TR	Nos.	1

3	<b>INDOOR UNIT-HIGH WALL TYPE:</b>		
	Supply, installation, testing and commissioning of following minimum capacity VRV/VRF High wall type Indoor unit equipped with washable synthetic media pre-filter, fan section with low noise fan/dynamically balanced blower, multispeed motor, coil section with DX copper coil, electronic expansion valve, outer cabinet, cordless remote control, drain pan, necessary accessories etc., suitable for operation on 230 V $\pm$ 10%, 50 Hz, single phase AC supply, complete as required. The unit shall have automatic force shut down provision in case of fire on receiving signal from BMS System. The cooling capacity of indoor unit will be at air inlet conditions of 27 Degree C DB and 19 Degree C WB temperature		
3.1	1.6 TR	Nos.	2
3.2	2.0 TR	Nos.	2
4	<b>Operation Theatre AHU DX Type :</b>		
	Supply, installation, testing and commissioning of sheet metal sectionalised construction draw thru type in double skin construction as per the specification DX type , Thermal break profile type AirHandling unit shall be filtersection with Pre+Fine filter(MERV-13) , With control, expansion kit ,cooling coils of copper tube and aluminium fins construction, squirrel cage induction EFF1 type motor, didw low noise fan, mixing box, vibration isolators, coil size shall beat face velocity of 500 feet per minute. Motor shall be suitable for 415V/3Ph/50 Hz AC electric supply. Air moving capacities shall be as detailed below as per drawing. HEPA filters shall be installed at terminals by OT vendor. (AHU controller and expansion Kit for Connecting the outdoor & AHU. (including Control Box & AHU expansion kit & Remote.)		
4.1	3000 cfm floor mounted AHU with 6 row coils 125 mm Static (for Operation Theatre)	Nos.	1
5	Supplying and fixing of thermostat , Humidistat & controller suitable for heating /cooling/both and to control RH and temperature simultaneously by controlling ahu on/off , heater on/off and humidifier on off . Make - Honeywell , Seimens, system sensor.	Nos.	1
6	Supply and installation AHU Kit having electronic expansion valve, controller and wire remote compatible with AHU to be installed under this work.	Nos.	1

7	Supply,Installation,testing and commissioning of corded /Cordless remote controls as per drawing and specifications	Nos.	20
8	Supply, Installation, Testing and Commissioning of Y/T/Multi Joints. Joints shall be of same Original Equipment Manufacturer (OEM) make as of ODU's and IDUs		
8.1	Indoor Units	Nos.	20
8.2	Outdoor Units Multi Joint	Nos.	1
9	Supply,Installation,testing and commissioning of Top of refrigerant gas	HP	50
10	<b>REFRIGERANT PIPE:</b>		
	Supply, Installation, testing and commissioning including vacuumization and Nitrogen testing of following nominal sizes of soft/hard drawn copper refrigerant piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastometric nitrile rubber tubular sleeves sections of specified thickness as given below for Suction and Liquid lines, all accessories as per specifications etc. as required :		
10.1	6.4 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	16
10.2	9.5 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	60
10.3	12.7 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	40
10.4	15.86 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	60
10.5	19.1 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	25
10.6	22.2 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	26
10.7	28.58 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	28
10.8	34.9 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	20
10.9	38.1 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	10
10.10.	41.27 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	16

11	Supply & fixing of control cum transmission wiring of 2 C X 1.5 Sq. mm Copper conductor cable alongwith conduite for looping between indoor & outdoor VRF system.	Rmt	300
12	Supplying & erecting XLPE(IS:7098)(I)-88 ISI unarmoured copper cable 1.1 KV grade to be erected as directed of following size. 3C x 2.5 sq.mm	Rmt	140
13	<b>Drain Piping :</b>		
	Supply,installation,testing and commissioning of of CPVC pipes having thermal stability for condensate water including wrapping of 9mm thick class 0 nitrile rubber insulation with suitable adhesive with all CPVC plain and brass threaded fittings including the pipes with clamps 1metre spacing.This including jointing of pipes with one step CPVC solvent cement and testing of joints complete as per drg and specifications		
13.1	40 mm dia.	Rmt	20
13.2	32mm dia.	Rmt	40
13.3	25 mm dia.	Rmt	40
14	Supply,installation testing and commissioning of AIR CURTAIN of following size as per approved make .		
14.1	1200 mm long (High flow type)	Nos	1
14.2	1500 mm long (High flow type)	Nos	1
15	<b>Propellar Type Fan</b>		
	Supply,installation,testing and commissioning of Propeller type free discharge exhaust fans complete with motor , fan ,exhaust Louvers as per drawings and specifications.		
15.1	200 mm dia	Nos	12
16	<b>Inline Ducted Type Exhaust Fans</b>		
	Supply, Installation, testing and Commissioning of ceiling / floor mounted Rectangular box type/circular type Inline fan, for toilet exhaust , ot exhaust , lab exhaust constructed of GSS duly powder coated as per detailed specifications, complete with forward curved SISW fan, motor and drive suitable for 220 ± 10% volts, 1 phase, 50 Hz A.C supply, with necessary canvas connection etc complete in all respects.		
16.1	500 cfm at 10 mm static	Nos.	2
16.2	200 cfm at 10 mm static	Nos.	2
17	<b>DUCTING , GRILLS, DIFFUSER AND DIFFUSER (AC+VENTILATION)</b>		

	Rectangular ductwork		
	Supply, installation, balancing and commissioning of fabricated at site 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 complete as required.		
17.1	Thickness 0.63mm sheet	Sqm	80
18	Supply, installation, testing and commissioning of Aluminum sheet metal rectangular ductwork complete with supports, elbows dampers/splitters/vanes/hangers/supports/rubber gaskets and ancillary items as per approved drawings and specifications of the following sheet thickness.:		
18.1	22 Gauge (Aluminium Duct)	Sqm	120
19	<b>Duct Insulation</b>		
	Supplying and fixing of following thickness duly laminated aluminum foil of mat finish closed cell Nitrile rubber (Class "O") insulation on existing duct after applying suitable adhesive for Nitrile rubber. The joints shall be sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required.		
19.1	19mm	Sqm	120
20	<b>Duct Acoustic Lining :</b>		
	Supply and fixing of acoustic lining of supply air duct and plenum with 25 mm thick resin bonded glass wool having density of 32 kg/m <sup>3</sup> , with 25 mm X 25 mm GI section of 1.25 mm thick, at 600 mm centre to centre covered with Reinforced Plastic tissue paper and 0.5 mm thick perforated aluminum sheet fixed to inside surface of ducts with cadmium plated nuts, bolts, stick pins, CPRX compound etc. complete as required and as per specifications.	Sqm	80
	<b>Grilles/Diffusers/Louvers/VCDs/FDs :</b>		
21	Supplying & fixing of powder coated extruded aluminium Return Air Grills with louvers but without volume control dampers complete as required.	SQM.	2

22	Supplying & fixing of powder coated extruded aluminium Supply Air Grills with aluminium volume control dampers complete as per specifications and size & shape as per site requirement and approved design.	Sqm	1
23	Supply,installation,testing and commissioning of flexible duct connections constructed of fire resistance flexible double canvas sleeve as per the drawings and specifications.	Sqm	80
24	Supply, installation, testing and commissioning of Volume control duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc, as per specifications.	SQM.	1
25	Supply, installation, testing and commissioning of Fire damper.in supply air duct / main branch and return air path as and where required of required sizes i/c control wiring the damper shall be motorised and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored . the spring return action shall be closed in the event of fire signal complete as required and as per specifications.		
25.1	Fire damper	Sqm	1
25.2	Actuator	each	2
26	Supply, installation, testing and commissioning of anodised aluminium Fresh air/Exhaust air louvers with bird screen as per specifications and drawings.	Sqm	1
27	Supply, installation, testing and commissioning of main panel board outdoor IP 55 type cubical Fully automatic DOL starter suitable for operating 5.5 kw motors/fan capacity, complete with contactors,Timer, overload protection relay, current sensing type single phase preventer, ON indications, push buttons, auto / manual / off selector switch,other accessories. complete as required.	Nos	1
	<b>VRV Unit Panel-FOR OUTDOOR UNITS ,FANS &amp; AHUS</b>		
28	Supply,installation,testing and commissioning		
	alised floor/wall mounted type made of 2 mm thick		
	steel sheet duly painted complete as per the		
	specifications and drawing and as detailed below :		
	1 no.320 Amps TPN MCCB incomer with KWH		
	meter, phase indicating lamps with control fuse &		
	toggle switch, voltmeter and selector switch, ammeter		

	with CTs and selector switch		
	2 nos. of 40 Amps TPN MCB outgoing with star delta starter		
	4 nos. 63Amp FP MCB + 63Amp. 300MAmp. FP RCCB		
	2 nos. of 63 Amps TPN MCB outgoing with star delta starter		
	2 nos. of 100 Amps TPN MCB outgoing with star delta starter	Nos.	1
29	Supply,installation,testing and commissioning of Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Copper conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe at road crossing or floor of following size of cable.		
29.1	(a) 3 core 2.5Sq. mm	Rmt	20
29.2	(a-1) 3 core 4 Sq. mm	Rmt	60
29.3	(b) 3 core 6 Sq. mm	Rmt	60
29.4	(c) 3 core 10 Sq. mm	Rmt	80
29.5	(d) 3 core 16 Sq. mm	Rmt	10
29.6	(E) 3 core 25 Sq. mm	Rmt	10
30	Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables		
30.1	3 1/2 core 240 Sq. mm	Rmt	60
31	Providing and fixing approved make Perforated C type cable tray. Made from sheet steel. The cable tray should be single or double bended as per required and as per IS 2062/1079 and shall be coated with hot dip galvanizing as per IS 2629/4759. with max 17.5% perforation with coupler plate / Fish plate and GI hardware like nut - bolt and washers etc. erection with necessary support( included) as per Specification and as per instruction of engineer in charge..		
31.1	100 X 50 X 1.6 mm Thick	Rmt	20
31.2	150 X 50 X 1.6 mm Thick	Rmt	20
31.3	300 X 50 X 2.0 mm Thick	Rmt	20
32	Earthing :		
	Supply,installation,testing and commissioning of following double earthing continuity conductor of Cu from Panels to respective equipment on surface or recess as per drawings and specifications.		
32.1	25 mm X 5 mm strip	Rmt	160
32.2	8 SWG wire	Rmt	160

## HVAC ESTIMATE -MULTIPURPOSE BLOCK

Sr.No.	Description		TOTAL QTY
		Unit	
1	<b>OUTDOOR UNITS:</b>		
	Supply Installation, Testing & Commissioning of modular type Variable Refrigerant Flow/Variable Refrigerant Volume air cooled Outdoor units suitable for cooling and heating, having all hermetically sealed inverter type Scroll Compressor(s), minimum two compressors for above 14 HP modules, microprocessor based Controller, top discharge type condensing unit(s), with R 410 A Refrigerant, vibration isolators, with suitable foundation etc. complete as required. The unit shall deliver the rated capacity at AHRI Conditions and work even at 50°C ambient temperature without tripping. The unit shall be suitable to work on 400V +/- 10%, 3 Phase, 50Hz AC power supply. The unit shall be filled with first charge of the refrigerant and ready for use as required. The COP at AHRI conditions shall not be less than 3.1 and IEER not less than 6.5. (Design should be got approval before execution from engineer in charge) .		
1.1	18 HP	Nos.	1
1.2	16 HP	Nos.	6
1.3	14 HP	Nos.	9
1.4	12 HP	Nos.	1
2	<b>AIR HANDLING UNITS</b>		
	Air Handling Units - Ceiling Suspended AHUs/Floor Mounted Ahu ,FINE Filter & PRE Filter etc		
	SITC of Air handling units complete with casing, sections & components as described below & in , vibration isolators all accessories and any other item required to make the system complete.		
	Orientation / Mounting: Ceiling Suspended/Floor Mounted		
	Casing: Double Skin (Thickness of Panels 25 mm)		
	Configuration: Draw Through for Cooling Coil & Heaters, Blow through for FINE Filter & PRE Filter		
	Location: Indoor		
	Units to be with Thermal Break Profile: yes		
	Filters: Pre - Filters (50 mm Thick)		
	Heating &Cooling Coil: Type - Dx Coil		



	Supply Air Fan - Type: Centrifugal, Blades: Forward Curved, Belt Driven, Fan Motor: Single Speed, Fan Motor Power Supply: 3 - Phase		
	Notes:		
	All Motors shall be of high efficiency with Efficiency Class IE2		
	All Dampers shall be of Extruded Aluminium Construction with Aerofoil Double Skin Blades.		
4.1	2000 CFM 65 MM S.P 4CC+2HC Row deep coil - 5.0TR	Nos.	3
4.2	3200 CFM 65 MM S.P 4CC+2HC Row deep coil - 8.0TR	Nos.	1
4.3	4000 CFM 65 MM S.P 4CC+2HC Row deep coil - 10.0TR	Nos.	4
4.4	14000 CFM 65 MM S.P 4CC+2HC Row deep coil - 35.0TR	Nos.	4
5	Supply and installation AHU Kit having electronic expansion valve, controller and wire remote compatible with AHU to be installed under this work.	Nos.	12
6	Supply,Installation,testing and commissioning of corded /Cordless remote controls as per drawing and specifications	Nos.	12
7	Supply, Installation, Testing and Commissioning of Y/T/Multi Joints. Joints shall be of same Original Equipment Manufacturer (OEM) make as of ODUs and IDUs		
7.1	Indoor Units	Nos.	4
7.2	Outdoor Units Multi Joint	Nos.	6
8	Supply,Installation,testing and commissioning of Top of refrigerant gas	HP	252
9	<b>REFRIGERANT PIPE:</b>		
	Supply, Installation, testing and commissioning including vaccumiazation and Nitrogen testing of following nominal sizes of soft/hard drawn copper refrigerant piping for VRV/VRF system, complete with fittings, with suitable adjustable ring type hanger supports, jointing/brazing including accessories, insulated with XPLE Class-O tubular insulation/with Class-O closed cell elastometric nitrile rubber tubular sleeves sections of specified thickness as given below for Suction and Liquid lines, all accessories as per specifications etc. as required :		
9.1	6.4 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	12
9.2	9.5 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	21
9.3	12.7 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	24

9.4	15.86 mm dia (OD) (Soft drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	70
9.5	19.1 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	44
9.6	22.2 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	55
9.7	28.58 mm dia (OD) (Hard drawn) with tube thickness 1.2 mm with 19 mm thick insulation	Rmt	64
9.8	34.9 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	20
9.9	38.1 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	62
9.10.	41.27 mm dia (OD) (Hard drawn) with tube thickness 1.62 mm with 19 mm thick insulation	Rmt	80
10	Supply & fixing of control cum transmission wiring of 2 C X 1.5 Sq. mm Copper conductor cable alongwith conduit for looping between indoor & outdoor VRF system.	Rmt	450
11	Supplying & erecting XLPE(IS:7098)(I)-88 ISI unarmoured copper cable 1.1 KV grade to be erected as directed of following size. 3C x 2.5 sq.mm	Rmt	140
12	<b>Drain Piping :</b>		
	Supply,installation,testing and commissioning of of CPVC pipes having thermal stability for condensate water including wrapping of 9mm thick class 0 nitrile rubber insulation with suitable adhesive with all CPVC plain and brass threaded fittings including the pipes with clamps 1metre spacing.This including jointing of pipes with one step CPVC solvent cement and testing of joints complete as per drg and specifications		
12.1	50 mm dia.	Rmt	120
12.2	40 mm dia.	Rmt	100
12.3	32mm dia.	Rmt	40
12.4	25 mm dia.	Rmt	20
13	Supply,installation testing and commissioning of AIR CURTAIN of following size as per approved make .		
13.1	1200 mm long (High flow type)	Nos	1
13.2	1500 mm long (High flow type)	Nos	1
14	<b>Axial Fan for "Exhaust Air (Emergency)"</b>		

	Supply installation, testing and commissioning of single piece long casing (Motor should completely be accommodated inside the fan casing) Vane Axial Fan (multi piece casing are not acceptable) in GSS/MS with powder coated, Al impeller with adjustable blade angles (Manually Adjustable at Site), bird screen ,gravity louvers, fire retardent flexible connection, necessary nut bolts and directly coupled TEFC Sq.cage induction motor (IE2) H Class insulation for Smoke Exhaust) suitable for 415V±10%, 50 Hz. 3 phase electric supply complete with required hardware etc. All offered fans pitch angle shall be AMCA Certified & Listed on AMCA website (Interpolation of pitch angle shall not be acceptable) and Fan Efficiency Grade ( Min FEG 71, lesser is not acceptable).Thickness of the casing shall not be less than: For Dia (300 to 650) mm – 2mm, Dia (700 to 1140) mm – 3 mm, Dia (1200 to 1400) mm – 4mm & Dia 1600 – 5 mm. All fans after assembly shall be dynamically trim-balanced to ISO1940 and AMCA 204/3 - G2.5 quality grade. Fan Casing should be provided with Special Designed Integral Straightening Vanes (Vanes should be integral part of casing, it should not be provided separately as an accessory) to reduced turbulence provide high performance & low noise level.		
	Fans for emergency application Tube axial are to be used. Sound level for emergency operation it should not exceed 88 Db(A)@ 3 meter (Room condition).Incase of not achieving sound , attenuator has to be added. Outlet velocity of the fans should not exceed 18 m/s for emergency application.		
	Smoke and heat exhaust fans should be tested and certified for 250 Deg C for 2 hour in accordance to standard 'BSEN12101-3:2015 from TUV SUD PSB Singapore or equivalent internationally recognized fire laboratory		
14.1	14000 cfm ,25 mm E.S.P,	Nos	4
15	<b>Propellar Type Fan</b>		
	Supply,installation,testing and commissioning of Propeller type free discharge exhaust fans complete with motor , fan ,exhaust Louvers as per drawings and specifications.		
15.1	200 mm dia	Nos	6
16	Inline Ducted Type Exhaust Fans		

	Supply, Installation, testing and Commissioning of ceiling / floor mounted Rectangular box type/circular type Inline fan, for toilet exhaust , ot exhaust , lab exhaust constructed of GSS duly powder coated as per detailed specifications, complete with forward curved SISW fan, motor and drive suitable for 220 ± 10% volts, 1 phase, 50 Hz A.C supply, with necessary canvas connection etc complete in all respects.		
16.1	300 cfm at 10 mm static	Nos.	4
17	<b>DUCTING , GRILLS, DIFFUSER AND DIFFUSER (AC+VENTILATION)</b>		
	Rectangular ductwork		
	Supply, installation, balancing and commissioning of fabricated at site 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 complete as required.		
17.1	Thickness 0.63mm sheet	Sqm	1250
17.2	Thickness 0.80mm sheet	Sqm	850
17.3	Thickness 1.00 mm sheet	Sqm	280
17.4	Thickness 1.25 mm sheet	Sqm	120
18	<b>Duct Insulation</b>		
	Supplying and fixing of following thickness duly laminated aluminum foil of mat finish closed cell Nitrile rubber (Class "O") insulation on existing duct after applying suitable adhesive for Nitrile rubber. The joints shall be sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required.		
18.1	19mm	Sqm	2380
19	<b>Duct Accoustic Lining :</b>		
	Supply and fixing of acoustic lining of supply air duct and plenum with 25 mm thick resin bonded glass wool having density of 32 kg/m <sup>3</sup> , with 25 mm X 25 mm GI section of 1.25 mm thick, at 600 mm centre to centre covered with Reinforced Plastic tissue paper and 0.5 mm thick perforated aluminum sheet fixed to inside surface of ducts with cadmium plated nuts, bolts, stick pins, CPRX compound etc. complete as required and as per specifications.	Sqm	120
	<b>Grilles/Diffusers/Louvers/VCDs/FDs :</b>		

20	Supplying & fixing of powder coated extruded aluminium Return Air Grills with louvers but without volume control dampers complete as required.	SQM.	20
21	Supplying & fixing of powder coated extruded aluminium Supply Air Grills with aluminium volume control dampers complete as per specifications and size & shape as per site requirement and approved design.	Sqm	20
22	Supply, installation, testing and commissioning of flexible duct connections constructed of fire resistance flexible double canvas sleeve as per the drawings and specifications.	Sqm	6
23	Supply, installation, testing and commissioning of Volume control duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc, as per specifications.	SQM.	4
24	Supply, installation, testing and commissioning of Fire damper.in supply air duct / main branch and return air path as and where required of required sizes i/c control wiring the damper shall be motorised and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored . the spring return action shall be closed in the event of fire signal complete as required and as per specifications.		
24.1	Fire damper	Sqm	4
24.2	Actuator	each	10
25	Supply, installation, testing and commissioning of anodised aluminium Fresh air/Exhaust air louvers with bird screen as per specifications and drawings.	Sqm	3
26	Supply, installation, testing and commissioning of main panel board outdoor IP 55 type cubical Fully automatic DOL starter suitable for operating 3.7 kw motors/fan capacity, complete with contactors,Timer, overload protection relay, current sensing type single phase preventer, ON indications, push buttons, auto / manual / off selector switch,other accessories. complete as required.	Nos	8
27	Supply, installation, testing and commissioning of main panel board outdoor IP 55 type cubical Fully automatic DOL starter suitable for operating 5.5 kw motors/fan capacity, complete with contactors,Timer, overload protection relay, current sensing type single phase preventer, ON indications, push buttons, auto / manual / off selector switch,other accessories. complete as required.	Nos	4

	<b>VRV Unit Panel-FOR OUTDOOR UNITS ,FANS &amp; AHUS</b>		
28	Supply,installation,testing and commissioning		
	alised floor/wall mounted type made of 2 mm thick		
	steel sheet duly painted complete as per the		
	specifications and drawing and as detailed below :		
	1 no.300 Amps TPN MCCB incomer with KWH		
	meter, phase indicating lamps with control fuse &		
	toggle switch, voltmeter and selector switch, ammeter		
	with CTs and selector switch		
	4 nos. 63Amp FP MCB + 63Amp. 300MAmp. FP RCCB		
	4 nos. of 63 Amps TPN MCB outgoing with star delta starter		
	2 nos. of 100 Amps TPN MCB outgoing with star delta starter	Nos.	2
29	Supply,installation,testing and commissioning of Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Copper conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe at road crossing or floor of following size of cable.		
29.1	(a) 3 core 2.5Sq. mm	Rmt	40
29.2	(a-1) 3 core 4 Sq. mm	Rmt	100
29.3	(b) 3 core 6 Sq. mm	Rmt	120
29.4	(c) 3 core 10 Sq. mm	Rmt	50
29.5	(d) 3 core 16 Sq. mm	Rmt	10
29.6	(E) 3 core 25 Sq. mm	Rmt	10
30	Providing and erecting XLPE(IS:7098)(I)-88 ISI armoured cable multistrand Aluminium conductor for 1.1 KV. to be laid on wall with necessary clamps or in existing trench / pipe of following size of cables		
30.1	3 1/2 core 240 Sq. mm	Rmt	180
31	Providing and fixing approved make Perforated C type cable tray. Made from sheet steel. The cable tray should be single or double bended as per required and as per IS 2062/1079 and shall be coated with hot dip galvanizing as per IS 2629/4759. with max 17.5% perforation with coupler plate / Fish plate and GI hardware like nut - bolt and washers etc. erection with necessary support( included) as per Specification and as per instruction of engineer in charge..		
31.1	100 X 50 X 1.6 mm Thick	Rmt	80
31.2	150 X 50 X 1.6 mm Thick	Rmt	40
31.3	300 X 50 X 2.0 mm Thick	Rmt	20
32	Earthing :		

	Supply,installation,testing and commissioning of following double earthing continuity conductor of Cu from Panels to respective equipment on surface or recess as per drawings and specifications.		
32.1	25 mm X 5 mm strip	Rmt	280
32.2	8 SWG wire	Rmt	280

## HVAC ESTIMATE -GUEST HOUSE

Sr.No.	Description		TOTAL QTY
		Unit	
1	<b>HI - WALL SPLIT SYSTEMS :</b>		
	Supply , Installation, Testing and Commissioning of Air Cooled Hi Wall split type Air conditioners complete with Indoor unit(IDU), Out door unit (ODU), surface / concealed copper Refrigerant piping with insulation (closed cell elastomeric nitrile rubber tubular pipe section) upto 3 Mtr (IDU to ODU), copper power cable upto 3.5 Mtr (IDU to ODU) i/c drain pipe R-32/R-410/ R- 407 Green Refrigerant, wireless Remote control, suitable for working between 180-260V with low & high voltage cutoff and 50 hz ,1 phase AC supply capable of performing cooling, dehumidification, air circulation of following capacity with Scroll / rotary compressor.Including with Stablizer.The system shall be able to deliver 100% of the rated capacity upto 42 Degree Celsius. Min 5 year Original Equipment Manufacturer (OEM) warranty both compressor and Printed Circuit Board (PCB). Must comply : Electrical cable IS 694 or IS 9968 temperature sensing control IS /International Electro technical Commission (IEC) 60730, hermetic compressor IS 10617, heat exchanger IS 11329, capacitor IS 2993 and motor IS 12615. Complete as per CPWD specification and IS : 1391 Part II 2023. The system shall be able to operate up to 50 0C (out door ambient temperature)		
1.1	1.0 TR with 3 Star BEE Rating	Nos.	2
1.2	1.5 TR with 3 Star BEE Rating	Nos.	2
1.3	2.0 TR with 3 Star BEE Rating	Nos.	9
	<b>Total</b>		
	<b>Total Without GST</b>		
	<b>Grand Total Without GST (DSR+MARKET BASED ITEM)</b>		
	<b>Grand Total Without GST (DSR+MARKET BASED ITEM) In Lac</b>		



**Name Of Work -Admin Block Internal Electrification Work**

Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	854.00	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	32.00	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	7,950.00	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	7,436.00	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	4,840.00	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	3,965.00	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	1,430.00	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	13,365.00	Meter
6	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.	765.00	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	30,285.00	Meter

8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	297.00	Each
b	TV socket outlet	17.00	Each
c	RJ45 socket cat 6 with shutter	359.00	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	673.00	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	407.00	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	318.00	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	181.00	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	82.00	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	16,155.00	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	651.00	Each

18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	350.00	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	-	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	4.00	Each
b	6 way (4 + 18), Double door	32.00	Each
c	8 way (4 + 24), Double door	50.00	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	1,792.00	Each
b	Double pole	4.00	Each
c	Three Phase & Neutral	61.00	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	183.00	Each
	63Amp.	66.00	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	4.00	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	22.00	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	100.00	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	100.00	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	50.00	Each
26	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.	10.00	Each
27	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.	2.00	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	300.00	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.00	Meter
30	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.	100.00	Meter
31	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.	50.00	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100.00	Meter
33	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.	50.00	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6 Watt to 9 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	77.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10 Watt to 15 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	369.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36 Watt to 46 Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	82.00	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED12S 6500 PSU GR or equivalent.	61.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	57.00	Each

37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	390.00	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	28.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	74.00	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	10.00	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm, service value &gt; 6.0 CM/Min/Watt, air delivery 210 CM/Min</p>	292.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	292.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	7.00	Each
	<b>Lightning Arrestor Work</b>		
44	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)		Each
45	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.		Metre
46	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.		Each
47	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.		Each
48	Test Link :Supply and installation of test link in weather proof IP 65 BOX.		Each
49	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstruction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.		Each

50	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b>  Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C,  Relative humidity 0 to 95%, Online double conversion true sine wave  Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		



	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	40KVA (Each Power module shall be < 10 KVA)	3.00	Set
<b>51</b>	<b>MAIN L.T PANEL</b>	1.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet. (65 KA Ics).		
	<b>INCOMING</b>		
	1 Nos. 1600 Amp FP EDO ACB 50KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 2000 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		

	4 Nos. 400 Amp FP EDO ACB 36 KA, having specs as per attached annexure having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB HVAC + Spare		
	6 Nos. 200 Amp FP MCCB 36 KA, having specs as per attached annexure having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB L+P + Spare		
	3 Nos. 160 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter Lift Panel + Spare		
	4 Nos. 125 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter UPS+Spare		
	4 Nos. 63 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter		
	Short Circuit Breaking capacity should not less than 50KA.		
	<b>RELAYS AS PER SLD</b>		
<b>52</b>	<b>Floor L+P Panel</b>	<b>4.00</b>	<b>Set</b>
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		

	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet. (65 K A Ics)		
	<b>INCOMING</b>		
	1 Nos. 200 Amp MCCB 36KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 250 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	10 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB LDB +Spare		
	8 Nos. 63 Amp FP MCB On, Off, Trip Status Indication with control MCB LDB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
<b>53</b>	<b>Lift Panel</b>	1.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet. (65 KA Ics).		
	<b>INCOMING</b>		
	1 Nos. 160 Amp MCCB 36KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 200 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	7 Nos. 63 Amp FP MCB On, Off, Trip Status Indication with control MCB LDB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		

	<b>RELAYS AS PER SLD</b>		
<b>54</b>	<b>UPS Output Panel</b>	1.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meter.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet. (65 KA Ics)		
	<b>INCOMING</b>		
	3 Nos. 125 Amp MCCB 36KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slective Interlocking function Multifunction Meter		
	<b>BUSCOUPLER</b>		
	2 Nos. 125 Amp FP MCCB		
	<b>BUSBARS</b>		
	3 Nos. 160 Amp FP busbars of aluminium alloy as per SLD.		

	<b>OUTGOING</b>		
	20 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB UPS DB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
55	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core	1,200.00	Meter
b	16 sq. mm 4 core	300.00	Meter
c	25 sq. mm 3-1/2 core	100.00	Meter
d	70 sq. mm 3-1/2 core	1,200.00	Meter
e	95 sq. mm 3-1/2 core	130.00	Meter
f	150 sq. mm 3-1/2 core	2,000.00	Meter
g	240 sq. mm 3-1/2 core	1,500.00	Meter
h	300 sq. mm 3-1/2 core	2,000.00	Meter
56	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core	-	Meter
b	35 sq. mm 3-1/2 core	200.00	Meter
57	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core	50.00	Each
b	10 sq. mm 4 core	50.00	Each
c	16 sq. mm 4 core	10.00	Each
d	25 sq. mm 3.5 core	2.00	Each
e	35 sq. mm 3.5 core	12.00	Each
g	70 sq. mm 3-1/2 core	20.00	Each
h	95 sq. mm 3-1/2 core	2.00	Each
j	150 sq. mm 3-1/2 core	8.00	Each
k	240 sq. mm 3-1/2 core	10.00	Each
l	300 sq. mm 3-1/2 core	10.00	Each

58	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
59	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	200.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
60	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	50.00	Meter
61	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		
a	120mm Dia	50.00	Meter
b	200mm Dia	40.00	Meter



Name Of Work -Admin Block Fire Detection Alarm & PA System Work			
Sr.No.	Particulars	Qty	Unit
	<b><u>Fire Alarm System :</u></b>		
1	Supplying, installation, testing and commissioning of micro processor based intelligent addressable main fire alarm panel, central processing unit with the following loop modules and capable of supporting not less than 240 devices (including detectors) and minimum 120 detectors per loop and loop length up to 2 km, network communication card, minimum 320 character graphics/ LCD display with touch screen or other keypad and minimum 4000 events history log in the non volatile memory (EPROM), power supply unit (230 $\pm$ 5% V, 50 hz), 48 hrs back-up with 24 volt sealed maintenance free batteries with automatic charger. The panel shall have facility to connect printer to printout log and facility to have seamless integration with analog/digital voice evacuation system (which is part of the schedule of work under SH: PA System) and shall be complete with all accessories . The panel shall be compatible for IBMS system with open protocol BACnet/ Modbus over IP complete as per specifications.		
A	Two Loop	1	NOS
2	Supplying, installation, testing & commissioning of central graphical fire alarm management system to centrally monitor and operate the fire alarm system complete as required.	1	NOS
3	Supplying, installation, testing & commissioning of repeater panel with 320 character/ Touch screen LCD display with inbuilt reset, acknowledge and silence switches complete as required.	1	NOS
4	Supplying, installation, testing & commissioning of intelligent analog addressable photothermal (Smoke) detector complete with mounting base complete as required.	480	NOS
5	Supplying, installation, testing & commissioning of response indicator on surface/recessed MS Box having two LED, metallic cover complete with all connections etc as required.	240	NOS
6	Supplying, installation, testing & commissioning of fault isolator complete with base as required.	24	NOS

7	Supplying, installation, testing & commissioning of intelligent addressable thermal detector with rate of rise cum fixed temperature thermistor complete with base as required.	10	NOS
8	Supplying, installation, testing & commissioning of addressable fire control module complete as required.	10	NOS
9	Supplying, installation, testing & commissioning of addressable phone control module complete as required.	12	NOS
10	Supplying, installation, testing & commissioning of addressable beam detector with short circuit isolator (inbuilt or separate) complete with emitter and receiver including connections with remote test features etc complete as required.	1	NOS
11	Supplying, installation, testing & commissioning of addressable manual call point complete as required.	20	NOS
12	Supplying, installation, testing & commissioning of addressable horn cum strobe complete as required.	20	NOS
13	Supplying, installation, testing & commissioning of fire fighter telephone handset complete as required.	2	NOS
14	Supplying, installation, testing & commissioning of fire fighter phone jack complete as required.	20	NOS
15	Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required.	4000	metre
	<b>Public Addressable System :</b>		
16	Supplying, installation, testing & commissioning of 6 zone, voice alarm controller with USB, MP3 player (including 6 zone button paging station) with seamless integration facility with main fire alarm panel for voice evacuation complete as required.	1	each
17	Supplying, installation, testing & commissioning of 1.5/3/6W ceiling speaker complete as required.	120	NOS

18	Supplying, installation, testing & commissioning of 1.5/3/6W metal box ceiling/wall speakers complete as required.	12	NOS
19	Supplying, installation, testing & commissioning of digital audio amplifier 500 Watt, 25V rms operating at 240 Volt AC Supply complete as required.	2	each
20	Supplying, installation, testing & commissioning of Voice command keypad 6 zone, with microphone assembly complete as required.	1	each
21	Supplying and drawing of cable Fire Retardant PVC insulated copper conductor cable in the existing surface / recessed steel conduit of following pairs, cores and size including connections and interconnections etc. as required.		
	17.5.3.1 speaker cable Single pair, 2-core, 1.5 sqmm	2500	metre
22	Same as in item 148, but 25mm dia PVC conduit.	2500	Meter

Name Of Work -Admin Block CCTV Surveillance System Work			
Sr.No.	Particulars	Qty	Unit
1	<b>2 MP IP IR Dome Camera</b> Supplying Installation Testing and Commissioning of 2 MP IP IR Dome Camera having following specifications, type of lens and features etc :- 1) Signal System: PAL/NTSC, Signal to Noise Ratio: >50 dB, Camera should display Camera title, Date & Time in live & recorded video 2)Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition(Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day & Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking 3) Compression (Minimum):- Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723 4) Wide Dynamic Range:- WDR (120db or more) 5) Digital Noise Reduction:- DNR (3D) On/Off 6) Video Streaming & Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920×1080)@25/30 fps,Sub streams minimum: 720P@25/30 fps). 7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection 8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.		

Sr.No.	Particulars	Qty	Unit
	<p>9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card.</p> <p>10) Recording Management: Format SD, overwrite, storage management, video to NAS device</p> <p>11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection</p> <p>12) Network Protocol: SFTP, IPv6, IPv4, DNS, RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast</p>		
	<p>13) System Capability: ONVIF, Camera shall support open source VMS</p> <p>14) Ethernet: 1 RJ 45 10/100 Ethernet port</p> <p>15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement.</p> <p>16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source.</p> <p>17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE</p> <p>18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body</p> <p>19) Operating Condition:- Ambient Temperature:- (-) 05°C to 50°C, humidity 95% (max) (non-condensing)</p> <p>20) IR life: 40000 hours or higher</p> <p>21) Video Bit rate: 32 KBPS - 8 MBPS or better</p> <p>22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS</p>		
	2MP (@ 25/30fps@1080P (1920×1080)) IP IR Dome Camera with 2.8/ 3.6mm fixed lens	34.00	Each
2	2 MP IP IR Outdoor Bullet Camera		

Sr.No.	Particulars	Qty	Unit
	<p>Supplying Installation Testing and Commissioning of 2MP Fixed Lens IP IR Outdoor Bullet Camera having following specifications and features etc :-</p> <p>1) Signal System: PAL/NTSC, Signal to Noise Ratio: &gt; 50 dB, Camera should display Camera title, Date &amp; Time in live &amp; recorded video</p> <p>2) Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition (Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day &amp; Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt Smart IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking</p>		
	<p>3) Compression (Minimum):- Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723</p> <p>4) Wide Dynamic Range:- WDR (120db or more)</p> <p>5) Digital Noise Reduction:- DNR (3D) On/Off</p> <p>6) Video Streaming &amp; Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920 × 1080)@25/30 fps Sub streams minimum: 720P@25/30 fps).</p> <p>7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection</p> <p>8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.</p> <p>9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card</p>		

Sr.No.	Particulars	Qty	Unit
	10) Recording Management: Format SD, overwrite, storage management, video to NAS device, 11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12)Network Protocol: SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 13) System Capability: ONVIF, Camera shall support open source VMS		
	14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement. 16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS		
	2MP @ 25/30fps@1080P (1920×1080) Outdoor Bullet Camera with 2.8/ 3.6mm fixed lens	10.00	Each
3	Supplying Installation Testing and Commissioning of following Channel Network Video Recorder (NVR) with camera licenses to record for all channels having specifications and features etc as mentioned below : 1) Network Video Recorder Embedded/ Installed OS (Linux) along with Camera Licenses to record per NVR and to provide a live view, storage and simultaneously Multi-channel playback of all IP camera or more and must be ONVIF with minimum support of 384 Mbps incoming Bandwidth.		

Sr.No.	Particulars	Qty	Unit
	<p>2) NVR should support video compressions : H.265 or better, H.264, MJPEG.</p> <p>3) Must support 1 channel RCA Input, 2 channel RCA Output for Two-way Talk with G.711U/A, G.711u, PCM, G726 audio compressions.</p> <p>4) Intelligent auto power on when power resumes after power outage.</p> <p>5) Storage: It should support minimum 8 SATA Slots with 20TB capacity/ Slot and RAID support of RAID 0/1/5/6/10.</p> <p>6) Connectivity Interface : 2 Nos. x 10/100/1000 Mbps Ethernet Ports, 1x RS485, 1x RS232, 1x eSATA Port</p> <p>7) Backup Interface : Its should have 4 Nosx USB port (2x USB3.0, 2xUSB2.0)</p> <p>8) Video Output Ports: 2x HDMI and 2 VGA</p>		
	<p>9) Alarm Ports: It should have 16/8 Ch In/ Out ports to connect various type of external sensors and output devices like hooter/ Siren etc.</p> <p>10) Email &amp; SMS Alert options: Option for SMS/ Email Alerts to minimum 5 designated mobile number for power failure, HDD failure, vandalism, tampering, network disconnection and panic</p> <p>11) Web &amp; Mobile Application: Web, Mobile app ( For iPhone, iPad, Android Phone) for alerts and viewing.</p> <p>12) Protocols: HTTP, HTTPS, TCP/IP, IPv4/IPv6, UDP, DHCP, DNS, SMTP, UPnP, IP Filter, PPPoE, FTP, DDNS, Alarm Server, IP Search, Multicast, Auto Registration, ONVIF (Profile T, Profile S, Profile G), CGI, SDK and OEM Cloud for remote monitoring without any public IP need.</p>		
	<p>13) Standards: CE, FCC, RoHS, BIS Certified</p> <p>14) Power Supply : Should support AC100-240V, 50/60Hz Power supply.</p> <p>15) Operating Condition : -5°C to 50°C, humidity 90% (max) (non-condensing)</p> <p>16) The VMS application shall support all the features &amp; functionalities of the offered cameras.</p> <p>17) VMS should consist Licenses for all channels to record Cameras with General, motion detection, intelligent, alarm and POS recording modes. VMS should be provided with Camera Licenses , with no dependency of VMS licenses by binding with the MAC address of the cameras to achieve the functionality.</p>		



Sr.No.	Particulars	Qty	Unit
	<p>18) The NVR OEM shall be responsible for providing a mobile application compatible with both Android and iOS devices, enabling remote monitoring and playback of cameras/NVR footage.</p> <p>19) The OEM must provide its own DDNS server hosted in India, eliminating the need for a public IP address for remote monitoring over the Internet.</p> <p>20) Must support Continuous, Alarm, Motion, Instant, Panic Recording Mode</p> <p>21) It should support Resolution: 32MP; 24MP; 16MP; 12MP; 8MP; 5MP; 4MP; 1080p; 720p; D1; CIF; OCIF</p>		
	<p>22) When alarm recording is enabled and an event occurs, you can click the alarm icon on monitoring page to view the alert details. The snapshot function is supported on monitoring and playback page</p> <p>23) The Network Video Recorder (NVR) shall be configured to send email whenever a system message is created or an alarm event occurs. The email server shall be a valid SMTP server. Each recipient email address shall be configured to receive any combination of critical, warning, or informational messages or alarm notifications. When an alarm occurs, the email message includes the NVR name, time of alarm and a list of camera that is configured to record upon alarm</p>		
	<p>24) It should have Web and GUI interface.</p> <p>25) Built-In Artificial Intelligence: NVR should have built-in AI :-</p> <ul style="list-style-type: none"> <li>- 2 Channel face detection and recognition, - Minimum 4 Channel perimeter protection, - Minimum 8 Channel Smart Motion Detection</li> </ul> <p>26) Face Recognition Database Capacity: It should support total Blacklist and Whitelist capacity of Minimum 20,000 Faces or more with Face Detection speed of 12 face images/sec and facility to add Name, gender, birthday, address, credential type, credential No., countries &amp; regions and state to each face image.</p>		

Sr.No.	Particulars	Qty	Unit
	<p>27) Face &amp; Human Attributes Search: Search Pictures/ Video by Gender, age group, glasses, expressions, face mask, beard, Top color, top type, hat, bag, age, gender and umbrella.</p> <p>28) ANPR Capability: It should support ANPR Camera with License plate, plate color, vehicle body, vehicle model, vehicle logo, calling, seatbelt, vehicle registration location etc vehicle attributes.</p> <p>29) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan, cybersecurity exception</p>		
	<p>30) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email.</p> <p>31) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Exception Detection, People Staying Detection, Violence Detection.</p> <p>32) Smart playback function: Should support smart search for the selected area in the video and smart playback to improve the playback efficiency</p> <p>33) VCA (Video Content Analytic): Should support multiple video contented analytics based on camera analytics</p>		
	34) Analytics by NVR: Perimeter protection and face recognition		
	64 Channel Network Video Recorder (NVR) having display split :- Main screen: 1/4/8/9/16/25/36/64, 2nd screen: 1/4/8/9/16	1.00	Each
	<b>Hard Disk Drive</b>		
4	<p>Supplying, Installation, Testing and Commissioning following capacity Serveillance grade Hard Disk with upto 256MB/s Transfer Rate, 256 MB Cache, 7200 RPM Disk Speed, 3.5 inch form factor, SATA Interface, BSMI, ICES-003/NNB-003, CE, FCC, KC, Maghreb, RCM, UKCA, VCCI, CB-Scheme, TUV, UL Certifications.</p>		

Sr.No.	Particulars	Qty	Unit
	10TB (Terabytes)	2.00	Each
5	S/I/T/C of 24 port 10/100/1000 Base T Standalone Gigabit Switch Make Dlink/Amp with active and passive components, punching, complete in all respect	5.00	Nos
6	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	5.00	Each
7	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		
	Copper Patch Cords of length 3m (10ft)	92.00	Each
8	Supplying, Installation, Testing and commissioning of CAT6 Copper Information Outlet (IO) with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	54.00	Each
9	Supplying, drawing, Installation, Testing and commissioning of CAT6 UTP LSZH 23AWG Twisted Pair Cable in existing conduit/ on surface, Category 6 Unshielded Twisted Pair, 4 pair should be complied as per UL/ETL verification program for compliance with ANSI/TIA-568.2-D standard. Outer diameter should be in the range of 6.1mm nominal with Operating Temperature Range : -5° to +60°C, Bending Radius : < 4 X Cable Diameter at -5°C ± 1°C and Pulling Force : 11.5Kg etc. complete as required.		
	1 Run of cable	1,620.00	Meter
10	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required. 25mm Dia	1,620.00	Meter

Sr.No.	Particulars	Qty	Unit
11	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color- RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number. etc. complete as required.		
	6U Rack	4.00	Each
12	Supplying and fixing 42U Rack with 6 inch Castor wheels and front brake Floor Standing Rack with Main Frame Pillar of 1.6mm CRCA Sheet with removable side panels, L- Shape adjustable Vertical Mounting Rail of 2mm with 'U'Marking completely knocked-down condition (CKD) Shape, fitted with 4 number cooling fans, minimum 8nos two line cable entry/exit provision at top and bottom with rubber protection, Front door 5mm Toughened Glass with MS frame or MS perforated with lock, Rear MS vented or perforated door, Powder coated Color- RAL- 7035 or black, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number etc. complete as required	1.00	Each
	<b>PC System</b>		
13	Supplying Installation Testing Commissioning of Client PC System comprising of PC Hardware with minimum 11th Gen Intel® I7 processor CPU E5-2640 x64 (or better), compatible with dual and quad core processors minimum 3.1 Ghz and 8GB or higher RAM, Hard Drive Space of 256 GB SSD or better, Video card and monitor capable of 1920 x 1080 pixel resolution or better with Ethernet adapter (10/100/1000 Mbps with RJ-45 connector) with 2 GB or higher Graphics card suitable for BMS System complete etc. as required.	1.00	Each
	<b>LED Display</b>		

Sr.No.	Particulars	Qty	Unit
14	Supplying, Installation, Testing and Commissioning of following size LED display (LED monitor) industrial grade with 3840x2160 resolution or better, USB playback, bluetooth and miracast connectivity, 4X HDMI 2.0, DP 1.2, HDR 10/10+, brightness: 500-nits or better, Video wall mode should be available, contrast ratio: 1200:1, OPS slot, viewing angle (H/V): 170°/ 170°, response time less than 12ms, Display control shall be on monitor screen and programmable with remote (remote shall be supplied with system), <u>Key Board. Optical Mouse. etc. as required.</u>		
	55 inch or larger	4.00	Each
15	Supplying, installing, testing and commissioning of HDMI to HDMI Cable.	4.00	Nos

Name Of Work -Admin Block Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	16 Passenger (G+5)	1	Each
b	Add Extra for rest floors		Each
c	20 Passenger (G+5) Lift	3	Each
c	20 Passenger (G+5) Lift		Each
	Total		
	AMC of Lift for 1st year @ 5% of Total Amount		
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount		
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount		
	AMC of Lift for 4th year @ 1.05% of 3rd year Amount		
	AMC of Lift for 5th year @ 1.05% of 4th year Amount		

**Name Of Work -Admin Block EPABX & Networking System Work**

Sr.No.	Particulars	Qty	Unit
<b>A</b>	<b><u>EPABX SYSTEM</u></b>		
<b>1</b>	SITC of IP-PBX WITH REDUNDANT CPU & REDUNDANT POWER SUPPLY 16 CO TRUNK, 200 ANALOG EXTENSION, 20 SIP TRUNK, 4 E1 PRI TRUNK, 15 IP EXTENSION, PMS INTEGRATION	1.00	Each
<b>2</b>	SITC of REDUNDANT FCBC WITH 12V BATTERIES WITH 15AH CAPACITY	1.00	Nos
<b>3</b>	Supplying, Installation, Testing & Commissioning of Type 1 IP Phone having 2 VoIP account, 120 x40 DOT matrix screen with backlight, Full HD duplex speaker phone, IPV6, Gigabit Etherent, PoE etc. complete as required.	20.00	Each
<b>4</b>	Supplying, Installation, Testing & Commissioning of Analog phones having standard feautres like 16 digit LCD display, 2 way speaker, caller ID and number storage facility etc. complete as required.	277.00	Each
<b>5</b>	S/f of I/O Boxes Krone connectors ,with connection etc.		
<b>a</b>	20 Pair		Nos
<b>b</b>	50 Pair	5.00	Nos
<b>c</b>	100 Pair		Nos
<b>d</b>	200 Pair	2.00	Nos
<b>6</b>	Wiring of Jelly Filled telephone Cable in existing pipe for system with connection.		
<b>a</b>	20 Pair		Meter
<b>b</b>	50 Pair	250.00	Meter
<b>c</b>	100 Pair	-	Meter
<b>d</b>	200 Pair	100.00	Meter
<b>7</b>	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	1.00	Each
<b>8</b>	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color-RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required. <b>6U Rack</b>	-	Each

	Supplying, installation, Testing and commissioning of following capacity 24 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: At least 24 X RJ-45 Gigabit Ethernet Ports and additional 2 X 10G Base -T with 4 X SFP Ports with non-blocking architecture by having Switching capacity of min. 168Gbps and packet forwarding rate of 125Mpps or higher, 16K MAC table. Console Port, USB port, Stacking support of min. 8 units per stack. Internal dual AC Power supply, STP, RSTP, MSTP, BPDU Filter, BPDU Restriction, Min. 9K Jumbo Frame, LBD, IGMP Snooping V1/V2/V3, MLD Snooping V1/V2. IGMP /MLD Groups 1K or more, IPv4/IPv6 Loopback Interface, 16 L3 IP Interface, Ipv6 ND, VRRPv3, UDP Helper, ECMP. VLAN: 802.1Q, Port based, Q-in-Q, Multicast VLAN, Protocol VLAN.		
	VLAN Trunking, DHCP Snooping, Server, server Screening. RADIUS , TACACS+ Authentication, QoS: 802.1P, 8 queues per port, QoS : WRR, Strict+WRR, WRED, 802.1p. ACL: MAC based, IPv4C IPv6, TCP/UDP Port number, time based ACL, TFTP Client, SNMP V1, v2c, v3, SNMP traps, RMON, DHCP server, relay, client, LLDP, LLDP-MED, OAM, Dying Gasp, 802.3ah, sflow, RIP, OSPF v2/v3, policy based route, SSL, SSH. 6 kV surge protection on all Gigabit Ethernet ports and on all GE RJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.		
9	24 port PoE Layer 2 Network Switch with PoE Support of 370W or higher with each copper port supporting 802.3at PoE+ min.	1.00	Each
10	Supplying and fixing 42U Rack with 6 inch Castor wheels and front brake Floor Standing Rack with Main Frame Pillar of 1.6mm CRCA Sheet with removable side panels, L- Shape adjustable Vertical Mounting Rail of 2mm with 'U'Marking completely knocked-down condition (CKD) Shape, fitted with 4 number cooling fans, minimum 8nos two line cable entry/exit provision at top and bottom with rubber protection, Front door 5mm Toughened Glass with MS frame or MS perforated with lock, Rear MS vented or perforated door, Powder coated Color- RAL- 7035 or black, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number. etc. complete as required.	1.00	Each
11	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required. <b>Copper Patch Cords of length 3m (10ft)</b>	20.00	Each
12	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required. 90 mm Dia	200.00	Meter
	<b>TOTAL A</b>		
<b>B</b>	<b><u>DATA / NETWORKING SYSTEM</u></b>		
1	Supplying, Installation, Testing and commissioning of <b>CAT6 Copper Information Outlet (IO)</b> with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	-	Each



2	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required. <b>Copper Patch Cords of length 3m (10ft)</b>	718.00	Each
3	Supplying and drawing following core Fiber Optic Cable having corrugated steel armoring. The Fiber should be SM Fiber Central -loose tube filled with Thixotropic jelly, duly following Standards: ISO 11801, IEC 60793-1/60794-1-2, ITU-T-REC G.652D and Telecordia GR-20-core, High quality Electro Chromium Coated Corrugated Steel tape (ECCS ) and HDPE- Sheath, Operating ambient Temperature should be – 5 0C to +50 0C and Storage Temperature shall be – 5 0C to +50 0C, Max Attenuation $\pm 0.36$ (db / km) at Operational Wavelength 1310 nm and $\pm 0.22$ db / km at Operational Wavelength 1550 nm. type of fiber should be 9/125 / G.652D & Refractive Index should be 1.4670/1.4675. The value for Mode-field, Cladding Diameter $9.2 \pm 0.4 \mu\text{m}$ and $125 \pm 0.7 \mu\text{m}$ correspondingly. The Dispersion value $< 3.5 < 18$ ps/nm-km and PMD value $< 0.2$ ps/km and Cable Cut off wavelength $< 1260$ nm i/c splicing & marking etc complete as required. <b>Single Mode 6 Core Optical fiber cable</b>	550.00	Meter
4	Supply and fixing following port Rack Mount loaded LIU with pigtail, Front-mounted cable saddles for jumper management, suitable to manage both splices and terminations, Pre-assembled shelves in multiple configurations, Rubber fiber slotted bracket built-in, metal splice shelf to protect the fibers, 2 fiber spools built-in for 900 $\mu\text{m}$ tight buffered fiber storing, Capable of storing up to 3 meters of 900 $\mu\text{m}$ tight buffered fiber per adapter, Removable front and rear covers for better access to interior of LIU, Should be Single / Multi mode LC Type fully loaded. Accessory kit consists of cable ties, mounting ear screws, and spiral wrap tube etc complete as required. <b>6 Port LIU</b>	3.00	Each
5	Supplying and fixing Patch Cord of Optical Fiber Multi Mode or Single Mode LC to LC Fiber Duplex having high precision ceramic ferrule with good concentricity, Fiber corning single mode G652D, Cable Type 2mm with Mechanical specification Apex Offset $< 50 \mu\text{m}$ , Fiber Height + 100 nm, End-face radius of Curvature $7\text{mm} < R < 25\text{mm}$ , Repeatability $< 0.2$ db, Working ambient Temperature – 5 0C to +50 0C, Storage Temperature – 10 0C to +50 0C, Length -- 2meter, Type -- LC-LC Duplex etc complete as required.	180.00	Each
6	Supply, Installation, Testing & Commissioning of SC-LC SM Fiber Patch Cords ( 3 Mtr) as per given Specification etc. all complete.	16.00	Nos
7	Supplying, Installation, Testing and commissioning of small form-Pluggable (SFP) for Network Switches. Must be hot Pluggable, RoHS Complaint, etc. complete as required. <b>1G Copper SFP</b>	8.00	Each
8	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		Each
9	S/I/T/C of 48 port category 6e SL Series fully loaded patch Panel Make Dlink/Amp with active and passive components,punching, complete in all respect	5.00	Nos

10	<p>Supplying, installation, Testing and commissioning of following capacity 24 port Layer 3 Network Switch having features and specifications etc. as mentioned here under: At least 20 X RJ-45 Gigabit Ethernet Ports and additional 4 combo 10/100/1000 base-t/SFP Ports with additional 4 SFP+ ports non-blocking architecture by having Switching capacity of min. 128Gbps and packet forwarding rate of 95Mpps or higher, 16K MAC table. Console Port, USB port, Internal AC Power supply with operating temperature of 0 to +50 0C. Stacking port with stacking support of minimum 8 units per stack. 48K Mac address, 9K or more Jumbo frame, ERPS with enabling ring to converge in less than 50 ms from node or link failure, Static routing, Static, 6to4, ISATAP and GRE, IPv6 Neighbor Discovery (ND), BGP, ISIS, MPLS, VRRP v2, OSPFv2/v3, PBR, Route Redistribution, RIPv1/v2/ng, IP Helper all L3 Protocols should support from day 1 for both IPv6 and IPv4, 802.1x, Port security , Radius C TACACS+ authentication C accounting, DAD, DAI, DoS attack prevention, SSH, Guest VLAN, IP Access List, MAC Access List. Multicast: VLAN, PIM-SM, PIM DM, PIM-SDM, PIM-SMv6, DVMRP v3 and MSDP, IGMP C MLD Snooping, Flow mirroring, IGMP C MLD Snooping Querier, Per-VLAN IGMP C MLD Snooping. SNMP, Dual configurations, Multiple images, RMON, LLDP/LLDP-MED, sFlow, DHCP/BOOTP Client, IPv4/IPv6, Syslog server, Debug command, 802.3ah Ethernet Link OAM, 802.1ag Connectivity Fault, Y.1731 OAM, 802.1Qbb Priority- based Flow Control (PFC), Dying Gasp, Cable Diagnostics , 6 kV surge protection on all Gigabit Ethernet ports and on all GERJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.</p>		Each
11	<p>Supply, Installation, Testing &amp; Commissioning of Access Enterprise PoE Network Switch: 48 Port10/100/1000 Base-T PoE+ with 4 x 10G SFP+ ports Managed Switch. PoE budget minimum 740W further expandable up to 1440W and during the reboot of switch connected end point should get PoE Power. FlexStack-Plus Capability and minimum 8 switches to be stack in single stack;2GB or Higher DRAM and 4GB or higher Flash, 600MHz Dual Core or Higher CPU; 176Gbps or Higher switching bandwidth; 4K VLAN ID; 130 Mpps or higher forwarding rate; The switch should support Digital Network Architecture and SD Access. The switch should support redundant power supply unit.. The switch should support standard proocols: IEEE 802.1D STP, IEEE 802.1p CoS Prioritization; IEEE 802.1ab (LLDP); IEEE 802.3ab 1000Base-T; IEEE 802.3z 1000 Base-X; IEEE 802.3x Full Duplex on 10/100/1000 Base-T Ports; SNMP v1, V2c and V3; Safety Standards like UL; EN; IEC;EMC; RoHS</p>	4.00	Nos

12	<p>Supplying, installation, Testing and commissioning of 10 Giga Bandwidth Data Centre Network Switch of 48 port Layer 3 having features and specifications etc. as mentioned here under: - ToR/EOR/Core Network Switch 48x 10GbE SFP+, 6x 100GbE QSFP28, RPS, with Console Port, Management Port and 1 x USB 2.0 Type A port, The switch must provide a switching capacity of no less than 2.16 Tbps and a forwarding rate of at least 1600 Mpps, ensuring non-blocking performance for high-bandwidth applications. It should support hot-swappable dual power supply modules (AC or DC) for 1+1 redundancy and load sharing, as well as hot-swappable, front-to-back airflow fan trays with N+1 redundancy to ensure continuous availability. IEEE 802.1X support for port-based and MAC-based authentication should be available, along with integration for RADIUS and TACACS+ authentication services. Guest VLANs, DoS prevention, and management access restrictions are essential. SNMP v1/v2c/v3, syslog, sFlow, and support for auto configuration via DHCP. Support for OpenFlow v1.4, Netconf/YANG, and LLDP is required for modern network automation. Support ONIE (Open Network Install Environment), IEEE 802.1Q bb Priority-based Flow Control (PFC), OpenFlow v1.4, ERPS, IPv6 Tunneling, IP interfaces and supported, VXLAN, Private VLAN, Multicast VLAN, Guest VLAN Double VLAN (Q-in-Q), RoCEv2, PIM-SSM/SM, MSDP. Support High Availability with MLAG/VSS and Layer 2/3 VPNs Critical for Multi-tenant, Virtualized, and Containerized Environments. BGPv4/v6, OSPFv2/v3, IS-IS, RIPng. VRRP, ECMP, BFD, and route redistribution for high-availability routing. Support flexible routing domains and secure inter-segment traffic flow. Certifications: CE, FCC, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.</p>	1.00	Each
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<b>13</b>	50G SFP56 to SFP56 0.65m Direct Attach Copper Cable	1.00	Nos
<b>14</b>	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color-RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required. <b>6U Rack</b>	10.00	Each
<b>15</b>	Mapping of Network Nodes & LAN Diagram	1.00	Job

<b><u>Name Of Work -Admin Block Conference Hall AV System Work</u></b>			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
<b>Conference Room-Third Floor (29 PAX)</b>			
1	SITC of Table top mount Chairman Discussion Unit with pluggable microphone and supplied with 400mm gooseneck microphone is equipped with a screw lock connector, complete with standard accessories as per the technical specifications.	2	Nos.
2	SITC of Table top mount Delegate Discussion Unit with pluggable microphone and supplied with 400mm gooseneck microphone is equipped with a screw lock connector, complete with standard accessories as per the technical specifications.	26	Nos.
3	SITC of Central Conference Controller with Recording & Web Server and built-in Digital Signal Processing, complete with standard accessories as per the technical specifications.	1	Nos.
4	SITC of 2 meter or better conference cable, complete with standard accessories as per the technical specifications.	27	Nos.
5	SITC of 20 meter or better conference cable, complete with standard accessories as per the technical specifications.	2	Nos.
6	SITC of wireless handheld microphone, complete with standard accessories as per the technical specifications.	1	Nos.
7	SITC of 40 Watt RMS, 5" Ceiling Speakers, complete with standard accessories as per the technical specifications.	6	Nos.
8	SITC of Dual Channel Class D 2 x 160 Watt, 1 x 320Watt, Matrix Amplifier, complete with standard accessories as per the technical specifications.	1	Nos.
9	SITC of Dante enable Chassis based configurable Digital signal processor, complete with standard accessories as per the technical specifications.	1	Nos.
10	SITC of Dual Channel Analog Input Card, complete with standard accessories as per the technical specifications.	2	Nos.
11	SITC of Dual Channel Analog Output Card, complete with standard accessories as per the technical specifications.	2	Nos.

12	SITC of AEC Card / License, complete with standard accessories as per the technical specifications.	1	Nos.
13	SITC of Dual Channel USB Card, complete with standard accessories as per the technical specifications.	1	Nos.
14	SITC of Speaker Cable, complete with standard accessories as per the technical specifications.	200	Mtrs.
15	SITC of Microphone Cable, complete with standard accessories as per the technical specifications.	100	Mtrs.
16	SITC of Connectors and patch cords, complete with standard accessories as per the technical specifications.	1	Lot.
17	SITC of 86" Interactive display supplied with OPS and wall mount bracket, complete with standard accessories as per the technical specifications.	1	Nos.
18	SITC of 55" 4K UHD display supplied with wall mount bracket, complete with standard accessories as per the technical specifications.	2	Nos.
19	SITC of 32" Full HD display, complete with standard accessories as per the technical specifications.	1	Nos.
20	SITC of mounting arrangement bracket for above display, complete with standard accessories as per the technical specifications.	1	Nos.
21	SITC of 12X Zoom PTZ Camera, complete with standard accessories as per the technical specifications.	2	Nos.
22	SITC of Camera switcher & recorder, complete with standard accessories as per the technical specifications.	1	Nos.
23	SITC of Cable Management System, Mechanical, Pass-Through Lid, Black, complete with 1xHDMI, 1xUSBC, 1xLAN, 1xPower standard accessories as per the technical specifications.	3	Nos.
24	SITC of 8x8 4K60 4:4:4 HDR AV Switcher, complete with standard accessories as per the technical specifications.	1	Nos.
25	SITC of 4K60 4:4:4 HDMI over twisted pair Transmitter for HDMI, RS-232, IR, and Analog Audio Signal Extension over CATx Cable, complete with standard accessories as per the technical specifications.	8	Nos.

26	SITC of 4K60 4:4:4 HDMI over twisted pair Receiver for HDMI, RS-232, IR, and Analog Audio Signal Extension over CATx Cable, complete with standard accessories as per the technical specifications.	8	Nos.
27	SITC of Wireless Presentation system with iOS, Android, Chromebook, PC, and Mac users instant wireless connectivity, standard accessories as per the technical specifications.	1	Nos.
28	SITC of USB Converter with HDMI and Analog Audio Input for Soft VC, complete with standard accessories as per the technical specifications.	1	Nos.
29	SITC of AV Controller, complete with standard accessories as per the technical specifications.	1	Nos.
30	SITC of 10" Touch Screen system supplied with controlling software licence, complete with standard accessories as per the technical specifications.	1	Nos.
31	SITC of 8 Port Network Switch, complete with standard accessories as per the technical specifications.	1	Nos.
32	SITC of Wi-Fi Router, complete with standard accessories as per the technical specifications.	1	Nos.
33	SITC of 6 Feet HDMI-HDMI Cable, complete with standard accessories as per the technical specifications.	22	Nos.
34	SITC of 20/30 Feet HDMI-HDMI Cable, complete with standard accessories as per the technical specifications.	3	Nos.
35	SITC of Shielded CAT6 Cable, complete with standard accessories as per the technical specifications.	400	Mtrs.
36	SITC of 17U Equipment Rack, complete with standard accessories as per the technical specifications.	1	Nos.
<b>Total Amount</b>			
<b>Conference Room-Fourth Floor (17 PAX)</b>			
1	SITC of Table top mount Chairman Discussion Unit with pluggable microphone and supplied with 400mm gooseneck microphone is equipped with a screw lock connector, complete with standard accessories as per the technical specifications.	3	Nos.

2	SITC of Table top mount Delegate Discussion Unit with pluggable microphone and supplied with 400mm gooseneck microphone is equipped with a screw lock connector, complete with standard accessories as per the technical specifications.	14	Nos.
3	SITC of Central Conference Controller with Recording & Web Server and built-in Digital Signal Processing, complete with standard accessories as per the technical specifications.	1	Nos.
4	SITC of 2 meter or better conference cable, complete with standard accessories as per the technical specifications.	15	Nos.
5	SITC of 20 meter or better conference cable, complete with standard accessories as per the technical specifications.	2	Nos.
6	SITC of 40 Watt RMS, 5" Ceiling Speakers, complete with standard accessories as per the technical specifications.	3	Nos.
7	SITC of Dual Channel Class D 2 x 160 Watt, 1 x 320Watt, Matrix Amplifier, complete with standard accessories as per the technical specifications.	1	Nos.
8	SITC of Dante enable Chassis based configurable Digital signal processor, complete with standard accessories as per the technical specifications.	1	Nos.
9	SITC of Dual Channel Analog Input Card, complete with standard accessories as per the technical specifications.	2	Nos.
10	SITC of Dual Channel Analog Output Card, complete with standard accessories as per the technical specifications.	2	Nos.
11	SITC of AEC Card / License, complete with standard accessories as per the technical specifications.	1	Nos.
12	SITC of Dual Channel USB Card, complete with standard accessories as per the technical specifications.	1	Nos.
13	SITC of Speaker Cable, complete with standard accessories as per the technical specifications.	100	Mtrs.
14	SITC of Microphone Cable, complete with standard accessories as per the technical specifications.	100	Mtrs.
15	SITC of Connectors and patch cords, complete with standard accessories as per the technical specifications.	1	Lot.



16	SITC of 86" Interactive display supplied with OPS and wall mount bracket, complete with standard accessories as per the technical specifications.	1	Nos.
17	SITC of 55" 4K UHD display supplied with wall mount bracket, complete with standard accessories as per the technical specifications.	2	Nos.
18	SITC of 32" Full HD display, complete with standard accessories as per the technical specifications.	1	Nos.
19	SITC of mounting arrangement bracket for above display, complete with standard accessories as per the technical specifications.	1	Nos.
20	SITC of 12X Zoom PTZ Camera, complete with standard accessories as per the technical specifications.	2	Nos.

21	SITC of Camera switcher & recorder, complete with standard accessories as per the technical specifications.	1	Nos.
22	SITC of Cable Management System, Mechanical, Pass-Through Lid, Black, complete with 1xHDMI, 1xUSBC, 1xLAN, 1xPower standard accessories as per the technical specifications.	2	Nos.
23	SITC of 8x8 4K60 4:4:4 HDR AV Switcher, complete with standard accessories as per the technical specifications.	1	Nos.
24	SITC of 4K60 4:4:4 HDMI over twisted pair Transmitter for HDMI, RS-232, IR, and Analog Audio Signal Extension over CATx Cable, complete with standard accessories as per the technical specifications.	6	Nos.
25	SITC of 4K60 4:4:4 HDMI over twisted pair Receiver for HDMI, RS-232, IR, and Analog Audio Signal Extension over CATx Cable, complete with standard accessories as per the technical specifications.	6	Nos.
26	SITC of Wireless Presentation system with iOS, Android, Chromebook, PC, and Mac users instant wireless connectivity, standard accessories as per the technical specifications.	1	Nos.
27	SITC of USB Converter with HDMI and Analog Audio Input for Soft VC, complete with standard accessories as per the technical specifications.	1	Nos.
28	SITC of AV Controller, complete with standard accessories as per the technical specifications.	1	Nos.
29	SITC of 10" Touch Screen system supplied with controlling software licence, complete with standard accessories as per the technical specifications.	1	Nos.
30	SITC of 8 Port Network Switch, complete with standard accessories as per the technical specifications.	1	Nos.
31	SITC of Wi-Fi Router, complete with standard accessories as per the technical specifications.	1	Nos.
32	SITC of 6 Feet HDMI-HDMI Cable, complete with standard accessories as per the technical specifications.	17	Nos.
33	SITC of 20/30 Feet HDMI-HDMI Cable, complete with standard accessories as per the technical specifications.	3	Nos.

34	SITC of Shielded CAT6 Cable, complete with standard accessories as per the technical specifications.	300	Mtrs.
35	SITC of 17U Equipment Rack, complete with standard accessories as per the technical specifications.	1	Nos.

Detailed Estimate Based On DSR-2022 With Cost Index & Market Rate			
Project - Proposed Construction of Horticulture & Forestry University at Gorakhpur.			
Name Of Work -Academic Block Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	1,135.00	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	48.00	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	9,968.00	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	3,875.00	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	6,740.00	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	3,120.00	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	1,560.00	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	6,435.00	Meter
6	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.	845.00	Meter

7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	12,805.00	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	99.00	Each
b	TV socket outlet	13.00	Each
c	RJ45 socket cat 6 with shutter	172.00	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	284.00	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	506.00	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	356.00	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	316.00	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	28.00	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	5,525.00	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		

a	Group C	728.00	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	168.00	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	-	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	23.00	Each
b	6 way (4 + 18), Double door	32.00	Each
c	8 way (4 + 24), Double door	24.00	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	1,372.00	Each
b	Double pole	14.00	Each
c	Three Phase & Neutral	48.00	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	144.00	Each
	63Amp.	72.00	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	7.00	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	24.00	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	1,000.00	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	1,000.00	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	500.00	Each
26	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.	14.00	Each
27	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.	2.00	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	400.00	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.00	Meter
30	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.	100.00	Meter
31	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.	50.00	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	200.00	Meter
33	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.	50.00	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess / Surface mounting ground 6 Watt to 9 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser / Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120 Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	188.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess / Surface mounting ground 10 Watt to 15 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser / Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120 Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	320.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36 Watt to 46 Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser / Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	354.00	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	112.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	36.00	Each



37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	262.00	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	43.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	107.00	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	8.00	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush</p> <p>Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm, service value &gt; 6.0 CM/Min/Watt, air delivery 210 CM/Min</p>	380.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	387.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	20.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirming to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)	2.00	Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.	120.00	Metre
47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.	2.00	Each
48	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.	6.00	Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.	6.00	Each
50	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstraction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.	2.00	Each

51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b>  Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C,  Relative humidity 0 to 95%, Online double conversion true sine wave  Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		

	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f) Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation / Battery Mode of Operation / Bypass feeding the load / UPS Fault / Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	40KVA (Each Power module shall be < 10 KVA)	2.00	Set
<b>52</b>	<b>Academic Block MAIN L.T PANEL</b>	1.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics).		
	<b>INCOMING</b>		
	1 Nos. 800 Amp FP EDO ACB 50KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Sleective Interlocking function Multifunction Meter		

	1 Nos. 2000 Amp FP EDO ACB 50KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	<b>BUSCOUPLER</b>		
	1 Nos. 800Amp TPN Motorized MCCB 50KA having specs as per attached annexure having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB		
	<b>BUSBARS</b>		
	1 Nos. 2500 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 1000 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	5 Nos. 500 Amp FP EDO MCCB 36 KA, having specs as per attached annexure having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB HVAC + Spare		
	6 Nos. 200 Amp FP MCCB 36 KA, having specs as per attached annexure having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB L+P + Spare		
	3 Nos. 160 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter Lift Panel + Spare		
	4 Nos. 125 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter UPS+Spare		
	4 Nos. 63 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter		
	Short Circuit Breaking capacity should not less than 50KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>Academic Block Floor L+P Panel</b>	4.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics).		
	<b>INCOMING</b>		
	1 Nos. 200 Amp MCCB 36KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 250 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	10 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB LDB +Spare		

	8 Nos. 63 Amp FP MCB On, Off, Trip Status Indication with control MCB LDB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>Academic Block Lift Panel</b>	1.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics).		
	<b>INCOMING</b>		
	1 Nos. 160 Amp MCCB 26KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slective Interlocking function Multifunction Meter		



	<b>BUSBARS</b>		
	1 Nos. 200 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	9 Nos. 63 Amp FP MCB On, Off, Trip Status Indication with control MCB Lift +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>Academic Block UPS Output Panel</b>	1.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)		
	<b>INCOMING</b>		

	2 Nos. 125 Amp MCCB 36KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	<b>BUSCOUPLER</b>		
	1 Nos. 125 Amp FP MCCB		
	<b>BUSBARS</b>		
	2 Nos. 160 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	12 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB UPS DB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core	2,000.00	Meter
b	16 sq. mm 4 core	2,500.00	Meter
c	25 sq. mm 3-1/2 core	2,000.00	Meter
d	70 sq. mm 3-1/2 core	2,000.00	Meter
e	95 sq. mm 3-1/2 core	3,000.00	Meter
f	150 sq. mm 3-1/2 core	2,000.00	Meter
g	240 sq. mm 3-1/2 core	2,000.00	Meter
h	300 sq. mm 3-1/2 core	4,000.00	Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core	2,000.00	Meter
b	35 sq. mm 3-1/2 core	6,500.00	Meter
59	Supply and fixing of brass nickel plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each

c	16 sq. mm 4 core	16.00	Each
d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	8.00	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	4.00	Each
j	150 sq. mm 3-1/2 core	8.00	Each
k	240 sq. mm 3-1/2 core	16.00	Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	6,500.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm	2,500.00	Meter
c	Above 95 sq. mm and upto 185 sq. mm	3,500.00	Meter
d	Above 185 sq. mm and upto 400 sq. mm	5,000.00	Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	140.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	50.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	50.00	Meter
b	200mm Dia	40.00	Meter

Name Of Work -Academic Block Fire Detection Alarm & PA System Work			
Sr.No.	Particulars	Qty	Unit
	<b><u>Fire Alarm System :</u></b>		
1	Supplying, installation, testing and commissioning of micro processor based intelligent addressable main fire alarm panel, central processing unit with the following loop modules and capable of supporting not less than 240 devices (including detectors) and minimum 120 detectors per loop and loop length up to 2 km, network communication card, minimum 320 character graphics/ LCD display with touch screen or other keypad and minimum 4000 events history log in the non volatile memory (EPROM), power supply unit (230 $\pm$ 5% V, 50 hz), 48 hrs back-up with 24 volt sealed maintenance free batteries with automatic charger. The panel shall have facility to connect printer to printout log and facility to have seamless integration with analog/digital voice evacuation system (which is part of the schedule of work under SH: PA System) and shall be complete with all accessories . The panel shall be compatible for IBMS system with open protocol BACnet/ Modbus over IP complete as per specifications.		
A	Two Loop	1	NOS
2	Supplying, installation, testing & commissioning of central graphical fire alarm management system to centrally monitor and operate the fire alarm system complete as required.	1	NOS
3	Supplying, installation, testing & commissioning of repeater panel with 320 character/ Touch screen LCD display with inbuilt reset, acknowledge and silence switches complete as required.	1	NOS
4	Supplying, installation, testing & commissioning of intelligent analog addressable photothermal (Smoke) detector complete with mounting base complete as required.	720	NOS
5	Supplying, installation, testing & commissioning of response indicator on surface/recessed MS Box having two LED, metallic cover complete with all connections etc as required.	360	NOS
6	Supplying, installation, testing & commissioning of fault isolator complete with base as required.	36	NOS

7	Supplying, installation, testing & commissioning of intelligent addressable thermal detector with rate of rise cum fixed temperature thermistor complete with base as required.	10	NOS
8	Supplying, installation, testing & commissioning of addressable fire control module complete as required.	10	NOS
9	Supplying, installation, testing & commissioning of addressable phone control module complete as required.	12	NOS
10	Supplying, installation, testing & commissioning of addressable beam detector with short circuit isolator (inbuilt or separate) complete with emitter and receiver including connections with remote test features etc complete as required.	1	NOS
11	Supplying, installation, testing & commissioning of addressable manual call point complete as required.	12	NOS
12	Supplying, installation, testing & commissioning of addressable horn cum strobe complete as required.	12	NOS
13	Supplying, installation, testing & commissioning of fire fighter telephone handset complete as required.	2	NOS
14	Supplying, installation, testing & commissioning of fire fighter phone jack complete as required.	12	NOS
15	Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required.	6740	metre
	<b>Public Addressable System :</b>		
16	Supplying, installation, testing & commissioning of 6 zone, voice alarm controller with USB, MP3 player (including 6 zone button paging station) with seamless integration facility with main fire alarm panel for voice evacuation complete as required.	1	each
17	Supplying, installation, testing & commissioning of 1.5/3/6W ceiling speaker complete as required.	90	NOS

18	Supplying, installation, testing & commissioning of 1.5/3/6W metal box ceiling/wall speakers complete as required.	12	NOS
19	Supplying, installation, testing & commissioning of digital audio amplifier 500 Watt, 25V rms operating at 240 Volt AC Supply complete as required.	1	each
20	Supplying, installation, testing & commissioning of Voice command keypad 6 zone, with microphone assembly complete as required.	1	each
21	Supplying and drawing of cable Fire Retardant PVC insulated copper conductor cable in the existing surface / recessed steel conduit of following pairs, cores and size including connections and interconnections etc. as required.		
	17.5.3.1 speaker cable Single pair, 2-core, 1.5 sqmm	2800	metre
22	Same as in item 148, but 25mm dia PVC conduit.	2000	Meter

Name Of Work -Academic Block CCTV Surveillance System Work			
Sr.No.	Particulars	Qty	Unit
1	<b>2 MP IP IR Dome Camera</b> Supplying Installation Testing and Commissioning of 2 MP IP IR Dome Camera having following specifications, type of lens and features etc :- 1) Signal System: PAL/NTSC, Signal to Noise Ratio: >50 dB, Camera should display Camera title, Date & Time in live & recorded video 2)Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition(Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day & Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking 3) Compression (Minimum):-Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723 4) Wide Dynamic Range:- WDR (120db or more) 5) Digital Noise Reduction:- DNR (3D) On/Off 6) Video Streaming & Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920×1080)@25/30 fps,Sub streams minimum: 720P@25/30 fps). 7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection 8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.		

Sr.No.	Particulars	Qty	Unit
	<p>9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card.</p> <p>10) Recording Management: Format SD, overwrite, storage management, video to NAS device</p> <p>11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection</p> <p>12) Network Protocol: SFTP, IPv6, IPv4, DNS, RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast</p>		
	<p>13) System Capability: ONVIF, Camera shall support open source VMS</p> <p>14) Ethernet: 1 RJ 45 10/100 Ethernet port</p> <p>15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement.</p> <p>16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source.</p> <p>17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE</p> <p>18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body</p> <p>19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing)</p> <p>20) IR life: 40000 hours or higher</p> <p>21) Video Bit rate: 32 KBPS - 8 MBPS or better</p> <p>22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS</p>		
	2MP (@ 25/30fps@1080P (1920×1080)) IP IR Dome Camera with 2.8/ 3.6mm fixed lens	49.00	Each
2	2 MP IP IR Outdoor Bullet Camera		



Sr.No.	Particulars	Qty	Unit
	<p>Supplying Installation Testing and Commissioning of 2MP Fixed Lens IP IR Outdoor Bullet Camera having following specifications and features etc :-</p> <p>1) Signal System: PAL/NTSC, Signal to Noise Ratio: &gt; 50 dB, Camera should display Camera title, Date &amp; Time in live &amp; recorded video</p> <p>2) Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition (Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day &amp; Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt Smart IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking</p>		
	<p>3) Compression (Minimum):- Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723</p> <p>4) Wide Dynamic Range:- WDR (120db or more)</p> <p>5) Digital Noise Reduction:- DNR (3D) On/Off</p> <p>6) Video Streaming &amp; Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920 × 1080)@25/30 fps Sub streams minimum: 720P@25/30 fps).</p> <p>7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection</p> <p>8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.</p> <p>9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card</p>		

Sr.No.	Particulars	Qty	Unit
	10) Recording Management: Format SD, overwrite, storage management, video to NAS device, 11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12)Network Protocol: SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 13) System Capability: ONVIF, Camera shall support open source VMS		
	14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement. 16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS		
	2MP @ 25/30fps@1080P (1920×1080) Outdoor Bullet Camera with 2.8/ 3.6mm fixed lens	4.00	Each
3	Supplying Installation Testing and Commissioning of following Channel Network Video Recorder (NVR) with camera licenses to record for all channels having specifications and features etc as mentioned below : 1) Network Video Recorder Embedded/ Installed OS (Linux) along with Camera Licenses to record per NVR and to provide a live view, storage and simultaneously Multi-channel playback of all IP camera or more and must be ONVIF with minimum support of 384 Mbps incoming Bandwidth.		

Sr.No.	Particulars	Qty	Unit
	<p>2) NVR should support video compressions : H.265 or better, H.264, MJPEG.</p> <p>3) Must support 1 channel RCA Input, 2 channel RCA Output for Two-way Talk with G.711U/A, G.711u, PCM, G726 audio compressions.</p> <p>4) Intelligent auto power on when power resumes after power outage.</p> <p>5) Storage: It should support minimum 8 SATA Slots with 20TB capacity/ Slot and RAID support of RAID 0/1/5/6/10.</p> <p>6) Connectivity Interface : 2 Nos. x 10/100/1000 Mbps Ethernet Ports, 1x RS485, 1x RS232, 1x eSATA Port</p> <p>7) Backup Interface : Its should have 4 Nosx USB port (2x USB3.0, 2xUSB2.0)</p> <p>8) Video Output Ports: 2x HDMI and 2 VGA</p>		
	<p>9) Alarm Ports: It should have 16/8 Ch In/ Out ports to connect various type of external sensors and output devices like hooter/ Siren etc.</p> <p>10) Email &amp; SMS Alert options: Option for SMS/ Email Alerts to minimum 5 designated mobile number for power failure, HDD failure, vandalism, tampering, network disconnection and panic</p> <p>11) Web &amp; Mobile Application: Web, Mobile app ( For iPhone, iPad, Android Phone) for alerts and viewing.</p> <p>12) Protocols: HTTP, HTTPS, TCP/IP, IPv4/IPv6, UDP, DHCP, DNS, SMTP, UPnP, IP Filter, PPPoE, FTP, DDNS, Alarm Server, IP Search, Multicast, Auto Registration, ONVIF (Profile T, Profile S, Profile G), CGI, SDK and OEM Cloud for remote monitoring without any public IP need.</p>		
	<p>13) Standards: CE, FCC, RoHS, BIS Certified</p> <p>14) Power Supply : Should support AC100-240V, 50/60Hz Power supply.</p> <p>15) Operating Condition : -5°C to 50°C, humidity 90% (max) (non-condensing)</p> <p>16) The VMS application shall support all the features &amp; functionalities of the offered cameras.</p> <p>17) VMS should consist Licenses for all channels to record Cameras with General, motion detection, intelligent, alarm and POS recording modes. VMS should be provided with Camera Licenses , with no dependency of VMS licenses by binding with the MAC address of the cameras to achieve the functionality.</p>		

Sr.No.	Particulars	Qty	Unit
	<p>18) The NVR OEM shall be responsible for providing a mobile application compatible with both Android and iOS devices, enabling remote monitoring and playback of cameras/NVR footage.</p> <p>19) The OEM must provide its own DDNS server hosted in India, eliminating the need for a public IP address for remote monitoring over the Internet.</p> <p>20) Must support Continuous, Alarm, Motion, Instant, Panic Recording Mode</p> <p>21) It should support Resolution: 32MP; 24MP; 16MP; 12MP; 8MP; 5MP; 4MP; 1080p; 720p; D1; CIF; OCIF</p>		
	<p>22) When alarm recording is enabled and an event occurs, you can click the alarm icon on monitoring page to view the alert details. The snapshot function is supported on monitoring and playback page</p> <p>23) The Network Video Recorder (NVR) shall be configured to send email whenever a system message is created or an alarm event occurs. The email server shall be a valid SMTP server. Each recipient email address shall be configured to receive any combination of critical, warning, or informational messages or alarm notifications. When an alarm occurs, the email message includes the NVR name, time of alarm and a list of camera that is configured to record upon alarm</p>		
	<p>24) It should have Web and GUI interface.</p> <p>25) Built-In Artificial Intelligence: NVR should have built-in AI :-</p> <ul style="list-style-type: none"> <li>- 2 Channel face detection and recognition, - Minimum 4 Channel perimeter protection, - Minimum 8 Channel Smart Motion Detection</li> </ul> <p>26) Face Recognition Database Capacity: It should support total Blacklist and Whitelist capacity of Minimum 20,000 Faces or more with Face Detection speed of 12 face images/sec and facility to add Name, gender, birthday, address, credential type, credential No., countries &amp; regions and state to each face image.</p>		

Sr.No.	Particulars	Qty	Unit
	<p>27) Face &amp; Human Attributes Search: Search Pictures/ Video by Gender, age group, glasses, expressions, face mask, beard, Top color, top type, hat, bag, age, gender and umbrella.</p> <p>28) ANPR Capability: It should support ANPR Camera with License plate, plate color, vehicle body, vehicle model, vehicle logo, calling, seatbelt, vehicle registration location etc vehicle attributes.</p> <p>29) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan, cybersecurity exception</p>		
	<p>30) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email.</p> <p>31) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Exception Detection, People Staying Detection, Violence Detection.</p> <p>32) Smart playback function: Should support smart search for the selected area in the video and smart playback to improve the playback efficiency</p> <p>33) VCA (Video Content Analytic): Should support multiple video contented analytics based on camera analytics</p>		
	34) Analytics by NVR: Perimeter protection and face recognition		
	64 Channel Network Video Recorder (NVR) having display split :- Main screen: 1/4/8/9/16/25/36/64, 2nd screen: 1/4/8/9/16	1.00	Each
	<b>Hard Disk Drive</b>		
4	<p>Supplying, Installation, Testing and Commissioning following capacity Serveillance grade Hard Disk with upto 256MB/s Transfer Rate, 256 MB Cache, 7200 RPM Disk Speed, 3.5 inch form factor, SATA Interface, BSMI, ICES-003/NNB-003, CE, FCC, KC, Maghreb, RCM, UKCA, VCCI, CB-Scheme, TUV, UL Certifications.</p>		

Sr.No.	Particulars	Qty	Unit
	10TB (Terabytes)	4.00	Each
5	S/I/T/C of 24 port 10/100/1000 Base T Standalone Gigabit Switch Make Dlink/Amp with active and passive components, punching, complete in all respect	8.00	Nos
6	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	8.00	Each
7	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		
	Copper Patch Cords of length 3m (10ft)	41.00	Each
8	Supplying, Installation, Testing and commissioning of CAT6 Copper Information Outlet (IO) with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	116.00	Each
9	Supplying, drawing, Installation, Testing and commissioning of CAT6 UTP LSZH 23AWG Twisted Pair Cable in existing conduit/ on surface, Category 6 Unshielded Twisted Pair, 4 pair should be complied as per UL/ETL verification program for compliance with ANSI/TIA-568.2-D standard. Outer diameter should be in the range of 6.1mm nominal with Operating Temperature Range : -5° to +60°C, Bending Radius : < 4 X Cable Diameter at -5°C ± 1°C and Pulling Force : 11.5Kg etc. complete as required.		
	1 Run of cable	2,385.00	Meter
10	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required. 25mm Dia	2,385.00	Meter

Sr.No.	Particulars	Qty	Unit
11	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color- RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required.		
	6U Rack	4.00	Each
12	Supplying and fixing 42U Rack with 6 inch Castor wheels and front brake Floor Standing Rack with Main Frame Pillar of 1.6mm CRCA Sheet with removable side panels, L- Shape adjustable Vertical Mounting Rail of 2mm with 'U'Marking completely knocked-down condition (CKD) Shape, fitted with 4 number cooling fans, minimum 8nos two line cable entry/exit provision at top and bottom with rubber protection, Front door 5mm Toughened Glass with MS frame or MS perforated with lock, Rear MS vented or perforated door, Powder coated Color- RAL- 7035 or black, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number etc. complete as required	1.00	Each
	<b>PC System</b>		
13	Supplying Installation Testing Commissioning of Client PC System comprising of PC Hardware with minimum 11th Gen Intel® I7 processor CPU E5-2640 x64 (or better), compatible with dual and quad core processors minimum 3.1 Ghz and 8GB or higher RAM, Hard Drive Space of 256 GB SSD or better, Video card and monitor capable of 1920 x 1080 pixel resolution or better with Ethernet adapter (10/100/1000 Mbps with RJ-45 connector) with 2 GB or higher Graphics card suitable for BMS System complete etc. as required.	1.00	Each
	<b>LED Display</b>		

Sr.No.	Particulars	Qty	Unit
14	Supplying, Installation, Testing and Commissioning of following size LED display (LED monitor) industrial grade with 3840x2160 resolution or better, USB playback, bluetooth and miracast connectivity, 4X HDMI 2.0, DP 1.2, HDR 10/10+, brightness: 500-nits or better, Video wall mode should be available, contrast ratio: 1200:1, OPS slot, viewing angle (H/V): 170°/ 170°, response time less than 12ms, Display control shall be on monitor screen and programmable with remote (remote shall be supplied with system), <u>Key Board. Optical Mouse. etc. as required.</u>		
	55 inch or larger	5.00	Each
15	Supplying, installing, testing and commissioning of HDMI to HDMI Cable.	6.00	Nos



Name Of Work -Academic Block Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	13 Passenger (G+5)	1	Each
b	Add Extra for rest floors		Each
c	20 Passenger (G+5) Lift	6	Each
c	20 Passenger (G+5) Lift		Each
	Total		
	AMC of Lift for 1st year @ 5% of Total Amount		
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount		
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount		
	AMC of Lift for 4thyear @ 1.05% of 3rd year Amount		
	AMC of Lift for 5thyear @ 1.05% of 4th year Amount		

**Name Of Work -Academic Blocks EPABX & Networking System Work**

Sr.No.	Particulars	Qty	Unit
<b>A</b>	<b><u>EPABX SYSTEM</u></b>		
<b>1</b>	SITC of IP-PBX WITH REDUNDANT CPU & REDUNDANT POWER SUPPLY 16 CO TRUNK, 200 ANALOG EXTENSION, 20 SIP TRUNK, 4 E1 PRI TRUNK, 15 IP EXTENSION, PMS INTEGRATION	2.00	Each
<b>2</b>	SITC of REDUNDANT FCBC WITH 12V BATTERIES WITH 15AH CAPACITY	3.00	Nos
<b>3</b>	Supplying, Installation, Testing & Commissioning of Type 1 IP Phone having 2 VoIP account, 120 x40 DOT matrix screen with backlight, Full HD duplex speaker phone, IPV6, Gigabit Etherent, PoE etc. complete as required.	20.00	Each
<b>4</b>	Supplying, Installation, Testing & Commissioning of Analog phones having standard feautres like 16 digit LCD display, 2 way speaker, caller ID and number storage facility etc. complete as required.	75.00	Each
<b>5</b>	S/f of I/O Boxes Krone connectors ,with connection etc.		
<b>a</b>	20 Pair		Nos
<b>b</b>	50 Pair	4.00	Nos
<b>c</b>	100 Pair		Nos
<b>d</b>	200 Pair	1.00	Nos
<b>6</b>	Wiring of Jelly Filled telephone Cable in existing pipe for system with connection.		
<b>a</b>	20 Pair		Meter
<b>b</b>	50 Pair	200.00	Meter
<b>c</b>	100 Pair	-	Meter
<b>d</b>	200 Pair	50.00	Meter
<b>7</b>	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	1.00	Each
<b>8</b>	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color-RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required. <b>6U Rack</b>	-	Each

	Supplying, installation, Testing and commissioning of following capacity 24 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: At least 24 X RJ-45 Gigabit Ethernet Ports and additional 2 X 10G Base -T with 4 X SFP Ports with non-blocking architecture by having Switching capacity of min. 168Gbps and packet forwarding rate of 125Mpps or higher, 16K MAC table. Console Port, USB port, Stacking support of min. 8 units per stack. Internal dual AC Power supply, STP, RSTP, MSTP, BPDU Filter, BPDU Restriction, Min. 9K Jumbo Frame, LBD, IGMP Snooping V1/V2/V3, MLD Snooping V1/V2. IGMP /MLD Groups 1K or more, IPv4/IPv6 Loopback Interface, 16 L3 IP Interface, Ipv6 ND, VRRPv3, UDP Helper, ECMP. VLAN: 802.1Q, Port based, Q-in-Q, Multicast VLAN, Protocol VLAN.		
	VLAN Trunking, DHCP Snooping, Server, server Screening. RADIUS , TACACS+ Authentication, QoS: 802.1P, 8 queues per port, QoS : WRR, Strict+WRR, WRED, 802.1p. ACL: MAC based, IPv4C IPv6, TCP/UDP Port number, time based ACL, TFTP Client, SNMP V1, v2c, v3, SNMP traps, RMON, DHCP server, relay, client, LLDP, LLDP-MED, OAM, Dying Gasp, 802.3ah, sflow, RIP, OSPF v2/v3, policy based route, SSL, SSH. 6 kV surge protection on all Gigabit Ethernet ports and on all GE RJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.		
9	24 port PoE Layer 2 Network Switch with PoE Support of 370W or higher with each copper port supporting 802.3at PoE+ min.	2.00	Each
10	Supplying and fixing 42U Rack with 6 inch Castor wheels and front brake Floor Standing Rack with Main Frame Pillar of 1.6mm CRCA Sheet with removable side panels, L- Shape adjustable Vertical Mounting Rail of 2mm with 'U'Marking completely knocked-down condition (CKD) Shape, fitted with 4 number cooling fans, minimum 8nos two line cable entry/exit provision at top and bottom with rubber protection, Front door 5mm Toughened Glass with MS frame or MS perforated with lock, Rear MS vented or perforated door, Powder coated Color- RAL- 7035 or black, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number. etc. complete as required.	1.00	Each
11	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required. <b>Copper Patch Cords of length 3m (10ft)</b>	20.00	Each
12	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required. 90 mm Dia	200.00	Meter
	<b>TOTAL A</b>		
<b>B</b>	<b><u>DATA / NETWORKING SYSTEM</u></b>		
1	Supplying, Installation, Testing and commissioning of <b>CAT6 Copper Information Outlet (IO)</b> with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	182.00	Each

2	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required. <b>Copper Patch Cords of length 3m (10ft)</b>	364.00	Each
3	Supplying and drawing following core Fiber Optic Cable having corrugated steel armoring. The Fiber should be SM Fiber Central -loose tube filled with Thixotropic jelly, duly following Standards: ISO 11801, IEC 60793-1/60794-1-2, ITU-T-REC G.652D and Telecordia GR-20-core, High quality Electro Chromium Coated Corrugated Steel tape (ECCS ) and HDPE- Sheath, Operating ambient Temperature should be – 5 0C to +50 0C and Storage Temperature shall be – 5 0C to +50 0C, Max Attenuation $\pm 0.36$ (db / km) at Operational Wavelength 1310 nm and $\pm 0.22$ db / km at Operational Wavelength 1550 nm. type of fiber should be 9/125 / G.652D & Refractive Index should be 1.4670/1.4675. The value for Mode-field, Cladding Diameter $9.2 \pm 0.4 \mu\text{m}$ and $125 \pm 0.7 \mu\text{m}$ correspondingly. The Dispersion value $< 3.5 < 18$ ps/nm-km and PMD value $< 0.2$ ps/km and Cable Cut off wavelength $< 1260$ nm i/c splicing & marking etc complete as required. <b>Single Mode 6 Core Optical fiber cable</b>	450.00	Meter
4	Supply and fixing following port Rack Mount loaded LIU with pigtail, Front-mounted cable saddles for jumper management, suitable to manage both splices and terminations, Pre-assembled shelves in multiple configurations, Rubber fiber slotted bracket built-in, metal splice shelf to protect the fibers, 2 fiber spools built-in for 900 $\mu\text{m}$ tight buffered fiber storing, Capable of storing up to 3 meters of 900 $\mu\text{m}$ tight buffered fiber per adapter, Removable front and rear covers for better access to interior of LIU, Should be Single / Multi mode LC Type fully loaded. Accessory kit consists of cable ties, mounting ear screws, and spiral wrap tube etc complete as required. <b>6 Port LIU</b>	5.00	Each
5	Supplying and fixing Patch Cord of Optical Fiber Multi Mode or Single Mode LC to LC Fiber Duplex having high precision ceramic ferrule with good concentricity, Fiber corning single mode G652D, Cable Type 2mm with Mechanical specification Apex Offset $< 50 \mu\text{m}$ , Fiber Height + 100 nm, End-face radius of Curvature $7\text{mm} < R < 25\text{mm}$ , Repeatability $< 0.2$ db, Working ambient Temperature – 5 0C to +50 0C, Storage Temperature – 10 0C to +50 0C, Length -- 2meter, Type -- LC-LC Duplex etc complete as required.	88.00	Each
6	Supply, Installation, Testing & Commissioning of SC-LC SM Fiber Patch Cords ( 3 Mtr) as per given Specification etc. all complete.	32.00	Nos
7	Supplying, Installation, Testing and commissioning of small form-Pluggable (SFP) for Network Switches. Must be hot Pluggable, RoHS Complaint, etc. complete as required. <b>1G Copper SFP</b>	18.00	Each
8	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	8.00	Each
9	S/I/T/C of 48 port category 6e SL Series fully loaded patch Panel Make Dlink/Amp with active and passive components,punching, complete in all respect		Nos

10	<p>Supplying, installation, Testing and commissioning of following capacity 24 port Layer 3 Network Switch having features and specifications etc. as mentioned here under: At least 20 X RJ-45 Gigabit Ethernet Ports and additional 4 combo 10/100/1000 base-t/SFP Ports with additional 4 SFP+ ports non-blocking architecture by having Switching capacity of min. 128Gbps and packet forwarding rate of 95Mpps or higher, 16K MAC table. Console Port, USB port, Internal AC Power supply with operating temperature of 0 to +50 0C. Stacking port with stacking support of minimum 8 units per stack. 48K Mac address, 9K or more Jumbo frame, ERPS with enabling ring to converge in less than 50 ms from node or link failure, Static routing, Static, 6to4, ISATAP and GRE, IPv6 Neighbor Discovery (ND), BGP, ISIS, MPLS, VRRP v2, OSPFv2/v3, PBR, Route Redistribution, RIPv1/v2/ng, IP Helper all L3 Protocols should support from day 1 for both IPv6 and IPv4, 802.1x, Port security , Radius C TACACS+ authentication C accounting, DAD, DAI, DoS attack prevention, SSH, Guest VLAN, IP Access List, MAC Access List. Multicast: VLAN, PIM-SM, PIM DM, PIM-SDM, PIM-SMv6, DVMRP v3 and MSDP, IGMP C MLD Snooping, Flow mirroring, IGMP C MLD Snooping Querier, Per-VLAN IGMP C MLD Snooping. SNMP, Dual configurations, Multiple images, RMON, LLDP/LLDP-MED, sFlow, DHCP/BOOTP Client, IPv4/IPv6, Syslog server, Debug command, 802.3ah Ethernet Link OAM, 802.1ag Connectivity Fault, Y.1731 OAM, 802.1Qbb Priority- based Flow Control (PFC), Dying Gasp, Cable Diagnostics , 6 kV surge protection on all Gigabit Ethernet ports and on all GERJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.</p>	8.00	Each
11	<p>Supply, Installation, Testing &amp; Commissioning of Access Enterprise PoE Network Switch: 48 Port10/100/1000 Base-T PoE+ with 4 x 10G SFP+ ports Managed Switch. PoE budget minimum 740W further expandable up to 1440W and during the reboot of switch connected end point should get PoE Power. FlexStack-Plus Capability and minimum 8 switches to be stack in single stack;2GB or Higher DRAM and 4GB or higher Flash, 600MHz Dual Core or Higher CPU; 176Gbps or Higher switching bandwidth; 4K VLAN ID; 130 Mpps or higher forwarding rate; The switch should support Digital Network Architecture and SD Access. The switch should support redundant power supply unit.. The switch should support standard proocols: IEEE 802.1D STP, IEEE 802.1p CoS Prioritization; IEEE 802.1ab (LLDP); IEEE 802.3ab 1000Base-T; IEEE 802.3z 1000 Base-X; IEEE 802.3x Full Duplex on 10/100/1000 Base-T Ports; SNMP v1, V2c and V3; Safety Standards like UL; EN; IEC;EMC; RoHS</p>		Nos

12	<p>Supplying, installation, Testing and commissioning of 10 Giga Bandwidth Data Centre Network Switch of 48 port Layer 3 having features and specifications etc. as mentioned here under: - ToR/EOR/Core Network Switch 48x 10GbE SFP+, 6x 100GbE QSFP28, RPS, with Console Port, Management Port and 1 x USB 2.0 Type A port, The switch must provide a switching capacity of no less than 2.16 Tbps and a forwarding rate of at least 1600 Mpps, ensuring non-blocking performance for high-bandwidth applications. It should support hot-swappable dual power supply modules (AC or DC) for 1+1 redundancy and load sharing, as well as hot-swappable, front-to-back airflow fan trays with N+1 redundancy to ensure continuous availability. IEEE 802.1X support for port-based and MAC-based authentication should be available, along with integration for RADIUS and TACACS+ authentication services. Guest VLANs, DoS prevention, and management access restrictions are essential. SNMP v1/v2c/v3, syslog, sFlow, and support for auto configuration via DHCP. Support for OpenFlow v1.4, Netconf/YANG, and LLDP is required for modern network automation. Support ONIE (Open Network Install Environment), IEEE 802.1Q bb Priority-based Flow Control (PFC), OpenFlow v1.4, ERPS, IPv6 Tunneling, IP interfaces and supported, VXLAN, Private VLAN, Multicast VLAN, Guest VLAN Double VLAN (Q-in-Q), RoCEv2, PIM-SSM/SM, MSDP. Support High Availability with MLAG/VSS and Layer 2/3 VPNs Critical for Multi-tenant, Virtualized, and Containerized Environments. BGPv4/v6, OSPFv2/v3, IS-IS, RIPng. VRRP, ECMP, BFD, and route redistribution for high-availability routing. Support flexible routing domains and secure inter-segment traffic flow. Certifications: CE, FCC, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.</p>	1.00	Each
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<b>13</b>	50G SFP56 to SFP56 0.65m Direct Attach Copper Cable	1.00	Nos
<b>14</b>	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color-RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required. <b>6U Rack</b>	17.00	Each
<b>15</b>	Mapping of Network Nodes & LAN Diagram	1.00	Job

Name Of Work -Library Block Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	381	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	3864	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	5875	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	2950	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	1015	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	210	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	650	Meter
6	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.	65	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	5575	Meter



8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	10	Each
b	TV socket outlet	1	Each
c	RJ45 socket cat 6 with shutter	108	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	119	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	15	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	138	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	74	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	2	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	4860	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	263	Each

18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	236	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	0	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	4	Each
b	6 way (4 + 18), Double door	8	Each
c	8 way (4 + 24), Double door	27	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	824	Each
b	Double pole	2	Each
c	Three Phase & Neutral	29	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	87	Each
	63Amp.	18	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	2	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	6	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	40	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	40	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	30	Each
26	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.	6.0	Each
27	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.	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	150.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.0	Meter
30	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.	100	Meter
31	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.	50	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100	Meter
33	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.	50	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	31.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	73.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	17.00	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	22.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	11.00	Each

37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	237.00	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	12.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	24.00	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	16.00	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm. service value &gt; 6.0 CM/Min/Watt. air delivery 210 CM/Min</p>	195.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	195.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	4.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)	1	Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.	60	Metre
47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.	1	Each
48	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.	3.0	Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.	3	Each
50	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstraction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.	1	Each

51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b>  Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C,  Relative humidity 0 to 95%, Online double conversion true sine wave  Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		

	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	40KVA (Each Power module shall be < 10 KVA)	2	Set
<b>52</b>	<b>LIBRARY BLOCK MAIN L.T PANEL</b>	1.00	Set



	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrade as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics).		
	<b>INCOMING</b>		
	1 Nos. 1200 Amp FP EDO ACB 50KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Sselective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 1600 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		

	3 Nos. 500 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter HVAC +Spare		
	3 Nos. 125 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter UPS +Spare		
	4 Nos. 63 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT +Spare		
	8 Nos. 63 Amp FP MCB 10 KA On, Off, Trip Status Indication with control MCB Multifunction Meter PDB +Spare		
	8 Nos. 32 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LDB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>Library Block UPS Output Panel</b>	1.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meter.		

	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 K A Ics)		
	<b>INCOMING</b>		
	2 Nos. 125 Amp MCCB 36KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		
	<b>BUSCOUPLER</b>		
	1 Nos. 125 Amp FP MCCB		
	<b>BUSBARS</b>		
	2 Nos. 160 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	5 Nos. 80 Amp FP MCCB On, Off, Trip Status Indication with control MCB Floor UPS Panel +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>Library Block UPS Floor Panel</b>	3.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incoming and outgoing Air Circuit Breakers, microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to close indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection function and should not derate upto 50 degree Centigrade as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, having current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics).		
	<b>INCOMING</b>		
	1 Nos. 80 Amp MCCB 36KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 100 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	12 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB UPS DB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		

	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core	150.00	Meter
c	25 sq. mm 3-1/2 core	150.00	Meter
d	70 sq. mm 3-1/2 core	100.00	Meter
e	95 sq. mm 3-1/2 core		Meter
f	150 sq. mm 3-1/2 core	800.00	Meter
g	240 sq. mm 3-1/2 core	1,500.00	Meter
h	300 sq. mm 3-1/2 core	2,000.00	Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	100.00	Meter
59	Supply and fixing of brass nickel plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	6.00	Each
d	25 sq. mm 3.5 core	6.00	Each
e	35 sq. mm 3.5 core	8.00	Each
g	70 sq. mm 3-1/2 core	4.00	Each
h	95 sq. mm 3-1/2 core		Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core	8.00	Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter

c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	100.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	10.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter
b	200mm Dia	10.00	Meter

Name Of Work -Library Block CCTV Surveillance System Work			
Sr.No.	Particulars	Qty	Unit
1	<b>2 MP IP IR Dome Camera</b> Supplying Installation Testing and Commissioning of 2 MP IP IR Dome Camera having following specifications, type of lens and features etc :- 1) Signal System: PAL/NTSC, Signal to Noise Ratio: >50 dB, Camera should display Camera title, Date & Time in live & recorded video 2)Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition(Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day & Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking 3) Compression (Minimum):-Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723 4) Wide Dynamic Range:- WDR (120db or more) 5) Digital Noise Reduction:- DNR (3D) On/Off 6) Video Streaming & Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920×1080)@25/30 fps,Sub streams minimum: 720P@25/30 fps). 7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection 8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.		

Sr.No.	Particulars	Qty	Unit
	9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card. 10) Recording Management: Format SD, overwrite, storage management, video to NAS device 11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12) Network Protocol: SFTP, IPv6, IPv4, DNS, RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast		
	13) System Capability: ONVIF, Camera shall support open source VMS 14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement. 16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS		a
	2MP (@ 25/30fps@1080P (1920×1080)) IP IR Dome Camera with 2.8/ 3.6mm fixed lens	21.00	Each
2	2 MP IP IR Outdoor Bullet Camera		



Sr.No.	Particulars	Qty	Unit
	<p>Supplying Installation Testing and Commissioning of 2MP Fixed Lens IP IR Outdoor Bullet Camera having following specifications and features etc :-</p> <p>1) Signal System: PAL/NTSC, Signal to Noise Ratio: &gt; 50 dB, Camera should display Camera title, Date &amp; Time in live &amp; recorded video</p> <p>2) Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition (Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day &amp; Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt Smart IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking</p>		
	<p>3) Compression (Minimum):- Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723</p> <p>4) Wide Dynamic Range:- WDR (120db or more)</p> <p>5) Digital Noise Reduction:- DNR (3D) On/Off</p> <p>6) Video Streaming &amp; Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920 × 1080)@25/30 fps Sub streams minimum: 720P@25/30 fps).</p> <p>7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection</p> <p>8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.</p> <p>9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card</p>		

Sr.No.	Particulars	Qty	Unit
	10) Recording Management: Format SD, overwrite, storage management, video to NAS device, 11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12)Network Protocol: SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 13) System Capability: ONVIF, Camera shall support open source VMS		
	14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement. 16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS		
	2MP @ 25/30fps@1080P (1920×1080) Outdoor Bullet Camera with 2.8/ 3.6mm fixed lens	3.00	Each
3	Supplying Installation Testing and Commissioning of following Channel Network Video Recorder (NVR) with camera licenses to record for all channels having specifications and features etc as mentioned below : 1) Network Video Recorder Embedded/ Installed OS (Linux) along with Camera Licenses to record per NVR and to provide a live view, storage and simultaneously Multi-channel playback of all IP camera or more and must be ONVIF with minimum support of 384 Mbps incoming Bandwidth.		

Sr.No.	Particulars	Qty	Unit
	<p>2) NVR should support video compressions : H.265 or better, H.264, MJPEG.</p> <p>3) Must support 1 channel RCA Input, 2 channel RCA Output for Two-way Talk with G.711U/A, G.711u, PCM, G726 audio compressions.</p> <p>4) Intelligent auto power on when power resumes after power outage.</p> <p>5) Storage: It should support minimum 8 SATA Slots with 20TB capacity/ Slot and RAID support of RAID 0/1/5/6/10.</p> <p>6) Connectivity Interface : 2 Nos. x 10/100/1000 Mbps Ethernet Ports, 1x RS485, 1x RS232, 1x eSATA Port</p> <p>7) Backup Interface : Its should have 4 Nosx USB port (2x USB3.0, 2xUSB2.0)</p> <p>8) Video Output Ports: 2x HDMI and 2 VGA</p>		
	<p>9) Alarm Ports: It should have 16/8 Ch In/ Out ports to connect various type of external sensors and output devices like hooter/ Siren etc.</p> <p>10) Email &amp; SMS Alert options: Option for SMS/ Email Alerts to minimum 5 designated mobile number for power failure, HDD failure, vandalism, tampering, network disconnection and panic</p> <p>11) Web &amp; Mobile Application: Web, Mobile app ( For iPhone, iPad, Android Phone) for alerts and viewing.</p> <p>12) Protocols: HTTP, HTTPS, TCP/IP, IPv4/IPv6, UDP, DHCP, DNS, SMTP, UPnP, IP Filter, PPPoE, FTP, DDNS, Alarm Server, IP Search, Multicast, Auto Registration, ONVIF (Profile T, Profile S, Profile G), CGI, SDK and OEM Cloud for remote monitoring without any public IP need.</p>		
	<p>13) Standards: CE, FCC, RoHS, BIS Certified</p> <p>14) Power Supply : Should support AC100-240V, 50/60Hz Power supply.</p> <p>15) Operating Condition : -5°C to 50°C, humidity 90% (max) (non-condensing)</p> <p>16) The VMS application shall support all the features &amp; functionalities of the offered cameras.</p> <p>17) VMS should consist Licenses for all channels to record Cameras with General, motion detection, intelligent, alarm and POS recording modes. VMS should be provided with Camera Licenses , with no dependency of VMS licenses by binding with the MAC address of the cameras to achieve the functionality.</p>		

Sr.No.	Particulars	Qty	Unit
	<p>18) The NVR OEM shall be responsible for providing a mobile application compatible with both Android and iOS devices, enabling remote monitoring and playback of cameras/NVR footage.</p> <p>19) The OEM must provide its own DDNS server hosted in India, eliminating the need for a public IP address for remote monitoring over the Internet.</p> <p>20) Must support Continuous, Alarm, Motion, Instant, Panic Recording Mode</p> <p>21) It should support Resolution: 32MP; 24MP; 16MP; 12MP; 8MP; 5MP; 4MP; 1080p; 720p; D1; CIF; OCIF</p>		
	<p>22) When alarm recording is enabled and an event occurs, you can click the alarm icon on monitoring page to view the alert details. The snapshot function is supported on monitoring and playback page</p> <p>23) The Network Video Recorder (NVR) shall be configured to send email whenever a system message is created or an alarm event occurs. The email server shall be a valid SMTP server. Each recipient email address shall be configured to receive any combination of critical, warning, or informational messages or alarm notifications. When an alarm occurs, the email message includes the NVR name, time of alarm and a list of camera that is configured to record upon alarm</p>		
	<p>24) It should have Web and GUI interface.</p> <p>25) Built-In Artificial Intelligence: NVR should have built-in AI :-</p> <ul style="list-style-type: none"> <li>- 2 Channel face detection and recognition, - Minimum 4 Channel perimeter protection, - Minimum 8 Channel Smart Motion Detection</li> </ul> <p>26) Face Recognition Database Capacity: It should support total Blacklist and Whitelist capacity of Minimum 20,000 Faces or more with Face Detection speed of 12 face images/sec and facility to add Name, gender, birthday, address, credential type, credential No., countries &amp; regions and state to each face image.</p>		

Sr.No.	Particulars	Qty	Unit
	<p>27) Face &amp; Human Attributes Search: Search Pictures/ Video by Gender, age group, glasses, expressions, face mask, beard, Top color, top type, hat, bag, age, gender and umbrella.</p> <p>28) ANPR Capability: It should support ANPR Camera with License plate, plate color, vehicle body, vehicle model, vehicle logo, calling, seatbelt, vehicle registration location etc vehicle attributes.</p> <p>29) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan, cybersecurity exception</p>		
	<p>30) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email.</p> <p>31) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Exception Detection, People Staying Detection, Violence Detection.</p> <p>32) Smart playback function: Should support smart search for the selected area in the video and smart playback to improve the playback efficiency</p> <p>33) VCA (Video Content Analytic): Should support multiple video contented analytics based on camera analytics</p>		
	34) Analytics by NVR: Perimeter protection and face recognition		
	32 Channel Network Video Recorder (NVR) having display split :- Main screen: 1/4/8/9/16/25/32(36), 2nd screen: 1/4/8/9/16	1.00	Each
	<b>Hard Disk Drive</b>		
4	<p>Supplying, Installation, Testing and Commissioning following capacity Serveillance grade Hard Disk with upto 256MB/s Transfer Rate, 256 MB Cache, 7200 RPM Disk Speed, 3.5 inch form factor, SATA Interface, BSMI, ICES-003/NNB-003, CE, FCC, KC, Maghreb, RCM, UKCA, VCCI, CB-Scheme, TUV, UL Certifications.</p>		

Sr.No.	Particulars	Qty	Unit
	10TB (Terabytes)	2.00	Each
5	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	1.00	Each
6	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		
	Copper Patch Cords of length 3m (10ft)	42.00	Each
7	Supplying, Installation, Testing and commissioning of CAT6 Copper Information Outlet (IO) with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	24.00	Each
8	Supplying, drawing, Installation, Testing and commissioning of CAT6 UTP LSZH 23AWG Twisted Pair Cable in existing conduit/ on surface, Category 6 Unshielded Twisted Pair, 4 pair should be complied as per UL/ETL verification program for compliance with ANSI/TIA-568.2-D standard. Outer diameter should be in the range of 6.1mm nominal with Operating Temperature Range : -5° to +60°C, Bending Radius : < 4 X Cable Diameter at -5°C ± 1°C and Pulling Force : 11.5Kg etc. complete as required.		
	1 Run of cable	720.00	Meter
9	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required. 25mm Dia	720.00	Meter

Sr.No.	Particulars	Qty	Unit
10	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color- RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number. etc. complete as required.		
	6U Rack	1.00	Each
	<b>PC System</b>		
11	Supplying Installation Testing Commissioning of Client PC System comprising of PC Hardware with minimum 11th Gen Intel® I7 processor CPU E5-2640 x64 (or better), compatible with dual and quad core processors minimum 3.1 Ghz and 8GB or higher RAM, Hard Drive Space of 256 GB SSD or better, Video card and monitor capable of 1920 x 1080 pixel resolution or better with Ethernet adapter (10/100/1000 Mbps with RJ-45 connector) with 2 GB or higher Graphics card suitable for BMS System complete etc. as required.	1.00	Each
	<b>LED Display</b>		
12	Supplying, Installation, Testing and Commissioning of following size LED display (LED monitor) industrial grade with 3840x2160 resolution or better, USB playback, bluetooth and miracast connectivity, 4X HDMI 2.0, DP 1.2, HDR 10/10+, brightness: 500-nits or better, Video wall mode should be available, contrast ratio: 1200:1, OPS slot, viewing angle (H/V): 170°/ 170°, response time less than 12ms, Display control shall be on monitor screen and programmable with remote (remote shall be supplied with system), Key Board. Optical Mouse. etc. as required.		
	55 inch or larger	3.00	Each
12	S/I/T/C of 24 port 10/100/1000 Base T Standalone Gigabit Switch Make Dlink/Amp with active and passive components, punching, complete in all respect	1.00	Nos

Sr.No.	Particulars	Qty	Unit
13	Supplying, installing, testing and commissioning of HDMI to HDMI Cable.	3.00	Nos



Name Of Work -Library Block Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of Capsule lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	16 Passenger (G+5)	2	Each
	Total		
	AMC of Lift for 1st year @ 5% of Total Amount		
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount		
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount		
	AMC of Lift for 4th year @ 1.05% of 3rd year Amount		
	AMC of Lift for 5th year @ 1.05% of 4th year Amount		

**Name Of Work -Library Block EPABX & Networking System Work**

Sr.No.	Particulars	Qty	Unit
<b>A</b>	<b><u>EPABX SYSTEM</u></b>		
<b>1</b>	SITC of IP-PBX WITH REDUNDANT CPU & REDUNDANT POWER SUPPLY 16 CO TRUNK, 200 ANALOG EXTENSION, 20 SIP TRUNK, 4 E1 PRI TRUNK, 15 IP EXTENSION, PMS INTEGRATION		Each
<b>2</b>	SITC of REDUNDANT FCBC WITH 12V BATTERIES WITH 15AH CAPACITY		Nos
<b>3</b>	Supplying, Installation, Testing & Commissioning of Type 1 IP Phone having 2 VoIP account, 120 x40 DOT matrix screen with backlight, Full HD duplex speaker phone, IPV6, Gigabit Etherent, PoE etc. complete as required.		Each
<b>4</b>	Supplying, Installation, Testing & Commissioning of Analog phones having standard feautres like 16 digit LCD display, 2 way speaker, caller ID and number storage facility etc. complete as required.	10.00	Each
<b>5</b>	S/f of I/O Boxes Krone connectors ,with connection etc.		
<b>a</b>	20 Pair	1.00	Nos
<b>b</b>	50 Pair		Nos
<b>c</b>	100 Pair		Nos
<b>d</b>	200 Pair		Nos
<b>6</b>	Wiring of Jelly Filled telephone Cable in existing pipe for system with connection.		
<b>a</b>	20 Pair	100.00	Meter
<b>b</b>	50 Pair		Meter
<b>c</b>	100 Pair	-	Meter
<b>d</b>	200 Pair		Meter
<b>7</b>	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		Each
<b>8</b>	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color-RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required. <b>6U Rack</b>	-	Each

	Supplying, installation, Testing and commissioning of following capacity 24 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: At least 24 X RJ-45 Gigabit Ethernet Ports and additional 2 X 10G Base -T with 4 X SFP Ports with non-blocking architecture by having Switching capacity of min. 168Gbps and packet forwarding rate of 125Mpps or higher, 16K MAC table. Console Port, USB port, Stacking support of min. 8 units per stack. Internal dual AC Power supply, STP, RSTP, MSTP, BPDU Filter, BPDU Restriction, Min. 9K Jumbo Frame, LBD, IGMP Snooping V1/V2/V3, MLD Snooping V1/V2. IGMP /MLD Groups 1K or more, IPv4/IPv6 Loopback Interface, 16 L3 IP Interface, Ipv6 ND, VRRPv3, UDP Helper, ECMP. VLAN: 802.1Q, Port based, Q-in-Q, Multicast VLAN, Protocol VLAN.		
	VLAN Trunking, DHCP Snooping, Server, server Screening. RADIUS , TACACS+ Authentication, QoS: 802.1P, 8 queues per port, QoS : WRR, Strict+WRR, WRED, 802.1p. ACL: MAC based, IPv4C IPv6, TCP/UDP Port number, time based ACL, TFTP Client, SNMP V1, v2c, v3, SNMP traps, RMON, DHCP server, relay, client, LLDP, LLDP-MED, OAM, Dying Gasp, 802.3ah, sflow, RIP, OSPF v2/v3, policy based route, SSL, SSH. 6 kV surge protection on all Gigabit Ethernet ports and on all GE RJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.		
9	24 port PoE Layer 2 Network Switch with PoE Support of 370W or higher with each copper port supporting 802.3at PoE+ min.		Each
10	Supplying and fixing 42U Rack with 6 inch Castor wheels and front brake Floor Standing Rack with Main Frame Pillar of 1.6mm CRCA Sheet with removable side panels, L- Shape adjustable Vertical Mounting Rail of 2mm with 'U'Marking completely knocked-down condition (CKD) Shape, fitted with 4 number cooling fans, minimum 8nos two line cable entry/exit provision at top and bottom with rubber protection, Front door 5mm Toughened Glass with MS frame or MS perforated with lock, Rear MS vented or perforated door, Powder coated Color- RAL- 7035 or black, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number. etc. complete as required.		Each
11	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required. <b>Copper Patch Cords of length 3m (10ft)</b>		Each
12	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required. 90 mm Dia		Meter
	<b>TOTAL A</b>		
<b>B</b>	<b><u>DATA / NETWORKING SYSTEM</u></b>		
1	Supplying, Installation, Testing and commissioning of <b>CAT6 Copper Information Outlet (IO)</b> with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	90.00	Each

2	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required. <b>Copper Patch Cords of length 3m (10ft)</b>		Each
3	Supplying and drawing following core Fiber Optic Cable having corrugated steel armoring. The Fiber should be SM Fiber Central -loose tube filled with Thixotropic jelly, duly following Standards: ISO 11801, IEC 60793-1/60794-1-2, ITU-T-REC G.652D and Telecordia GR-20-core, High quality Electro Chromium Coated Corrugated Steel tape (ECCS ) and HDPE- Sheath, Operating ambient Temperature should be – 5 0C to +50 0C and Storage Temperature shall be – 5 0C to +50 0C, Max Attenuation $\pm 0.36$ (db / km) at Operational Wavelength 1310 nm and $\pm 0.22$ db / km at Operational Wavelength 1550 nm. type of fiber should be 9/125 / G.652D & Refractive Index should be 1.4670/1.4675. The value for Mode-field, Cladding Diameter $9.2 \pm 0.4 \mu\text{m}$ and $125 \pm 0.7 \mu\text{m}$ correspondingly. The Dispersion value $< 3.5 < 18$ ps/nm-km and PMD value $< 0.2$ ps/km and Cable Cut off wavelength $< 1260$ nm i/c splicing & marking etc complete as required. <b>Single Mode 6 Core Optical fiber cable</b>		Meter
4	Supply and fixing following port Rack Mount loaded LIU with pigtail, Front-mounted cable saddles for jumper management, suitable to manage both splices and terminations, Pre-assembled shelves in multiple configurations, Rubber fiber slotted bracket built-in, metal splice shelf to protect the fibers, 2 fiber spools built-in for 900 $\mu\text{m}$ tight buffered fiber storing, Capable of storing up to 3 meters of 900 $\mu\text{m}$ tight buffered fiber per adapter, Removable front and rear covers for better access to interior of LIU, Should be Single / Multi mode LC Type fully loaded. Accessory kit consists of cable ties, mounting ear screws, and spiral wrap tube etc complete as required. <b>6 Port LIU</b>		Each
5	Supplying and fixing Patch Cord of Optical Fiber Multi Mode or Single Mode LC to LC Fiber Duplex having high precision ceramic ferrule with good concentricity, Fiber corning single mode G652D, Cable Type 2mm with Mechanical specification Apex Offset $< 50 \mu\text{m}$ , Fiber Height + 100 nm, End-face radius of Curvature $7\text{mm} < R < 25\text{mm}$ , Repeatability $< 0.2$ db, Working ambient Temperature – 5 0C to +50 0C, Storage Temperature – 10 0C to +50 0C, Length -- 2meter, Type -- LC-LC Duplex etc complete as required.		Each
6	Supply, Installation, Testing & Commissioning of SC-LC SM Fiber Patch Cords ( 3 Mtr) as per given Specification etc. all complete.		Nos
7	Supplying, Installation, Testing and commissioning of small form-Pluggable (SFP) for Network Switches. Must be hot Pluggable, RoHS Complaint, etc. complete as required. <b>1G Copper SFP</b>		Each
8	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		Each
9	S/I/T/C of 48 port category 6e SL Series fully loaded patch Panel Make Dlink/Amp with active and passive components,punching, complete in all respect		Nos

10	<p>Supplying, installation, Testing and commissioning of following capacity 24 port Layer 3 Network Switch having features and specifications etc. as mentioned here under: At least 20 X RJ-45 Gigabit Ethernet Ports and additional 4 combo 10/100/1000 base-t/SFP Ports with additional 4 SFP+ ports non-blocking architecture by having Switching capacity of min. 128Gbps and packet forwarding rate of 95Mpps or higher, 16K MAC table. Console Port, USB port, Internal AC Power supply with operating temperature of 0 to +50 0C. Stacking port with stacking support of minimum 8 units per stack. 48K Mac address, 9K or more Jumbo frame, ERPS with enabling ring to converge in less than 50 ms from node or link failure, Static routing, Static, 6to4, ISATAP and GRE, IPv6 Neighbor Discovery (ND), BGP, ISIS, MPLS, VRRP v2, OSPFv2/v3, PBR, Route Redistribution, RIPv1/v2/ng, IP Helper all L3 Protocols should support from day 1 for both IPv6 and IPv4, 802.1x, Port security , Radius C TACACS+ authentication C accounting, DAD, DAI, DoS attack prevention, SSH, Guest VLAN, IP Access List, MAC Access List. Multicast: VLAN, PIM-SM, PIM DM, PIM-SDM, PIM-SMv6, DVMRP v3 and MSDP, IGMP C MLD Snooping, Flow mirroring, IGMP C MLD Snooping Querier, Per-VLAN IGMP C MLD Snooping. SNMP, Dual configurations, Multiple images, RMON, LLDP/LLDP-MED, sFlow, DHCP/BOOTP Client, IPv4/IPv6, Syslog server, Debug command, 802.3ah Ethernet Link OAM, 802.1ag Connectivity Fault, Y.1731 OAM, 802.1Qbb Priority- based Flow Control (PFC), Dying Gasp, Cable Diagnostics , 6 kV surge protection on all Gigabit Ethernet ports and on all GERJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.</p>	7.00	Each
11	<p>Supply, Installation, Testing &amp; Commissioning of Access Enterprise PoE Network Switch: 48 Port10/100/1000 Base-T PoE+ with 4 x 10G SFP+ ports Managed Switch. PoE budget minimum 740W further expandable up to 1440W and during the reboot of switch connected end point should get PoE Power. FlexStack-Plus Capability and minimum 8 switches to be stack in single stack;2GB or Higher DRAM and 4GB or higher Flash, 600MHz Dual Core or Higher CPU; 176Gbps or Higher switching bandwidth; 4K VLAN ID; 130 Mpps or higher forwarding rate; The switch should support Digital Network Architecture and SD Access. The switch should support redundant power supply unit.. The switch should support standard proocols: IEEE 802.1D STP, IEEE 802.1p CoS Prioritization; IEEE 802.1ab (LLDP); IEEE 802.3ab 1000Base-T; IEEE 802.3z 1000 Base-X; IEEE 802.3x Full Duplex on 10/100/1000 Base-T Ports; SNMP v1, V2c and V3; Safety Standards like UL; EN; IEC;EMC; RoHS</p>		Nos

12	<p>Supplying, installation, Testing and commissioning of 10 Giga Bandwidth Data Centre Network Switch of 48 port Layer 3 having features and specifications etc. as mentioned here under: - ToR/EOR/Core Network Switch 48x 10GbE SFP+, 6x 100GbE QSFP28, RPS, with Console Port, Management Port and 1 x USB 2.0 Type A port, The switch must provide a switching capacity of no less than 2.16 Tbps and a forwarding rate of at least 1600 Mpps, ensuring non-blocking performance for high-bandwidth applications. It should support hot-swappable dual power supply modules (AC or DC) for 1+1 redundancy and load sharing, as well as hot-swappable, front-to-back airflow fan trays with N+1 redundancy to ensure continuous availability. IEEE 802.1X support for port-based and MAC-based authentication should be available, along with integration for RADIUS and TACACS+ authentication services. Guest VLANs, DoS prevention, and management access restrictions are essential. SNMP v1/v2c/v3, syslog, sFlow, and support for auto configuration via DHCP. Support for OpenFlow v1.4, Netconf/YANG, and LLDP is required for modern network automation. Support ONIE (Open Network Install Environment), IEEE 802.1Q bb Priority-based Flow Control (PFC), OpenFlow v1.4, ERPS, IPv6 Tunneling, IP interfaces and supported, VXLAN, Private VLAN, Multicast VLAN, Guest VLAN Double VLAN (Q-in-Q), RoCEv2, PIM-SSM/SM, MSDP. Support High Availability with MLAG/VSS and Layer 2/3 VPNs Critical for Multi-tenant, Virtualized, and Containerized Environments. BGPv4/v6, OSPFv2/v3, IS-IS, RIPng. VRRP, ECMP, BFD, and route redistribution for high-availability routing. Support flexible routing domains and secure inter-segment traffic flow. Certifications: CE, FCC, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.</p>	1.00	Each
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<b>13</b>	50G SFP56 to SFP56 0.65m Direct Attach Copper Cable	1.00	Nos
<b>14</b>	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color-RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required. <b>6U Rack</b>	6.00	Each
<b>15</b>	Mapping of Network Nodes & LAN Diagram	1.00	Job

Name Of Work -Health Center Block Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	139	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	1400	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	775	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	750	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	260	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	195	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	490	Meter
6	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.	65	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	1185	Meter



8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	14	Each
b	TV socket outlet	1	Each
c	RJ45 socket cat 6 with shutter	18	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	33	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	37	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	50	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	27	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	7	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	630	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	77	Each

18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	32	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	0	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	0	Each
b	6 way (4 + 18), Double door	4	Each
c	8 way (4 + 24), Double door	3	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	144	Each
b	Double pole	0	Each
c	Three Phase & Neutral	4	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	12	Each
	63Amp.	9	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	0	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	3	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	10	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	10	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	0	Each
26	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.	2.0	Each
27	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.	0.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	50.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	0.0	Meter
30	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.	0	Meter
31	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.	50	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	50	Meter
33	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.	50	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	19.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	62.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	48.00	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	15.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	7.00	Each

37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	16.00	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	2.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	8.00	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	2.00	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm. service value &gt; 6.0 CM/Min/Watt. air delivery 210 CM/Min</p>	30.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	30.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	-	Each
45	<b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing & Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against		
	phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be < 5% at 50 %load. (The required LC (		

	inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication <del>DC222/DC485/RS485/RS232C/Modbus</del>		
	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	40KVA (Each Power module shall be < 10 KVA)	1	Set

<b>52</b>	<b>HEALTH CENTER MAIN L.T PANEL</b>	<b>1.00</b>	<b>Set</b>
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meter.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)		
	<b>INCOMING</b>		
	1 Nos. 200 Amp FP MCCB 50KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 250 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		



	2 Nos. 160 Amp FP EDO MCCB 36 KA, having specs as per attached annexure having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB HVAC + Spare		
	2 Nos. 63 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter UPS+Spare		
	4 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB LDB +Spare		
	5 Nos. 63 Amp FP MCB On, Off, Trip Status Indication with control MCB PDB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>HEALTH CENTER UPS Output Panel</b>	1.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		

	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 K A Ics)		
	<b>INCOMING</b>		
	1 Nos. 63 Amp MCCB 36KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Sleective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 100 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	4 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB UPS DB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core	50.00	Meter
c	25 sq. mm 3-1/2 core	50.00	Meter
d	70 sq. mm 3-1/2 core		Meter
e	95 sq. mm 3-1/2 core	-	Meter
f	150 sq. mm 3-1/2 core		Meter
g	240 sq. mm 3-1/2 core	500.00	Meter
h	300 sq. mm 3-1/2 core	500.00	Meter
58	Supply ofPower/Control Copper Cables,Solid Copper conductor,XLPE Insulated,cores laid up, PVC tape innersheathed,Unarmoured/Armour (Glavanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm,2x16 sqmm, 3x10 sqmm,4x10sqmm balance all galvanised steel strip),extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core	50.00	Meter

b	35 sq. mm 3-1/2 core	-	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core	4.00	Each
c	16 sq. mm 4 core	4.00	Each
d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	-	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core	-	Each
l	300 sq. mm 3-1/2 core	2.00	Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm		Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	50.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	5.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter

b	200mm Dia	10.00	Meter
	<b>Total</b>		
	<b>Grand Total Without GST (DSR+MARKET BASED ITEM)</b>		
	<b>Grand Total Without GST (DSR+MARKET BASED ITEM) In Lac</b>		

<b>Name Of Work -Health Center Block Fire Detection Alarm &amp; PA System Work</b>			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
1	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	2	Each
2	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	2	Each
3	Supplying, installation, testing & commissioning talk back slave station in surface/recess suitable for operation on simplex mode complete with P.T.T. knob & speaker/microphone enclosed in a M.S.(16 SWG)/ ABS box with break glass in front etc. complete as required	2	Each
4	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS:2189 with mimic diagram for all area/zone covered, complete with all connections, interconnections as required		
	4 ZONE	2	Each
	CABLING & WIRING		
5	17.5.1 Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required	900	Meter
	<b>TOTAL</b>		
	<b>GRAND TOTAL WITHOUT GST (PWD+DSR+MARKET BASED ITEM)</b>		

	AND TOTAL WITHOUT GST (PWD+DSR+MARKET BASED ITEM) IN L
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Name Of Work -Health Center Block CCTV Surveillance System Work			
Sr.No.	Particulars	Qty	Unit
1	<b>2 MP IP IR Dome Camera</b> Supplying Installation Testing and Commissioning of 2 MP IP IR Dome Camera having following specifications, type of lens and features etc :- 1) Signal System: PAL/NTSC, Signal to Noise Ratio: >50 dB, Camera should display Camera title, Date & Time in live & recorded video 2)Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition(Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day & Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking 3) Compression (Minimum):-Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723 4) Wide Dynamic Range:- WDR (120db or more) 5) Digital Noise Reduction:- DNR (3D) On/Off 6) Video Streaming & Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920×1080)@25/30 fps,Sub streams minimum: 720P@25/30 fps). 7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection 8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.		

Sr.No.	Particulars	Qty	Unit
	9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card. 10) Recording Management: Format SD, overwrite, storage management, video to NAS device 11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12) Network Protocol: SFTP, IPv6, IPv4, DNS, RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast		
	13) System Capability: ONVIF, Camera shall support open source VMS 14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement. 16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS		
	2MP (@ 25/30fps@1080P (1920×1080)) IP IR Dome Camera with 2.8/ 3.6mm fixed lens	1.00	Each
2	2 MP IP IR Outdoor Bullet Camera		



Sr.No.	Particulars	Qty	Unit
	<p>Supplying Installation Testing and Commissioning of 2MP Fixed Lens IP IR Outdoor Bullet Camera having following specifications and features etc :-</p> <p>1) Signal System: PAL/NTSC, Signal to Noise Ratio: &gt; 50 dB, Camera should display Camera title, Date &amp; Time in live &amp; recorded video</p> <p>2) Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition (Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day &amp; Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt Smart IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking</p>		
	<p>3) Compression (Minimum):- Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723</p> <p>4) Wide Dynamic Range:- WDR (120db or more)</p> <p>5) Digital Noise Reduction:- DNR (3D) On/Off</p> <p>6) Video Streaming &amp; Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920 × 1080)@25/30 fps Sub streams minimum: 720P@25/30 fps).</p> <p>7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection</p> <p>8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.</p> <p>9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card</p>		

Sr.No.	Particulars	Qty	Unit
	10) Recording Management: Format SD, overwrite, storage management, video to NAS device, 11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12)Network Protocol: SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 13) System Capability: ONVIF, Camera shall support open source VMS		
	14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement. 16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS		
	2MP @ 25/30fps@1080P (1920×1080) Outdoor Bullet Camera with 2.8/ 3.6mm fixed lens	4.00	Each
	<b>Hard Disk Drive</b>		
3	Supplying, Installation, Testing and Commissioning following capacity Serveillance grade Hard Disk with upto 256MB/s Transfer Rate, 256 MB Cache, 7200 RPM Disk Speed, 3.5 inch form factor, SATA Interface, BSMI, ICES-003/NNB-003, CE, FCC, KC, Maghreb, RCM, UKCA, VCCI, CB-Scheme, TUV, UL Certifications.		
	4TB (Terabytes)	1.00	Each

Sr.No.	Particulars	Qty	Unit
4	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	1.00	Each
5	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		
	Copper Patch Cords of length 3m (10ft)	8.00	Each
6	Supplying, Installation, Testing and commissioning of CAT6 Copper Information Outlet (IO) with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	8.00	Each
7	Supplying, drawing, Installation, Testing and commissioning of CAT6 UTP LSZH 23AWG Twisted Pair Cable in existing conduit/ on surface, Category 6 Unshielded Twisted Pair, 4 pair should be complied as per UL/ETL verification program for compliance with ANSI/TIA-568.2-D standard. Outer diameter should be in the range of 6.1mm nominal with Operating Temperature Range : -5° to +60°C, Bending Radius : < 4 X Cable Diameter at -5°C ± 1°C and Pulling Force : 11.5Kg etc. complete as required.		
	1 Run of cable	200.00	Meter
8	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required. 25mm Dia	200.00	Meter

Sr.No.	Particulars	Qty	Unit
9	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color- RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number. etc. complete as required.		
	6U Rack	1.00	Each
	<b>PC System</b>		
10	Supplying Installation Testing Commissioning of Client PC System comprising of PC Hardware with minimum 11th Gen Intel® I7 processor CPU E5-2640 x64 (or better), compatible with dual and quad core processors minimum 3.1 Ghz and 8GB or higher RAM, Hard Drive Space of 256 GB SSD or better, Video card and monitor capable of 1920 x 1080 pixel resolution or better with Ethernet adapter (10/100/1000 Mbps with RJ-45 connector) with 2 GB or higher Graphics card suitable for BMS System complete etc. as required.	1.00	Each
11	Supplying, installing, testing and commissioning of HDMI to HDMI Cable.	1.00	Nos

**Name Of Work -Museum Block EPABX & Networking System Work**

Sr.No.	Particulars	Qty	Unit
<b>A</b>	<b><u>EPABX SYSTEM</u></b>		
<b>1</b>	SITC of IP-PBX WITH REDUNDANT CPU & REDUNDANT POWER SUPPLY 16 CO TRUNK, 200 ANALOG EXTENSION, 20 SIP TRUNK, 4 E1 PRI TRUNK, 15 IP EXTENSION, PMS INTEGRATION		Each
<b>2</b>	SITC of REDUNDANT FCBC WITH 12V BATTERIES WITH 15AH CAPACITY		Nos
<b>3</b>	Supplying, Installation, Testing & Commissioning of Type 1 IP Phone having 2 VoIP account, 120 x40 DOT matrix screen with backlight, Full HD duplex speaker phone, IPV6, Gigabit Etherent, PoE etc. complete as required.		Each
<b>4</b>	Supplying, Installation, Testing & Commissioning of Analog phones having standard feautres like 16 digit LCD display, 2 way speaker, caller ID and number storage facility etc. complete as required.	10.00	Each
<b>5</b>	S/f of I/O Boxes Krone connectors ,with connection etc.		
<b>a</b>	20 Pair		Nos
<b>b</b>	50 Pair	1.00	Nos
<b>c</b>	100 Pair		Nos
<b>d</b>	200 Pair		Nos
<b>6</b>	Wiring of Jelly Filled telephone Cable in existing pipe for system with connection.		
<b>a</b>	20 Pair		Meter
<b>b</b>	50 Pair	100.00	Meter
<b>c</b>	100 Pair	-	Meter
<b>d</b>	200 Pair		Meter
<b>7</b>	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		Each
<b>8</b>	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color-RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required. <b>6U Rack</b>	-	Each

	Supplying, installation, Testing and commissioning of following capacity 24 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: At least 24 X RJ-45 Gigabit Ethernet Ports and additional 2 X 10G Base -T with 4 X SFP Ports with non-blocking architecture by having Switching capacity of min. 168Gbps and packet forwarding rate of 125Mpps or higher, 16K MAC table. Console Port, USB port, Stacking support of min. 8 units per stack. Internal dual AC Power supply, STP, RSTP, MSTP, BPDU Filter, BPDU Restriction, Min. 9K Jumbo Frame, LBD, IGMP Snooping V1/V2/V3, MLD Snooping V1/V2. IGMP /MLD Groups 1K or more, IPv4/IPv6 Loopback Interface, 16 L3 IP Interface, Ipv6 ND, VRRPv3, UDP Helper, ECMP. VLAN: 802.1Q, Port based, Q-in-Q, Multicast VLAN, Protocol VLAN.		
	VLAN Trunking, DHCP Snooping, Server, server Screening. RADIUS , TACACS+ Authentication, QoS: 802.1P, 8 queues per port, QoS : WRR, Strict+WRR, WRED, 802.1p. ACL: MAC based, IPv4C IPv6, TCP/UDP Port number, time based ACL, TFTP Client, SNMP V1, v2c, v3, SNMP traps, RMON, DHCP server, relay, client, LLDP, LLDP-MED, OAM, Dying Gasp, 802.3ah, sflow, RIP, OSPF v2/v3, policy based route, SSL, SSH. 6 kV surge protection on all Gigabit Ethernet ports and on all GE RJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.		
9	24 port PoE Layer 2 Network Switch with PoE Support of 370W or higher with each copper port supporting 802.3at PoE+ min.		Each
10	Supplying and fixing 42U Rack with 6 inch Castor wheels and front brake Floor Standing Rack with Main Frame Pillar of 1.6mm CRCA Sheet with removable side panels, L- Shape adjustable Vertical Mounting Rail of 2mm with 'U'Marking completely knocked-down condition (CKD) Shape, fitted with 4 number cooling fans, minimum 8nos two line cable entry/exit provision at top and bottom with rubber protection, Front door 5mm Toughened Glass with MS frame or MS perforated with lock, Rear MS vented or perforated door, Powder coated Color- RAL- 7035 or black, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number. etc. complete as required.		Each
11	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required. <b>Copper Patch Cords of length 3m (10ft)</b>		Each
12	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required. 90 mm Dia	100.00	Meter
	<b>TOTAL A</b>		
<b>B</b>	<b><u>DATA / NETWORKING SYSTEM</u></b>		
1	Supplying, Installation, Testing and commissioning of <b>CAT6 Copper Information Outlet (IO)</b> with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	18.00	Each

2	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required. <b>Copper Patch Cords of length 3m (10ft)</b>	36.00	Each
3	Supplying and drawing following core Fiber Optic Cable having corrugated steel armoring. The Fiber should be SM Fiber Central -loose tube filled with Thixotropic jelly, duly following Standards: ISO 11801, IEC 60793-1/60794-1-2, ITU-T-REC G.652D and Telecordia GR-20-core, High quality Electro Chromium Coated Corrugated Steel tape (ECCS ) and HDPE- Sheath, Operating ambient Temperature should be – 5 0C to +50 0C and Storage Temperature shall be – 5 0C to +50 0C, Max Attenuation $\pm 0.36$ (db / km) at Operational Wavelength 1310 nm and $\pm 0.22$ db / km at Operational Wavelength 1550 nm. type of fiber should be 9/125 / G.652D & Refractive Index should be 1.4670/1.4675. The value for Mode-field, Cladding Diameter $9.2 \pm 0.4 \mu\text{m}$ and $125 \pm 0.7 \mu\text{m}$ correspondingly. The Dispersion value $< 3.5 < 18$ ps/nm-km and PMD value $< 0.2$ ps/km and Cable Cut off wavelength $< 1260$ nm i/c splicing & marking etc complete as required. <b>Single Mode 6 Core Optical fiber cable</b>	400.00	Meter
4	Supply and fixing following port Rack Mount loaded LIU with pigtail, Front-mounted cable saddles for jumper management, suitable to manage both splices and terminations, Pre-assembled shelves in multiple configurations, Rubber fiber slotted bracket built-in, metal splice shelf to protect the fibers, 2 fiber spools built-in for 900 $\mu\text{m}$ tight buffered fiber storing, Capable of storing up to 3 meters of 900 $\mu\text{m}$ tight buffered fiber per adapter, Removable front and rear covers for better access to interior of LIU, Should be Single / Multi mode LC Type fully loaded. Accessory kit consists of cable ties, mounting ear screws, and spiral wrap tube etc complete as required. <b>6 Port LIU</b>	2.00	Each
5	Supplying and fixing Patch Cord of Optical Fiber Multi Mode or Single Mode LC to LC Fiber Duplex having high precision ceramic ferrule with good concentricity, Fiber corning single mode G652D, Cable Type 2mm with Mechanical specification Apex Offset $< 50 \mu\text{m}$ , Fiber Height + 100 nm, End-face radius of Curvature $7\text{mm} < R < 25\text{mm}$ , Repeatability $< 0.2$ db, Working ambient Temperature – 5 0C to +50 0C, Storage Temperature – 10 0C to +50 0C, Length -- 2meter, Type -- LC-LC Duplex etc complete as required.	36.00	Each
6	Supply, Installation, Testing & Commissioning of SC-LC SM Fiber Patch Cords ( 3 Mtr) as per given Specification etc. all complete.	4.00	Nos
7	Supplying, Installation, Testing and commissioning of small form-Pluggable (SFP) for Network Switches. Must be hot Pluggable, RoHS Complaint, etc. complete as required. <b>1G Copper SFP</b>	4.00	Each
8	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	2.00	Each
9	S/I/T/C of 48 port category 6e SL Series fully loaded patch Panel Make Dlink/Amp with active and passive components,punching, complete in all respect		Nos

10	<p>Supplying, installation, Testing and commissioning of following capacity 24 port Layer 3 Network Switch having features and specifications etc. as mentioned here under: At least 20 X RJ-45 Gigabit Ethernet Ports and additional 4 combo 10/100/1000 base-t/SFP Ports with additional 4 SFP+ ports non-blocking architecture by having Switching capacity of min. 128Gbps and packet forwarding rate of 95Mpps or higher, 16K MAC table. Console Port, USB port, Internal AC Power supply with operating temperature of 0 to +50 0C. Stacking port with stacking support of minimum 8 units per stack. 48K Mac address, 9K or more Jumbo frame, ERPS with enabling ring to converge in less than 50 ms from node or link failure, Static routing, Static, 6to4, ISATAP and GRE, IPv6 Neighbor Discovery (ND), BGP, ISIS, MPLS, VRRP v2, OSPFv2/v3, PBR, Route Redistribution, RIPv1/v2/ng, IP Helper all L3 Protocols should support from day 1 for both IPv6 and IPv4, 802.1x, Port security , Radius C TACACS+ authentication C accounting, DAD, DAI, DoS attack prevention, SSH, Guest VLAN, IP Access List, MAC Access List. Multicast: VLAN, PIM-SM, PIM DM, PIM-SDM, PIM-SMv6, DVMRP v3 and MSDP, IGMP C MLD Snooping, Flow mirroring, IGMP C MLD Snooping Querier, Per-VLAN IGMP C MLD Snooping. SNMP, Dual configurations, Multiple images, RMON, LLDP/LLDP-MED, sFlow, DHCP/BOOTP Client, IPv4/IPv6, Syslog server, Debug command, 802.3ah Ethernet Link OAM, 802.1ag Connectivity Fault, Y.1731 OAM, 802.1Qbb Priority- based Flow Control (PFC), Dying Gasp, Cable Diagnostics , 6 kV surge protection on all Gigabit Ethernet ports and on all GERJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.</p>	1.00	Each
11	<p>Supply, Installation, Testing &amp; Commissioning of Access Enterprise PoE Network Switch: 48 Port10/100/1000 Base-T PoE+ with 4 x 10G SFP+ ports Managed Switch. PoE budget minimum 740W further expandable up to 1440W and during the reboot of switch connected end point should get PoE Power. FlexStack-Plus Capability and minimum 8 switches to be stack in single stack;2GB or Higher DRAM and 4GB or higher Flash, 600MHz Dual Core or Higher CPU; 176Gbps or Higher switching bandwidth; 4K VLAN ID; 130 Mpps or higher forwarding rate; The switch should support Digital Network Architecture and SD Access. The switch should support redundant power supply unit.. The switch should support standard proocols: IEEE 802.1D STP, IEEE 802.1p CoS Prioritization; IEEE 802.1ab (LLDP); IEEE 802.3ab 1000Base-T; IEEE 802.3z 1000 Base-X; IEEE 802.3x Full Duplex on 10/100/1000 Base-T Ports; SNMP v1, V2c and V3; Safety Standards like UL; EN; IEC;EMC; RoHS</p>		Nos



12	<p>Supplying, installation, Testing and commissioning of 10 Giga Bandwidth Data Centre Network Switch of 48 port Layer 3 having features and specifications etc. as mentioned here under: - ToR/EOR/Core Network Switch 48x 10GbE SFP+, 6x 100GbE QSFP28, RPS, with Console Port, Management Port and 1 x USB 2.0 Type A port, The switch must provide a switching capacity of no less than 2.16 Tbps and a forwarding rate of at least 1600 Mpps, ensuring non-blocking performance for high-bandwidth applications. It should support hot-swappable dual power supply modules (AC or DC) for 1+1 redundancy and load sharing, as well as hot-swappable, front-to-back airflow fan trays with N+1 redundancy to ensure continuous availability. IEEE 802.1X support for port-based and MAC-based authentication should be available, along with integration for RADIUS and TACACS+ authentication services. Guest VLANs, DoS prevention, and management access restrictions are essential. SNMP v1/v2c/v3, syslog, sFlow, and support for auto configuration via DHCP. Support for OpenFlow v1.4, Netconf/YANG, and LLDP is required for modern network automation. Support ONIE (Open Network Install Environment), IEEE 802.1Q bb Priority-based Flow Control (PFC), OpenFlow v1.4, ERPS, IPv6 Tunneling, IP interfaces and supported, VXLAN, Private VLAN, Multicast VLAN, Guest VLAN Double VLAN (Q-in-Q), RoCEv2, PIM-SSM/SM, MSDP. Support High Availability with MLAG/VSS and Layer 2/3 VPNs Critical for Multi-tenant, Virtualized, and Containerized Environments. BGPv4/v6, OSPFv2/v3, IS-IS, RIPng. VRRP, ECMP, BFD, and route redistribution for high-availability routing. Support flexible routing domains and secure inter-segment traffic flow. Certifications: CE, FCC, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.</p>		Each
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<b>13</b>	50G SFP56 to SFP56 0.65m Direct Attach Copper Cable		Nos
<b>14</b>	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color-RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required. <b>6U Rack</b>	2.00	Each
<b>15</b>	Mapping of Network Nodes & LAN Diagram	1.00	Job
	<b>Total B</b>		
	<b>Grand Total (A+B) Without GST</b>		
	<b>Grand Total (A+B) Without GST in Lac</b>		

Name Of Work -Guest House Block Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. Group C	277.00	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	-	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	2,425.00	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	800.00	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	1,540.00	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	260.00	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	260.00	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	1,170.00	Meter
6	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.	945.00	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	2,250.00	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		

a	Telephone socket outlet	26.00	Each
b	TV socket outlet	21.00	Each
c	RJ45 socket cat 6 with shutter	3.00	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	50.00	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	107.00	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	80.00	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	30.00	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	15.00	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	135.00	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	82.00	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	24.00	Each

19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	17.00	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	2.00	Each
b	6 way (4 + 18), Double door	2.00	Each
c	8 way (4 + 24), Double door	4.00	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	156.00	Each
b	Double pole	-	Each
c	Three Phase & Neutral	4.00	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	12.00	Each
	63Amp.	12.00	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	-	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	4.00	Each
25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	20.00	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	20.00	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	10.00	Each

26	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.	2.00	Each
27	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.	-	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	50.00	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	-	Meter
30	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.	-	Meter
31	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.	20.00	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	50.00	Meter
33	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.	50.00	Meter
34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/ Surface mounting ground 6 Watt to 9 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI>80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warrantee.	17.00	Each

35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10 Watt to 15 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI>80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty	182.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36 Watt to 46 Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	2.00	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	17.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	16.00	Each
37	Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46 Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.  4320-5520 system lumen > 120lm/w, PF>0.95, THD<10% at full load CRI>80, >300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA	30.00	Each
38	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmissivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.  1200 system lumen, >120lm/W, PF>0.95, CRI>70, >300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA	6.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	1.00	Each

40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	6.00	Each
41	<b>Brush Less Direct Current (BLDC) Motor</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req 1200mm, service value > 6.0 CM/Min/Watt, air delivery 210 CM/Min	67.00	Each
42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	67.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	-	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eaarly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)		Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.		Metre



47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.		Each
48	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.		Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.		Each
50	Supply, installation, testing and commissioning of 2 x 25W LED Aviation abstraction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.		Each
51	<b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing & Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against		
	phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be < 5% at 50 %load. (The required LC (		

	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		
	<p>integration, all hardware &amp; software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 &amp; 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.</p>		
	<p>d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging &amp; Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code</p>		
	10KVA (Each Power module shall be < 10 KVA)	1.00	Set

<b>52</b>	<b>GUEST HOUSE MAIN L.T PANEL</b>	<b>1.00</b>	<b>Set</b>
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers, microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet. (65 KA Ics)		
	<b>INCOMING</b>		
	1 Nos. 125 Amp FP EDO MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexture From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		

	2 Nos. 63 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter UPS +Spare		
	6 Nos. 63 Amp FP MCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter PDB +Spare		
	4 Nos. 32 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LDB +Spare		
	Short Circuit Breaking capacity should not less than 25KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>Guest House UPS Output Panel</b>	1.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		

	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet. (65 K A Ics)		
	<b>INCOMING</b>		
	1 Nos. 63 Amp MCCB 25KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 100 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	4 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB UPS DB +Spare		
	Short Circuit Breaking capacity should not less than 25KA.		
	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core	1,200.00	Meter
b	16 sq. mm 4 core	1,200.00	Meter
c	25 sq. mm 3-1/2 core	1,500.00	Meter
d	70 sq. mm 3-1/2 core	2,000.00	Meter
e	95 sq. mm 3-1/2 core	200.00	Meter
f	150 sq. mm 3-1/2 core	400.00	Meter
g	240 sq. mm 3-1/2 core	450.00	Meter
h	300 sq. mm 3-1/2 core	500.00	Meter
58	Supply ofPower/Control Copper Cables,Solid Copper conductor,XLPE Insulated,cores laid up, PVC tape innersheathed,Unarmoured/Armour (Glavanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm,2x16 sqmm, 3x10 sqmm,4x10sqmm balance all galvanised steel strip),extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core	50.00	Meter

b	35 sq. mm 3-1/2 core	-	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core	4.00	Each
c	16 sq. mm 4 core	4.00	Each
d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core		Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core		Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm		Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	50.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	5.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter

b	200mm Dia	10.00	Meter
1	Supply Installation Testing of Electric Storage Water heater(Geyser) Capacity 25 litre 2000 watt ,BEE rating 5 star make AO Smith,Havells,Bajaj	15.00	Each

Name Of Work -Guest House Block CCTV Surveillance System Work			
Sr.No.	Particulars	Qty	Unit
1	<b>2 MP IP IR Dome Camera</b>		
	<p>Supplying Installation Testing and Commissioning of 2 MP IP IR Dome Camera having following specifications, type of lens and features etc :-</p> <p>1) Signal System: PAL/NTSC, Signal to Noise Ratio: &gt;50 dB, Camera should display Camera title, Date &amp; Time in live &amp; recorded video 2)Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition(Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day &amp; Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, <u>Back Light Compensation, Multi zone Privacy Masking, HLC,</u></p>		
	<p>3) Compression (Minimum):-Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723</p> <p>4) Wide Dynamic Range:- WDR (120db or more)</p> <p>5) Digital Noise Reduction:- DNR (3D) On/Off</p> <p>6) Video Streaming &amp; Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920×1080)@25/30 fps,Sub streams minimum: 720P@25/30 fps).</p> <p>7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection</p> <p>8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.</p>		



Sr.No.	Particulars	Qty	Unit
	<p>9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card.</p> <p>10) Recording Management: Format SD, overwrite, storage management, video to NAS device</p> <p>11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection</p> <p>12) Network Protocol: SFTP, IPv6, IPv4, DNS, RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast</p>		
	<p>13) System Capability: ONVIF, Camera shall support open source VMS</p> <p>14) Ethernet: 1 RJ 45 10/100 Ethernet port</p> <p>15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement.</p> <p>16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source.</p> <p>17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE</p> <p>18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body</p> <p>19) Operating Condition:- Ambient Temperature:- (-) 05°C to 50°C, humidity 95% (max) (non-condensing)</p> <p>20) IR life: 40000 hours or higher</p> <p>21) Video Bit rate: 32 KBPS - 8 MBPS or better</p> <p>22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS</p>		
	2MP (@ 25/30fps@1080P (1920×1080)) IP IR Dome Camera with 2.8/ 3.6mm fixed lens	7.00	Each

Sr.No.	Particulars	Qty	Unit
2	<b>Network Video Recorder (NVR)</b>		
	Supplying Installation Testing and Commissioning of following Channel Network Video Recorder (NVR) with camera licenses to record for all channels having specifications and features etc as mentioned below : 1) Network Video Recorder Embedded/ Installed OS (Linux) along with Camera Licenses for number of channels of NVR to record per NVR and to provide a live view, storage and simultaneously Multi-channel playback of all IP, IR camera or more and must be ONVIF with minimum support of 256Mbps incoming Bandwidth.		
	2) NVR should support H.265 or better, H.264, MJPEG, MPEG4 support 3) Must support 1 channel Input, 1 channel Output, RCA for Two-way Talk 4) Intelligent auto power on when power resumes after power outage. 5) Storage: It should support minimum 2 SATA Slots with 20TB capacity/ Slot. 6) Connectivity Interface : 1 Nos. x 10/100/1000 Mbps Ethernet Ports, 1x RS485, 1x RS232 7) Backup Interface : Its should have 2 Nosx USB port (1x USB3.0, 1xUSB2.0) 8) Video Output Ports: 1x HDMI and 1 VGA		
	9) Alarm Ports: It should have 4/I Ch In/ Out ports to connect various type of external sensors and output devices like hooter/ Siren etc. 10) Email & SMS Alert options: Option for SMS/ Email Alerts to minimum 5 designated mobile number for power failure, HDD failure, vandalism, tempring, network disconnection and panic 11) Web & Mobile Application: Web, Mobile app ( For iPhone, iPad, Android Phone) for alerts and viewing. 12) Protocols: HTTP, HTTPS, TCP/IP, IPv4, UDP, NTP, DHCP, DNS, SMTP, UPnP, DDNS, Alarm Server, IP Search, Multicast, Auto Registration, ONVIF (Profile T, Profile S, Profile G), CGI, SDK and OEM Cloud for remote monitoring without any public IP need.		

Sr.No.	Particulars	Qty	Unit
	<p>13) Standards: CE, FCC, RoHS and BIS Certified</p> <p>14) Power Supply : Should support 12VDC, 4Amp or AC100-240V, 50/60Hz Power supply.</p> <p>15) Operating Condition : Ambient Temperature (-5°C to 50°C), humidity 90% (max) (non-condensing)</p> <p>16) The VMS, NVR application shall support all the features &amp; functionalities of the offered cameras.</p> <p>17) VMS should consist of Base license and Channel Licenses. VMS should be provided with camera Licenses , with no dependency of VMS licenses by binding with the MAC address of the cameras to achieve the functionality.</p> <p>18) The NVR OEM shall be responsible for providing a mobile application compatible with both Android and iOS devices, enabling remote monitoring and playback of cameras/NVR footage.</p>		
	<p>19) The OEM must provide its own DDNS server hosted in India, eliminating the need for a public IP address for remote monitoring over the Internet.</p> <p>20) Must support Resolution: 7680x4320 (8K), 3840*2160, 1920×1080, 1280×1024,1280×720, 1024×768</p> <p>21) Must support recording resolution upto 32MP</p> <p>22) Must support Continuous, Alarm, Motion, Instant, Panic Recording Mode</p> <p>23) When alarm recording is enabled and an event occurs, you can click the alarm icon on monitoring page to view the alert details. The snapshot function is supported on monitoring and playback page</p>		
	<p>24) The Network Video Recorder (NVR) shall be configured to send email whenever a system message is created or an alarm event occurs. The email server shall be a valid SMTP server. Each recipient email address shall be configured to receive any combination of critical, warning, or informational messages or alarm notifications. When an alarm occurs, the email message includes the NVR name, time of alarm and a list of camera that is configured to record upon alarm</p> <p>25) It should support Network Support: HTTP, TCP/IP, SMTP, DHCP, DNS, DDNS, FTP, NTP, UPnP, Multi IP Setting. Convert multiple recording files to one avi/MP4 file.</p>		

Sr.No.	Particulars	Qty	Unit
	<p>26) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Exception Detection, People Staying Detection, Violence Detection.</p> <p>27) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan</p> <p>28) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email</p>		
	<p>29) Built-In Artificial Intelligence: NVR should have built-in AI :-</p> <ul style="list-style-type: none"> <li>- 2 Channel face detection and recognition, - Minimum 4 Channel perimeter protection, - Minimum 8 Channel Smart Motion Detection</li> </ul> <p>30) Face Recognition Database Capacity: It should support total Blacklist and Whitelist capacity of Minimum 20,000 Faces or more with Face Detection speed of 12 face images/sec.</p> <p>31) Face &amp; Human Attributes Search: Search Pictures/ Video by Gender, age group, glasses, expressions, face mask, beard, Top color, top type, hat, bag, age, gender and umbrella.</p>		
	<p>32) ANPR Capability: It should support ANPR Camera with License plate, plate color, vehicle body, vehicle model, vehicle logo, calling, seatbelt, vehicle registration location etc vehicle attributes.</p> <p>33) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan, cybersecurity exception</p>		

Sr.No.	Particulars	Qty	Unit
	34) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email. 35) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Exception Detection, People Staying Detection, Violence Detection. 36) Smart playback function: Should support smart search for the selected area in the video and smart playback to improve the playback efficiency 37) VCA (Video Content Analytic): Should support multiple video contented analytics based on camera analytics		
	16 Channel Network Video Recorder (NVR) having display split :- Main screen: 1/4/8/9/16, 2nd screen: 1/4/8/9/16	1.00	Each
	<b>Hard Disk Drive</b>		
3	Supplying, Installation, Testing and Commissioning following capacity Serveillance grade Hard Disk with upto 256MB/s Transfer Rate, 256 MB Cache, 7200 RPM Disk Speed, 3.5 inch form factor, SATA Interface, BSML, ICES-003/NNB-003, CE, FCC, KC, Maghreb, RCM, UKCA, VCCI, CB-Scheme, TUV, UL Certifications.		
	8TB (Terabytes)	1.00	Each
4	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	1.00	Each
5	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		
	Copper Patch Cords of length 3m (10ft)	7.00	Each

Sr.No.	Particulars	Qty	Unit
6	Supplying, Installation, Testing and commissioning of CAT6 Copper Information Outlet (IO) with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	7.00	Each
7	Supplying, drawing, Installation, Testing and commissioning of CAT6 UTP LSZH 23AWG Twisted Pair Cable in existing conduit/ on surface, Category 6 Unshielded Twisted Pair, 4 pair should be complied as per UL/ETL verification program for compliance with ANSI/TIA-568.2-D standard. Outer diameter should be in the range of 6.1mm nominal with Operating Temperature Range : -5° to +60°C, Bending Radius : < 4 X Cable Diameter at -5°C ± 1°C and Pulling Force : 11.5Kg etc. complete as required.		
	1 Run of cable	420.00	Meter
8	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required. 25mm Dia	420.00	Meter
9	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color- RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number. etc. complete as required.		

Sr.No.	Particulars	Qty	Unit
	6U Rack	1.00	Each
	<b>PC System</b>		
10	Supplying Installation Testing Commissioning of Client PC System comprising of PC Hardware with minimum 11th Gen Intel® I7 processor CPU E5-2640 x64 (or better), compatible with dual and quad core processors minimum 3.1 Ghz and 8GB or higher RAM, Hard Drive Space of 256 GB SSD or better, Video card and monitor capable of 1920 x 1080 pixel resolution or better with Ethernet adapter (10/100/1000 Mbps with RJ-45 connector) with 2 GB or higher Graphics card suitable for BMS System complete etc. as required.	1.00	Each
	<b>LED Display</b>		
11	Supplying, Installation, Testing and Commissioning of following size LED display (LED monitor) industrial grade with 3840x2160 resolution or better, USB playback, bluetooth and miracast connectivity, 4X HDMI 2.0, DP 1.2, HDR 10/10+, brightness: 500-nits or better, Video wall mode should be available, contrast ratio: 1200:1, OPS slot, viewing angle (H/V): 170°/ 170°, response time less than 12ms, Display control shall be on monitor screen and programmable with remote (remote shall be supplied with system), Key Board. Optical Mouse. etc. as required.		
	55 inch or larger	1.00	Each

<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
<b>12</b>	S/I/T/C of 24 port 10/100/1000 Base T Standalone Gigabit Switch Make Dlink/Amp with active and passive components, punching, complete in all respect	1.00	Nos
<b>13</b>	Supplying, installing, testing and commissioning of HDMI to HDMI Cable.	1.00	Nos



Name Of Work -Guest House Block EPABX & Networking System Work			
Sr.No.	Particulars	Qty	Unit
<b>A</b>	<b><u>EPABX SYSTEM</u></b>		
<b>1</b>	SITC of IP-PBX WITH REDUNDANT CPU & REDUNDANT POWER SUPPLY 16 CO TRUNK, 200 ANALOG EXTENSION, 20 SIP TRUNK, 4 E1 PRI TRUNK, 15 IP EXTENSION, PMS INTEGRATION		Each
<b>2</b>	SITC of REDUNDANT FCBC WITH 12V BATTERIES WITH 15AH CAPACITY		Nos
<b>3</b>	Supplying, Installation, Testing & Commissioning of Type 1 IP Phone having 2 VoIP account, 120 x40 DOT matrix screen with backlight, Full HD duplex speaker phone, IPV6, Gigabit Ethernet, PoE etc. complete as required.		Each
<b>4</b>	Supplying, Installation, Testing & Commissioning of Analog phones having standard feautres like 16 digit LCD display, 2 way speaker, caller ID and number storage facility etc. complete as required.	26.00	Each
<b>5</b>	S/f of I/O Boxes Krone connectors ,with connection etc.		
<b>a</b>	20 Pair		Nos
<b>b</b>	50 Pair	1.00	Nos
<b>c</b>	100 Pair		Nos
<b>d</b>	200 Pair		Nos
<b>6</b>	Wiring of Jelly Filled telephone Cable in existing pipe for system with connection.		
<b>a</b>	20 Pair		Meter
<b>b</b>	50 Pair	950.00	Meter
<b>c</b>	100 Pair	-	Meter
<b>d</b>	200 Pair		Meter
<b>7</b>	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		Each
<b>8</b>	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color-RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required. <b>6U Rack</b>	-	Each

	Supplying, installation, Testing and commissioning of following capacity 24 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: At least 24 X RJ-45 Gigabit Ethernet Ports and additional 2 X 10G Base -T with 4 X SFP Ports with non-blocking architecture by having Switching capacity of min. 168Gbps and packet forwarding rate of 125Mpps or higher, 16K MAC table. Console Port, USB port, Stacking support of min. 8 units per stack. Internal dual AC Power supply, STP, RSTP, MSTP, BPDU Filter, BPDU Restriction, Min. 9K Jumbo Frame, LBD, IGMP Snooping V1/V2/V3, MLD Snooping V1/V2. IGMP /MLD Groups 1K or more, IPv4/IPv6 Loopback Interface, 16 L3 IP Interface, Ipv6 ND, VRRPv3, UDP Helper, ECMP. VLAN: 802.1Q, Port based, Q-in-Q, Multicast VLAN, Protocol VLAN.		
	VLAN Trunking, DHCP Snooping, Server, server Screening. RADIUS , TACACS+ Authentication, QoS: 802.1P, 8 queues per port, QoS : WRR, Strict+WRR, WRED, 802.1p. ACL: MAC based, IPv4C IPv6, TCP/UDP Port number, time based ACL, TFTP Client, SNMP V1, v2c, v3, SNMP traps, RMON, DHCP server, relay, client, LLDP, LLDP-MED, OAM, Dying Gasp, 802.3ah, sflow, RIP, OSPF v2/v3, policy based route, SSL, SSH. 6 kV surge protection on all Gigabit Ethernet ports and on all GE RJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.		
9	24 port PoE Layer 2 Network Switch with PoE Support of 370W or higher with each copper port supporting 802.3at PoE+ min.		Each
10	Supplying and fixing 42U Rack with 6 inch Castor wheels and front brake Floor Standing Rack with Main Frame Pillar of 1.6mm CRCA Sheet with removable side panels, L- Shape adjustable Vertical Mounting Rail of 2mm with 'U'Marking completely knocked-down condition (CKD) Shape, fitted with 4 number cooling fans, minimum 8nos two line cable entry/exit provision at top and bottom with rubber protection, Front door 5mm Toughened Glass with MS frame or MS perforated with lock, Rear MS vented or perforated door, Powder coated Color- RAL- 7035 or black, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number. etc. complete as required.		Each
11	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required. <b>Copper Patch Cords of length 3m (10ft)</b>		Each
12	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required. 90 mm Dia	950.00	Meter
	<b>TOTAL A</b>		
<b>B</b>	<b><u>DATA / NETWORKING SYSTEM</u></b>		
1	Supplying, Installation, Testing and commissioning of <b>CAT6 Copper Information Outlet (IO)</b> with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.		Each

2	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required. <b>Copper Patch Cords of length 3m (10ft)</b>		Each
3	Supplying and drawing following core Fiber Optic Cable having corrugated steel armoring. The Fiber should be SM Fiber Central -loose tube filled with Thixotropic jelly, duly following Standards: ISO 11801, IEC 60793-1/60794-1-2, ITU-T-REC G.652D and Telecordia GR-20-core, High quality Electro Chromium Coated Corrugated Steel tape (ECCS ) and HDPE- Sheath, Operating ambient Temperature should be – 5 0C to +50 0C and Storage Temperature shall be – 5 0C to +50 0C, Max Attenuation $\pm 0.36$ (db / km) at Operational Wavelength 1310 nm and $\pm 0.22$ db / km at Operational Wavelength 1550 nm. type of fiber should be 9/125 / G.652D & Refractive Index should be 1.4670/1.4675. The value for Mode-field, Cladding Diameter $9.2 \pm 0.4 \mu\text{m}$ and $125 \pm 0.7 \mu\text{m}$ correspondingly. The Dispersion value $< 3.5 < 18$ ps/nm-km and PMD value $< 0.2$ ps/km and Cable Cut off wavelength $< 1260$ nm i/c splicing & marking etc complete as required. <b>Single Mode 6 Core Optical fiber cable</b>		Meter
4	Supply and fixing following port Rack Mount loaded LIU with pigtail, Front-mounted cable saddles for jumper management, suitable to manage both splices and terminations, Pre-assembled shelves in multiple configurations, Rubber fiber slotted bracket built-in, metal splice shelf to protect the fibers, 2 fiber spools built-in for 900 $\mu\text{m}$ tight buffered fiber storing, Capable of storing up to 3 meters of 900 $\mu\text{m}$ tight buffered fiber per adapter, Removable front and rear covers for better access to interior of LIU, Should be Single / Multi mode LC Type fully loaded. Accessory kit consists of cable ties, mounting ear screws, and spiral wrap tube etc complete as required. <b>6 Port LIU</b>		Each
5	Supplying and fixing Patch Cord of Optical Fiber Multi Mode or Single Mode LC to LC Fiber Duplex having high precision ceramic ferrule with good concentricity, Fiber corning single mode G652D, Cable Type 2mm with Mechanical specification Apex Offset $< 50 \mu\text{m}$ , Fiber Height + 100 nm, End-face radius of Curvature $7\text{mm} < R < 25\text{mm}$ , Repeatability $< 0.2$ db, Working ambient Temperature – 5 0C to +50 0C, Storage Temperature – 10 0C to +50 0C, Length -- 2meter, Type -- LC-LC Duplex etc complete as required.		Each
6	Supply, Installation, Testing & Commissioning of SC-LC SM Fiber Patch Cords ( 3 Mtr) as per given Specification etc. all complete.		Nos
7	Supplying, Installation, Testing and commissioning of small form-Pluggable (SFP) for Network Switches. Must be hot Pluggable, RoHS Complaint, etc. complete as required. <b>1G Copper SFP</b>		Each
8	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		Each
9	S/I/T/C of 48 port category 6e SL Series fully loaded patch Panel Make Dlink/Amp with active and passive components,punching, complete in all respect		Nos

10	<p>Supplying, installation, Testing and commissioning of following capacity 24 port Layer 3 Network Switch having features and specifications etc. as mentioned here under: At least 20 X RJ-45 Gigabit Ethernet Ports and additional 4 combo 10/100/1000 base-t/SFP Ports with additional 4 SFP+ ports non-blocking architecture by having Switching capacity of min. 128Gbps and packet forwarding rate of 95Mpps or higher, 16K MAC table. Console Port, USB port, Internal AC Power supply with operating temperature of 0 to +50 0C. Stacking port with stacking support of minimum 8 units per stack. 48K Mac address, 9K or more Jumbo frame, ERPS with enabling ring to converge in less than 50 ms from node or link failure, Static routing, Static, 6to4, ISATAP and GRE, IPv6 Neighbor Discovery (ND), BGP, ISIS, MPLS, VRRP v2, OSPFv2/v3, PBR, Route Redistribution, RIPv1/v2/ng, IP Helper all L3 Protocols should support from day 1 for both IPv6 and IPv4, 802.1x, Port security , Radius C TACACS+ authentication C accounting, DAD, DAI, DoS attack prevention, SSH, Guest VLAN, IP Access List, MAC Access List. Multicast: VLAN, PIM-SM, PIM DM, PIM-SDM, PIM-SMv6, DVMRP v3 and MSDP, IGMP C MLD Snooping, Flow mirroring, IGMP C MLD Snooping Querier, Per-VLAN IGMP C MLD Snooping. SNMP, Dual configurations, Multiple images, RMON, LLDP/LLDP-MED, sFlow, DHCP/BOOTP Client, IPv4/IPv6, Syslog server, Debug command, 802.3ah Ethernet Link OAM, 802.1ag Connectivity Fault, Y.1731 OAM, 802.1Qbb Priority- based Flow Control (PFC), Dying Gasp, Cable Diagnostics , 6 kV surge protection on all Gigabit Ethernet ports and on all GERJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.</p>		Each
11	<p>Supply, Installation, Testing &amp; Commissioning of Access Enterprise PoE Network Switch: 48 Port10/100/1000 Base-T PoE+ with 4 x 10G SFP+ ports Managed Switch. PoE budget minimum 740W further expandable up to 1440W and during the reboot of switch connected end point should get PoE Power. FlexStack-Plus Capability and minimum 8 switches to be stack in single stack;2GB or Higher DRAM and 4GB or higher Flash, 600MHz Dual Core or Higher CPU; 176Gbps or Higher switching bandwidth; 4K VLAN ID; 130 Mpps or higher forwarding rate; The switch should support Digital Network Architecture and SD Access. The switch should support redundant power supply unit.. The switch should support standard proocols: IEEE 802.1D STP, IEEE 802.1p CoS Prioritization; IEEE 802.1ab (LLDP); IEEE 802.3ab 1000Base-T; IEEE 802.3z 1000 Base-X; IEEE 802.3x Full Duplex on 10/100/1000 Base-T Ports; SNMP v1, V2c and V3; Safety Standards like UL; EN; IEC;EMC; RoHS</p>		Nos

12	<p>Supplying, installation, Testing and commissioning of 10 Giga Bandwidth Data Centre Network Switch of 48 port Layer 3 having features and specifications etc. as mentioned here under: - ToR/EOR/Core Network Switch 48x 10GbE SFP+, 6x 100GbE QSFP28, RPS, with Console Port, Management Port and 1 x USB 2.0 Type A port, The switch must provide a switching capacity of no less than 2.16 Tbps and a forwarding rate of at least 1600 Mpps, ensuring non-blocking performance for high-bandwidth applications. It should support hot-swappable dual power supply modules (AC or DC) for 1+1 redundancy and load sharing, as well as hot-swappable, front-to-back airflow fan trays with N+1 redundancy to ensure continuous availability. IEEE 802.1X support for port-based and MAC-based authentication should be available, along with integration for RADIUS and TACACS+ authentication services. Guest VLANs, DoS prevention, and management access restrictions are essential. SNMP v1/v2c/v3, syslog, sFlow, and support for auto configuration via DHCP. Support for OpenFlow v1.4, Netconf/YANG, and LLDP is required for modern network automation. Support ONIE (Open Network Install Environment), IEEE 802.1Q bb Priority-based Flow Control (PFC), OpenFlow v1.4, ERPS, IPv6 Tunneling, IP interfaces and supported, VXLAN, Private VLAN, Multicast VLAN, Guest VLAN Double VLAN (Q-in-Q), RoCEv2, PIM-SSM/SM, MSDP. Support High Availability with MLAG/VSS and Layer 2/3 VPNs Critical for Multi-tenant, Virtualized, and Containerized Environments. BGPv4/v6, OSPFv2/v3, IS-IS, RIPng. VRRP, ECMP, BFD, and route redistribution for high-availability routing. Support flexible routing domains and secure inter-segment traffic flow. Certifications: CE, FCC, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.</p>		Each
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<b>13</b>	50G SFP56 to SFP56 0.65m Direct Attach Copper Cable		Nos
<b>14</b>	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color-RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number, etc. complete as required. <b>6U Rack</b>		Each
<b>15</b>	Mapping of Network Nodes & LAN Diagram		Job
	<b>Total B</b>		
	<b>Grand Total (A+B) Without GST</b>		
	<b>Grand Total (A+B) Without GST in Lac</b>		

**Name Of Work -Diploma Boys/Girls Hostel Block Internal Electrification Work**

<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
1	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 in surface / recessed medium class PVC 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. Group C	365.00	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	-	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	2,744.00	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	1,825.00	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	2,140.00	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	210.00	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	210.00	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	130.00	Meter
6	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.	65.00	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	325.00	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		

a	Telephone socket outlet	2.00	Each
b	TV socket outlet	1.00	Each
c	RJ45 socket cat 6 with shutter	2.00	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	5.00	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	127.00	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	76.00	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	55.00	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	2.00	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	130.00	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	120.00	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	74.00	Each



19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	22.00	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	5.00	Each
b	6 way (4 + 18), Double door	9.00	Each
c	8 way (4 + 24), Double door	-	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	206.00	Each
b	Double pole	2.00	Each
c	Three Phase & Neutral	6.00	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	18.00	Each
	63Amp.	18.00	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	2.00	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	6.00	Each
25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	30.00	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	30.00	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	20.00	Each

26	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.	10.00	Each
27	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.	2.00	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	150.00	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.00	Meter
30	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.	20.00	Meter
31	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.	50.00	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100.00	Meter
33	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.	50.00	Meter
34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/ Surface mounting ground 6 Watt to 9 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated die cast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warrantee.	49.00	Each

35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10 Watt to 15 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI>80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty	117.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36 Watt to 46 Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED12S 6500 PSU GR or equivalent.	19.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	159.00	Each
37	Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46 Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, suitable for 24 hr continuous operation complete in all respect.  4320-5520 system lumen > 120lm/w, PF>0.95, THD<10% at full load CRI>80, >300V over voltage protection, 4KV internal surge protection with 5 year warranty. CAT-AAA	-	Each
38	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmissivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.  1200 system lumen, >120lm/W, PF>0.95, CRI>70, >300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA	22.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	-	Each

40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	8.00	Each
41	<b>Brush Less Direct Current (BLDC) Motor</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req 1200mm. service value > 6.0 CM/Min/Watt. air delivery 210 CM/Min	81.00	Each
42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work	81.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	4.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)	1.00	Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.	60.00	Metre

47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.	1.00	Each
48	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.	3.00	Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.	3.00	Each
50	Supply, installation, testing and commissioning of 2 x 25W LED Aviation abstraction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.	1.00	Each
51	<b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing & Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against		
	phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be < 5% at 50 %load. (The required LC (		

	inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication RS232/RS485/SNMP and optional GSM GPRS.		
	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	30KVA (Each Power module shall be < 10 KVA)	1.00	Set

52	<b>DIPLOMA BOYS / GIRLS HOSTEL MAIN L.T PANEL</b>	1.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers, microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet. (65 KA Ics)		
	<b>INCOMING</b>		
	1 Nos. 320 Amp FP MCCB 50KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Sleective Interlocking function Multifunction Meter		

	1 Nos. 125 Amp FP EDO MCCB 50KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	1 Nos. 125 Amp FP ATS		
	<b>BUSBARS</b>		
	1 Nos. 320 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	1 Nos. 100 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter UPS +Spare		
	6 Nos. 63 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT + UPS +Spare		
	10 Nos. 63 Amp FP MCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter PDB +Spare		
	10 Nos. 32 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LDB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>DIPLOMA BOYS / GIRLS HOSTEL UPS PANEL</b>	1.00	Set



	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics).		
	<b>INCOMING</b>		
	1 Nos. 125 Amp MCCB 25KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 160 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	9 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB UPS DB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		

	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core	300.00	Meter
c	25 sq. mm 3-1/2 core		Meter
d	70 sq. mm 3-1/2 core	50.00	Meter
e	95 sq. mm 3-1/2 core		Meter
f	150 sq. mm 3-1/2 core	100.00	Meter
g	240 sq. mm 3-1/2 core		Meter
h	300 sq. mm 3-1/2 core	1,200.00	Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	50.00	Meter
59	Supply and fixing of brass nickel plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	10.00	Each
d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	4.00	Each
g	70 sq. mm 3-1/2 core	2.00	Each
h	95 sq. mm 3-1/2 core		Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core	2.00	Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter

c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	50.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	10.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter
b	200mm Dia	10.00	Meter

Name Of Work -Diploma Boys/Girls Hostel Block Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	16 Passenger (G+5)	3	Meter
b	Add Extra for rest floors		Meter
c	20 Passenger (G+5) Lift	1	Meter
c	20 Passenger (G+5) Lift		Meter

Name Of Work -Research Boys Hostel Block Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	541	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	4004	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	1725	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	1540	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	560	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	280	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	65	Meter
6	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.	0	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	130	Meter

8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	1	Each
b	TV socket outlet	0	Each
c	RJ45 socket cat 6 with shutter	1	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	68	Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	2	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	122	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	109	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	132	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	68	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	65	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	112	Each

18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	69	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	34	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	10	Each
b	6 way (4 + 18), Double door	16	Each
c	8 way (4 + 24), Double door	0	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	392	Each
b	Double pole	2	Each
c	Three Phase & Neutral	16	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	48	Each
	63Amp.	24	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	2	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	8	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	30	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	30	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	20	Each
26	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.	6.0	Each
27	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.	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	150.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.0	Meter
30	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.	100	Meter
31	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.	50	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100	Meter
33	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.	50	Meter



34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	34.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	279.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	34.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	68.00	Each

37	Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.  4320-5520 system lumen > 120lm/w, PF>0.95, THD<10% at full load CRI>80, >300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA	-	Each
38	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.  1200 system lumen, >120lm/W, PF>0.95, CRI>70, >300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA	18.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	69.00	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	8.00	Each
41	<b>Brush Less Direct Current (BLDC) Motor</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req 1200mm. service value > 6.0 CM/Min/Watt. air delivery 210 CM/Min	68.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	68.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	4.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)		Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.		Metre
47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.		Each
48	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.		Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.		Each
50	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstraction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.		Each

51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		

	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accoseries are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	30KVA (Each Power module shall be < 10 KVA)	1	Set
<b>52</b>	<b>RESEARCH BOYS / GIRLS HOSTEL MAIN L.T PANEL</b>	1.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)		
	<b>INCOMING</b>		
	1 Nos. 250 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		

	1 Nos. 125 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	1 Nos. 125 Amp FP ATS		
	<b>BUSBARS</b>		
	1 Nos. 320 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	1 Nos. 100 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter UPS +Spare		
	6 Nos. 63 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT + UPS +Spare		
	10 Nos. 63 Amp FP MCB 10 KA On, Off, Trip Status Indication with control MCB Multifunction Meter PDB +Spare		
	10 Nos. 32 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LDB +Spare		
	Short Circuit Breaking capacity should not less than 25KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>RESEARCH BOYS / GIRLS HOSTEL UPS PANEL</b>	1.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)		
	<b>INCOMING</b>		
	1 Nos. 125 Amp MCCB 25KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 160 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	9 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB UPS DB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		



	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core	300.00	Meter
c	25 sq. mm 3-1/2 core	200.00	Meter
d	70 sq. mm 3-1/2 core	200.00	Meter
e	95 sq. mm 3-1/2 core	250.00	Meter
f	150 sq. mm 3-1/2 core	450.00	Meter
g	240 sq. mm 3-1/2 core	1,200.00	Meter
h	300 sq. mm 3-1/2 core		Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	50.00	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	10.00	Each
d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	4.00	Each
g	70 sq. mm 3-1/2 core	2.00	Each

h	95 sq. mm 3-1/2 core		Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	50.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	10.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter
b	200mm Dia	10.00	Meter

Name Of Work -Research Boys Hostel Block Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	16 Passenger (G+5)	1	Meter
b	Add Extra for rest floors		Meter
c	20 Passenger (G+5) Lift	1	Meter
c	20 Passenger (G+5) Lift		Meter
	Total		
	AMC of Lift for 1st year @ 5% of Total Amount		
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount		
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount		
	AMC of Lift for 4thyear @ 1.05% of 3rd year Amount		
	AMC of Lift for 5thyear @ 1.05% of 4th year Amount		

Name Of Work -Research Girls Hostel Block Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	405	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	2996	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	1275	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	1540	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	420	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	210	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	65	Meter
6	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.	0	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	130	Meter

8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	1	Each
b	TV socket outlet	0	Each
c	RJ45 socket cat 6 with shutter	1	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	50	Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	2	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	91	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	82	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	103	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	50	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	65	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	87	Each

18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	51	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	25	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	8	Each
b	6 way (4 + 18), Double door	12	Each
c	8 way (4 + 24), Double door	0	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	296	Each
b	Double pole	2	Each
c	Three Phase & Neutral	12	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	36	Each
	63Amp.	18	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	2	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	6	Each
25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		

a	100 mm width X 50 mm depth X 1.6 mm thickness	30	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	30	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	20	Each
26	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.	6.0	Each
27	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.	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	150.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.0	Meter
30	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.	100	Meter
31	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.	50	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100	Meter
33	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.	50	Meter
34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/ Surface mounting ground 6 Watt to 9 Watt, Cutout Min 125mm, Height Min 40mm., LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120 Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warrantee.	25.00	Each

35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10 Watt to 15 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty	210.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36 Watt to 46 Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED12S 6500 PSU GR or equivalent.	25.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	50.00	Each
37	Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46 Watt seamlessly integrated LED luminaire with high purity transmissivity UV stabilized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and short circuit protection, suitable for 24 hr continuous operation complete in all respect.  4320-5520 system lumen > 120lm/w, PF>0.95, THD<10% at full load CRI>80, >300V over voltage protection, 4KV internal surge protection with 5 year warranty. CAT-AAA	-	Each
38	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set conforming to IP 65 and above Protection, IK08, High purity / transmissivity UV stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24hrs continuous operation complete in all respect.  1200 system lumen, >120lm/W, PF>0.95, CRI>70, >300V, over voltage protection, 4KV internal surge protection with 5 year warranty. CAT-AAA	16.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	51.00	Each



40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	8.00	Each
41	<b>Brush Less Direct Current (BLDC) Motor</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req 1200mm. service value > 6.0 CM/Min/Watt. air delivery 210 CM/Min	50.00	Each
42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work	50.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	4.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirng to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)		Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.		Metre

47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.		Each
48	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.		Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.		Each
50	Supply, installation, testing and commissioning of 2 x 25W LED Aviation abstraction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.		Each
51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b>  Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C,  Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		

	inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication <del>DS222/DS485/CAN/RS485/Modbus/Profibus-DP/RS-485</del>		
	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accoseries are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	30KVA (Each Power module shall be < 10 KVA)	1	Set

<b>52</b>	<b>RESEARCH BOYS / GIRLS HOSTEL MAIN L.T PANEL</b>	<b>1.00</b>	<b>Set</b>
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meter.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 K A Ics)		
	<b>INCOMING</b>		
	1 Nos. 250 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexture From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		

	1 Nos. 125 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	1 Nos. 125 Amp FP ATS		
	<b>BUSBARS</b>		
	1 Nos. 320 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	1 Nos. 100 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter UPS +Spare		
	6 Nos. 63 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT + UPS +Spare		
	10 Nos. 63 Amp FP MCB 10 KA On, Off, Trip Status Indication with control MCB Multifunction Meter PDB +Spare		
	10 Nos. 32 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LDB +Spare		
	Short Circuit Breaking capacity should not less than 25KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>RESEARCH BOYS / GIRLS HOSTEL UPS PANEL</b>	1.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics).		
	<b>INCOMING</b>		
	1 Nos. 125 Amp MCCB 25KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 160 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	9 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB UPS DB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		

	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core	300.00	Meter
c	25 sq. mm 3-1/2 core	200.00	Meter
d	70 sq. mm 3-1/2 core	200.00	Meter
e	95 sq. mm 3-1/2 core	250.00	Meter
f	150 sq. mm 3-1/2 core	450.00	Meter
g	240 sq. mm 3-1/2 core	1,200.00	Meter
h	300 sq. mm 3-1/2 core		Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	50.00	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	10.00	Each
d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	4.00	Each
g	70 sq. mm 3-1/2 core	2.00	Each

h	95 sq. mm 3-1/2 core		Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	50.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	10.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter
b	200mm Dia	10.00	Meter



Name Of Work -Research Girls Hostel Block Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	16 Passenger (G+5)	1	Meter
b	Add Extra for rest floors		Meter
c	20 Passenger (G+5) Lift	1	Meter
c	20 Passenger (G+5) Lift		Meter
	Total		
	AMC of Lift for 1st year @ 5% of Total Amount		
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount		
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount		
	AMC of Lift for 4thyear @ 1.05% of 3rd year Amount		
	AMC of Lift for 5thyear @ 1.05% of 4th year Amount		
	<b>Grand Total</b>		
	<b>Total</b>		
	<b>Grand Total Without GST (DSR+MARKET BASED ITEM)</b>		
	<b>Grand Total Without GST (DSR+MARKET BASED ITEM) In Lac</b>		

Name Of Work -UG/PG Boys Hostel Block Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	1,351.00	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	-	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	8,792.00	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	6,714.00	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	4,300.00	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	1,120.00	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	595.00	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	105.00	Meter
6	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.	405.00	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	640.00	Meter

8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	3.00	Each
b	TV socket outlet	9.00	Each
c	RJ45 socket cat 6 with shutter	2.00	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	14.00	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	572.00	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	275.00	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	108.00	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	2.00	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	130.00	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	286.00	Each

18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	382.00	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	39.00	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	20.00	Each
b	6 way (4 + 18), Double door	30.00	Each
c	8 way (4 + 24), Double door	3.00	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	820.00	Each
b	Double pole	4.00	Each
c	Three Phase & Neutral	32.00	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	96.00	Each
	63Amp.	51.00	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	4.00	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	17.00	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	50.00	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	50.00	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	20.00	Each
26	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.	10.00	Each
27	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.	2.00	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	150.00	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.00	Meter
30	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.	20.00	Meter
31	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.	50.00	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100.00	Meter
33	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.	50.00	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess / Surface mounting ground 6 Watt to 9 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser / Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120 Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	194.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess / Surface mounting ground 10 Watt to 15 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser / Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120 Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty	400.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36 Watt to 46 Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser / Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	50.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	584.00	Each

37	Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.  4320-5520 system lumen > 120lm/w, PF>0.95, THD<10% at full load CRI>80, >300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA	-	Each
38	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.  1200 system lumen, >120lm/W, PF>0.95, CRI>70, >300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA	44.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	-	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	8.00	Each
41	<b>Brush Less Direct Current (BLDC) Motor</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req 1200mm. service value > 6.0 CM/Min/Watt. air delivery 210 CM/Min	296.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	296.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	4.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)	1.00	Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.	60.00	Metre
47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.	1.00	Each
48	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.	3.00	Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.	3.00	Each
50	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstruction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.	1.00	Each



51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b>  Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C,  Relative humidity 0 to 95%, Online double conversion true sine wave  Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		

	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accoseries are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	40KVA (Each Power module shall be < 10 KVA)	2.00	Set
<b>52</b>	<b>UG/PG BOYS HOSTEL MAIN L.T PANEL</b>	1.00	Set

	<p>SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB &amp; Multifunction meters.</p>		
	<p>The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous &amp; earthfault protection with Current &amp; Voltage metering &amp; LCD display.</p>		
	<p>Air Circuit Breaker with microprocessor release ge metering &amp; LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrade as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism &amp; capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 K A Ics).</p>		
	<b>INCOMING</b>		
	<p>1 Nos. 630 Amp FP EDO ACB 25KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having  R,Y,B Phase indication Lamp with control MCB  On, Off, Trip Status Indication with control MCB  Inbuilt Zone Slective Interlocking function  Multifunction Meter</p>		

	1 Nos. 200 Amp FP EDO ACB 25KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slective Interlocking function Multifunction Meter		
	1 Nos. 200 Amp FP ATS		
	<b>BUSBARS</b>		
	1 Nos. 800 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 250 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	3 Nos. 125 Amp FP MCCB 16 KA On, Off, Trip Status Indication with control MCB Multifunction Meter UPS +Spare		
	4 Nos. 63 Amp FP MCCB 16 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT +Spare		
	17 Nos. 63 Amp FP MCB 10 KA On, Off, Trip Status Indication with control MCB Multifunction Meter PDB +Spare		
	17 Nos. 32 Amp FP MCB 10 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LDB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>UG / PG Boys Hostel Block UPS Output Panel</b>	1.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 K A Ics).		
	<b>INCOMING</b>		
	2 Nos. 125 Amp MCCB 16KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slective Interlocking function Multifunction Meter		
	<b>BUSCOUPLER</b>		
	1 Nos. 125 Amp FP MCCB		
	<b>BUSBARS</b>		
	2 Nos. 160 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		

	17 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB UPS DB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core	400.00	Meter
c	25 sq. mm 3-1/2 core	800.00	Meter
d	70 sq. mm 3-1/2 core	1,000.00	Meter
e	95 sq. mm 3-1/2 core	1,200.00	Meter
f	150 sq. mm 3-1/2 core	1,800.00	Meter
g	240 sq. mm 3-1/2 core	2,000.00	Meter
h	300 sq. mm 3-1/2 core	2,500.00	Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	100.00	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	10.00	Each

d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	8.00	Each
g	70 sq. mm 3-1/2 core	4.00	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm		Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	100.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	20.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	20.00	Meter
b	200mm Dia	20.00	Meter

Name Of Work -UG/PG Boys Hostel Block Fire Detection Alarm & PA System			
Sr.No.	Particulars	Qty	Unit
1	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	24	Each
2	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	24	Each
3	Supplying, installation, testing & commissioning talk back slave station in surface/recess suitable for operation on simplex mode complete with P.T.T. knob & speaker/microphone enclosed in a M.S.(16 SWG)/ ABS box with break glass in front etc. complete as required	24	Each
4	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS:2189 with mimic diagram for all area/zone covered, complete with all connections, interconnections as required		
	4 ZONE	1	Each
	CABLING & WIRING		
5	17.5.1 Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required	5200	Meter



Name Of Work -UG/PG Boys Hostel Block Lift Work				
Sr.No.	Particulars	Sch.No.	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.	3.1		
a	16 Passenger (G+5)	3.1.6	3	Meter
b	Add Extra for rest floors	3.1.6	6	Meter
c	20 Passenger (G+5) Lift	3.2.2	1	Meter
c	Add Extra for rest floors	3.2.2	2	Meter
	Total			
	AMC of Lift for 1st year @ 5% of Total Amount			
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount			
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount			
	AMC of Lift for 4thyear @ 1.05% of 3rd year Amount			
	AMC of Lift for 5thyear @ 1.05% of 4th year Amount			

Name Of Work -UG/PG Girl Hostel Block Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	1029	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	6720	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	6925	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	3850	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	840	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	455	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	105	Meter
6	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.	315	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	550	Meter

8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	3	Each
b	TV socket outlet	7	Each
c	RJ45 socket cat 6 with shutter	2	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	12	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	428	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	209	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	88	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	2	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	130	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	218	Each

18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	284	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	31	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	16	Each
b	6 way (4 + 18), Double door	22	Each
c	8 way (4 + 24), Double door	3	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	628	Each
b	Double pole	4	Each
c	Three Phase & Neutral	24	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	72	Each
	63Amp.	39	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	4	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	13	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	45	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	45	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	20	Each
26	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.	10.0	Each
27	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.	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	150.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.0	Meter
30	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.	20	Meter
31	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.	50	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100	Meter
33	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.	50	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	146.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	300.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	38.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	444.00	Each

37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	-	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	36.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	-	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	8.00	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm. service value &gt; 6.0 CM/Min/Watt. air delivery 210 CM/Min</p>	226.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	226.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	37.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)	1	Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.	60	Metre
47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.	1	Each
48	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.	3.0	Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.	3	Each
50	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstruction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.	1	Each



51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b>  Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C,  Relative humidity 0 to 95%, Online double conversion true sine wave  Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		

	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accoseries are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	40KVA (Each Power module shall be < 10 KVA)	2.00	Set
<b>52</b>	<b>UG/PG GIRLS HOSTEL MAIN L.T PANEL</b>	1.00	Set

	<p>SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB &amp; Multifunction meters</p>		
	<p>The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous &amp; earthfault protection with Current &amp; Voltage metering &amp; LCD display.</p>		
	<p>Air Circuit Breaker with microprocessor release ge metering &amp; LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism &amp; capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)</p>		
	<b>INCOMING</b>		
	<p>1 Nos. 630 Amp FP EDO ACB 50KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having  R,Y,B Phase indication Lamp with control MCB  On, Off, Trip Status Indication with control MCB  Inbuilt Zone Slective Interlocking function  Multifunction Meter</p>		

	1 Nos. 200 Amp FP MCCB 50KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	1 Nos. 200 Amp FP ATS		
	<b>BUSBARS</b>		
	1 Nos. 800 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 250 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	3 Nos. 125 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter UPS +Spare		
	4 Nos. 63 Amp FP MCCB 36 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT +Spare		
	12 Nos. 63 Amp FP MCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter PDB +Spare		
	12 Nos. 32 Amp FP MCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LDB +Spare		
	Short Circuit Breaking capacity should not less than 25KA.		
	<b>RELAYS AS PER SLD</b>		
<b>56</b>	<b>UG / PG Girls Hostel Block UPS Output Panel</b>	1.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centigrade as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 K A Ics).		
	<b>INCOMING</b>		
	2 Nos. 125 Amp MCCB 36KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slective Interlocking function Multifunction Meter		
	<b>BUSCOUPLER</b>		
	1 Nos. 125 Amp FP MCCB		
	<b>BUSBARS</b>		
	2 Nos. 160 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		

	12 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB UPS DB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core	1,200.00	Meter
c	25 sq. mm 3-1/2 core	1,000.00	Meter
d	70 sq. mm 3-1/2 core	500.00	Meter
e	95 sq. mm 3-1/2 core	800.00	Meter
f	150 sq. mm 3-1/2 core	1,000.00	Meter
g	240 sq. mm 3-1/2 core	1,500.00	Meter
h	300 sq. mm 3-1/2 core	2,200.00	Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	100.00	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	10.00	Each

d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	8.00	Each
g	70 sq. mm 3-1/2 core	4.00	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm		Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	100.00	Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	20.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	20.00	Meter
b	200mm Dia	20.00	Meter

<b>Detailed Estimate Based On DSR-2022 With Cost Index &amp; Market Rate</b>			
<b>Project - Proposed Construction of Horticulture &amp; Forestry University at</b>			
<b>Name Of Work -UG/PG Girls Hostel Block Fire Detection Alarm &amp; PA System</b>			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
1	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	18	Each
2	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	18	Each
3	Supplying, installation, testing & commissioning talk back slave station in surface/recess suitable for operation on simplex mode complete with P.T.T. knob & speaker/microphone enclosed in a M.S.(16 SWG)/ ABS box with break glass in front etc. complete as required	2	Each
4	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS:2189 with mimic diagram for all area/zone covered, complete with all connections, interconnections as required		
	4 ZONE	1	Each
	<b>CABLING &amp; WIRING</b>		
5	17.5.1 Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required	4500	Meter



Name Of Work -UG/PG Girl Hostel Block Lift Work				
Sr.No.	Particulars	Sch.No.	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.	3.1		
a	16 Passenger (G+5)	3.1.6	3	Meter
b	Add Extra for rest floors	3.1.6	0	Meter
c	20 Passenger (G+5) Lift	3.2.2	1	Meter
c	Add Extra for rest floors	3.2.2	0	Meter
	Total			
	AMC of Lift for 1st year @ 5% of Total Amount			
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount			
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount			
	AMC of Lift for 4thyear @ 1.05% of 3rd year Amount			
	AMC of Lift for 5thyear @ 1.05% of 4th year Amount			

<b>Name Of Work -Type-II Residential Block (G+10) Floor Fire Detection Alarm &amp; PA</b>			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
1	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	22	Each
2	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	22	Each
3	Supplying, installation, testing & commissioning talk back slave station in surface/recess suitable for operation on simplex mode complete with P.T.T. knob & speaker/microphone enclosed in a M.S.(16 SWG)/ ABS box with break glass in front etc. complete as required	2	Each
4	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS:2189 with mimic diagram for all area/zone covered, complete with all connections, interconnections as required		
	4 ZONE	1	Each
	<b>CABLING &amp; WIRING</b>		
5	17.5.1 Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required	2480	Meter

<b>Name Of Work -Type-III Residential Block (G+14) Floor Fire Detection Alarm &amp;</b>			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
1	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	28	Each
2	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	28	Each
3	Supplying, installation, testing & commissioning talk back slave station in surface/recess suitable for operation on simplex mode complete with P.T.T. knob & speaker/microphone enclosed in a M.S.(16 SWG)/ ABS box with break glass in front etc. complete as required	2	Each
4	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS:2189 with mimic diagram for all area/zone covered, complete with all connections, interconnections as required		
	4 ZONE	1	Each
	<b>CABLING &amp; WIRING</b>		
5	17.5.1 Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required	2450	Meter

<b>Name Of Work -Type-III Residential Block (G+10) Floor Fire Detection Alarm &amp;</b>			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
1	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	26	Each
2	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	26	Each
3	Supplying, installation, testing & commissioning talk back slave station in surface/recess suitable for operation on simplex mode complete with P.T.T. knob & speaker/microphone enclosed in a M.S.(16 SWG)/ ABS box with break glass in front etc. complete as required	2	Each
4	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS:2189 with mimic diagram for all area/zone covered, complete with all connections, interconnections as required		
	4 ZONE	1	Each
	<b>CABLING &amp; WIRING</b>		
5	17.5.1 Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required	2380	Meter

<b>Name Of Work -Type-IV Residential Block (G+10) Floor Fire Detection Alarm &amp;</b>			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
1	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	22	Each
2	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	22	Each
3	Supplying, installation, testing & commissioning talk back slave station in surface/recess suitable for operation on simplex mode complete with P.T.T. knob & speaker/microphone enclosed in a M.S.(16 SWG)/ ABS box with break glass in front etc. complete as required	2	Each
4	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS:2189 with mimic diagram for all area/zone covered, complete with all connections, interconnections as required		
	4 ZONE	1	Each
	<b>CABLING &amp; WIRING</b>		
5	17.5.1 Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required	3820	Meter

<b>Name Of Work -Type-V Residential Block (G+8) Floor Fire Detection Alarm &amp; PA</b>			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
1	Supplying, installation, testing & commissioning of manual call boxes of MS construction in surface/recess with stainless steel chain & hammer assembly complete with glass and push button etc. as required.	18	Each
2	Supplying, installation, testing & commissioning fire alarm sounder with facility to make announcement, mounted in M.S. box (16 SWG) with hinged cover plate & suitable for operation with amplifier i/c line matching transformer etc. complete as required.	18	Each
3	Supplying, installation, testing & commissioning talk back slave station in surface/recess suitable for operation on simplex mode complete with P.T.T. knob & speaker/microphone enclosed in a M.S.(16 SWG)/ ABS box with break glass in front etc. complete as required	2	Each
4	Supplying, installation, testing & commissioning sector panel suitable for following zones, complete with visual indications for short circuit fault, open circuit fault, fire condition and all other standard facilities as per IS:2189 with mimic diagram for all area/zone covered, complete with all connections, interconnections as required		
	4 ZONE	1	Each
	<b>CABLING &amp; WIRING</b>		
5	17.5.1 Supplying & laying of 2x1.5 sqmm fire survival armoured cable, 600/1000V rated with annealed copper conductor having glass mica fire barrier tape covered by an extruded layer of Cross Linkable Ethylene Propylene Rubber (EPR) insulation and LSZH inner bedding, steel wire armouring & LSZH outer sheath complete as required	3200	Meter

**Name Of Work -Type-II Residential Block (G+10) Floor Internal Electrification Work**

Sr.No.	Particulars	Sch.No.	Qty	Unit
1	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 in surface / recessed medium class PVC 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. Group C	1.10.2	865	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	1.11	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	1.12	8250	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.	1.14		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	1.14.1	0	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	1.14.2	4200	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	1.14.10	0	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	1.14.11	35	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.	1.18		
a	2 Pair	1.18.2	4200	Meter
6	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.	1.19	3000	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.	1.21		
a	25 mm	1.21.2	7200	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.	1.24		

a	Telephone socket outlet	1.24.6	120	Each
b	TV socket outlet	1.24.7	120	Each
c	RJ45 socket cat 6 with shutter	RA-1	0	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	1.25		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.	1.27		
a	1 or 2 Module (75mmX75mm)	1.27.1	240	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	1.31	500	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	1.32	335	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	1.35	317	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.	1.36		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	1.38	40	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.	1.53		
a	1 run of cable	1.53.1	0	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.	1.55		
a	Group C	1.55.3	178	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	1.56	120	Each



19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	1.57	40	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)	2.3		
a	8 way Double door	2.3.2	40	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)	2.4		
a	4 way (4 + 12), Double door	2.4.1	2	Each
b	6 way (4 + 18), Double door	2.4.2	0	Each
c	8 way (4 + 24), Double door	2.4.3	1	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.	2.10		
a	Single pole	2.10.1	352	Each
b	Double pole	2.10.3	42	Each
c	Three Phase & Neutral	2.10.5	0	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.	2.14		
	25Amp.	2.14.1	0	Each
	63Amp.	2.14.3	3	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	RA-3	2	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	RA-4	1	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.	4.1		
a	100 mm width X 50 mm depth X 1.6 mm thickness	4.1.1	40	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	4.1.4	70	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	4.1.7	30	Each
26	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.	5.4	6.0	Each
27	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.	5.6	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	5.9	150.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	5.8	50.0	Meter
30	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.	5.1	100	Meter
31	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.	5.11	50	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	5.15	100	Meter
33	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.	5.18	50	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	PWD 2024 23.01	-	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	PWD 2024 23.02	308.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	PWD 2024 23.05	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	RA-7	-	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	PWD 2024 23.08	218.00	Each

37	Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.  4320-5520 system lumen > 120lm/w, PF>0.95, THD<10% at full load CRI>80, >300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA	PWD 2024 23.10	-	Each
38	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.  1200 system lumen, >120lm/W, PF>0.95, CRI>70, >300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA	PWD 2024 23.11	34.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	MR	280.00	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	PWD 2024 23.22	3.00	Each
41	<b>Brush Less Direct Current (BLDC) Motor</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req 1200mm. service value > 6.0 CM/Min/Watt. air delivery 210 CM/Min	DSR 2025 2.1.3	120.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	DSR Civil 2023 10.18	120.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	RA-2	-	Each
	<b>Lightning Arrestor Work</b>			
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)	MR	1	Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.	MR	60	Metre
47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.	MR	1	Each
48	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.	5.6	3.0	Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.	MR	3	Each
50	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstraction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.	MR	1	Each

51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b>  Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C,  Relative humidity 0 to 95%, Online double conversion true sine wave  Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>			
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>			
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>			

	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.			
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f) Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code	DSR 2025 5.2		
	30KVA (Each Power module shall be < 10 KVA)	5.2.3	0	Set
52	TYPE-II BLOCK MAIN L.T PANEL	MR	1.00	Set

	<p>SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB &amp; Multifunction meters</p>			
	<p>The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous &amp; earthfault protection with Current &amp; Voltage metering &amp; LCD display.</p>			
	<p>Air Circuit Breaker with microprocessor release ge metering &amp; LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism &amp; capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)</p>			
	<b>INCOMING</b>			
	<p>1 Nos. 400 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Sselective Interlocking function Multifunction Meter</p>			



	1 Nos. 125 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter			
	1 Nos. 125 Amp FP ATS			
	<b>BUSBARS</b>			
	1 Nos. 500 Amp FP busbars of aluminium alloy as per SLD.			
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.			
	<b>OUTGOING</b>			
	4 Nos. 125 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter Meter Panel +Spare			
	4 Nos. 63 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT +Spare			
	3 Nos. 63 Amp FP MCB 10 KA On, Off, Trip Status Indication with control MCB Multifunction Meter C.DB + Pump +Spare			
	Short Circuit Breaking capacity should not less than 16KA.			
	<b>RELAYS AS PER SLD</b>			
<b>56</b>	<b>TYPE-II BLOCK Meter Panel</b>	MR	3.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters			

	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.			
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)			
	<b>INCOMING</b>			
	1 Nos. 125 Amp MCCB 25KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter			
	<b>BUSBARS</b>			
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.			
	<b>OUTGOING</b>			
	18 Nos. 32 Amp DP MCB On, Off, Trip Status Indication with control MCB Flat DB +Spare			
	14Nos. Single Phase Energy Meter			
	Short Circuit Breaking capacity should not less than 16KA.			
	<b>RELAYS AS PER SLD</b>			
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.	PWD 2024		
a	6 sq. mm 2 core	20d.1.1	1,400.00	Meter
b	16 sq. mm 4 core	20d.1.9	250.00	Meter
c	25 sq. mm 3-1/2 core	20d.1.10	400.00	Meter

d	70 sq. mm 3-1/2 core	20d.1.13	150.00	Meter
e	95 sq. mm 3-1/2 core	20d.1.14	500.00	Meter
f	150 sq. mm 3-1/2 core	20d.1.16	800.00	Meter
g	240 sq. mm 3-1/2 core	20d.1.18	1,080.00	Meter
h	300 sq. mm 3-1/2 core	20d.1.19		Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape inner sheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10 sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988	MR		
a	10 sq. mm 4 core	RA-16		Meter
b	35 sq. mm 3-1/2 core	RA-17	-	Meter
59	Supply and fixing of brass nickel plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.			
a	6 sq. mm 2 core	9.1.1	56.00	Each
b	10 sq. mm 4 core	9.1.32		Each
c	16 sq. mm 4 core	9.1.33	6.00	Each
d	25 sq. mm 3.5 core	9.1.20	-	Each
e	35 sq. mm 3.5 core	9.1.21	-	Each
g	70 sq. mm 3-1/2 core	9.1.23	6.00	Each
h	95 sq. mm 3-1/2 core	9.1.24	-	Each
j	150 sq. mm 3-1/2 core	9.1.26	4.00	Each
k	240 sq. mm 3-1/2 core	9.1.29		Each
l	300 sq. mm 3-1/2 core	9.1.30		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.	7.5		
a	Upto 35 sq. mm	7.5.1	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm	7.5.2		Meter

c	Above 95 sq. mm and upto 185 sq. mm	7.5.3		Meter
d	Above 185 sq. mm and upto 400 sq. mm	7.5.4		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.	7.8		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)	7.8.1		Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clasp)	7.8.2		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)	7.8.3		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)	7.8.4		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	14.14.4	50.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required	14.15.5		Meter
a	120mm Dia	14.15.3	20.00	Meter
b	200mm Dia	14.14.5	20.00	Meter

Name Of Work -Type-II Residential Block (G+10) Floor Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	16 Passenger (G+5)	1	Meter
b	Add Extra for rest floors	5	Meter
c	20 Passenger (G+5) Lift	1	Meter
c	20 Passenger (G+5) Lift	5	Meter
	Total		
	AMC of Lift for 1st year @ 5% of Total Amount		
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount		
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount		
	AMC of Lift for 4thyear @ 1.05% of 3rd year Amount		
	AMC of Lift for 5thyear @ 1.05% of 4th year Amount		

<b>Name Of Work -Type-III Residential Block (G+14) Floor Internal Electrification Work</b>			
<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
1	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 in surface / recessed medium class PVC 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. Group C	963	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	9350	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	0	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	2530	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	0	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	35	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	3920	Meter
6	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.	2800	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	6720	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		

a	Telephone socket outlet	112	Each
b	TV socket outlet	112	Each
c	RJ45 socket cat 6 with shutter	0	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	224	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	462	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	285	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	325	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	28	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	0	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	144	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providng and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	112	Each

19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	140	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	8 way Double door	0	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	2	Each
b	6 way (4 + 18), Double door	0	Each
c	8 way (4 + 24), Double door	14	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	360	Each
b	Double pole	2	Each
c	Three Phase & Neutral	0	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	0	Each
	63Amp.	3	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	2	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	29	Each



25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	40	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	70	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	30	Each
26	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.	6.0	Each
27	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.	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	150.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.0	Meter
30	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.	100	Meter
31	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.	50	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100	Meter
33	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.	50	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	56.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	316.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	56.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	214.00	Each

37	Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.  4320-5520 system lumen > 120lm/w, PF>0.95, THD<10% at full load CRI>80, >300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA	-	Each
38	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.  1200 system lumen, >120lm/W, PF>0.95, CRI>70, >300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA	42.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	224.00	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	3.00	Each
41	<b>Brush Less Direct Current (BLDC) Motor</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req 1200mm. service value > 6.0 CM/Min/Watt. air delivery 210 CM/Min	112.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	112.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	56.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)	1	Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.	60	Metre
47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.	1	Each
48	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.	3.0	Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.	3	Each
50	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstruction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.	1	Each

51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		

	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accoseries are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	30KVA (Each Power module shall be < 10 KVA)	0	Set
<b>52</b>	<b>TYPE-III BLOCK MAIN L.T PANEL</b>	1.00	Set

	<p>SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB &amp; Multifunction meters</p>		
	<p>The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous &amp; earthfault protection with Current &amp; Voltage metering &amp; LCD display.</p>		
	<p>Air Circuit Breaker with microprocessor release ge metering &amp; LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centigrade as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism &amp; capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)</p>		
	<b>INCOMING</b>		
	<p>1 Nos. 800 Amp FP ACB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having  R,Y,B Phase indication Lamp with control MCB  On, Off, Trip Status Indication with control MCB  Inbuilt Zone Slective Interlocking function  Multifunction Meter</p>		

	1 Nos. 125 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	1 Nos. 125 Amp FP ATS		
	<b>BUSBARS</b>		
	1 Nos. 500 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	4 Nos. 63 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT +Spare		
	4 Nos. 200 Amp FP MCCB 16 KA On, Off, Trip Status Indication with control MCB Multifunction Meter MP +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
<b>52</b>	<b>TYPE-III BLOCK Meter PANEL</b>	2.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meter.		



	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 degree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)		
	<b>INCOMING</b>		
	1 Nos. 400 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexture From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 500 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	32 Nos. 63 Amp FP MCB 10 KA On, Off, Trip Status Indication with control MCB Multifunction Meter FLAT DB +Spare		
	22Nos. Three Phase Energy Meter		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core	-	Meter

b	16 sq. mm 4 core	920.00	Meter
c	25 sq. mm 3-1/2 core		Meter
d	70 sq. mm 3-1/2 core		Meter
e	95 sq. mm 3-1/2 core	-	Meter
f	150 sq. mm 3-1/2 core	450.00	Meter
g	240 sq. mm 3-1/2 core		Meter
h	300 sq. mm 3-1/2 core	900.00	Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	-	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armoring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	44.00	Each
d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	-	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core	8.00	Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core	6.00	Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		

a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)		Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	50.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	20.00	Meter
b	200mm Dia	20.00	Meter

Name Of Work -Type-III Residential Block (G+14) Floor Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	16 Passenger (G+5)	1	Meter
b	Add Extra for rest floors	9	Meter
c	20 Passenger (G+5) Lift	1	Meter
c	20 Passenger (G+5) Lift	9	Meter
	Total		
	AMC of Lift for 1st year @ 5% of Total Amount		
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount		
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount		
	AMC of Lift for 4thyear @ 1.05% of 3rd year Amount		
	AMC of Lift for 5thyear @ 1.05% of 4th year Amount		

Name Of Work -Type-III Residential Block (G+13) Floor Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. Group C	896	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	8690	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	0	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	2300	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	0	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	35	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	3640	Meter
6	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.	2600	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	6240	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		

a	Telephone socket outlet	104	Each
b	TV socket outlet	104	Each
c	RJ45 socket cat 6 with shutter	0	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.		Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	208	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	429	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	265	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	303	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	26	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	0	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	135	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providng and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	104	Each

19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	130	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	8 way Double door	0	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	2	Each
b	6 way (4 + 18), Double door	0	Each
c	8 way (4 + 24), Double door	14	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	360	Each
b	Double pole	2	Each
c	Three Phase & Neutral	0	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	0	Each
	63Amp.	3	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	2	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	27	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	40	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	70	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	30	Each
26	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.	6.0	Each
27	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.	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	150.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.0	Meter
30	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.	100	Meter
31	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.	50	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100	Meter
33	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.	50	Meter



34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	52.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	294.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	52.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	200.00	Each

37	Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.  4320-5520 system lumen > 120lm/w, PF>0.95, THD<10% at full load CRI>80, >300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA	-	Each
38	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.  1200 system lumen, >120lm/W, PF>0.95, CRI>70, >300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA	40.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	208.00	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	3.00	Each
41	<b>Brush Less Direct Current (BLDC) Motor</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req 1200mm. service value > 6.0 CM/Min/Watt. air delivery 210 CM/Min	104.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	104.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	52.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)	1	Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.	60	Metre
47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.	1	Each
48	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.	3.0	Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.	3	Each
50	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstruction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.	1	Each

51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		

	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	30KVA (Each Power module shall be < 10 KVA)	0	Set
<b>52</b>	<b>TYPE-III BLOCK MAIN L.T PANEL</b>	<b>1.00</b>	<b>Set</b>

	<p>SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB &amp; Multifunction meters</p>		
	<p>The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous &amp; earthfault protection with Current &amp; Voltage metering &amp; LCD display.</p>		
	<p>Air Circuit Breaker with microprocessor release ge metering &amp; LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism &amp; capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)</p>		
	<b>INCOMING</b>		
	<p>1 Nos. 800 Amp FP ACB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having  R,Y,B Phase indication Lamp with control MCB  On, Off, Trip Status Indication with control MCB  Inbuilt Zone Slective Interlocking function  Multifunction Meter</p>		

	1 Nos. 125 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	1 Nos. 125 Amp FP ATS		
	<b>BUSBARS</b>		
	1 Nos. 500 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	4 Nos. 63 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT +Spare		
	4 Nos. 200 Amp FP MCCB 16 KA On, Off, Trip Status Indication with control MCB Multifunction Meter MP +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
<b>52</b>	<b>TYPE-III BLOCK Meter PANEL</b>	2.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meter.		

	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)		
	<b>INCOMING</b>		
	1 Nos. 400 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexture From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slelective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 500 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	32 Nos. 63 Amp FP MCB 10 KA On, Off, Trip Status Indication with control MCB Multifunction Meter FLAT DB +Spare		
	22Nos. Three Phase Energy Meter		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core	-	Meter



b	16 sq. mm 4 core	920.00	Meter
c	25 sq. mm 3-1/2 core		Meter
d	70 sq. mm 3-1/2 core		Meter
e	95 sq. mm 3-1/2 core	-	Meter
f	150 sq. mm 3-1/2 core	450.00	Meter
g	240 sq. mm 3-1/2 core		Meter
h	300 sq. mm 3-1/2 core	900.00	Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	-	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armoring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	44.00	Each
d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	-	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core	8.00	Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core	6.00	Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		

a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)		Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	50.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	20.00	Meter
b	200mm Dia	20.00	Meter
	<b>Total</b>		
	<b>Grand Total Without GST (DSR+MARKET BASED ITEM)</b>		
	<b>Grand Total Without GST (DSR+MARKET BASED ITEM) In Lac</b>		

Name Of Work -Type-III Residential Block (G+13) Floor Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	16 Passenger (G+5)	1	Meter
b	Add Extra for rest floors	8	Meter
c	20 Passenger (G+5) Lift	1	Meter
c	20 Passenger (G+5) Lift	8	Meter
	Total		
	AMC of Lift for 1st year @ 5% of Total Amount		
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount		
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount		
	AMC of Lift for 4thyear @ 1.05% of 3rd year Amount		
	AMC of Lift for 5thyear @ 1.05% of 4th year Amount		

**Name Of Work -Type-IV Residential Block (G+8) Floor Internal Electrification Work**

Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	727	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	6446	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	0	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	4600	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	0	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	35	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	2800	Meter
6	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.	2000	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	4800	Meter

8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	80	Each
b	TV socket outlet	80	Each
c	RJ45 socket cat 6 with shutter	0	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	80	Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	160	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	312	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	197	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	241	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	16	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	0	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	90	Each

18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	80	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	96	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	8 way Double door	0	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	2	Each
b	6 way (4 + 18), Double door	1	Each
c	8 way (4 + 24), Double door	17	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	320	Each
b	Double pole	2	Each
c	Three Phase & Neutral	0	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	0	Each
	63Amp.	3	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	2	Each

24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	17	Each
25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	40	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	70	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	30	Each
26	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.	6.0	Each
27	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.	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	150.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.0	Meter
30	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.	100	Meter
31	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.	50	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100	Meter
33	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.	50	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess / Surface mounting ground 6 Watt to 9 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser / Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	48.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess / Surface mounting ground 10 Watt to 15 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser / Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	232.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36 Watt to 46 Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser / Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED12S 6500 PSU GR or equivalent.	48.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	152.00	Each



37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	-	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	30.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	160.00	Each
40	<p><b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b></p>	3.00	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm, service value &gt; 6.0 CM/Min/Watt, air delivery 210 CM/Min</p>	80.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	80.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	48.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)	1	Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.	60	Metre
47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.	1	Each
48	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.	3.0	Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.	3	Each
50	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstruction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.	1	Each

51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C,</p> <p>Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		

	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f) Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation / Battery Mode of Operation / Bypass feeding the load / UPS Fault / Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	30KVA (Each Power module shall be < 10 KVA)	0	Set
<b>52</b>	<b>TYPE-IV BLOCK (G+10) MAIN L.T CUM METER PANEL</b>	1.00	Set

	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meters.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics).		
	<b>INCOMING</b>		
	1 Nos. 320 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Sleective Interlocking function Multifunction Meter		

	1 Nos. 125 Amp FP EDO ACB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	1 Nos. 125 Amp FP ATS		
	<b>BUSBARS</b>		
	1 Nos. 500 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	4 Nos. 63 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT +Spare		
	22 Nos. 63 Amp FP MCB 10 KA On, Off, Trip Status Indication with control MCB Multifunction Meter PDB +Spare		
	22Nos. Three Phase Energy Meter		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core	-	Meter
b	16 sq. mm 4 core	790.00	Meter
c	25 sq. mm 3-1/2 core		Meter
d	70 sq. mm 3-1/2 core		Meter
e	95 sq. mm 3-1/2 core	-	Meter
f	150 sq. mm 3-1/2 core		Meter
g	240 sq. mm 3-1/2 core	1,100.00	Meter
h	300 sq. mm 3-1/2 core		Meter
i	400 sq. mm 3-1/2 core	1,000.00	Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter

b	35 sq. mm 3-1/2 core	-	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	38.00	Each
d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	-	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)		Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	50.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	20.00	Meter

b	200mm Dia	20.00	Meter



Name Of Work -Type-IV Residential Block (G+8) Floor Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	16 Passenger (G+5)	1	Meter
b	Add Extra for rest floors	3	Meter
c	20 Passenger (G+5) Lift	1	Meter
c	20 Passenger (G+5) Lift	3	Meter
	Total		
	AMC of Lift for 1st year @ 5% of Total Amount		
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount		
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount		
	AMC of Lift for 4th year @ 1.05% of 3rd year Amount		
	AMC of Lift for 5th year @ 1.05% of 4th year Amount		

Name Of Work -Type-V Residential Block (G+7) Floor Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. Group C	990	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	6886	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	0	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	3220	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	0	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	35	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	6370	Meter
6	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.	2450	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	8820	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		

a	Telephone socket outlet	98	Each
b	TV socket outlet	98	Each
c	RJ45 socket cat 6 with shutter	0	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	112	Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	196	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	357	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	201	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	255	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	14	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	0	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	81	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providng and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	98	Each

19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	112	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	8 way Double door	0	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	2	Each
b	6 way (4 + 18), Double door	1	Each
c	8 way (4 + 24), Double door	12	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	284	Each
b	Double pole	2	Each
c	Three Phase & Neutral	0	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	0	Each
	63Amp.	3	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	2	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	15	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	40	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	70	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	30	Each
26	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.	6.0	Each
27	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.	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	150.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	50.0	Meter
30	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.	100	Meter
31	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.	50	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	100	Meter
33	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.	50	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	56.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	414.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	56.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	164.00	Each

37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	-	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	28.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	168.00	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	3.00	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm. service value &gt; 6.0 CM/Min/Watt. air delivery 210 CM/Min</p>	112.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	112.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	56.00	Each
	<b>Lightning Arrestor Work</b>		
45	Lightning Arrestor: Supply, installation, testing and commissioning of External Lightning wide area protection system based on Eearly Streamer Emission (ESE) technology. Device shall emit electromagnetic impulse in the form of a streamer into the air microseconds earlier than naturally formed streamers. Device confirmg to NFC 17-102 and UNE 21186 Standards. Appropriate non penetrating mounting arrangement. The device shall be mounted at suitable clear to the highest point on the roof top. (Model selected shall give coverage of 79 M radius @ min 5M height from terrace)	1	Each
46	Down conductor:Supply, installation, testing and commissioning of 70 Sqmm twisted 19-Strand, bare Cu cable on surface/wall / as per site requirement and complete in all respect.	60	Metre
47	Lightning Counter :Supply and installation of counting the number of lightning strikes without any power supply.	1	Each
48	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.	3.0	Each
49	Test Link :Supply and installation of test link in weather proof IP 65 BOX.	3	Each
50	Supply, installation, testing and commisioning of 2 x 25W LED Aviation abstruction light medium bay type 62, complete with lamp, lamp holder, Condenser necessary connecting wire, 1 X 25 AV with all necessary hardware, accessories as required for complete installation. Rate shall include the cost of necessary steel structures , fixing arrangements in this item. Refer drawing.	1	Each



51	<p><b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing &amp; Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against</p>		
	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		

	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accoseries are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	30KVA (Each Power module shall be < 10 KVA)	0	Set
<b>52</b>	<b>TYPE-V BLOCK MAIN L.T CUM METER PANEL</b>	1.00	Set

	<p>SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB &amp; Multifunction meters</p>		
	<p>The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous &amp; earthfault protection with Current &amp; Voltage metering &amp; LCD display.</p>		
	<p>Air Circuit Breaker with microprocessor release ge metering &amp; LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism &amp; capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)</p>		
	<b>INCOMING</b>		
	<p>1 Nos. 400 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexture From 800KVA Transformer having  R,Y,B Phase indication Lamp with control MCB  On, Off, Trip Status Indication with control MCB  Inbuilt Zone Slective Interlocking function  Multifunction Meter</p>		

	1 Nos. 125 Amp FP MCCB 36KA LSIG having S/C, E/F O/C protection, LCD Display having specs as per attached annexure From 800KVA Transformer having R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Selective Interlocking function Multifunction Meter		
	1 Nos. 125 Amp FP ATS		
	<b>BUSBARS</b>		
	1 Nos. 500 Amp FP busbars of aluminium alloy as per SLD.		
	1 Nos. 150 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	4 Nos. 63 Amp FP MCCB 25 KA On, Off, Trip Status Indication with control MCB Multifunction Meter LIFT +Spare		
	20 Nos. 63 Amp FP MCB 10 KA On, Off, Trip Status Indication with control MCB Multifunction Meter PDB +Spare		
	14Nos. Three Phase Energy Meter		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core	-	Meter
b	16 sq. mm 4 core	710.00	Meter
c	25 sq. mm 3-1/2 core		Meter
d	70 sq. mm 3-1/2 core		Meter
e	95 sq. mm 3-1/2 core	-	Meter
f	150 sq. mm 3-1/2 core	400.00	Meter
g	240 sq. mm 3-1/2 core	980.00	Meter
h	300 sq. mm 3-1/2 core		Meter

i	400 sq. mm 3-1/2 core	1,000.00	Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	-	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	34.00	Each
d	25 sq. mm 3.5 core	-	Each
e	35 sq. mm 3.5 core	-	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		

a	Upto 35 sq. mm (clamped with 1mm thick saddle)		Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	50.00	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	20.00	Meter
b	200mm Dia	20.00	Meter

Name Of Work -Type-V Residential Block (G+7) Floor Lift Work			
Sr.No.	Particulars	Qty	Unit
1	Supply Installation Testing and Commissioning of lift with power operated doors and AC variable voltage and variable frequency controls having speed of minimum 1.5m/sec as per CPWD specifications.		
a	16 Passenger (G+5)	2	Meter
b	Add Extra for rest floors	4	Meter
	Total		
	AMC of Lift for 1st year @ 5% of Total Amount		
	AMC of Lift for 2nd year @ 1.05% of 1st year Amount		
	AMC of Lift for 3rd year @ 1.05% of 2nd year Amount		
	AMC of Lift for 4thyear @ 1.05% of 3rd year Amount		
	AMC of Lift for 5thyear @ 1.05% of 4th year Amount		

Name Of Work -Type-6 Residence Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. Group C	106	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	2	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	726	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	240	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	542.5	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	70	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	70	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	455	Meter
6	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.	225	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	1065	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		



a	Telephone socket outlet	7	Each
b	TV socket outlet	9	Each
c	RJ45 socket cat 6 with shutter	7	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	17	Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	23	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	47	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	19	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	21	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	1	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	385	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	50	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providng and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	21	Each

19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	14	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	8 way Double door	0	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	1	Each
b	6 way (4 + 18), Double door	1	Each
c	8 way (4 + 24), Double door	2	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	72	Each
b	Double pole	0	Each
c	Three Phase & Neutral	2	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	6	Each
	63Amp.	6	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	0	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	2	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	10	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	6	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	0	Each
26	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.	2.0	Each
27	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.		Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	30.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)		Meter
30	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.		Meter
31	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.	10	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	60	Meter
33	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.	90	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	8.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	89.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	12.00	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	6.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	2.00	Each

37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	-	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	6.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	6.00	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	3.00	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm. service value &gt; 6.0 CM/Min/Watt. air delivery 210 CM/Min</p>	17.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	17.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	8.00	Each
45	<b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing & Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against		
	phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be < 5% at 50 %load. (The required LC (		

	inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication <del>DC222/DC485/CMMP</del> <del>and</del> <del>16</del> <del>DMC</del>		
	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accoseries are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	10KVA (Each Power module shall be < 10 KVA)	0	Set

<b>56</b>	<b>Main Panel</b>	1.00	Set
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meter.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)		
	<b>INCOMING</b>		
	1 Nos. 100 Amp MCCB 25KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Sselective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 125 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	2 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB L DB +Spare		



	4 Nos. 63 Amp FP MCB On, Off, Trip Status Indication with control MCB PDB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core		Meter
c	25 sq. mm 3-1/2 core	100.00	Meter
d	70 sq. mm 3-1/2 core	600.00	Meter
e	95 sq. mm 3-1/2 core	-	Meter
f	150 sq. mm 3-1/2 core		Meter
g	240 sq. mm 3-1/2 core		Meter
h	300 sq. mm 3-1/2 core		Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	-	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core	-	Each
b	10 sq. mm 4 core		Each

c	16 sq. mm 4 core	-	Each
d	25 sq. mm 3.5 core	2.00	Each
e	35 sq. mm 3.5 core	-	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)		Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	-	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter

b	200mm Dia	-	Meter

Name Of Work -Facility Center Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. Group C	80	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	484	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	350	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	750	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	35	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	35	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	0	Meter
6	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.	0	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	910	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		

a	Telephone socket outlet	0	Each
b	TV socket outlet	0	Each
c	RJ45 socket cat 6 with shutter	14	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	17	Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	14	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	22	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	22	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	8	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	5	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	910	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	40	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providng and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	14	Each

19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	0	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	8 way Double door	7	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	0	Each
b	6 way (4 + 18), Double door	2	Each
c	8 way (4 + 24), Double door	0	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	92	Each
b	Double pole	7	Each
c	Three Phase & Neutral	1	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	6	Each
	63Amp.	3	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	0	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	1	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	10	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	6	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	0	Each
26	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.	2.0	Each
27	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.	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	70.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	70.0	Meter
30	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.	20	Meter
31	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.	20	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	50	Meter
33	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.	50	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	6.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	34.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	40.00	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	5.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	10.00	Each



37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	-	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	-	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	-	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	3.00	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm. service value &gt; 6.0 CM/Min/Watt. air delivery 210 CM/Min</p>	17.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	17.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	-	Each
45	<b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing & Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against		
	phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be < 5% at 50 %load. (The required LC (		

	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication <del>DC222/DC485/CAN/RS485/Modbus/16-DMC</del></p>		
	<p>integration, all hardware &amp; software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accoseries are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 &amp; 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.</p>		
	<p>d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging &amp; Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code</p>		
	10KVA (Each Power module shall be < 10 KVA)	0	Set

<b>56</b>	<b>Facility Center Main L.T Panel</b>	<b>1.00</b>	<b>Set</b>
	SITC of LT switchgear panels suitable for 433 V, 3 phase, 4 wire, 50 Hz power distribution system. The panel shall be Indoor, free standing, floor mounting, sheet metal clad, cubicle, dead front, dust and vermin proof type compartmentalised design fabricated out of 14 SWG CRCA sheet steel, complete with colour coded, heat shrinkable PVC insulated, aluminium bus bars and separate earth bus bar of adequate cross section through out the length of the panel. The incoming and outgoing feeders shall be accommodated in a fully segregated, modular multitier arrangement with adequate size and distinct cable alley, bus bar alley/chamber. The panel shall be complete with name plate, earthing, numbering, danger plate etc. as per specifications and drawings as required. The panel shall withstand the fault level of 50kA as per Single Line Diagram. The Panel shall also be capable to communicate status like ON/OFF/ Trip through Modbus/Ethernet for major component like ACB, MCCB, MCB & Multifunction meter.		
	The Main LT Panel shall use all draw out type breakers suitable for 415 V AC, 3 phase, 50 Hz, 3 phase 4 wire supply system. Panel shall have Buscoupler switching, auto operation of incommer and bus coupler, auto start of D.G. Sets, auto D.G. running by pre set timing, auto changeover etc and having following incomming and outgoing Air Circuit Breakers,microprocessor release for overload, short circuit, instantaneous & earthfault protection with Current & Voltage metering & LCD display.		
	Air Circuit Breaker with microprocessor release ge metering & LCD display , with ready to clsoe indicator, should have capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet and as per the detail specification of ACB (Icu=Ics=Icw=65 KA (1 sec). MCCB, with microprocessor release with LSIG protection functionand should not derate upto 50 decree Centrigrate as per testing guideline as per IEC 60947-2 and all the ACB upto 2500Amp ACB should have same frame size LCD display for fault trip history, haivng current limiting feature, double break mechanism & capability to communicate ON /OFF/ Trip Status on Modbus/Ethernet (65 KA Ics)		
	<b>INCOMING</b>		
	1 Nos. 100 Amp MCCB 16KA R,Y,B Phase indication Lamp with control MCB On, Off, Trip Status Indication with control MCB Inbuilt Zone Slective Interlocking function Multifunction Meter		
	<b>BUSBARS</b>		
	1 Nos. 125 Amp FP busbars of aluminium alloy as per SLD.		
	<b>OUTGOING</b>		
	2 Nos. 32 Amp FP MCB On, Off, Trip Status Indication with control MCB L DB +Spare		

	2 Nos. 63 Amp FP MCB On, Off, Trip Status Indication with control MCB PDB +Spare		
	9 Nos. 32 Amp DP MCB On, Off, Trip Status Indication with control MCB PDB +Spare		
	Short Circuit Breaking capacity should not less than 16KA.		
	<b>RELAYS AS PER SLD</b>		
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core	140.00	Meter
b	16 sq. mm 4 core		Meter
c	25 sq. mm 3-1/2 core	100.00	Meter
d	70 sq. mm 3-1/2 core	1,200.00	Meter
e	95 sq. mm 3-1/2 core	-	Meter
f	150 sq. mm 3-1/2 core		Meter
g	240 sq. mm 3-1/2 core		Meter
h	300 sq. mm 3-1/2 core		Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	-	Meter

59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core	12.00	Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	-	Each
d	25 sq. mm 3.5 core	2.00	Each
e	35 sq. mm 3.5 core	-	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)		Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	-	Meter

63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter
b	200mm Dia	-	Meter
	<b>Total</b>		
	<b>Grand Total Without GST (DSR+MARKET BASED ITEM)</b>		
	<b>Grand Total Without GST (DSR+MARKET BASED ITEM) In Lac</b>		

**Name Of Work -Multipurpose Hall Internal Electrification Work**

<b>Sr.No.</b>	<b>Particulars</b>	<b>Qty</b>	<b>Unit</b>
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	80	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	154	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	50	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	95	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	0	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	35	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	130	Meter
6	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.	25	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	285	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		



a	Telephone socket outlet	2	Each
b	TV socket outlet	1	Each
c	RJ45 socket cat 6 with shutter	2	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	4	Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	5	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	8	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	6	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	50	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	2	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	130	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	4	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	4	Each

19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	1	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	8 way Double door	0	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	1	Each
b	6 way (4 + 18), Double door	0	Each
c	8 way (4 + 24), Double door	0	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	12	Each
b	Double pole	0	Each
c	Three Phase & Neutral	0	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	0	Each
	63Amp.	3	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	0	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	1	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	10	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	6	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	0	Each
26	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.	2.0	Each
27	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.		Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	70.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)		Meter
30	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.		Meter
31	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.	20	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.		Meter
33	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.		Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	18.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	4.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	6.00	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED12S 6500 PSU GR or equivalent.	8.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	-	Each

37	Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.  4320-5520 system lumen > 120lm/w, PF>0.95, THD<10% at full load CRI>80, >300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA	-	Each
38	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.  1200 system lumen, >120lm/W, PF>0.95, CRI>70, >300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA	2.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	-	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	40.00	Each

41	<b>Brush Less Direct Current (BLDC) Motor</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req 1200mm. service value > 6.0 CM/Min/Watt. air delivery 210 CM/Min	4.00	Each
42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	4.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	-	Each
45	<b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing & Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against		

	<p>phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier &amp; inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be &gt;96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(THD) on the input grid shall be &lt; 5% at 50 %load. (The required LC (</p>		
	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		
	<p>integration, all hardware &amp; software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 &amp; 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.</p>		

	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f) Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation / Battery Mode of Operation / Bypass feeding the load / UPS Fault / Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	10KVA (Each Power module shall be < 10 KVA)	0	Set
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core	1,000.00	Meter
c	25 sq. mm 3-1/2 core	800.00	Meter
d	70 sq. mm 3-1/2 core	1,200.00	Meter
e	95 sq. mm 3-1/2 core	1,800.00	Meter
f	150 sq. mm 3-1/2 core	2,000.00	Meter
g	240 sq. mm 3-1/2 core		Meter
h	300 sq. mm 3-1/2 core		Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	-	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each



b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	2.00	Each
d	25 sq. mm 3.5 core		Each
e	35 sq. mm 3.5 core	-	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core		Each
k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)		Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	-	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter
b	200mm Dia	-	Meter

Name Of Work -Multipurpose Hall CCTV Surveillance System Work			
Sr.No.	Particulars	Qty	Unit
1	<b>2 MP IP IR Dome Camera</b> Supplying Installation Testing and Commissioning of 2 MP IP IR Dome Camera having following specifications, type of lens and features etc :- 1) Signal System: PAL/NTSC, Signal to Noise Ratio: >50 dB, Camera should display Camera title, Date & Time in live & recorded video 2)Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition(Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day & Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking 3) Compression (Minimum):-Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723 4) Wide Dynamic Range:- WDR (120db or more) 5) Digital Noise Reduction:- DNR (3D) On/Off 6) Video Streaming & Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920×1080)@25/30 fps,Sub streams minimum: 720P@25/30 fps). 7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection 8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.		

Sr.No.	Particulars	Qty	Unit
	<p>9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card.</p> <p>10) Recording Management: Format SD, overwrite, storage management, video to NAS device</p> <p>11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection</p> <p>12) Network Protocol: SFTP, IPv6, IPv4, DNS, RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast</p>		
	<p>13) System Capability: ONVIF, Camera shall support open source VMS</p> <p>14) Ethernet: 1 RJ 45 10/100 Ethernet port</p> <p>15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement.</p> <p>16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source.</p> <p>17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE</p> <p>18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body</p> <p>19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing)</p> <p>20) IR life: 40000 hours or higher</p> <p>21) Video Bit rate: 32 KBPS - 8 MBPS or better</p> <p>22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS</p>		a
	2MP (@ 25/30fps@1080P (1920×1080)) IP IR Dome Camera with 2.8/ 3.6mm fixed lens	2.00	Each
2	2 MP IP IR Outdoor Bullet Camera		

Sr.No.	Particulars	Qty	Unit
	<p>Supplying Installation Testing and Commissioning of 2MP Fixed Lens IP IR Outdoor Bullet Camera having following specifications and features etc :-</p> <p>1) Signal System: PAL/NTSC, Signal to Noise Ratio: &gt; 50 dB, Camera should display Camera title, Date &amp; Time in live &amp; recorded video</p> <p>2) Image Sensor: 1/2.8" or better progressive Scan CMOS to get color image even at night condition (Minimum Illumination: 0.006 Lux@ F1.4, AGC ON, 0 lux with IR or better) True Day &amp; Night High Performance Mechanical IR cut filter with auto switch, Integrated IR Source (Auto, Manual)- Inbuilt Smart IR LED's with effective distance upto 50 meter or better and 30 meter for colour view in night, Imaging: 1/3s to 1/30000s electronic shutter support, Auto Gain Control , White Balance- Auto, Back Light Compensation, Multi zone Privacy Masking, HLC, Digital Watermarking</p>		
	<p>3) Compression (Minimum):- Video:- H.265 or better, H.264H, H.264, Audio:- G.711U/A, G.711Mu, G.726, AAC, G.723</p> <p>4) Wide Dynamic Range:- WDR (120db or more)</p> <p>5) Digital Noise Reduction:- DNR (3D) On/Off</p> <p>6) Video Streaming &amp; Frame Rates :- Triple streaming , configurable (Main stream: 2MP (1920 × 1080)@25/30 fps Sub streams minimum: 720P@25/30 fps).</p> <p>7) Image Setting: Rotate Mode, saturation, brightness, contrast, sharpness adjustable through client software or web browser, Edge Analytics: Tripwire, Intrusion, Motion Detection</p> <p>8) Cyber Security: AES 256-bit Encryption, Configuration encryption, trusted execution, Digest, security logs, account lockout, syslog, video encryption, IP/MAC filtering, HTTPS, trusted upgrade, trusted boot.</p> <p>9) Onboard Storage: Camera should support built-in Micro SD/SDHC/SDXC Card slot upto 512 GB. It should be supplied with minimum 128GB memory Card</p>		

Sr.No.	Particulars	Qty	Unit
	10) Recording Management: Format SD, overwrite, storage management, video to NAS device, 11) Alarm Trigger : Motion/tampering detection; audio detection; network disconnection detection; IP conflict detection; memory card state detection; memory space detection 12)Network Protocol: SFTP, IPv6, IPv4, DNS,RTCP, NTP, RTP, HTTP, HTTPS, SNMP TCP/IP, PPPoE, NFS, UDP, ICMP, SSL, DHCP, SMTP, RTSPS, unicast, 13) System Capability: ONVIF, Camera shall support open source VMS		
	14) Ethernet: 1 RJ 45 10/100 Ethernet port 15) Audio : It should support 1 x Built-In Mic and 1/1 Alarm In/ Out for External Mic. and Speakers as per site requirement. 16) Power Input: The camera should support simultaneous dual power input—12 VDC (via power adapter) and PoE (802.3af)—to ensure continuous operation in the event of a failure in one power source. 17) Power Requirement: 12VDC/24 VAC/PoE (802.3af)/ePoE 18) Housing/ Enclosure:- IP67 weather proof, IK10, Metallic body 19) Operating Condition:- Ambient Temperature:- (-)05°C to 50°C, humidity 95% (max) (non-condensing) 20) IR life: 40000 hours or higher 21) Video Bit rate: 32 KBPS - 8 MBPS or better 22) Standards: BIS with ER, STQC Certified, CE, FCC and RoHS		
	2MP @ 25/30fps@1080P (1920×1080) Outdoor Bullet Camera with 2.8/ 3.6mm fixed lens	2.00	Each
3	Network Video Recorder (NVR)		

Sr.No.	Particulars	Qty	Unit
	<p>Supplying Installation Testing and Commissioning of following Channel Network Video Recorder (NVR) with camera licenses to record for all channels having specifications and features etc as mentioned below :</p> <p>1) Network Video Recorder Embedded/ Installed OS (Linux) along with Camera Licenses for number of channels of NVR to record per NVR and to provide a live view, storage and simultaneously Multi-channel playback of all IP, IR camera or more and must be ONVIF with minimum support of 256Mbps incoming Bandwidth.</p>		
	<p>2) NVR should support H.265 or better, H.264, MJPEG, MPEG4 support</p> <p>3) Must support 1 channel Input, 1 channel Output, RCA for Two-way Talk</p> <p>4) Intelligent auto power on when power resumes after power outage.</p> <p>5) Storage: It should support minimum 2 SATA Slots with 20TB capacity/ Slot.</p> <p>6) Connectivity Interface : 1 Nos. x 10/100/1000 Mbps Ethernet Ports, 1x RS485, 1x RS232</p> <p>7) Backup Interface : Its should have 2 Nosx USB port (1x USB3.0, 1xUSB2.0)</p> <p>8) Video Output Ports: 1x HDMI and 1 VGA</p>		
	<p>9) Alarm Ports: It should have 4/1 Ch In/ Out ports to connect various type of external sensors and output devices like hooter/ Siren etc.</p> <p>10) Email &amp; SMS Alert options: Option for SMS/ Email Alerts to minimum 5 designated mobile number for power failure, HDD failure, vandalism, tampering, network disconnection and panic</p> <p>11) Web &amp; Mobile Application: Web, Mobile app ( For iPhone, iPad, Android Phone) for alerts and viewing.</p> <p>12) Protocols: HTTP, HTTPS, TCP/IP, IPv4, UDP, NTP, DHCP, DNS, SMTP, UPnP, DDNS, Alarm Server, IP Search, Multicast, Auto Registration, ONVIF (Profile T, Profile S, Profile G), CGI, SDK and OEM Cloud for remote monitoring without any public IP need</p>		

Sr.No.	Particulars	Qty	Unit
	<p>13) Standards: CE, FCC, RoHS and BIS Certified</p> <p>14) Power Supply : Should support 12VDC, 4Amp or AC100-240V, 50/60Hz Power supply.</p> <p>15) Operating Condition : Ambient Temperature (-5°C to 50°C), humidity 90% (max) (non-condensing)</p> <p>16) The VMS, NVR application shall support all the features &amp; functionalities of the offered cameras.</p> <p>17) VMS should consist of Base license and Channel Licenses. VMS should be provided with camera Licenses , with no dependency of VMS licenses by binding with the MAC address of the cameras to achieve the functionality.</p> <p>18) The NVR OEM shall be responsible for providing a mobile application compatible with both Android and iOS devices, enabling remote monitoring and playback of cameras/NVR footage.</p>		
	<p>19) The OEM must provide its own DDNS server hosted in India, eliminating the need for a public IP address for remote monitoring over the Internet.</p> <p>20) Must support Resolution: 7680x4320 (8K), 3840*2160, 1920×1080, 1280×1024,1280×720, 1024×768</p> <p>21) Must support recording resolution upto 32MP</p> <p>22) Must support Continuous, Alarm, Motion, Instant, Panic Recording Mode</p> <p>23) When alarm recording is enabled and an event occurs, you can click the alarm icon on monitoring page to view the alert details. The snapshot function is supported on monitoring and playback page</p>		
	<p>24) The Network Video Recorder (NVR) shall be configured to send email whenever a system message is created or an alarm event occurs. The email server shall be a valid SMTP server. Each recipient email address shall be configured to receive any combination of critical, warning, or informational messages or alarm notifications. When an alarm occurs, the email message includes the NVR name, time of alarm and a list of camera that is configured to record upon alarm</p> <p>25) It should support Network Support: HTTP, TCP/IP, SMTP, DHCP, DNS, DDNS, FTP, NTP, UPnP, Multi IP Setting. Convert multiple recording files to one avi/MP4 file.</p>		

Sr.No.	Particulars	Qty	Unit
	<p>26) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Exception Detection, People Staying Detection, Violence Detection.</p> <p>27) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan</p> <p>28) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email</p>		
	<p>29) Built-In Artificial Intelligence: NVR should have built-in AI :-</p> <ul style="list-style-type: none"> <li>- 2 Channel face detection and recognition, - Minimum 4 Channel perimeter protection, - Minimum 8 Channel Smart Motion Detection</li> </ul> <p>30) Face Recognition Database Capacity: It should support total Blacklist and Whitelist capacity of Minimum 20,000 Faces or more with Face Detection speed of 12 face images/sec.</p> <p>31) Face &amp; Human Attributes Search: Search Pictures/ Video by Gender, age group, glasses, expressions, face mask, beard, Top color, top type, hat, bag, age, gender and umbrella.</p>		
	<p>32) ANPR Capability: It should support ANPR Camera with License plate, plate color, vehicle body, vehicle model, vehicle logo, calling, seatbelt, vehicle registration location etc vehicle attributes.</p> <p>33) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan, cybersecurity exception</p>		



Sr.No.	Particulars	Qty	Unit
	<p>34) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email.</p> <p>35) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Exception Detection, People Staying Detection, Violence Detection.</p> <p>36) Smart playback function: Should support smart search for the selected area in the video and smart playback to improve the playback efficiency</p> <p>37) VCA (Video Content Analytic): Should support multiple video contented analytics based on camera analytics</p>		
	08 Channel Network Video Recorder (NVR) having display split :- Main screen: 1/4/8/9, 2nd screen: 1/4/8/9	1.00	Each
3	<p>Supplying Installation Testing and Commissioning of following Channel Network Video Recorder (NVR) with camera licenses to record for all channels having specifications and features etc as mentioned below :</p> <p>1) Network Video Recorder Embedded/ Installed OS (Linux) along with Camera Licenses to record per NVR and to provide a live view, storage and simultaneously Multi-channel playback of all IP camera or more and must be ONVIF with minimum support of 384 Mbps incoming Bandwidth.</p>		
	<p>2) NVR should support video compressions : H.265 or better, H.264, MJPEG.</p> <p>3) Must support 1 channel RCA Input, 2 channel RCA Output for Two-way Talk with G.711U/A, G.711u, PCM, G726 audio compressions.</p> <p>4) Intelligent auto power on when power resumes after power outage.</p> <p>5) Storage: It should support minimum 8 SATA Slots with 20TB capacity/ Slot and RAID support of RAID 0/1/5/6/10.</p> <p>6) Connectivity Interface : 2 Nos. x 10/100/1000 Mbps Ethernet Ports, 1x RS485, 1x RS232, 1x eSATA Port</p> <p>7) Backup Interface : Its should have 4 Nosx USB port (2x USB3.0, 2xUSB2.0)</p> <p>8) Video Output Ports: 2x HDMI and 2 VGA</p>		

Sr.No.	Particulars	Qty	Unit
	<p>9) Alarm Ports: It should have 16/8 Ch In/ Out ports to connect various type of external sensors and output devices like hooter/ Siren etc.</p> <p>10) Email &amp; SMS Alert options: Option for SMS/ Email Alerts to minimum 5 designated mobile number for power failure, HDD failure, vandalism, tampering, network disconnection and panic</p> <p>11) Web &amp; Mobile Application: Web, Mobile app ( For iPhone, iPad, Android Phone) for alerts and viewing.</p> <p>12) Protocols: HTTP, HTTPS, TCP/IP, IPv4/IPv6, UDP, DHCP, DNS, SMTP, UPnP, IP Filter, PPPoE, FTP, DDNS, Alarm Server, IP Search, Multicast, Auto Registration, ONVIF (Profile T, Profile S, Profile G), CGI, SDK and OEM Cloud for remote monitoring without any public IP need</p>		
	<p>13) Standards: CE, FCC, RoHS, BIS Certified</p> <p>14) Power Supply : Should support AC100-240V, 50/60Hz Power supply.</p> <p>15) Operating Condition : -5°C to 50°C, humidity 90% (max) (non-condensing)</p> <p>16) The VMS application shall support all the features &amp; functionalities of the offered cameras.</p> <p>17) VMS should consist Licenses for all channels to record Cameras with General, motion detection, intelligent, alarm and POS recording modes. VMS should be provided with Camera Licenses , with no dependency of VMS licenses by binding with the MAC address of the cameras to achieve the functionality.</p>		
	<p>18) The NVR OEM shall be responsible for providing a mobile application compatible with both Android and iOS devices, enabling remote monitoring and playback of cameras/NVR footage.</p> <p>19) The OEM must provide its own DDNS server hosted in India, eliminating the need for a public IP address for remote monitoring over the Internet.</p> <p>20) Must support Continuous, Alarm, Motion, Instant, Panic Recording Mode</p> <p>21) It should support Resolution: 32MP; 24MP; 16MP; 12MP; 8MP; 5MP; 4MP; 1080p; 720p; D1; CIF; OCIF</p>		

Sr.No.	Particulars	Qty	Unit
	<p>22) When alarm recording is enabled and an event occurs, you can click the alarm icon on monitoring page to view the alert details. The snapshot function is supported on monitoring and playback page</p> <p>23) The Network Video Recorder (NVR) shall be configured to send email whenever a system message is created or an alarm event occurs. The email server shall be a valid SMTP server. Each recipient email address shall be configured to receive any combination of critical, warning, or informational messages or alarm notifications. When an alarm occurs, the email message includes the NVR name, time of alarm and a list of camera that is configured to record upon alarm</p>		
	<p>24) It should have Web and GUI interface.</p> <p>25) Built-In Artificial Intelligence: NVR should have built-in AI :-</p> <ul style="list-style-type: none"> <li>- 2 Channel face detection and recognition, - Minimum 4 Channel perimeter protection, - Minimum 8 Channel Smart Motion Detection</li> </ul> <p>26) Face Recognition Database Capacity: It should support total Blacklist and Whitelist capacity of Minimum 20,000 Faces or more with Face Detection speed of 12 face images/sec and facility to add Name, gender, birthday, address, credential type, credential No., countries &amp; regions and state to each face image.</p>		
	<p>27) Face &amp; Human Attributes Search: Search Pictures/ Video by Gender, age group, glasses, expressions, face mask, beard, Top color, top type, hat, bag, age, gender and umbrella.</p> <p>28) ANPR Capability: It should support ANPR Camera with License plate, plate color, vehicle body, vehicle model, vehicle logo, calling, seatbelt, vehicle registration location etc vehicle attributes.</p> <p>29) Alarm Notifications based on: Motion detection, video tampering, video loss, scene changing, PIR alarm, Camera external alarm, Face detection, face recognition, perimeter protection (intrusion and tripwire), ANPR, people counting, stereo analysis, crowd distribution, heat map, Disk Full, Storage Error, IP Conflict and abnormal behavior of fan, cybersecurity exception</p>		

Sr.No.	Particulars	Qty	Unit
	30) Alarm Notification should be linked with Recording, snapshots, Camera external alarm output, buzzer, logs, presets and email. 31) General AI Based Search: Search Pictures by channel, time, event type, target classification (Fall Detection, People Approach Detection, People No. Exception Detection, People Staying Detection, Violence Detection. 32) Smart playback function: Should support smart search for the selected area in the video and smart playback to improve the playback efficiency 33) VCA (Video Content Analytic): Should support multiple video contented analytics based on camera analytics		
	34) Analytics by NVR: Perimeter protection and face recognition		
	32 Channel Network Video Recorder (NVR) having display split :- Main screen: 1/4/8/9/16/25/32(36), 2nd screen: 1/4/8/9/16		Each
	64 Channel Network Video Recorder (NVR) having display split :- Main screen: 1/4/8/9/16/25/36/64, 2nd screen: 1/4/8/9/16		Each
	<b>Hard Disk Drive</b>		
<b>4</b>	Supplying, Installation, Testing and Commissioning following capacity Serveillance grade Hard Disk with upto 256MB/s Transfer Rate, 256 MB Cache, 7200 RPM Disk Speed, 3.5 inch form factor, SATA Interface, BSMI, ICES-003/NNB-003, CE, FCC, KC, Maghreb, RCM, UKCA, VCCI, CB-Scheme, TUV, UL Certifications.		
	4TB (Terabytes)		Each
	6TB (Terabytes)	1.00	Each
	8TB (Terabytes)		Each
	10TB (Terabytes)		Each

Sr.No.	Particulars	Qty	Unit
5	Supplying, installation, Testing and commissioning of following capacity 8 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: Minimum 8 X RJ-45 Gigabit Ethernet Ports and additional 2 X 1G SFP Ports with non-blocking architecture by having Switching capacity of minimum 20Gbps and packet forwarding rate of 14Mpps or higher, 8K MAC table. Internal dual AC Power supply with operating temperature of -5 0C to +50 0C. Jumbo frame: 10KB or higher, IGMP Snooping, IGMP snooping querier and support for IGMP Snooping Fast Leave, Should create 250 or more MLD groups, MLD Snooping, Per VLAN MLD Snooping C MLD Snooping Fast Leave, STP, RSTP, MSTP, Loopback detection, Multicast filtering, VLAN Tagging, QOS: 8 Que per port, WRR, IPv4/IPv6 Interface : minimum 100 IPv4 static route entries and minimum 50 IPv6 static route entries, 700 Access Control entries, SSH CSSL for IPv4 and IPv6, 802.1x, ARP Spoofing, DHCP Snooping and server screening, IP+MAC+Port Binding, Per Port Bandwidth Control, 802.1X Authentication (Supports local/RADIUS database, Port-based Access Control and EAP, OTP, TLS, TTLS, PEAP Support) Cable Diagnostic feature, LLDP, LLDP-MED, SNTP/NTP, RMON, SNMP v1,v2c, v3 and SNMP Traps. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.		
	8 port PoE Layer 2 Network Switch with PoE Support of 130W or higher with each copper port supporting 802.3at PoE+.		Each

Sr.No.	Particulars	Qty	Unit
6	Supplying, installation, Testing and commissioning of following capacity 24 port Layer 2 indoor Network Switch having features and specifications etc. as mentioned here under: At least 24 X RJ-45 Gigabit Ethernet Ports and additional 2 X 10G Base -T with 4 X SFP Ports with non-blocking architecture by having Switching capacity of min. 168Gbps and packet forwarding rate of 125Mpps or higher, 16K MAC table. Console Port, USB port, Stacking support of min. 8 units per stack. Internal dual AC Power supply, STP, RSTP, MSTP, BPDU Filter, BPDU Restriction, Min. 9K Jumbo Frame, LBD, IGMP Snooping V1/V2/V3, MLD Snooping V1/V2. IGMP /MLD Groups 1K or more, IPv4/IPv6 Loopback Interface, 16 L3 IP Interface, Ipv6 ND, VRRPv3, UDP Helper, ECMP. VLAN: 802.1Q, Port based Q-in-Q, Multicast VLAN, Protocol VLAN, VLAN Trunking, DHCP Snooping, Server, server Screening. RADIUS , TACACS+ Authentication, QoS: 802.1P, 8 queues per port, QoS : WRR, Strict+WRR, WRED, 802.1p. ACL: MAC based, IPv4C IPv6, TCP/UDP Port number, time based ACL, TFTP Client, SNMP V1, v2c, v3, SNMP traps, RMON, DHCP server, relay, client, LLDP, LLDP-MED, OAM, Dying Gasp, 802.3ah, sflow, RIP, OSPF v2/v3, policy based route, SSL, SSH. 6 kV surge protection on all Gigabit Ethernet ports and on all GE RJ-45 access ports. Certifications: UL, CE, FCC, RoHS, MTCTE, OEM/Product must be on Trusted Telecom Portal of Department of Telecommunication, Government of India etc. complete as required.		
	24 port PoE Layer 2 Network Switch with PoE Support of 370W or higher with each copper port supporting 802.3at PoE+ min.		Each
7	Supplying Installation Testing and Commissioning of 24 port Cat6 Patch Panel loaded. Must be of 1U height with clear label holders and white label with the panel. 24 Ports Cat-6 Patch Panel should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.	1.00	Each

Sr.No.	Particulars	Qty	Unit
8	Supplying, Installation, Testing and commissioning of following CAT6 Patch Cord should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D etc. complete as required.		
	Copper Patch Cords of length 1m (3ft)		Each
	Copper Patch Cords of length 3m (10ft)	4.00	Each
9	Supplying, Installation, Testing and commissioning of CAT6 Copper Information Outlet (IO) with face plate of color as per site requirement, should have ETL/UL verification program certificate for compliance with ANSI/TIA-568.2-D. All copper Cable and Components should be from same OEM to maintain compatibility and interoperability etc. complete as required.	4.00	Each
10	Supplying, Installation, Testing and commissioning of RJ45 Connector for CAT 6/6A Cables. RJ45 modular plug supports 4 twisted pairs, 8 positions, 8 connectors. Housing: PC, UL94V-2, transparent color, Use for 24- 26 AWG stranded wires etc. complete as required.		Each
11	Supplying, drawing, Installation, Testing and commissioning of CAT6 UTP LSZH 23AWG Twisted Pair Cable in existing conduit/ on surface, Category 6 Unshielded Twisted Pair, 4 pair should be complied as per UL/ETL verification program for compliance with ANSI/TIA-568.2-D standard. Outer diameter should be in the range of 6.1mm nominal with Operating Temperature Range : -5° to +60°C, Bending Radius : < 4 X Cable Diameter at -5°C ± 1°C and Pulling Force : 11.5Kg etc. complete as required.		
	1 Run of cable	200.00	Meter
12	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required. 25mm Dia	200.00	Meter

Sr.No.	Particulars	Qty	Unit
13	Supplying and fixing of following size Wall Mount Rack having Fixed Structure with 0.8mm CRCA Sheet, completely knocked-down condition (CKD) Shape, Vertical Mounting Rail 1.6 mm with 'U'Marking, Minimum 2 cable entry/exit provision at Top and bottom with rubber protection, Front 5mm Toughened Glass with lock, wall mounting kit, Powder coated Color- RAL- 7035, complied with UL & RoHS, 2 x 6 sockets 16A power distribution units, 3 numbers closed cable organizer, Hardware mounting screws packet of 20 x 1 number. etc. complete as required.		
	6U Rack	1.00	Each
10	S/I/T/C of 24 port 10/100/1000 Base T Standalone Gigabit Switch Make Dlink/Amp with active and passive components, punching, complete in all respect	1.00	Nos
14	<b>PC System</b>		
	Supplying Installation Testing Commissioning of Client PC System comprising of PC Hardware with minimum 11th Gen Intel® I7 processor CPU E5-2640 x64 (or better), compatible with dual and quad core processors minimum 3.1 Ghz and 8GB or higher RAM, Hard Drive Space of 256 GB SSD or better, Video card and monitor capable of 1920 x 1080 pixel resolution or better with Ethernet adapter (10/100/1000 Mbps with RJ-45 connector) with 2 GB or higher Graphics card suitable for BMS System complete etc. as required.	1.00	Each



Name Of Work -Maintenance Office Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. Group C	54	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	616	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	320	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	550	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	70	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	35	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	910	Meter
6	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.	50	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	2065	Meter
8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		

a	Telephone socket outlet	14	Each
b	TV socket outlet	2	Each
c	RJ45 socket cat 6 with shutter	17	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	11	Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	33	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	13	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	21	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	2	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	5	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	1105	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	0	Each
18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providng and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	18	Each

19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	7	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	8 way Double door	0	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	2	Each
b	6 way (4 + 18), Double door	0	Each
c	8 way (4 + 24), Double door	1	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	42	Each
b	Double pole	0	Each
c	Three Phase & Neutral	2	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	6	Each
	63Amp.	3	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	0	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	1	Each

25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	10	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	6	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	0	Each
26	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.	2.0	Each
27	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.	2.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	70.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	70.0	Meter
30	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.	20	Meter
31	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.	20	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	50	Meter
33	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.	50	Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	3.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	15.00	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	8.00	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	2.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	4.00	Each

37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	6.00	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	-	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	-	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	-	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm. service value &gt; 6.0 CM/Min/Watt. air delivery 210 CM/Min</p>	11.00	Each

42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	11.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	-	Each
45	<b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing & Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against		
	phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be < 5% at 50 %load. (The required LC (		

	inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication <del>DC222/DC485/GSM/GPRS/Internet/LC-DMS</del>		
	integration, all hardware & software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 & 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.		
	d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging & Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code		
	10KVA (Each Power module shall be < 10 KVA)	0	Set



57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core	-	Meter
b	16 sq. mm 4 core		Meter
c	25 sq. mm 3-1/2 core	100.00	Meter
d	70 sq. mm 3-1/2 core		Meter
e	95 sq. mm 3-1/2 core	-	Meter
f	150 sq. mm 3-1/2 core		Meter
g	240 sq. mm 3-1/2 core		Meter
h	300 sq. mm 3-1/2 core		Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	-	Meter
59	Supply and fixing of brass nickel plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core	-	Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	-	Each
d	25 sq. mm 3.5 core	2.00	Each
e	35 sq. mm 3.5 core	-	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core		Each

k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)		Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	-	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter
b	200mm Dia	-	Meter

Name Of Work -Police Choki Internal Electrification Work			
Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	21	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	132	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	125	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	95	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	0	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	10	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	195	Meter
6	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.	0	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	520	Meter

8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	3	Each
b	TV socket outlet	0	Each
c	RJ45 socket cat 6 with shutter	5	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	7	Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	8	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	8	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	6	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	2	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	2	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	325	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	4	Each

18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	5	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	0	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	8 way Double door	0	Each
20	Supplying and fixing following way, horizontal type three pole and neutral, sheet steel, MCB distribution board, 415 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	4 way (4 + 12), Double door	1	Each
b	6 way (4 + 18), Double door	0	Each
c	8 way (4 + 24), Double door	0	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	12	Each
b	Double pole	0	Each
c	Three Phase & Neutral	0	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	0	Each
	63Amp.	3	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	0	Each

24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	1	Each
25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness	10	Each
b	300 mm width X 50 mm depth X 1.6 mm thickness	6	Each
c	600 mm width X 50 mm depth X 1.6 mm thickness	0	Each
26	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.	2.0	Each
27	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.		Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	70.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)		Meter
30	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.		Meter
31	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.	20	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.		Meter
33	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.		Meter

34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 6Watt to 9Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	2.00	Each
35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10Watt to 15Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty.	-	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36Watt to 46Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED 12S 6500 PSU GR or equivalent.	2.00	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	2.00	Each

37	<p>Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46Watt seamlessly integrated LED luminaire with high purity transistivity UV stablized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and shot circuit protection, sutable for 24 hr continuous operation complete in all respect.</p> <p>4320-5520 system lumen &gt; 120lm/w, PF&gt;0.95, THD&lt;10% at full load CRI&gt;80, &gt;300V over voltage protection, 4KV internal surge protection with 5 year warrantee. CAT-AAA</p>	10.00	Each
38	<p>Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmisivity UV stablized Non yellowish diffuser/ Reflector for uniform light distribution, ditachable driver set, suitable for 24hrs continuous operation complete in all respect.</p> <p>1200 system lumen, &gt;120lm/W, PF&gt;0.95, CRI&gt;70, &gt;300V, over voltage protection, 4KV internal surge protection with 5 year warrenty. CAT-AAA</p>	-	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	-	Each
40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	-	Each
41	<p><b>Brush Less Direct Current (BLDC) Motor</b></p> <p>Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req</p> <p>1200mm. service value &gt; 6.0 CM/Min/Watt. air delivery 210 CM/Min</p>	7.00	Each



42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work.	7.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	-	Each
45	<b>Online UPS- Input supply: Three Phase, Output supply: Three Phase</b> Supplying, installation, Testing & Commissioning of of following capacity at full load (Unity Power Factor) at operating temperature 0 to 40 deg C, Relative humidity 0 to 95%, Online double conversion true sine wave Uninterrupted hot swappable (allow for the replacement or addition of battery modules without shutting down the entire system) modular Power Supply (UPS) system with N+1 modules (N denotes total number of moduels requird for rated capacity). The UPS shall include a Rectifier, inverter, battery bank suitable for 30 minutes back up (Battery VAH capacity shall not be less than 1600 VAH per KVA of UPS rating per Hour backup time) on full load (Battery shall be VRLA, SMF in ABS Container) and Static Bypass switch alongwith provision for manual bypass, suitable isolation transformer for additional protection against		
	phase sequence correction. The UPS systems offered are to be of the latest technology with Digital Control Microprocessor based for reliable operation using Insulated Gate Bipolar Transistor (IGBT)'s both for the rectifier & inverter (3 Level) with PWM (Pulse Width Modulation). The quality of design, manufacturing and inspection process should confirm to the relevant International standards such as IEC/EN/VDE. The operating efficiency of the UPS systems shall be >96% while operating on battery mode and delivering quality power to the 100% non-linear loads. Current total harmonic effect(ITHD) on the input grid shall be < 5% at 50 %load. (The required LC (		

	<p>inductor (L) and a capacitor (C)) filters shall be included in UPS cost), extreme power factor kit to be included to limit the input power factor (PF) to 0.99 and output power factor shall be unity (i.e. kw rating of the UPS shall be kva rating x 1 ), however UPS shall be suitable to take load at 0.7 lagging to 0.7 leading power factor loads. UPS shall be suitable for incoming supply AC : 3Phase 400V +/-20%, 50 Hz +/-5 Hz, AC Output voltage: 3Phase 415 Volt, 50 Hz +/- 0.2Hz, Overload capacity of 120% for 10 mins, Sine wave output. Non condensing, noise level less than 60db at 1 meter distance, protections: Input Under voltage over voltage, abnormal out voltage, battery over charging, output over current, short circuit protection, battery deep discharge protection, 10KV surge. UPS must comply with low voltage electromagnetic compatibility (EMC) achieved as per EN 6204, EN6204 Part I and Part 2, it shall be a Voltage and Frequency Independent (VFI)-type UPS. Communication</p>		
	<p>integration, all hardware &amp; software for IoT Communication as per approved by Engineering in charge. Required battery racks and interconnecting copper conductor cables of suitable size and connectors and all required accessories are inclusive of the cost). This system must provide a means for logging and alarming of all monitored points plus email notification. Forced air-cooling with integral inbuilt fans with redundancy (if one fan fail UPS should be able to handle at least 80% of the load, Noise Level 65 DB at 1 meter distance. The system shall be in compliance IEC 62040- 1,2 &amp; 3, IS: 16242 and CPWD Specification. Display Panel (minimum) (In-build 5 inch or more LC Display / LED ) to display : a) Input: Voltage, current, Frequency. b) Bypass: Voltage, Frequency. c) Output: Voltage, frequency, Current.</p>		
	<p>d) Battery: Voltage, Capacity. e) Load: KVA, KW, Percentage. f)Temperature: STS, Inverter, PFC. g) Event Logging &amp; Statistical Data (On LCD/LED): UPS should capture and display up to 3000 events like: Over temperature / DC Bus Fail / Fan Fail / Fuse Fail / Overload / Short-circuit / Device Fail / Inverter Fail / Rectifier Fail / Bypass Fail, etc. h) Statistical Data: No. of power failures / Transfers to Bypass / Total Running time, etc. i) Mains Mode of Operation /Battery Mode of Operation / Bypass feeding the load /UPS Fault /Battery charging and discharging, overload, battery voltage and battery capacity. j) Audible Alarms : Mains Failure, Battery Low Alarm, UPS Overload, Fault, Shutdown, Input Over, Under Voltage, Output Over, Under Voltage, Battery Over, Under Voltage, Over Load and short circuit, Over Temperature. The UPS should have QR code</p>		
	10KVA (Each Power module shall be < 10 KVA)	0	Set

57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core	50.00	Meter
c	25 sq. mm 3-1/2 core		Meter
d	70 sq. mm 3-1/2 core		Meter
e	95 sq. mm 3-1/2 core	-	Meter
f	150 sq. mm 3-1/2 core		Meter
g	240 sq. mm 3-1/2 core		Meter
h	300 sq. mm 3-1/2 core		Meter
58	Supply of Power/Control Copper Cables, Solid Copper conductor, XLPE Insulated, cores laid up, PVC tape innersheathed, Unarmoured/Armour (Galvanised wire for cables up to 14x1.5 sqmm, 9x2.5 sqmm, 2x16 sqmm, 3x10 sqmm, 4x10sqmm balance all galvanised steel strip), extruded PVC Type ST2 Sheathed, 650/1100 V grade as per IS 7098 (Part 1) 1988		
a	10 sq. mm 4 core		Meter
b	35 sq. mm 3-1/2 core	-	Meter
59	Supply and fixing of brass nickle plated compression gland for PVC insulated & armoured served sheathed, underground cable including rubber ring etc. complete in all respect. The armouring of the cable shall be properly connected with the earth as per direction of Engineer-Incharge.		
a	6 sq. mm 2 core		Each
b	10 sq. mm 4 core		Each
c	16 sq. mm 4 core	2.00	Each
d	25 sq. mm 3.5 core		Each
e	35 sq. mm 3.5 core	-	Each
g	70 sq. mm 3-1/2 core	-	Each
h	95 sq. mm 3-1/2 core	-	Each
j	150 sq. mm 3-1/2 core		Each

k	240 sq. mm 3-1/2 core		Each
l	300 sq. mm 3-1/2 core		Each
60	Laying of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size in the existing RCC/ HUME/ METAL pipe as required.		
a	Upto 35 sq. mm	-	Meter
b	Above 35 sq. mm and upto 95 sq. mm		Meter
c	Above 95 sq. mm and upto 185 sq. mm		Meter
d	Above 185 sq. mm and upto 400 sq. mm		Meter
61	Laying and fixing of one number PVC insulated and PVC sheathed / XLPE power cable of 1.1 KV grade of following size on cable tray as required.		
a	Upto 35 sq. mm (clamped with 1mm thick saddle)		Meter
b	Above 35 sq. mm and upto 95 sq. mm (clamped with 25x3mm MS flat clamp)		Meter
c	Above 95 sq. mm and upto 185 sq. mm (clamped with 25/40x3mm MS flat clamp)		Meter
d	Above 185 sq. mm and upto 400 sq. mm (clamped with 40x3mm MS flat clamp)		Meter
62	Providing, laying and fixing 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 (75 cm deep) and refilling etc as required. 300mm Dia	-	Meter
63	Supplying and laying of following size DWC HDPE pipe ISI marked along with all accessories like socket, bend, couplers etc. conforming to IS 14930, Part II complete with fitting and cutting, jointing etc. in the existing trench, complete as required		Meter
a	120mm Dia	10.00	Meter
b	200mm Dia	-	Meter

**Name Of Work -Utility Block Internal Electrification Work**

Sr.No.	Particulars	Qty	Unit
1	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 in surface / recessed medium class PVC 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. <u>Group C</u>	20	Nos.
2	Wiring for twin control light point with 1.5 sq.mm FRLS PVC insulated copper conductor single core cable in surface / recessed medium class PVC 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.	0	Nos.
3	Wiring for light/ power plug with 2X4 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed medium class PVC conduit alongwith 1 No. 4 sq. mm FRLS PVC insulated copper conductor single core cable for loop earthing as required.	380	Meter
4	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
a	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	400	Meter
b	2 X 2.5 sq. mm + 1 X 2.5 sq. mm earth wire	200	Meter
c	4 X 10 sq. mm + 2 X 6 sq. mm earth wire	200	Meter
c	4 X 16 sq. mm + 2 X 6 sq. mm earth wire	500	Meter
5	Supplying and drawing following pair 0.5 mm dia FRLS PVC insulated annealed copper conductor, unarmored telephone cable in the existing surface/ recessed steel/ PVC conduit as required.		
a	2 Pair	250	Meter
6	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.	0	Meter
7	Supplying and fixing of following sizes of medium class PVC conduit along with accessories in surface/recess including cutting the wall and making good the same in case of recessed conduit as required.		
a	25 mm	500	Meter

8	Supplying and fixing following modular switch/ socket on the existing modular plate & switch box including connections but excluding modular plate etc. as required.		
a	Telephone socket outlet	2	Each
b	TV socket outlet	0	Each
c	RJ45 socket cat 6 with shutter	2	Each
9	Supplying and fixing two module stepped type electronic fan regulator on the existing modular plate switch box including connections but excluding modular plate etc. as required.	2	Each
10	Supplying and fixing following size/ modules, GI box alongwith modular base & cover plate for modular switches in recess etc. as required.		
a	1 or 2 Module (75mmX75mm)	4	Each
11	Supplying 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 A modular socket outlet and 5/6 A modular switch, connections etc. as required.	8	Each
12	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 6 pin 5/6 & 15/16 A modular socket outlet and 15/16 A modular switch, connections etc. as required.	8	Each
13	Installation ,Testing, Commissioning of wall bracket /ceiling fittings of all sizes and shapes containing upto two GLS/CFL/LED lamps per fitting, complete with all accessories including connections etc. as required.	19	Each
14	Supplying and fixing stiff pendent with 300 mm long, 20 mm dia X 1.6 mm thick steel conduit, aluminium cast back plate and brass holder complete, including wiring the down rod with 1.5 sq. mm FRLS PVC insulated, copper conductor, single core cable and painting etc. as required.		Each
15	Supplying and fixing call bell/ buzzer suitable for single phase, 230 V, complete as required.	0	Each
16	Supplying and drawing of UTP 4 pair CAT 6 LAN Cable in the existing surface/ recessed Steel/ PVC conduit as required.		
a	1 run of cable	250	Meter
17	Wiring for group controlled (looped) light point/fan point/exhaust fan point/ call bell point ( without independent switch etc.) with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable in surface/ recessed PVC conduit, and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core cable etc. as required.		
a	Group C	6	Each

18	Supplying and fixing suitable size GI box with modular plate and cover in front on surface or in recess, including providing and fixing 2 nos. 3 pin 5/6 A modular socket outlet and 2 nos. 5/6 A modular switch, connections etc. as required. (For light plugs to be used in non residential buildings).	4	Each
19	Supplying & fixing suitable size GI box with modular plate and cover in front on surface or in recess including providing and fixing 25 A modular socket outlet and 25 A modular SP MCB, "C" curve including connections, painting etc. as required.	2	Each
20	Supplying and fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 V, on surface/ recess, complete with tinned copper bus bar, neutral bus bar, earth bar, din bar, interconnections, powder painted including earthing etc. as required. (But without MCB/RCCB/Isolator)		
a	8 way Double door	4	Each
21	Supplying and fixing 5 A to 32 A rating, 240/415 V, 10 kA, "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.		
a	Single pole	32	Each
b	Double pole	4	Each
c	Three Phase & Neutral	0	Each
22	Supplying and fixing following rating, double pole, (single phase and neutral), 240 V, residual current circuit breaker (RCCB), having a sensitivity current 30 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required.		
	25Amp.	0	Each
	63Amp.	0	Each
23	Supplying and fixing 63Amp, four pole, (three phase and neutral), 415 volts, residual current circuit breaker (RCCB), having a sensitivity current 300 mA in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand or equivalent.</b>	0	Each
24	Supplying and fixing 40/63A rating, 415 V, 10 kA, "C" curve, miniature circuit breaker suitable for inductive load of Four poles in the existing MCB DB complete with connections, testing and commissioning etc. as required. <b>Similar to Legrand DX3 AC MCBs or equivalent.</b>	0	Each
25	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc as required.		
a	100 mm width X 50 mm depth X 1.6 mm thickness		Each
b	300 mm width X 50 mm depth X 1.6 mm thickness		Each

c	600 mm width X 50 mm depth X 1.6 mm thickness		Each
26	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.	0.0	Each
27	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.	0.0	Each
28	Supplying and laying 25 mm X 5 mm G.I strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with G.I. nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of G.I. nut bolt & spring washer spaced at 50mm)	0.0	Meter
29	Supplying and laying 25 mm X 5 mm copper strip at 0.50 metre below ground as strip earth electrode, including connection/ terminating with nut, bolt, spring, washer etc. as required. (Jointing shall be done by overlapping and with 2 sets of brass nut bolt & spring washer spaced at 50mm)	0.0	Meter
30	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.	0	Meter
31	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.	0	Meter
32	Providing and fixing 25 mm X 5 mm G.I. strip on surface or in recess for connections etc. as required.	0	Meter
33	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.	500	Meter
34	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/ Surface mounting ground 6 Watt to 9 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 720-1080 system lumens, >120 Lm/W, PF >0.95, THD <10% at full load, CRI >80, >300V over voltage protection, 2.5KV internal Surge Protection, with 5 years warranty.	-	Each



35	Supply and fixing of IP20, Front Lit, Mid Power SMD type LED Light, recess/Surface mounting ground 10 Watt to 15 Watt, Cutout Min 125mm, Height Min 40mm,, LED Down Lighter having Powder coated diecast aluminium housing with heat sink, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24 Hr Continuous Operation, Complete in All respect. 1200-1800 system lumens, >120Lm/W, PF>0.95, THD<10% at full load, CRI >80, , >300V over voltage protection, 2.5KV internal Surge Protection with 5 years warranty	-	Each
36	Supply and fixing of IP20, Mid Power SMD type LED Light, 2'x2' 36 Watt to 46 Watt, Indoor Recess mounting LED Square Fitting for Armstrong Ceiling Powder coated CRCA housing body, High purity / transmissivity UV Stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, open and short circuit protection, suitable for 24 Hr Continuous Operation. Complete in All respect.	-	Each
35	SITC of 12W Extruded aluminium batten available in 2ft run length with multiple lumen packages and suitable for surface, wall & conduit mounting (with accessories). similar to Philips Type HSN Code MRP (INR) BN 021 LED12S 6500 PSU GR or equivalent.	-	Each
36	Supply and fixing of 18-22W LED Batten fitting with Extruded Aluminum housing, special polycarbonate diffuser for glare free light distribution and suitable mounting for on both surface & suspended, Complete in all respect.	14.00	Each
37	Supply and fixing of recess/pendent mounting having 1x4 size 36 to 46 Watt seamlessly integrated LED luminaire with high purity transmissivity UV stabilized Non Yellowish diffuser/Reflector for uniform light distribution integral/detachable driver set, open and short circuit protection, suitable for 24 hr continuous operation complete in all respect.  4320-5520 system lumen > 120lm/w, PF>0.95, THD<10% at full load CRI>80, >300V over voltage protection, 4KV internal surge protection with 5 year warranty. CAT-AAA	-	Each
38	Supply and fixing of water tight oblong 10 Watt LED bulkhead luminaire having pressure diecast housing with driver set confirming to IP 65 and above Protection, IK08, High purity / transmissivity UV stabilized Non yellowish diffuser/ Reflector for uniform light distribution, detachable driver set, suitable for 24hrs continuous operation complete in all respect.  1200 system lumen, >120lm/W, PF>0.95, CRI>70, >300V, over voltage protection, 4KV internal surge protection with 5 year warranty. CAT-AAA	5.00	Each
39	Recessed PIR Motion Sensor Similar to Wipro Make : GLPS01R010HA or equivalent	4.00	Each

40	<b>Supply and fixing of factorywired integral LED flood light luminaireswithdiecast aluminiumhousingwithtoughendglass/ UVstabilizedPCCoverandlensesbuiltwithmandatorydriverset suitable for 40 to50WattConfirming to IP65/66 , IK07and above protection complete in all respect.</b>	1.00	Each
41	<b>Brush Less Direct Current (BLDC) Motor</b> Supply, Installation, Testing and Commissioning of ceiling fan with Brush Less Direct Current (BLDC) Motor, class of insulation: B, 3 nos. metal (Aluminum alloy) blades, 30 cm long down rod, 2 nos. canopies, shackle kit, safety rope, copper winding, steel/Al body Power Factor not less than 0.9, Service Value (CM/M/W) minimum as below, 350 RPM (tolerance as per IS : 374-2019), THD (Total Harmonic Distortion) less than 10%, remote (preferably mobile app based) for speed control and all remaining accessories including safety pin, nut bolts, washers, temperature rise=75 degree C (max.), insulation resistance more than 2 mega ohm, suitable for 230 V, 50 Hz, single phase AC Ceiling Fan compliant to IS 374:2019 fan Supply, earthing etc. complete as req 1200mm. service value > 6.0 CM/Min/Watt. air delivery 210 CM/Min	2.00	Each
42	Supply and fixing hexagonal Round G.P.fan box approved make made up of 1.0 mm thick ISI Marked G.P.sheet spot welded Four to Eight holes for pipe entry of the box. Holes should be semi-shuttered type with 0.5 mm G.P. Sheet made upper & lower cover duly screwed. Fixing with wiring conduit laid in the R.C.C. roof before concreting alongwith supply of all material, labour, T&P etc. required for proper completion of the work	2.00	Each
43	Supply Installation Testing and Commissioning of 400mm sweep 1500RPM energy efficient BLDC fan with double ball bearing for longer life similar to CGE RENESA or equivalent.	4.00	Each
57	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
a	6 sq. mm 2 core		Meter
b	16 sq. mm 4 core	50.00	Meter
c	25 sq. mm 3-1/2 core		Meter
d	70 sq. mm 3-1/2 core		Meter
e	95 sq. mm 3-1/2 core	200.00	Meter
f	150 sq. mm 3-1/2 core	1,500.00	Meter
g	240 sq. mm 3-1/2 core		Meter
h	300 sq. mm 3-1/2 core		Meter

TYPE 6			
SI.NO.	Description	Unit	Qty
<b>1</b>	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	2
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	2
<b>2</b>	Providing and fixing fire man axe	Each	2

TYPE 5 (S+7)			
SI.NO.	Description	Unit	Qty
1	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	900 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	3
	100 mm dia	mtr	21

3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	8
4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	8
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	16
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	8

8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	8
9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1
12	Providing and fixing gun metal ball valve	each	8
13	Providing and fixing pressure gauge	each	2
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	8
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	8
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	8
18	Providing and fixing fire man axe	Each	8

19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25
20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as requrd as per standard details.	Each	1

FIRE FIGHTING BOQ			
TYPE 4 (S+8)			
SI.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electro driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	900 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	5
	100 mm dia	mtr	30
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	9



4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	9
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	18
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	9
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	9
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1

<b>12</b>	Providing and fixing gun metal ball valve	each	9
<b>13</b>	Providing and fixing pressure gauge	each	2
<b>15</b>	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	9
<b>16</b>	Providing and fixing air release valve	Each	1
<b>17</b>	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	9
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	9
<b>18</b>	Providing and fixing fire man axe	Each	9
19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25
20	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.		
	4 X 16 sq. mm (28mm)	Each	2

21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as required as per standard details.	Each	1

FIRE FIGHTING BOQ			
TYPE 3 (S+14)			
Sl.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	4
	100 mm dia	mtr	46
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	15
4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	15

6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	30
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	15
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	15
12	Providing and fixing gun metal ball valve	each	15
13	Providing and fixing pressure gauge	each	2
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	15
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		

	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	15
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	15
<b>18</b>	Providing and fixing fire man axe	Each	15

FIRE FIGHTING BOQ			
TYPE 3 (S+13)			
Sl.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	4
	100 mm dia	mtr	42
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	14
4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	14
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	28

7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	14
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	14
12	Providing and fixing gun metal ball valve	each	14
13	Providing and fixing pressure gauge	each	2
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	14
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	14
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	14
18	Providing and fixing fire man axe	Each	14



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FIRE FIGHTING BOQ			
TYPE 2 (S+10)			
Sl.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	900 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	4
	100 mm dia	mtr	35
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	11

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	11
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	22
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	11
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	11

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1
12	Providing and fixing gun metal ball valve	each	11
13	Providing and fixing pressure gauge	each	2
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	11
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	11
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	11
18	Providing and fixing fire man axe	Each	11
19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25

20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
	300 mm width X 50 mm depth X 1.6 mm thickness	Meter	
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as requrd as per standard details.	Each	1

<b>FIRE FIGHTING BOQ</b>			
<b>BOYS HOSTEL UP &amp; PG</b>			
<b>SI.NO.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty</b>
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	900 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	4
	100 mm dia	mtr	25
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	18

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	3
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	24
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	48
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	24
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	24

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1
12	Providing and fixing gun metal ball valve	each	24
13	Providing and fixing pressure gauge	each	2
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	24
16	Providing and fixing air release valve	Each	3
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	24
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	24
18	Providing and fixing fire man axe	Each	24
19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25



20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
	300 mm width X 50 mm depth X 1.6 mm thickness	Meter	
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as requrd as per standard details.	Each	1

<b>FIRE FIGHTING BOQ</b>			
<b>GIRLS HOSTEL UP &amp; PG</b>			
<b>Sl.NO.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty</b>
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	900 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	10
	100 mm dia	mtr	25
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	15

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	3
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	18
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	36
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	18
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	18

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1
12	Providing and fixing gun metal ball valve	each	18
13	Providing and fixing pressure gauge	each	1
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	18
16	Providing and fixing air release valve	Each	3
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	18
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	18
18	Providing and fixing fire man axe	Each	18
19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25

20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as required as per standard details.	Each	1

FIRE FIGHTING BOQ			
BOYS HOSTEL - DIPLOMA			
SI.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	450 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	2
	100 mm dia	mtr	18
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	3

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	3
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	6
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	3
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	3

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1
11	Providing & fixing flow switch in following sizes M.S. pipe including connection etc as required.		
	100 mm dia	Each	1
12	Providing and fixing gun metal ball valve	each	3
13	Providing and fixing pressure gauge	each	1
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	3
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	3
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	3
18	Providing and fixing fire man axe	Each	3



19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25
20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as requrd as per standard details.	Each	1

FIRE FIGHTING BOQ			
GIRLS HOSTEL - DIPLOMA			
SI.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electro driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	450 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	2
	100 mm dia	mtr	18
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	3

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	3
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	6
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	3
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	3

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1
11	Providing & fixing flow switch in following sizes M.S. pipe including connection etc as required.		
	100 mm dia	Each	1
12	Providing and fixing gun metal ball valve	each	3
13	Providing and fixing pressure gauge	each	1
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	3
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	3
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	3
18	Providing and fixing fire man axe	Each	3

19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25
20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
	300 mm width X 50 mm depth X 1.6 mm thickness	Meter	
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as requrd as per standard details.	Each	1

FIRE FIGHTING BOQ			
BOYS HOSTEL - RESEARCH			
Sl.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	450 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	2
	100 mm dia	mtr	20
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	4

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	4
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	4
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	8
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	4
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	4

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1
11	Providing & fixing flow switch in following sizes M.S. pipe including connection etc as required.		
	100 mm dia	Each	1
12	Providing and fixing gun metal ball valve	each	4
13	Providing and fixing pressure gauge	each	1
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	4
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	4
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	4
18	Providing and fixing fire man axe	Each	4



19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25
20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as requrd as per standard details.	Each	1

<b>FIRE FIGHTING BOQ</b>			
<b>GIRLS HOSTEL - RESEARCH</b>			
<b>SI.NO.</b>	<b>Description</b>	<b>Unit</b>	<b>Qty</b>
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	450 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	2
	100 mm dia	mtr	18
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	3

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	3
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	6
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	3
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	3

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1
12	Providing and fixing gun metal ball valve	each	3
13	Providing and fixing pressure gauge	each	1
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	3
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	3
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	3
18	Providing and fixing fire man axe	Each	3
19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25

20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as required as per standard details.	Each	1

FIRE FIGHTING BOQ			
ADMINISTRATIVE BUILDING			
SI.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	25 mm dia	mtr	5280
	32 mm dia	mtr	825
	40 mm dia	mtr	1980
	50 mm dia	mtr	660
	65 mm dia	mtr	1155
	80 mm dia	mtr	990
	100 mm dia	mtr	1980
	150 mm dia	mtr	660
2	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	20
3	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	10
B	80 mm dia	set	22
C	150 mm dia	set	4
D	65 mm dia	set	10

4	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	24
5	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	44
6	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	22
7	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	22
10	Providing & fixing flow switch in following sizes M.S. pipe including connection etc as required.		
	100 mm dia	Each	6
11	Providing, fixing, testing & commissioing of 15 mm dia quartzoid bulb type sprinklers of rating 68 degree centigrade with required accessories:		
	Pendent Sprinkler	Each	1200
	Upright Sprinkler	Each	1200
	Horizontal Side Wall Sprinkler	Each	50

<b>12</b>	Providing and fixing gun metal ball valve	each	20
<b>22</b>	Providing and fixing pressure gauge	each	20
<b>23</b>	Providing and fixing weather proof standard hose cabinet (900mm x 750 mm x 400 mm) out door type suitable for accommodating yard hydrants made of 1.5mm thick M.S. sheet having central opening glazed door including necessary locking arrangements, painting one coat of primer and two coats of postal red enamel paint and housing 2 Nos. canvas hose pipe and branch pipe as required. (The cabinet shall be floor mounted on suitable raised platform). The shutters are to be lockable type. The words "Fire Hose Cabinet" to be painted on the box.	Each	12
<b>24</b>	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	22
<b>25</b>	Providing and fixing air release valve	Each	6
<b>26</b>	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	25
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	25
<b>27</b>	Providing and fixing fire man axe	Each	22



FIRE FIGHTING BOQ			
ACEDEMIC			
SI.NO.	Description	Unit	Qty
1	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	900 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		

	80 mm dia	mtr	5
	100 mm dia	mtr	50
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	22
4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	5
B	80 mm dia	set	22
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	17
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	44

7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	22
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	22
9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1

12	Providing and fixing gun matel ball valve	each	22
13	Providing and fixing pressure gauge	each	1
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	22
16	Providing and fixing air release valve	Each	3
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	22
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	22
18	Providing and fixing fire man axe	Each	22
19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25

20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as required as per standard details.	Each	1

FIRE FIGHTING BOQ			
CENTRAL LIBRARY			
SI.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	900 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	10
	100 mm dia	mtr	15
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	3

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	3
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	3
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	6
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	3
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	3

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	3
11	Providing & fixing flow switch in following sizes M.S. pipe including connection etc as required.		
	100 mm dia	Each	1
12	Providing and fixing gun metal ball valve	each	2
13	Providing and fixing pressure gauge	each	3
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	3
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	6
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	6
18	Providing and fixing fire man axe	Each	3



19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25
20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as requrd as per standard details.	Each	1

FIRE FIGHTING BOQ			
MULTIPURPOSE HALL			
Sl.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	25 mm dia	mtr	1450
	32 mm dia	mtr	225
	40 mm dia	mtr	535
	50 mm dia	mtr	180
	65 mm dia	mtr	315
	80 mm dia	mtr	270
	100 mm dia	mtr	535
	150 mm dia	mtr	180
2	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	4
3	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	1
C	150 mm dia	set	1
4	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	4

5	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	8
6	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	4
7	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	4
8	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing flow switch in following sizes M.S. pipe including connection etc as required.		
	100 mm dia	Each	1
11	Providing, fixing, testing & commissioning of 15 mm dia quartzoid bulb type sprinklers of rating 68 degree centigrade with required accessories:		
	Pendent Sprinkler	Each	325
	Upright Sprinkler	Each	325

<b>12</b>	Providing and fixing gun metal ball valve	each	4
<b>22</b>	Providing and fixing pressure gauge	each	4
<b>23</b>	Providing and fixing weather proof standard hose cabinet (900mm x 750 mm x 400 mm) out door type suitable for accommodating yard hydrants made of 1.5mm thick M.S. sheet having central opening glazed door including necessary locking arrangements, painting one coat of primer and two coats of postal red enamel paint and housing 2 Nos. canvas hose pipe and branch pipe as required. (The cabinet shall be floor mounted on suitable raised platform). The shutters are to be lockable type. The words "Fire Hose Cabinet" to be painted on the box.	Each	5
<b>24</b>	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	4
<b>25</b>	Providing and fixing air release valve	Each	4
<b>26</b>	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	4
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	4
<b>27</b>	Providing and fixing fire man axe	Each	4

FIRE FIGHTING BOQ			
GUEST HOUSE			
Sl.NO.	Description	Unit	Qty
1	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	450 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	10
	100 mm dia	mtr	30
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	8

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	8
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	7
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	16
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	8
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	8

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	3
11	Providing & fixing flow switch in following sizes M.S. pipe including connection etc as required.		
	100 mm dia	Each	1
12	Providing and fixing gun metal ball valve	each	2
13	Providing and fixing pressure gauge	each	8
14	Providing and fixing weather proof standard hose cabinet (900mm x 750 mm x 400 mm) out door type suitable for accommodating yard hydrants made of 1.5mm thick M.S. sheet having central opening glazed door including necessary locking arrangements, painting one coat of primer and two coats of postal red enamel paint and housing 2 Nos. canvas hose pipe and branch pipe as required. (The cabinet shall be floor mounted on suitable raised platform). The shutters are to be lockable type. The words "Fire Hose Cabinet" to be painted on the box.	Each	1
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	7
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	8

	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	8
18	Providing and fixing fire man axe	Each	8
19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25
20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as required as per standard details.	Each	1



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FIRE FIGHTING BOQ			
HEALTH CENTER			
Sl.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	450 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	10
	100 mm dia	mtr	30
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	4

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	4
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	3
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	8
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	4
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	4

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	3
11	Providing & fixing flow switch in following sizes M.S. pipe including connection etc as required.		
	100 mm dia	Each	1
12	Providing and fixing gun metal ball valve	each	2
13	Providing and fixing pressure gauge	each	4
15	Providing and fixing Fire hose cabinet glazed door shutter and frame with hold fasts ( frame fabricated from 40 x 40 x 5mm and shutter from 35x35x5mm M.S. angle) 2100 mm high x 1000 mm wide with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint. The words "Fire Hose Cabinet" to be painted on the box.	Each	4
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	6
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	6
18	Providing and fixing fire man axe	Each	4

19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25
20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as requrd as per standard details.	Each	1

FIRE FIGHTING BOQ			
FACILITY CENTER			
SI.NO.	Description	Unit	Qty
<b>1</b>	<b>PIPES &amp; ACCESSORIES</b>		
1	Supplying, Installtion, testing and commisionning of electrc driven terrace pump suitable for automatic operation and consisting of following, complete in all respects , as required: (Terrace Pump)		
	Horizontal type, multistage, centrifugal, split casing pump cast iron body & bronze impeller with stainless steel shaft, mechanical confirming to IS:1520		
	Suitable HP squirell cage induction motor TEFC type suitable for operation on 415 volts, 3 phase, 50 Hz, AC supply with IP55 class of protection for enclosure, horizontal foot mounted type with class-F insulation, conforming to IS 325.		
	M.S. Fabricated common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	900 LPM @35M HEAD	each	1
2	Providing, laying, testing & commissioning of 'C' class heavy duty MS pipe conforming to IS 3589/IS 1239 including Welding, fittings like elbows, tees, flanges, tapers, nuts bolts, gaskets etc. and fixing the pipe on the wall/ceiling with suitable clamp/support frame and painting with two or more coats of synthetic enamel paint of required shade complete as required :		
	80 mm dia	mtr	4
	100 mm dia	mtr	10
3	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required :		
a	Single headed Gunmetal	set	1

4	Supplying, fixing, testing and commissioning of butterfly valve of PN 1.6 rating with bronze/gunmetal seat duly ISI marked complete with nuts, bolts, washers, gaskets conforming to IS 13095 of following sizes as required :		
A	100 mm dia	set	2
B	80 mm dia	set	1
5	Supplying and fixing orifice plate made out of 6 mm thick stainless steel (Grade 304) with orifice of required size to be fitted between flange & landing valve of external and internal hydrants to reduce pressure at the outlet to the level of 3.5 kg/cm <sup>2</sup> complete as required.	each	1
6	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	2
7	Supplying and fixing first-aid Hose Reel with MS construction spray painted in post office red, conforming to IS 884 complete with the following as required.		
	20 mm nominal internal dia water hose thermoplastic (Textile reinforced) type -2 as per IS: 12585		
	20 mm nominal internal dia gun metal globe valve & nozzle.		
	Drum and brackets for fixing the equipments on wall. Connections from riser with 25 mm dia stop gun metal valve & M.S. Pipe and socket.		
a	30m	set	1
8	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	1

9	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1
10	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	1
12	Providing and fixing gun metal ball valve	each	2
13	Providing and fixing pressure gauge	each	1
14	Providing and fixing weather proof standard hose cabinet (900mm x 750 mm x 400 mm) out door type suitable for accommodating yard hydrants made of 1.5mm thick M.S. sheet having central opening glazed door including necessary locking arrangements, painting one coat of primer and two coats of postal red enamel paint and housing 2 Nos. canvas hose pipe and branch pipe as required. (The cabinet shall be floor mounted on suitable raised platform). The shutters are to be lockable type. The words "Fire Hose Cabinet" to be painted on the box.	Each	1
16	Providing and fixing air release valve	Each	1
17	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	2
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	2
18	Providing and fixing fire man axe	Each	1
19	Supply and laying of aluminium conductor PVC insulated armoured served sheathed cables 1100 Volts grade on cable tray as directed by engineer incharge complete in all respect including The armouring of the cable shall be properly connected with the earth conductor by clamps etc.		
	16 sq. mm 4 core	Mtr	25



20	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.		
	4 X 16 sq. mm (28mm)	Each	2
21	Supplying and installing following size of perforated painted with powder coating M.S. cable trays with perforation not more than 17.5%, in convenient sections, joined with connectors, suspended from the ceiling with M.S. suspenders including bolts & nuts, painting suspenders etc. as required.		
	100 mm width X 50 mm depth X 1.6 mm thickness	Meter	10
22	Wiring for circuit/ submain wiring alongwith earth wire with the following sizes of FRLS PVC insulated copper conductor, single core cable in surface/ recessed medium class PVC conduit as required.		
	2 X 1.5 sq. mm + 1 X 1.5 sq. mm earth wire	Meter	25
23	Supplying, installation & testing commissioning electrical <b>Control panel with 7.5HP DOL starter</b> , 3 Pole motor protection category current limiting type MCCB, indicating light, ammeter, voltmeter, selector switches, CT's protective fuses, single phasing protection, dry suction cut off etc as required as per standard details.	Each	1

FIRE FIGHTING BOQ			
MAINTENANCE OFFICE			
Sl.NO.	Description	Unit	Qty
<b>1</b>	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	2
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	2
<b>2</b>	Providing and fixing fire man axe	Each	1

FIRE FIGHTING BOQ			
POLICE CHOWKI			
Sl.NO.	Description	Unit	Qty
<b>1</b>	<b>Fire Extinguisher</b>		
	Providing and fixing 6 Kg clean agent or ABC extinguisher with IS: 2171. (ISI marked)	Each	2
	Providing and fixing 4.5 Kg clean agent or CO2 extinguisher with IS: 2171. (ISI marked)	Each	2
<b>2</b>	Providing and fixing fire man axe	Each	1

PUMP ROOM AND EXTERNAL FIRE FIGHTING BOQ			
FORESTRY UNIVERSITY GORAKHPUR			
SI.NO.	Description	Unit	Qty
<b>1</b>	PIPES & ACCESSORIES		
<b>1</b>	Supplying, installation, testing and commissioning of Electric driven Main Fire Pump suitable for automatic operation and consisting of following, complete in all respects, as required :		
	Horizontal type, multistage, centrifugal, split casing pump of cast iron body & bronze impeller with stainlesssteel shaft, mechanical seal conforming to IS 1520.		
	Suitable HP Squirrel cage induction motor, TEFC, synchronous speed 1500 RPM, suitable for operation on 415 volts, 3 phase 50 Hz, AC supply with IP 55 protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS-325.		
	M.S.fabricated Common base plate, coupling, coupling guard,foundation bolts etc.as required.		
	Suitable cement concrete foundation duly plastered with anti vibration pads.		
	2280 lpm at 88 m Head	set	2.00
<b>2.00</b>	Supplying, installation, testing and commissioning of diesel engine driven main fire pump suitable for automatic operation and consisting of following, complete in all respects, as required : (Diesel Driven Pump).		
	Horizontal type, multistage, centrifugal pump of cast of iron body and bronze impeller with stainless steel shaft, mechanical seal conforming to IS 1520.		
	Suitable HP, 1500 RPM water cooled with radiator, diesel engine conforming to relevant IS standard complete with auto starting mechanism, 12 /24 volts electric starting equipment, diesel tank, exhaust pipe extended upto 10 m outside pump house duly insulated with 50 mm thick glass wool with 1.0 mm thick aluminium sheet cladding, residential silencer, instruments and protection as per standard specification, stop solenoid for auto stop in the event of fault with audio indications, painted with post office red colour etc. as required.		
	M.S fabricated, common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	2280 lpm at 88 m Head	set	1.00

3.00	Supplying, installation, testing and commissioning of electric driven pressurisation pump suitable for automatic operation and consisting of following, complete in all respects, as required : (Jockey Pump)		
	Horizontal type, multistage, centrifugal pump of cast iron body and bronze impeller with stainless steel shaft, mechanical seal conforming to IS : 1520.		
	Suitable HP squirrel cage induction motor TEFC type suitable for operation on 415 volts, 3 phase 50 Hz AC supply with IP 55 class of protection for enclosure, horizontal foot mounted type with Class-'F' insulation, conforming to IS : 325. M.S.fabricated Common		
	M.S.fabricated Common base plate, coupling, coupling guard, foundation bolts etc. as required.		
	Suitable cement concrete foundation duly plastered and with anti vibration pads.		
	180 lpm at 88 m Head	set	2.00
4.00	Fabrication, supply, Installation testing & commissioning of Electrical control panel of cubical construction, floor mounted type, fabricated out of 2mm thick CRCA sheet, compartmentalised with hinged lockable doors, dust and vermin proof, powdercoated of approved shade after 7 tank treatment process, cable alley, interconnection with suitable size copper conductor cable/solid copper strip, having switchgears and accessories, mountings and internal wiring, earth terminals, numbering etc. complete in all respect, suitable for main fire pump, pressurisation pump & diesel pump set complete as per CPWD specification with following in coming and Outgoings, suitable for operation on 415V, 3 phase, 50Hz Ac Supply with enclosure protection class IP 42 as required :		
	INCOMER	Set	1.00
	400A, 50kA 4 Pole MCCB, Ics=100% Icu rating Digital Voltmeter 0-500V with selector switch Ammeter (0-400 A) with selector switch & CTs etc.		
	LED type RYB phase indicating lamps, ON, OFF, trip indicating lamps Set of Copper Bus Bar 500A		
	OUTGOING.		
	Main fire pump and Sprinkler pump		
	200 A, 50kA TPN MCCB, Ics=100% Icu, with fully automatic Star/Delta starter suitable for 75 hp pump with overload protection, current sensing type single phase preventor complete with all accessories and internal wiring required for automatic operation, selector switch for local/remote, auto/manual/OFF operation.		
	Water curtain pump		

	100 A, 50kA TPN MCCB, Ics=100% Icu, with fully automatic Star/Delta starter suitable for 60 HP pump with overload protection, current sensing type single phase preventor complete with all accessories and internal wiring required for automatic operation, selector switch for local/remote, auto/manual/OFF operation.		
	Jockey pump		
	100 A, 50kA TPN MCCB, Ics=100% Icu, with suitable HP fully automatic Star/Delta starter with overload protection, current sensing type single phase preventor complete with all accessories and internal wiring required for automatic operation, selector switch for local/remote, auto/manual/OFF operation.		
	Diesel Engine Control		
	Control for Diesel Engine comprising:-		
	Auto / Manual selector switch & 3 attempt starting device, timers and relays as required, push buttons, start / stop in manual mode.		
	Indication lamp for High / Low Lub. Oil pressure, High Water Temp. and Engine ON indication.		
	Battery charger suitable for 12V / 24 V DC with boost and tickle selector switch, 0-30 V DC volt meter, 0-20A DC Ammeter.		
	All standard relays and accessories for automatic operation of diesel engine.		
	DIESEL ENGINE CONTROL		
	Control for diesel engine comprising -Automatic/Manual selector switch & 3 attempts starting device, timers and relays as required, push buttons, start/stop in manual mode Indicating lamp for high/ Low Lub. Oil pressure, High Water Temp and Engine on indication Battery charger suitable for 12V/24 V DC with boost and trickle selector switch, 0-30 V DC volt meter, and 0-20 A DC Ammeter All standard relays and accessories for automatic operation of diesel engine System Controller Designing, Supply, Installation, Testing and commissioning of system controller to control operation of main electric fire pump, diesel pump, Pressurization pump, Terrace pump in sequence as per specification consisting of relays, timers. Sensors, annunciation window for fault indication, complete as per specification		
5.00	Providing laying, testing & commissioning of C class heavy duty MS pipe conforming to IS 1239/3589 i/c fitting like elbows, tees, flanges, tapers, nuts bolts, gasket etc. in ground including welding, excavation & providing with coal tar/asphalt tape as per IS 10221, refilling the trench etc. of following sizes complete as required.		
	150 mm dia	mtr	4,500.00
6.00	Providing, installation, testing and commissioning of non-return valve of following sizes conforming to IS: 5312 complete with rubber gasket, GI bolts, nuts, washers etc. as required :		

	100mm dia	set	2.00
	150mm dia	set	3.00
<b>7.00</b>	Providing, installation, testing and commissioning of stainless steel Y-strainer fabricated out of 1.6 mm thick stainless steel, Grade 304, sheet with 3 mm dia holes with stainless steel flange.		
	150mm dia	Each	0.00
	200mm dia	Each	2.00
<b>8.00</b>	Supplying and fixing of fire brigade connection of cast iron body with gun metal male instantaneous inlet couplings complete with cap and chain as reqd. for suitable dia MS pipe connection conforming to IS 904 as required :		
a	2 way-100 mm dia M.S. Pipe	set	2.00
b	4 way-150 mm dia M.S. Pipe	set	2.00
<b>9.00</b>	Supplying and fixing air vessel made of 250 mm dia, 8 mm thick MS sheet, 1200 mm in height with air release valve on top and flanged connection to riser, drain arrangement with 25 mm dia gun metal wheel valve with required accessories, pressure gauge and painting with synthetic enamel paint of approved shade as required.	set	1.00
<b>10.00</b>	Providing & fixing of pressure switch in M.S. pipe line including connection etc. as required.	Each	5.00
<b>11.00</b>	Providing and fixing gun metal ball valve	each	1.00
<b>12.00</b>	Providing and fixing pressure gauge	each	3.00
<b>13.00</b>	Fire Extinguisher		
	Supply and fixing of fire extinguisher, ABC Type 6.00 kg. capacity (ISI Marked IS : 15683 & TAC approved) complete with initial charge and wall bracket, along with supply of all materials and labour for proper completion of work.	Each	2.00
	Supply and fixing of CO2 type fire extinguisher 4.5 kg. capacity (ISI Marked IS : 2878 & TAC approved) complete with initial charge and wall bracket, along with supply of all materials and labour for proper completion of work.	Each	2.00
<b>14</b>	Supplying and fixing single headed internal hydrant valve with instantaneous Gunmetal/Stainless Steel coupling of 63 mm dia with cast iron wheel ISI marked conforming to IS 5290 (Type -A) with blank Gunmetal/Stainless Steel cap and chain as required : (at the distance of 100m)		
a	Single headed Gunmetal	set	40

15	Supplying and fixing 63 mm dia, 15 m long RRL hose pipe with 63 mm dia male and female couplings duly bound with GI wire, rivets etc. conforming to IS 636 (type-A) as required :		
a	Gun Metal	Set	80
16	Supplying & fixing 63 mm dia gun metal short branch pipe with 20 mm nominal internal diameter size nozzle conforming to IS 903 suitable for instantaneous connection to interconnect hose pipe coupling as required :		
a	Gun metal	nos.	40
17	Providing and fixing weather proof standard hose cabinet (750mm x 600 mm x 250 mm) out door type suitable for accommodating yard hydrants made of 1.5mm thick M.S. sheet having central opening glazed door including necessary locking arrangements, painting one coat of primer and two coats of postal red enamel paint and housing 2 Nos. canvas hose pipe and branch pipe as required. (The cabinet shall be floor mounted on suitable raised platform). The shutters are to be lockable type. The words "Fire Hose Cabinet" to be painted on the box.	Each	40
18	Supplying, fixing, testing & commissioning of double flanged sluice valve of rating PN 1.6 with non rising spindle, bronze/gun metal seat, ISI marked complete with nuts, bolts, washers, gaskets and conforming to IS 780 of following sizes as required :		
	150 mm dia.pipe	Each	50