

ALL INDIA INSTITUTE OF MEDICAL SCIENCES,
ANSARI NAGAR, NEW DELHI

Tender

For

**Construction of Surgical Block including maintenance for
AIIMS within AIIMS campus, Ansari Nagar, New Delhi**

Bill of Quantity

Volume-V

JUNE 2011



HSCC (INDIA) LTD.
(CONSULTANTS & ENGINEERS FOR MEGA HOSPITALS & LABORATORIES)
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PQ No. HSCC/BU-HP-II/2010

**Construction of Surgical Block including maintenance for AIIMS within
AIIMS campus, Ansari Nagar, New Delhi**

SUMMARY SHEET

TOTAL QUOTED AMOUNT (in Rs.)

1. Civil
(including PHE & Fire Fighting)

2. Electrical

3. HVAC

Total

CIVIL - WORKS

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

ABSTRACT OF COST

S.No	DESCRIPTION OF WORK	Amount
1	EARTHWORK	
2	CONCRTE WORK	
3	RCC WORK	
4	BRICK WORK	
5	DOORS & WINDOWS	
6	STEEL WORK	
7	FLOORING	
8	CEILING & ROOFING	
9	FINISHING	
10	MISCELLANEOUS	
11	ROAD WORK	
12	SIGNAGE	
13	COMPREHENSIVE MAINTENANCE & OPERATION	
	TOTAL	

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)						
Bill of Quantity						
Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
1.00	EARTH WORK					
1.01	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30cm in depth, 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50m and lift up to 1.5m, disposed earth to be levelled and neatly dressed.					
a)	All kinds of soil	32408.00	cum			
b)	Ordinary rock	10.00	cum			
c)	Hard rock (blasting prohibited)	10.00	cum			
1.02	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.					
a)	All kinds of soil.	100.00	cum			
1.03	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 up to 1.5 m.	8035.00	cum			
1.04	Extra for every additional lift of 1.5 m or part there of in.					

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1	2	3	4	5	6	7
a)	All kinds of soil.					
i	1.5 to 3.0 mtr	3337.00	cum			
ii	3.0 to 4.5 mtr	3337.00	cum			
iii	4.5 to 6.0 mtr	3337.00	cum			
iv	6.0 to 7.5 mtr	3337.00	cum			
v	7.5 to 9.0 mtr	3337.00	cum			
vi	9.0 to 10.5 mtr	3337.00	cum			
vii	10.5 to 12.0 mtr	3337.00	cum			
viii	12.0 to 13.5 mtr	2225.00	cum			
1.05	Supplying and filling in plinth with river sand under floors including, watering, ramming consolidating and dressing complete.	50.00	cum			
1.06	Extra for disposal of excavated earth for additional lead beyond 50m or part thereof upto 500m					
a)	All kinds of soil	23047.00	cum			
1.07	Felling trees of the girth (measured at a height of 1 m above ground level) including cutting of trunks and branches removing the roots and stacking of serviceable material and disposal of unserviceable material.					
a)	Beyond 60 cm girth upto and including 120 cm girth	2.00	Each			
b)	Beyond 120 cm girth upto and including 240 cm girth	3.00	Each			
	Total					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
2.00	Concrete Work					
2.01	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:					
a)	1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	30.00	cum			
b)	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).	204.00	cum			
c)	1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size)	60.00	cum			
2.02	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets etc. up to floor five level, excluding the cost of centering, shuttering and finishing:					
a)	1:2:4 (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	10.00	cum			
2.03	Providing and laying damp-proof course 40mm thick with cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 12.5mm nominal size).	10.00	sqm			
2.04	Extra for providing and mixing water proofing material in CC/RCC work @ 1 kg per 50kg of cement.	5.00	per 50 kg cement			

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1	2	3	4	5	6	7
2.05	Applying a coat of residual petroleum bitumen of penetration 80/100 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.	10.00	sqm			
2.06	Providing and laying in position cement concrete 1:5:10 (1 Cement : 5 fine sand : 10 broken brick bats 40 mm nominal size) including consolidation etc all complete.	208.00	Cum			
	Total					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
3.00	REINFORCED CEMENT CONCRETE					
3.01	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete work 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. M-25 grade reinforced cement concrete by using 380kg. of cement per cum of concrete. All work up to floor V level.	8847.00	cum			
3.02	Add or deduct for providing richer or leaner mixes respectively at all floor levels.					
i)	Providing M-30 grade concrete by using 400kg of cement per cum of concrete instead of M-25 grade B.M.C/ R.M.C..	3987.00	cum			
ii)	Providing M-35 grade concrete by using 420kg of cement per cum of concrete instead of M-25 grade B.M.C./ R.M.C...	500.00	cum			
3.03	Centering and shuttering including strutting, propping etc. and removal of form for:					
a)	Foundations, footings, bases of columns, etc. for mass concrete.	228.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
b)	Walls (any thickness) including attached pilasters, butteresses, plinth and string courses etc.	3767.00	sqm			
c)	Suspended floors, roofs, landings, balconies and access platform.	17411.00	sqm			
d)	Shelves (Cast in situ)	119.00	sqm			
e)	lintels, beams, plinth beams. girders. bressumers and cantilevers.	13861.00	sqm			
f)	Columns, Pillars, Piers, Abutments, Posts and Struts.	7303.00	sqm			
g)	Stairs, (excluding landings) except spiral-staircases	1030.00	sqm			
h)	Small lintels not exceeding 1.5m clear span, moulding as in cornices, window sills, string courses, bands, copings, bed plates, anchor blocks and the like.	117.00	sqm			
i)	Edges of slabs and breaks in floors and walls. Under					
i)	20 cm wide	200.00	metre			
ii)	Above 20 cm wide	20.00	sqm			
j)	Extra for shuttering in circular work for					
i)	columns	20.00	Sqm			
ii)	Beams	20.00	sqm			
3.04	Extra for additional height in centering, shuttering wherever required with adequate bracing, propping etc. including cost of decshuttering 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)					

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1	2	3	4	5	6	7
a)	Suspended floors, <i>roofs</i> , landings, beams and balconies (Plan area to be measured).	17411.00	sqm			
3.05	Reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete.					
a)	Thermo-Mechanically Treated bars	1294595.00	Kg			
3.06	Extra for R.C.C./ B.M.C/ R.M.C. work above floor V level for each four floors or part thereof.	1877.00	Cum			
3.07	Deduct for using less cement than the quantity as provided in the item of batch mix concrete/RMC as arrived as per mix design.	50.00	Qtl			
	Total					

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1	2	3	4	5	6	7
4.00	BRICK WORK					
4.01	Brick work with F.P.S. bricks of class designation 75 in foundation and plinth in:					
a)	Cement mortar 1:6 (1 cement: 6 coarse sand)	313.00	cum			
4.02	Brick work with F.P.S. bricks of class designation 75 in superstructure above plinth level up to floor V level in all shapes and sizes in :					
a)	Cement mortar 1:6 (1 cement: 6 coarse sand)	3208.00	cum			
4.03	Extra for forming cavity 5 cm to 7.5 cm wide in cavity walls with necessary weep and vent holes including use of cores and cost of providing and fixing bitumastic coated M .S. ties 300mm long of 25x3mm section at not less than 3 ties per sqm as per approved design.	100.00	sqm			
4.04	Half brick masonry with F.P.S. brick of class designation 75 in foundations and plinth in.					
a)	cement mortar 1:4 (1 cement: 4 coarse sand)	778.00	sqm			
4.05	Half brick masonry with F.P.S. bricks of class designation 75 in superstructure above plinth level up to floor V level.					
a)	Cement mortar 1:4 (1 cement :4 coarse sand)	10223.00	sqm			
4.06	Extra for providing and placing in position 2 Nos. 6mm dia. M.S. bars at every third course of half brick masonry (with F.P.S. bricks).	11001.00	sqm			

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1	2	3	4	5	6	7
4.07	Extra for brick work in superstructure above floor V level for each four floors or part thereof by mechanical means by lifting material using mobile crane.	1936.00	Cum			
4.08	Extra for half brick masonry in superstructure, above floor V level for every four floors or part thereof by mechanical means by lifting material using mobile crane.	5246.00	Sqm			
4.09	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)	199.00	Metre			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
4.10	Providing and fixing partition upto ceiling height consisting of G.I. frame and required board including providing and fixing of frame work made of special section power pressed/ roll form G.I. sheet with zinc coating of grade 175, consisting of floor and ceiling channel 50mm wide having equal flanges of 32mm and 0.55 mm thick fixed to the floor and ceiling at the spacing of 610mm centre to centre with dash fastener of 12.5mm dia meter 40mm length and the studs 48mm wide having one flange of 34mm and other flange 36mm and 0.55 mm thick fixed vertically within flanges of floor and ceiling channel and placed at a spacing of 610mm centre to centre by 6mm dia bolts and nuts at both ends of partition fixed flush to wall with rawl plugs at spacing of 450mm centre to centre and fixing of boards to either side of frame work by 20mm long drive wall screws on studs, floor and ceiling channels at the spacing of 300mm centre to centre,					
	including jointing and finishing to a flush finish with recommended jointing compound, jointing tape, joint finisher and two coats of primer suitable for board as per manufacture's specification and direction of Engineer in Charge all complete.					

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1	2	3	4	5	6	7
	75mm overall thickness partition with 12.5mm thick double skin plain Gypsum board conforming to IS: 2095: part I	100.00	Sqm			
	Total					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
5.00	DOORS, WINDOWS AND FITTINGS					
5.01	Providing and fixing aluminium work for doors, windows, ventilators, partitions and louvers with extruded built up standard tubular <i>sections</i> / appropriate Z sections/ sheet strips and other modular 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 / panelling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing and panelling to be paid for separately) :					
5.01.1	For fixed portion					
a)	Powder coated aluminium (minimum thickness of powder coating 50 micron)	14096.00	kg			
5.01.2	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).					

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1	2	3	4	5	6	7
a)	Powder coated aluminium (minimum thickness of powder coating 50 micron)	4056.00	kg			
5.02	Providing and fixing anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868. Minimum anodic coating of grade AC 15) sub frame/spacer frame work for windows and ventilators a with extruded built up standard tubular sections of approved make conforming to IS: 733 and IS : 1285 fixed with rawl plugs and stainless steel screws etc.	3430.00	kg			
5.03	Providing and fixing 12mm 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.					
a)	Pre-laminated particle board with decorative lamination on both sides.	20.00	Sqm			
5.04	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-in-charge. (Cost of aluminium snap beading shall be paid in basic item) :					
a)	With float glass panes of 5.50 mm thickness	802.00	sqm			

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1	2	3	4	5	6	7
5.05	Providing and fixing double action hydraulic floor spring of approved brand and manufacture IS : 6315 marked, for doors including cost of cutting floors as required, embedding in floors and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.					
a)	With brass cover plate	4.00	each			
5.06	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.					
a)	Upto 5mm depth and 5 mm width	2031.00	Metre			
5.07	Providing and fixing powder coated aluminium grills made out with special extruded sections fixed with suitable means approved and as directed by Engineer in Charge including all complete.					
		2340.00	kg			

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1	2	3	4	5	6	7
5.08	Providing and fixing factory made Pre-laminated particle board flat pressed three layer or graded wood particle board with one side decorative finish and other side balancing lamination conforming to IS: 12823 Grade I Type II, of approved design, and edges sealed with water resistant paint and lipped with aluminium 'U' type edge beading all-round the shutter, including fixing with angle cleat, grip strip, cadmium plated steel screws including fixing of aluminium hinges 100x63x4 mm etc. complete as per architectural drawing and direction of Engineer-in-Charge (Cost of 'U' beading and hinges will be paid for separately).					
	25 mm thick.	1014.00	Sqm			
5.09	Providing and fixing aluminum U beading of required size to Pre-laminated /flush door shutter including fixing etc. complete as per direction of Engineer-in-charge.	1014.00	Kg			
5.10	Providing and fixing ISI marked flush door shutters conforming to IS: 2202 (Part I) non-decorative type, core of block board construction with frame of 1st class hard wood and well matched commercial 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters :					
a)	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	546.00	sqm			

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1	2	3	4	5	6	7
5.11	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of shutters (over all area of door shutter to be measured) over item no. 5.09 above.	546.00	sqm			
5.12	Extra of providing vision panal not exceding 0.1sqm in all type of flush doors. (Cost of glass excluded). Over all area of doors shutters to be measured.					
a)	Rectalgarular of square	273.00	sqm			
5.13	Extra for providing frosted glass panes 4 mm thick instead of ordinary float glass panes 4 mm thick in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	25.00	sqm			
5.14	Providing glass panes, with wooden fillets wherever necessary.					
a)	4 mm thick Glass panes weighing 10 kg./sqm.	25.00	Sqm			
5.15	Extra for Providing etching on glass panes in doors, windows shutters, partition etc in desired pattern complete as per drawing and as directed.(Area of etching shall be measered for payment)	25.00	sqm			

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1	2	3	4	5	6	7
5.16	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.	1092.00	sqm			
5.17	Providing and installation of fully insulated wooden fire rated shutter of 120min. fire rating conforming to BS: 476 part 22 and IS:3614 Part II as per the prototype tested and certified by CBRI Roorkee or equivalent approved Govt laboratory, of 55mm thickness, comprising of 75mm x 49mm hardwood internal timber frame work, with infill of 96 kg/m ³ , ceramic fiber blankets, coated with VIPER FR or equivalent intumescent coating on both sides for insulation. The coated insulation shall be sandwiched between 12mm thick, Non combustible Boards (Calcium Silicate) on both sides (edge to edge on internal Hardwood frame) and cladded with 3mm thick commercial ply of approved quality & 1mm thick laminate of approved brand and manufacture on both sides, with 55mm x 14mm 2nd class teak wood lipping all round the shutter.					

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1	2	3	4	5	6	7
	The shutter is suitable for mounted on the door frame, as per the item given below.. Both frame and shutter shall be fitted with fire & smoke intumescent seal of Viper or equivalent make of size 20 x 4mm on all the three sides except bottom. The pasting of the ply/veneer/laminate should be done using automatic machine and should be free from any nails or perforations. The board shall be Resistant to vermin, mould growth, minor impact, abrasion and short term water attack. The shutter shall be fixed with the frame with the help of SS 304 grade ball bearing hinges of size 100x76x2mm with necessary screws and making cut out for vision panel. Provisions/reinforcement for fixing all fixtures shall be built in on the door prior to the supply.					
a)	Single/Double Shutter	191.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
5.18	Providing and fixing door frames as per BS: 476 part 22, IS:3614 Part II as per the prototype certified by CBRI Roorkee or equivalent approved Govt Laboratory made out of 2nd class C.P. Teak Wood frame of section 140x65mm for fire resistant doors of 120 minutes fire rating, with heat activated intumescent fire seal strips of size 20 x 4 mm(for smoke sealing) provided in grooves on all three sides of the frame with one coat of approved brand of fire retardant primer including two coats of fire retardant paint FR 881or equivalent un thinned on cleared hard wood surface of door frames (@3.5 sq.m. per litre per coat) including preperation of base surface as per recommendations of manufacturer to make the surface fire retardant, including fixing the frame with 8 nos. 100 mm long, 10 mm dia metal dash fastners complete as per directions of the Engineer in charge NOTE:- cost of fire seal strips, dash fastners are included in the item. Nothing extra shall be paid if size of any component of material exceeds the limit mentioned in the item.	345.00	Metre			
	The rebate shall be of 20mm x 57mm in Door Frame to accommodate the shutter in frame					
5.19	Providing and fixing UL listed door Co-ordinator for coordination of double leaf doors, of approved brand and manufacture with minimum one year warrantee.	55.00	Each			

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1	2	3	4	5	6	7
5.20	Providing & fixing of Fire-stop Fire sealing System mortar type of approved make for sealing of floors, wall openings for the purpose of compartmentation.The FPSS consists of 225mm thick slab casted with vermuclite based cementitious compound . The FPSS system must provide min. one hour fire rating as per IS 12458-1989 having CERTIFICATION from CBRI, Roorkee for 1 hr. Fire rating.	50.00	sqm			
5.21	Providing and fixing 6 mm thick pyroswiss extra or equivalent fire rated clear toughened glass of approved make, of 120 minutes fire rating to be fixed in vision panel including cost of fire ceramic tape and moulding/beading etc all complete	5.00	sqm			
	ALUMINIUM FITTINGS					
5.22	Providing and fixing IS : 3564 marked Aluminium die cast body tubular type universal hydraulic door closer with necessary accessories and screws etc. complete.	658.00	each			
5.23	Providing and fixing aluminium sliding door bolts ISI marked anodised (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed to required colour or shade with nuts and screws etc. complete:					
a)	300x16 mm	2.00	each			
b)	250x16 mm	2.00	each			

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1	2	3	4	5	6	7
5.24	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:					
a)	250x10 mm	1330.00	each			
b)	150x10 mm	2095.00	each			
5.25	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 :					
a)	125 mm	2240.00	each			
b)	100 mm	653.00	each			
5.26	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.					
a)	Twin rubber stopper	912.00	each			
5.27	Providing and fixing bright finished brass 100 mm mortice latch and lock ISI marked with six levers and a pair of anodised (anodic coating not less than grade AC 10 as per IS : 1868) aluminium lever handles with necessary screws etc. complete (Best make of approved quality).	658.00	each			

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1	2	3	4	5	6	7
5.28	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 Engineer-in-charge complete.					
a)	255 X 19 mm	1306.00	each			
5.29	Providing and fixing aluminium tubular handle bar 32 mm outer dia, 3.0 mm thick & 2100 mm long with SS screws etc .complete as per direction of Engineer-in-Charge.					
a)	Powder coated minimum thickness 50 micron aluminium tubular handle bar.	8.00	each			
5.30	Providing and fixing 100mm brass locks (best make of approved quality) for aluminium doors including necessary cutting and making good etc. complete.					
		2.00	each			
5.31	Providing and fixing aluminium casement windows fastener of required length for aluminium windows with necessary screws etc. complete.					
a)	Powder coated minimum thickness 50 micron aluminium.	719.00	each			
5.32	Providing and fixing aluminium round shape handle of outer dia 100mm with SS screws etc. complete as per direction of Engineer-in-charge					
a)	Powder coated minimum thickness 50 micron aluminium	8.00	each			

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Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
5.33	Providing and fixing of UL listed fire rated single/double leaf panic exit devices tested in accordance with BS EN 1125: 1997 & BS EN 179: 1997, EN 1670 (Corrosion Resistant), & BS 476 Part 22 (for fire rating) with min. one year warrantee..					
a)	Double Leaf	55.00	each			
5.34	Providing and fixing of fire rated heavy duty door closer tested in accordance with BS:476 Part 22 for fire rating) and BS EN 1154 with minimum one year warranty.	55.00	each			
5.35	Providing and fixing fire rated mortice lock with lever handle tested in accordance with European Standard EN12209 / DIN18251 and 80mm Long cylinder to EN1303 of approved brand and manufacturer having 1 year manufacturers warranty.	55.00	each			
5.36	Providing and fixing 300 mm long stainless steel grade 304 D type pull handle with necessary screws etc. complete.	20.00	each			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
5.37	Providing, Fixing, Supply, Installation, and Commissioning of Fully Automatic Hermetically Seal Sliding Doors of size 1500mm width and height 2100mm and doorframe of high quality anodised aluminium consisting of reinforced plasterboard panels faced with same laminate as the doors and the door panel of compact laminate vision panels (300x300mm) to be provided in the doors .The door moves on nylon wheels within a single piece aluminium extruded track for smooth sliding . Microprocessor based electronic automation unit (CE Marked) for controlling door movement with low noise level level motor.The acceleration and speed of the door can be adjusted .The controller will be capable of either being operated by elbow switches/foot switches,radar switch (touch less sensor).All doors will be able to be operated manually in the event of failure of the power supply or the automation unit. The item includes the cost of radar switches and foot switches of approved quality.	2.00	Each			
Total						

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
6.00 Steel Works						
6.01	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. all complete.					
a)	Fixed to steel windows by welding.	100.00	kg			
6.02	Providing and fixing circular Hexagonal cast iron or M.S sheet box for ceiling fan clamp of internal dia 140mm, 73mm height, top lid of 1.5mm thick M.S. sheet with its top surface hacked for proper bonding , top lid shall be screwed into the cast iron / M.S. sheet box by means of 3.3mm dia. round headed screws, one lock at the corners. Clamp shall be made of 12mm dia M.S. bar bent to shape as per standard drawing.	1100.00	Each			
6.03	Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete:	5792.00	kg			
6.04	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.	2000.00	Kg			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
6.05	Providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing and staircase railing including applying a priming coat of approved steel primer.					
a)	M.S. tube.	100.00	Kg			
b)	Stainless steel 304 grade hairline finish hand rail pipe fixed on wall with suitable ss base plate, holding clamps etc. all complete	5000.00	Kg			
6.06	Fabrication, supply and installation of SS 304 grade 900mm high railing made of SS 304 grade handrail pipe of 50 mm OD and 1.6 mm thickness polished with automatic round polishing machine to get a uniform hairline finish mounted with the help of adjustable solid neck support on balustrade of approved design at 1200mm c/c and at every turn, supporting 3 mid rails of 12mm OD and 1.6 mm thickness with the help of solid connectors of 23 mm dia holding the mid rails by M6 grub screws inserted in baluster and screwed through the baluster with M6 counter sunk screws overall mounted on SS 304 grade base plate with the help of dash fasteners to be treated with K2 solution at all welding joints and passivated.					
a)	Staircase/Balcony/Ramp/ cut-out railing (900 mm high) as per enclosed drawing	348.00	Mtr			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
6.07	Providing and fixing buff finished 20SWG stainless steel (SS-304 grade) cladding for all height including cost of necessary scaffolding consisting of non-combustible mineral-filled core sandwiched between two skins of 0.6mm thick stainless steel sheet of required colour & finish on columns, walls, ceiling, pergola and in-between structural glazings etc. of required panel thickness duly fixed with necessary screws and fittings etc including sealing with appropriate silicon sealants complete as per specifications and as directed. (only surface area shall be measured for payment). 3mm Total thickness. Complete job as per direction of the Engineer-in-Charge	100.00	Sqm			
Total						

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.00	Flooring					
7.01	Cement concrete flooring 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate) finised with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete.					
a)	40mm thick with 20mm nominal size stone aggregate.	635.00	sqm			
7.02	Cement plaster skirting (up to 30 cm height) with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement.					
a)	18 mm thick.	64.00	sqm			
7.03	Providing and fixing glass strips in joints of <i>terrazo</i> / cement concrete floors.					
a)	40 mm wide and 4 mm thick.	1586.00	Metre			
7.04	Marble stone flooring/skirting with 18mm thick marble stone (sample of marble shall be approved by Engineer-in-charge) over 20 mm (average) thick base of cement mortar 1:4 (1 cement: 4 coarse sand) laid and jointed with grey cement slurry including rubbing and polishing complete with:					
a)	Raj Nagar White	50.00	sqm			
b)	Udaipur green marble	541.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.05	18mm thick Prepolished Granite/ Engg. stone of approved colour and quality in Risers, skirting and dado/wall cladding over 12mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointed with grey cement including pointing with white cement mixed with pigment matching the shade of stone all complete and as directed.					
a)	Granite stone (Base rate Rs. 110/- Sft.)	4106.00	sqm			
b)	Engg. Stone (Base rate Rs. 350/- Sft)	79.00	sqm			
7.06	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) :					
a)	25 mm thick.	2400.00	sqm			
7.07	Kota stone slabs 25 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.					
		237.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.08	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.	638.00	sqm			
7.09	Providing and laying rectified Glazed Ceramic floor tiles 300x300 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	648.00	sqm			
7.10	Providing and laying polished vitrified floor and skirting, tiles in different sizes (thickness to be specified by the manufacturer) with water absorption's 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					
a)	Size of Tile 60x60 cm	4712.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.11	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 of approved shade, colour and texture laid over 20mm thick base cement mortar 1:4 (1 cement : 4 coarse sand) with joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edge to give high gloss finish etc. complete at all levels					
a)	Granite of any colour and shade					
i	Area of slab upto 0.50 sqm	10.00	sqm			
ii	Area of slab over 0.50 sqm.	108.00	sqm			
7.12	Extra for providing edge moulding to 18mm thick Granite stone counters, Vanities etc. including machine polishing to edge to give high gloss finish etc. complete as per design approved by Engineer-in-Charge.					
a)	Granite work.	144.00	metre			
7.13	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.					
		144.00	metre			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.14	Extra for providing opening of required size & shape for wash basins/ kitchen sink in kitchen platform, vanity counters and similar location in marble/Granite/stone work including necessary holes for pillar taps etc. including rubbing and polishing of cut edges etc. complete.	74.00	Each			
7.15	Providing & fixing 2 mm thick homogeneous jointless, scratch resistant, chemical resistant, anti fungal and anti bacterial PVC Vinyl flooring and skirting/ coving good for laboratories of approved quality including the cost of suitable adhesive and coving material of approved quality and manufacture.	259.00	Sqm			
7.16	Chequered terrazo tiles 22 mm thick with graded marble chips of size up to 6 mm in floors jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing complete on 20 mm thick bed of cement mortar 1:4 (1 cement :4 coarse sand) :					
	Medium shade using 50%white cement 50% ordinary cement	60.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.17	Stone flooring with 18 mm thick pre- polished granite/ Engg. stone of approved colour, quality and size as per drawing or as per the pattern as approved by the client/ architect/ engineer, over 20 mm thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with grey cement slurry mixed with pigment to match the shade of stone including rubbing and polishing complete.					
a)	Granite stone (Base rate Rs. 110/- Sft.)	4565.00	Sqm			
b)	Engg. Stone (Base rate Rs. 350/- Sft)	151.00	Sqm			
7.18	Providing and laying C.C. pavement of mix M25 with ready mixed concrete from batching plant. The ready mixed concrete shall be laid and finished with screed board vibrator, vacuum dewatering process and finally finished by floating, brooming with wire brush etc. complete as per specifications and directions of Engineer-in-charge. (The panel shuttering work shall be paid for separately).	233.00	Cum			
7.19	P/L 8mm thick (EN13329) laminated Flooring including skirting (class use of 23/31 AC 3 with 0.2mm thick direct pressure laminated on top) plank size 1290 X 194 mm & groove construction with edge impregnate with seal to secure long lasting joints ,secured together with the help of suitable glue, conforming to EN 13329.	169.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.20	Providing and fixing 10mm thick acid and/or alkali resistant tiles of approved make and colour using acid and/or alkali resisting mortar bedding and joints filled with acid and/or alkali resisting cement as per IS : 4457 complete as per the direction of Engineer-in- Charge.					
a)	In flooring on a bed of 10 mm thick mortar 1:4 (1 acid proof cement : 4 coarse sand).	21.00	Sqm			
b)	In dado/skirting on 12 mm thick mortar 1:4 (1 acid proof cement : 4 coarse sand).	5.00	Sqm			
7.21	Providing and laying 3mm thick epoxy resin based jointless anti static floor coating in three coats (primer coat, base, top coat (2mm thick)) preparation of cement concrete flooring including cutting of grooves, providing copper wiring, connections etc. for elimination of static charge between the equipment base and floor surface to ensure leakage resistance of 10^4 to 10^8 ohms in static decay test of 0.02sec., all complete as specified and as per the direction of Engineer-in-Charge.The work shall be carried out through specialised agency.	100.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
7.22	Providing and laying 3mm thick chemical resistant monolithic resinous (epoxy) flooring and coving/ skirting of required colour into two or more coats by non slippery, anti-fungal, anti bacteria, scratch proof protective finish over concrete substrate including preparing surface by mechanical means captive shot blasting/ grinding etc as required complete to the satisfaction of engineer. The concrete floor must be checked for moisture content using thermo Hygrometer and should have moisture content less than 5% and no rising dampness in floor, for which nothing extra is payable.	682.00	Sqm			
Total						

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
8.00	CEILING & ROOFING					
8.01	Providing and fixing 15mm thick Mineral Fibre False Ceiling Tiles or equivalent of size 600x600 mm in true horizontal levelsuspended on inter locking metalgrid of hot dipped galvanied steel sectios (Galvanized @ 170 gsm/sqm) consisting of main "T" runner suitably spaced at joints to get required length and of size 24x38mm made from 0.30 mm thick (minimum)sheet spaced at 1200 mm center to center and cross "T" of size 24x25mm made of 0.30 mm thick (minimum) sheet to be interlocked at middle of the 1200x600mm panel to form grids of 600x 600mm and laying 15 mm thick mineral fibre false ceiling tiles of approved texture in the grid including, wherever, requried, cutting/making, opening for services like diffusers, grills, light fittings, fixtures, smoke deterctors etc. Main "T" runners to besuspended from ceiling using GI slotted cleats fixed to ceiling with 6 mm dia and 50 mm long dah fasteners, 4 mm GI adjustable rods with galvanised level clips spaced at 1200 m center to center along main T, bottom exposed width of 24 mm of all T-Secitons shall be pre-painted					
	polyester paint, all complete at all heights as per specificaitons drawings and as directed by Engineer-in-Charge.Only Mineral Fibre false ceiling area will be measured for the purpose of payment.					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
a)	With Mineral Fibre Ceiling tiles having NRC value of 0.5 (minimum) CAC 35-39, light reflection 84% (minium), fire rating class A as per ASTM E-84, suitable for 95% relative humidity and also having Thermal Resistance "(R)" =0.33 sqm deg. C/W	2171.00	sqm			
Note	The job to be carried out by an approved reputed company having sufficient work experience.					
8.02	Providing and fixing thermal insulation of ceiling (under deck insulation) with Resin Bonded Fibre glass wool conforming to IS : 8193 density 24kg/m ³ , 50mm thick, wrapped in 200 G Virgin Polythene bags fixed to ceiling with metallic cleats (50x50x3 mm) @ 60 cm and wire mesh of 12.5mm x 24g wire and mesh, for top most ceiling of building.	3171.00	Sq Mtr.			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
8.03	Providing and fixing at all height false ceiling including providing and fixing of frame work made of special sections power pressed from M.S. sheet and galvanised in accordance with zinc coating of grade 350 as per IS : 277 and consisting of angle cleats of size 25mm wide x 1.6mm thick with flanges of 22mm and 37mm at 1200mm centre to centre one flange fixed to the ceiling with dash fastener 12.5mm diax40mm long with 6mm dia bolts to the angle hangers of 25x25x0.55mm of required length, and other end of angle hanger being fixed with nut and bolts to G.I. channels 45x15x0.9mm running at the rate of 1200mm centre to centre to which the ceiling section 0.5mm thick button wedge of 80mm with tapered flanges of 26mm each having clips of 10.5mm at 450mm centre to centre shall be fixed in a direction perpendicular to G.I. channel with connecting clips made out of 2.64mm diax230mm long G.I. wire at every junction including fixing the gypsum board with ceiling section and perimeter channels 0.5mm thick 27mm high having flanges of 20mm and					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	30mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450mm centre to centre with 25mm long drive-all screws @ 230mm interval including jointing and fixing to a flush finish of tapered and square edges of the board with recommended filler, jointing tapes, finisher and two coats of primer suitable for board as per manufactures specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed all complete as per drawing and specification and direction of the Engineer in Charge but excluding the cost of painting with :					
a)	12.5 mm thick tapered edge gypsum board conforming to IS: 2095- Part I.	2966.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
8.04	Providing and fixing perforated ceiling tiles 600mm x 600mm manufactured out of 0.70mm thick aluminium alloy AA 3105/3005 Chromatised and stove enamelled (coil coated) in manufacturer's standard colour shades, with square edges produced on advanced equipment, which includes several levelling stages in the manufacturing process. The tiles shall be perforated with holes of 2.5mm dia at 5.5mm c/c. Exposed side of tile shall have 20 micron coil coated polyester finish and 5 micron back coat of Alkyd primer. The short sides of each plank to be raised and pipped and stopped to ensure positive engagement into the spring clip-in profile, yet allow for demounting of individual planks. Suspension with rows of 0.5mm galvanised steel clip in profiles 40mm X 20mm, installed at 600mm c/c to support to the tiles. Suspension profiles suspended from roof structure by G I suspension angles, ceiling brackets and hold on clamps. Wall angle to be 25 X 25 X 0.5mm thick coil coated aluminium matching the colour of tiles.	3214.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
8.05	Providing and fixing 8mm thick clear multi wall polycarbonate sheets of approved quality and shade in desired shape in roofing including the cost of EPDM gaskets , sealing tape , aluminium profile and all necessary accessories complete as per architectural drawings and as directed by Engineer incharge. The item includes designing the complete system and supplying & getting approved from client and / or reputed engineering institue like IIT etc. The detailed shop drawings including supplying structural design calculations based on relevent codal provisions and carrying out water penetration test as per standards followed in India.					
	The whole work is to be done through reputed and approved vendor having experience in polycarbonate work in Commercial/Govt/Corporate buildings as per architectural elevation drawings including filling of joints with silicon sealent and also with masonry/RCC work, at all heights including double heights, straight or curved etc. complete in all respect. (Plan Area shall be measured for the payment) (Framing to be paid seprately)	50.00	Sqm			
8.06	Providing and laying water proofing treatment to vertical and horizontal surfaces of depressed pprtions of W.C., kitchen and the like consisting of :					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
i)	1st course of applying cement slurry @ 4.4 Kg/sqm mixed with water proofing compound conforming to 18 2645 in recommended proportions including rounding off junction of vertical and horizontal surface.					
ii)	IIInd course of 20mm cement plaster 1:3 (1 cement: 3 coarse sand) mixed with water proofing compound in recommended proportion including rounding off junction of vertical and horizontal surface.					
iii)	IIIrd course of applying blown or residual bitumen applied hot at 1.7 Kg. per sqm of area.					
iv)	IVth course of 400 micron thick PVC sheet. (Overlaps at joints of PVC sheet Should be 100 mm wide and pasted to each other with bitumen @ 1:7 Kg/sqm.)	1253.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
8.07	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 300mm height including cleaning the surface before treatment. b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115mm 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 to IS : 2645 and approved by Engineer - in - charge to required slope and treating similarly the					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	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 2.75kg/ 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 3mm deep. 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 :					
a)	With average thickness of 120mm and minimum thickness at khurra as 65 mm.	1731.00	sqm			
	Total					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
9.00	Finishing					
9.01	12 mm cement plaster of mix:					
a)	1:6 (1 cement: 6 fine sand)	18919.00	sqm			
9.02	15 mm cement plaster on the rough side of single or half brick wall of mix:					
a)	1:6 (1 cement: 6 fine sand)	23123.00	sqm			
9.03	20 mm cement plaster of mix :					
a)	1:2:2 (1 cement: 2 coarse sand:2 Fine Sand)	7001.00	sqm			
9.04	6 mm cement plaster of mix:					
a)	1:3 (1 cement: 3 fine sand)	9217.00	sqm			
9.05	Neat cement punning	100.00	sqm			
9.06	Extra for plastering exterior walls of height more than 10 m from .groound level for every additional height of. 3 m or part thereof.	5051.00	sqm			
9.07	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete	46171.00	Sqm			
9.08	White washing with lime to give an even shade:					
a)	New work (three or more coats)	200.00	sqm			

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
9.09	Distemping with oil bound washable distemper of approved brand and manufacture to give an even shade					
a)	New work (two or more coats) over and including priming coat with cement primer.	17314.00	sqm			
9.10	Applying one coat of cement primer of approved brand and manufacture on wall surface:					
a)	Cement primer.	28857.00	sqm			
9.11	Finishing walls with textured exterior paint of required shade:					
a)	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including base coat of water proofing cement paint applied @ 2.20kg/1 0 sqm.	7001.00	sqm			
9.12	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade:					
a)	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture.	3744.00	sqm			
9.13	Wall painting with plastic emulsion paint of approved brand and manufacture to give an even shade:					
a)	Two or more coats on new work	28857.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
9.14	Providing and fixing 24 gauge and 18mm mesh size chicken wiremesh at junction of concrete and brick work and other locations at all heights including cutting to required size and side laps of minimum 75mm and fixing in positions with nails/screws etc. as directed and as required at site.	1500.00	sqm			
9.15	Finishing walls with Acrylic Smooth exterior paint of required shade:					
a)	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including base coat of water proofing cement paint applied @ 2.20 kg/10 sqm).	1000.00	sqm			
9.16	Applying chemical resistant epoxy resin wall coating over plastered surface including preparing of the surface, applying acrylic primer, putty and painting of approved brand and manufacture.					
a)	New work (three or more coats) over and including priming coat with acrylic primer and putty.	11543.00	sqm			
Total						

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.00	Miscellaneous					
10.01	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement :3 coarse sand : 6graded stone aggregate 20mm nominal size) over 75mm bed by dry brick ballast 40mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth	163.00	sqm			
10.02	Designing, supplying, fabrication and installation of semi unitised Structural glazing system in the form of fixed panels, using specially designed aluminium extruded sections, mullions and transoms having 25 micron Anodising of approved colour and shade and make with mullions fixed on the RCC beams/columns through adequately designed brackets including providing masking tape on the profiles for safety against external scratches on site complete with approved silicon sealant EPDM gasket etc. to make the structural glazing air tight and water tight as per standards and as per Architect's drawings and specifications. The design to be as per BIS code for required wind pressure IS: 875 part III and use of aluminium section alloy as per IS:8147.					

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
a)	System design to strictly consider for thermal movements, air infiltration, water penetration, seismic movement and structural movement. Contractor to furnish shop drawings along with sequence of work for approval of Engineer-in-charge.The minimum section shall be 131x66x2mm and per sqmt weight shall be 10kg approx., the item shall be measured and paid for actual surface area of structural glazing/aluminium composite panel supported on the frame. The work shall be carried out by the specialised agency approved by Engineer in Charge.	2251.00	SqM			
10.03	Extra for providing & fixing 24mm made up thickness insulated glass over above corresponding item hermetically sealed with 6mm heat strengthend toughened solar control off line coated high performance temperable glass of approved colour having reflective soft coating and 6mm clear toughned float glass inside with 12mm dry air cavity between two glass panes separated by a hollow aluminium spacer bar with twin lines of micro holes as approved filled with molecular desiccant of approved make and using primary hot meld duly and secondary polysulphide or silicon sealant of approved make all complete over above item. (U value less than 2.85w/sqm k, shadding cofficent less than 0.55, solar factor less than 0.25, light transmission minimum 25%)	2251.00	Sqm			

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.04	Providing, cutting, bending and fixing 4mm thick aluminium composite cladding on external façade of size as approved/ required as per drawing/ site requirements with water tight system either curved or straight or circular in plan. Skin material 0.5mm thick aluminium sheet (3005 H6) core material natural polyethylene, aluminium cladding panel to be of approved colour/shade fixed with extruded aluminium basic frame, angle cleats, weather sealants, rivets, GI brackets all as approved, using suitable chemical/anchor bolts on structural steel work including necessary accessories complete in all respects (frame work to be paid separately).					
	(Rate should be quoted considering enclosed particular specifications and provision of openable access panels for services wherever required) visible surface area shall be measured for payment. With weather silicon sealant of approved make, non-streaking/ staining weather sealant of approved make.					
	On curved or straight surfaces including cill and jambs.	500.00	Sqm			

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.05	Providing and fixing 12mm toughened clear glass of approved quality for frameless doors (manual swing) and partitions including fixing of required stainless steel patch fittings complete as per specifications and architectural drawings. Edges shall be crystal grind and polished. (cost of patch fittings shall be included in this item while other fittings, floor spring etc to be paid seperately.	50.00	Sqm			
10.06	Water proofing treatment by Chemical Injection system(preconstruction)					
a)	HORIZONTAL SURFACE (RAFT SLAB)					
	A. Before the raft reinforcement is placed in position:					
	i) Applying Cement slurry (cement and polymer based water proofing compound) in proportion as per manufacturer specifications is spread on already laid PCC.					
	ii) Providing and laying 20mm thick cement mortar 1:4 (1 cement: 4 coarse sand) mixed with polymer based water proofing compound is over the slurry. Stone aggregates 12mm and down size is embedded at random.					
	iii) After 24 hours, spreading cement slurry (cement and polymer based water proofing compound) on the 1st layer of mortar.					
	iv) Providing and laying 2nd layer of 20mm thick cement mortar 1:4 (1cement:4 coarse sand) mixed with polymer based water proofing compound. Stone aggregate 12mm down is embedded at random.					

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	v) After curing for two days, spreading cement slurry mixed with water proofing compound over the 2nd layer of cement mortar. Thereafter, the 3rd and final layer of 20mm thick cement mortar in 1:4 (1 cement: 4 coarse sand) mixed with water proofing compound is laid and finished smooth to receive raft foundation.					
	vi) The total thickness of the treatment from operation i to v will be about 60mm.					
	B. After The reinforcement of raft is placed in position:					
	i) Providing and fixing 25mm dia GI threaded grouting nozzles of adequate length at the specified locations @ 1.50 metre c/c or as shown in the drawing all over the slab. The grouting nozzles are tied with reinforcement in such a manner as not to choke its end during concrete operations. The top of these nozzles protrudes above the raft concrete.					
	ii) After minimum 7 days of concreting, cement grout of cement and polymer based water proofing compound (non shrinkage grouting compound) in proportion as specified is injected, through these nozzles at a pressure of 2.5 to 3.0 Kg/Sq.cm.					
	iii) After grouting, top of the nozzles is cut and the space is filled with cement mortar 1:2 (1 cement: 2 coarse sand) mixed with polymer based water proofing compound. Area of raft treated shall be measured for payment					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	(leveling course to be paid separately). Joints sealed and grouted with cement slurry mixed with water proofing compound. ii) 2nd layer of 25mm thick cement mortar 1:3 (1 cement: 3 coarse sand) mixed with water proofing compound in recommended proportions. iii) Finishing top with stone aggregate of 10mm to 12mm nominal size spreading @ 8 cudm/sqm thoroughly embedded in the 2nd layer.	1565.00	Sqm			
b)	Retaining Wall					
	i) Preparing the external surface and cement slurry mixed with polymer based water proofing compound.					
	ii) Providing and laying 25mm thick cement mortar in 1:4 (1 cement : 4 coarse sand) mixed with polymer based water proofing compound in two layers with chicken wire mesh 26 or 24 gauge 25mm size in between the two layers.					
	iii) Placing G.I. pipes at 1.5m c/c and at location as directed or indicated as in drawing and securely fastened to the reinforcement prior to shuttering and concreting or alternately by drilling holes (25mm to 32mm dia) in the concrete upto a depth as directed or as shown in the drawing all over the wall surface @ 1.50mt. c/c and as shown in the drawing. Treatment along all construction joints by providing nozzles, as above, shall also be executed.					

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	iv) Fixing 25mm dia G.I. threaded nozzles in these holes with cement mortar 1:4(1 cement: 4 coarse sand) mixed with water proofing compound.					
	v) Injecting cement grout of cement and polymer based water proofing compound (non shrinkage grouting compound) in proportion as per manufacturer specification or as specified in these nozzles at a pressure of 2.5 to 3.0 Kg/Sq.cm.					
	vi) After the grout the nozzles are cut and filled with cement mortar 1:2 mixed with polymer based water proofing compound in proportion as specified and finished smooth.					
	Area of walls treated shall be measured for payment	1864.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.07	Providing and laying integral cement based treatment for water proofing on horizontal surface at all depth below ground level for under ground structures as directed by Engineer-in-Charge and consisting of : i) 1st layer of 22mm to 25mm thick approved and specified rough stone slab over a 25mm thick base of cement mortar 1:3 (1 cement : 3 coarse sand) mixed with water proofing compound conforming to IS:2645 in the recommended proportion over the leveling course (leveling course to be paid separately). Joints sealed and grouted with cement slurry mixed with water proofing compound. ii) 2nd layer of 25mm thick cement mortar 1:3 (1 cement: 3 coarse sand) mixed with water proofing compound in recommended proportions. iii) Finishing top with stone aggregate of 10mm to 12mm nominal size spreading @ 8 cudm/sqm thoroughly embedded in the 2nd layer.					
a)	Using rough kota stone.	85.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
10.08	Providing and laying integral cement based treatment for water proofing on the vertical surface by fixing specified stone slab 22 mm to 25mm thick with cement slurry mixed with water proofing compound conforming to IS:2645 in recommended proportions with a gap of 20mm (minimum) between stone slabs and the receiving surfaces and filling the gaps with neat cement slurry mixed with water proofing compound and finishing the exterior of stone slab with cement mortar 1:3 (1 cement : 3 coarse sand) 20mm thick with neat cement punning mixed with water proofing compound in recommended proportion complete at all levels and as directed by Engineer-in-charge :					
a)	Using rough Kota stone	409.00	Sqm			
10.09	Providing the following brand new vehicle at any time for exclusive use of engineer during currency of contract. The number of vehicles and period shall be informed by the engineer as per requirement.The rate are inclusive of services of drivers, fuel, oil, lubrication, comnsumable stores and maintenance etc complete					
a)	Indica or equivalent as required	54000.00	Km			
	Total					

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.00	ROAD WORK		#REF!			
			#REF!			
11.01	Preparation of sub grade by 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 disposal of surplus earth lead upto 50 Metres.	1800.00	SQM			
11.02	Supplying & stacking of graded stone aggregate at site of size range.					
a)	90 mm to 45 mm	270.00	CuM			
b)	63 mm to 45 mm	239.40	CuM			
11.03	Laying spreading and compacting stone aggregate of specified sizes to WBM specifications including spreading in uniform thickness, hand picking, rolling with 3 wheeled road! vibratory roller 8-10 tonne in stages to proper grade and camber, applying and brooming requisite type of screening! binding material to fill up interstices of coarse aggregate watering and compacting to the required density.	360.00	Cum			
11.04	Providing and laying C.C. pavement of mix M25 with ready mixed concrete from batching plant. The ready mixed concrete shall be laid and finished with screed board vibrator, vacuum dewatering process and finally finished by floating, brooming with wire brush etc. complete as per specifications and directions of Engineer-in-charge. (The panel shuttering work shall be paid for separately).	270.00	Cum			

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Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.05	Extra for providing and mixing hard crete of approved quality as per manufacturer's specification in cement concrete.	810.00	Litre			
11.06	Providing and laying in position bitumen hot sealing compound for expansion joints etc	10125.00	Per cm depth per cm width per m length			
a)	Using grade 'A' sealing compound.					
11.07	Providing and laying 60mm thick factory made cement concrete interlocking paver block of M -30 grade made by block making machine with strong vibratory compaction and of approved size and design/ shape laid in required colour and pattern over and including 50mm thick compacted bed of course sand, filling the joints with coarse sand etc. all complete as per the direction of Engineer-in-charge.	1000.00	SqM			

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
11.08	Providing and laying at/ near ground level factory made kerb stone of M-25 grade cement 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).	45.00	Cum			
	Total					

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
12.00	Signages		#REF!			
			#REF!			
12.01	Providing fabricating and fixing of signages of varying sizes and shapes using three mm thick PVC sheet at base with self adhesive coloured vinyl with graphicson top of glow tape complete including fixing on wall with screws and washers or hanging on ceiling with GI chain/GI Bar complete as per technical specifications and directions of Engineer.	25000.00	sq inch			
12.03	Providing and fixing of sinages of varying sizes and shapes using stainless steel sheet of minimum 16G thickness brush finish including engraving/etching of letters of required size filled with colour as desired by engineer,fixing with ss screws on walls	2000.00	sqinch			
12.04	Providing and fixing of sinages of varying sizes made of hollow aluminum sections of 150 mm width.with both hollow ends caped with suitable PVC/aluminium cover plates of required including hanging from ceiling by two adjustable suspenders of appropriate dia made of MS/GI bars ,lettering on vinyle sheet and pasting on it with pictogram complete as per technical specifications and directions of Engineer.	500.00	r/ft			

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
12.05	Providing and fixing of external sinages of varying sizes and shapes using GI sheet of atleast 22 G / aluminium sheet of suitable gauge complete as per technical specifications and directions of Engineer.	300.00	sqft			
12.06	Providing and fixing MS support frame for external signages made of structural steel including welding, primering, painting foundation with 1:1.5:3 cement concrete complete as per drawing, technical specifications and directions of engineer.	1000.00	Kg			
12.07	Providing,fabricating and fixing neon glow signages of approved make with 100% handcraft glass tubes in letter shape of required colour of dia 9-12 mm including making the electrical wiring for illumination,transformer,connection complete as per technical specifications and directions of engineer.	200.00	sqft			
12.08	Providing,fabricating and fixing digitally printed translites(Technova) with multicolour design on roland /HP printers mounted on acrylic sheet 3mm further mounted on 22 gauge powder coated GI box with phylips /surya tubes inside including installtion on wall electric fittings etc on walls or otherwise complete .	300.00	sq ft			

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
12.09	Providing fabricating installation and fixing of backlit flex signages on Hanwa/star 18 ounce flex signages printed on high resolution printer mounted on MS sheet on framed MS structure further fixed on 24 gauge MS /GI box with phylips/surya fittings inside including transformers etc, electri wiring etc complete.	300.00	sqft			
12.10	Providing,fabricating installation and fixing of glass finish SS letters made of 20 gauge SS 304 sheet of required size and shape with neatly fabricated joints properly welded and grinded with all corners rubbed and polished with arrangement of screws in the letter itself for mounting on the walls including cost of screws and fixing complete as per directions of Engineer.	500.00	sqinch of each letter			
12.11	Providing fabricating and fixing of retroreflective vinyle sinages of varying sizes and shapes pasted on aluminium/GI sheet of 18 gauge with provision of fixing on MS structure complete as per technical specifications and directions of Engineer.	10000.00	sqinch			
12.12	Providing fabricating , installation and fixing of poster frame with digitally printed transparent film technova sandwiched between 2-3 mm clear acrylic sheet fixed on the wall/MS with the help of suitable steel studs	500.00	sqft			

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
12.13	Providing fabricating installation and fixing of night vision sinages visible in complete darkness computer cut vinyl pasted on 3mm acrylic sheet and further fixed on wall/hanging from ceiling with the help of MS/GI rods complete as per technical specifications and directions of engineer.	1000.00	sq inch			
12.14	Providing. fabricating and fixing of ACP aluminum composite plastic signs with 3 mm ACP sheet, using 1" ms pipe frame, with anti rust coating, back with G.I. and 5 sides with ACP sheet, lettering to be done with 5mm acrylic sheet and vinyls if needed backlit with Philips slim lite tube light fittings, acrylic letters to protrude out and be lit, together with a timer for switching on and off at required timings, including transportation and fixing at site as per the direction of the site engineer	500.00	sq.ft.			
12.15	Providing, fabricating and fixing of frontlit signages with solvent printing on 13 oz Hanwa/LG make flex printing on Vutek/ Sytec/ Edge print etc with UV cure inks with minimum life of 1 year for non fading, stretched on 25mm sq M.S. pipe, with 28 gauge tin sheet on the back for withstanding wind pressure with adequate lights in the front. The front lighting to be Metalite (white light) of 150 watts and Philips make to be fixed with metal arms at least 4ft protruding outside.	1500.00	sq.ft.			

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
12.16	Providing, fabricating and fixing digital posters inside the hospitals on 5mm sun board sheet with 1440 dpi digital printing on Technova/ LG coated vinyl duly laminated and pasted on the sheet and fixed on the walls with help of steel studs or mirror screws as per the direction of the engineer	350.00	sq.ft.			
12.17	Providing fabricating and fixing of name plate pockets outside rooms made of 5mm opaque, milky white acrylic sheet in various sizes and with provision of fixing acrylic plates as per boq-1 on the same, the pockets should be well crafted using high quality adhesives and should be fixed on the wall with the help of screws etc. and as per the direction of the engineer.	1000.00	sq.inch			
Sub Total						

Project Name:Proposed development of Masjid Mod, AIIMS, NewDelhi.(Construction of Surgical Block)

Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	PART-B					
13.00	Operation and Maintenance work					
<p>(The quoted rates shall become a part of financial bid and shall be considered for the purpose of evaluation of financial bids of the bidder. The employer reserves the right for placement of order for this maintenance work. However the quoted rates by the bidders shall remain binding on the bidder. The BOQ items shall be read in conjunction with a technical specification,GCC,SCC and their quoted rates shall deem to include all works/requirements in the technical specification,GCC,SCC etc. The quoted amount of PART-B (Operation and Maintenance work) should not include the amount/liabilities/ provisions already covered in respect of PART -A of the work during defect liability period.)</p>						
13.01	Providing comprehensive operation and maintenance charges of whole work executed under all different head of the main contract including equipments supplied and services executed for this projects from the date of hand over / completion of work whichever is later for a period of 5 years. The comprehensive operation and maintenance charges of whole work including equipments supplied shall include all the spare parts, consumables (excluding the cost of diesel required for runing of DG sets) , manpower, periodical changes of lubricants etc including replacement/repairs of all fittings, fixtures and parts etc as required to keep the building in usable condition with least disturbance to the occupants.					
a	1st Year	1	Job			
b	2nd Year	1	Job			
c	3rd Year	1	Job			
d	4th Year	1	Job			
e	5th Year	1	Job			

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Bill of Quantity

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures(in Rs)
1	2	3	4	5	6	7
	TOTAL					

PHE - WORKS

ABSTRACT

Name of Work: Plumbing work of AIIMS-Surgical Block,New Delhi

S.No.	DESCRIPTION	Amount in figures (Rs.)	Amount in words (Rs.)	Remarks
A	INTERNAL PLUMBING ,			
1. 00	SANITARY FIXTURES			
2. 00	SOIL, WASTE AND VENT PIPES			
3. 00	WATER SUPPLY			
4. 00	SEWERAGE AND DRAINAGE			
B	EXTERNAL PLUMBING ,			
5.00	RAIN WATER PIPING			
6.00	BOREWELL			
7.00	RAIN WATER HARVESTING			
8.00	SOLAR WATER HEATING SYSTEM & RECIRCULATING SYSTEM			
9.00	WATER TREATMENT PLANT ,PUMP & EQUIPMENT			
10.00	EFFLUENT TREATMENT PLANT			
11.00	WATER SUPPLY ELECTRICAL PANEL			
	TOTAL			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi

Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
	Note: Based on the tender drawing the agency has to prepare the internal & external plumbing shop drawing and obtain the approval of the same before execution					
1.00	SANITARY FIXTURES					
1.01	Providing&fixing water closet squatting pan(Indian W.C.Pan)with 100 mm sand cast iron P or S strap,10 Litre low level white P.V.C flushing cistern with manually controled device(handle lever) conforming to IS:7231 with all fittings&fixture complete including cutting and making good the walls & floors wherever required.					
a)	White vitreous china orissa pattern W.C. pan of size 580 x 440 mm with integral type foot rests.	Each	2.0			
1.02	Providing and fixing white vitreous china pedestal type water closet (European type) with seat and lid, 10 litre low level white vitreous flushing cistern and 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:					
a)	W.C. pan with ISI black solid plastic seat & lid.	Each	150.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
1.03	Providing and fixing white vitreous China flat back or wall corner type lipped front 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 or fittings and brackets, cutting and making good the walls and floors wherever required.					
a)	One urinal basin with 5 litre white PVC automatic flushing cistern	Each	1.0			
b)	Range of two urinal basin with 5 litre white PVC automatic flushing cistern.	Each	1.0			
c)	Range of three urinal basin with 10 litre white PVC automatic flushing cistern.	Each	6.0			
1.04	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32mm 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 550x 400 mm with a pair of 15mm C.P. brass pillar tap.	Each	140.0			
b)	White Vitreous Surgeon type wash basin of size 660 x 460 mm with a pair of 15 mm C.P. brass pillar taps, with elbow operated levers.	Each	50.0			
1.05	Providing and fixing Stainless Steel A ISI 304 (18/8) kitchen sink as per IS 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required:					
a)	Kitchen sink without drain board					
a)i)	610x510 mm bowl depth 200 mm.	Each	8.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
1.06	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 40 mm brass trap with necessary C.P. brass unions complete including painting of fittings and brackets, cutting and making good the walls and floors wherever required:					
a)	Size 600x450x200 mm	Each	20.0			
1.07	Extra for using coloured W.C. pan instead of white W.C pan					
a)	Orissa pattern W.C. pan 580x440 mm	Each	2.0			
1.08	Extra for using coloured pedestal type W.C. pan (European type) with low level cistern of same colour instead of white vitreous china W.C. pan and cistern	Each	130.0			
1.09	Providing and fixing superior glass (of approved quality) and of required shape and size with plastic moulded frame of approved make and shape with 6 mm thick hard board backing.					
a)	Rectangular shape 453x357 mm	Each	190.0			
1.10	Providing and fixing 600x120x5 mm glass shelf with edges round of supported and anodised aluminium angle frame with C.P. brass brackets and guard rail complete fixed with 40 mm long screws, rawl plugs etc., complete.	Each	190.0			
1.11	Providing and fixing toilet paper holder .					
a)	Vitreous china	Each	150.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
1.12	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour weighing not less than 105 gms.	Each	140.0			
1.13	Providing and fixing water Jet Nozzle with hose pipe and half turn CP brass angle valve to be fitted with seat cover of european water closet complete in all respect of approved quality	Each	138.0			
1.14	Providing and fixing soap tray with CP brass lid and brackets fixed to wooden cleats with CP brass screws.(Jaquar model no.1131 or equivalent model of other approved make).	Each	50.0			
1.15	Providing and fixing CP brass towel rail size of 600x20 mm of approved make complete with CP brackets fixed to wooden cleats with CP brass screws(Jaquar model no.1111 or equivalent model of other approved make)	Each	190.0			
1.16	Providing and fixing brass coat hook of approved quality and make complete with material of fixing	Each	200.0			
1.17	Extra for providing and fixing white vitreous china oval shape wash basin in place of normal wash basin with CI/MS brackets painted white, 15 mm CP brass pillar taps, 32 mm CP brass waste of standard pattern, including painting of fittings and brackets cutting and making good the walls wherever required					
a)	Counter top oval shape wash basin size 550x470 mm with centre tap hole, single 15 mm CP brass swan neck type pillar tap	Each	130.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
1.18	Extra for providing and fixing white vitreous china wall hung type water closet (European type) in place of normal pedestal type water closet with white solid plastic seat and lid concealed flushing cystem 9 ltrs capacity(min) approximate size(400x300x100)comprising of SS actuating panel with dual flush with fittings ,specials of standard make(Viega,ACO,Kohler,Jaquar) and complete including painting , cutting and making good the walls and floors wherever required:	Each	130.0			
1.19	Supply , installation, testing and commissioning of compact floor mounted pedestal base surgical scrub sink tailor made to suit the site available compatiabile with all the regular and standard plumbing system, with inbuilt geyser designed for use in operation theatre fabricated from 16 gauge 304 type stainless steel seamless welded,polished to satain finish including connecting to drainage and water points and making good cutting of walls and floor surface all complete and as directed					
	Tailor made surgical scrub sink (2 bay) Approximate size 1.4 mX0.54mX0.84m with 1 user elbow operated mixture tap, soap dispensers, drain outlet ,thermostatic control of water temperature	Each	7.0			
1.20	Providing and fixing stainless steel grab bar 20mm dia of required length with PVC cleats, C.P. brass screws etc. complete.	Each	10.0			
1.21	Providing and fixing Hospital white vitreous china bed pan sink with P trap, size 600 x 450 mm with 10 litres C.I. High level flushing cistern flush pipe, C.I./M.S. bracket painting with 3 coats of white paint complete with accessories, C.P. brass fittings with vertical jet horizontal spray complete with control cocks.	Each	20.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
1.22	Providing and fixing vitreous china division plate of size 960x165x325 mm of approved make and design including brass cleats, C.P. brass screws all fittings etc. complete in all respect	Each	20.0			
SUB TOTAL(SANITARY FIXTURES)						

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
2.00	SOIL, WASTE AND VENT PIPES					
2.01	Providing and fixing soil, waste and vent pipes.					
a)	100 mm dia.					
a i)	Centrifugally cast (spun) iron socketed pipe as per IS:3989	Metre	3000.0			
b)	150 mm dia					
	Centrifugally cast (spun) iron socketed pipe as per IS:3989	Metre	400.0			
c)	200 mm dia	Metre	60.0			
2.02	Providing and fixing M.S holder-bat clamps of approved design to Sand Cast iron/ cast iron (spun) pipe embedded in and including cement concrete blocks 10x10x10 cm of 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) including cost of cutting holes and making good the walls etc.					
a)	for 100 mm dia. pipe	Each	220.0			
b)	for 150 mm dia pipe	Each	40.0			
2.03	Providing and fixing bend of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.					
a)	100 mm					
a ii)	Sand cast iron S&S as per IS-3989	Each	44.0			
b)	150 mm dia					
	Sand cast iron S&S as per IS-3989	Each	10.0			
c)	200 mm dia	Each	4.0			
2.04	Providing and fixing plain bend of required degree.					
a)	100 mm					
a ii)	Sand cast iron S&S as per IS:3989	Each	182.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
b)	150 mm dia Sand cast iron S&S as per IS-3989	Each	10.0			
c)	200 mm dia Sand cast iron S&S as per IS-3989	Each	4.0			
2.05	Providing and fixing heel rest sanitary bend.					
a)	100 mm dia					
a.ii)	sand cast iron S&S as per IS-3989	Each	22.0			
c)	150 mm dia Sand cast iron S&S as per IS-3989	Each	4.0			
2.06	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.					
a)	100x100x100mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	125.0			
b)	150x150x150 mm dia					
	Sand cast iron S&S as per IS-3989	Each	10.0			
c)	200x200x200 mm dia	Each	2.0			
2.07	Providing and fixing single equal plain junction of required degree					
a)	100x100x100mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	193.0			
b)	150x150x150mm Centrifugally cast (spun) iron S&S					
b.ii)	sand cast iron S&S as per IS-3989	Each	5.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
c)	200x200x200 mm dia	Each	4.0			
2.08	Providing and fixing single unequal plain junction of required degree					
a)	150x150x100 mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	10.0			
b)	200x200x100 mm	Each	10.0			
c)	200x200x150 mm	Each	2.0			
2.09	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts and nuts complete					
a)	100 mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	50.0			
2.10	Providing and fixing terminal guard.					
a)	100 mm	Each	22.0			
a.ii)	sand cast iron S&S as per IS-3989					
b)	150 mm dia					
	Sand cast iron S&S as per IS-3989	Each	4.0			
2.11	Providing and fixing collar					
a)	100 mm					
a.ii)	Sand cast iron S&S as per IS-3989	Each	150.0			
b)	150 mm dia					
	Sand cast iron S&S as per IS-3989	Each	10.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
2.12	Providing lead caulked joints to sand cast iron /centrifugally cast (spun) iron pipes and fittings of diameter:					
a)	100 mm	Each	1600.0			
b)	150 mm	Each	100.0			
2.13	Providing Drip seal joint of approved make for the sand cast iron/centrifugally cast iron pipes where the workability of lead joint can be effected due to space constraints.					
a)	100 mm	Each	700.0			
b)	150 mm	Each	50.0			
2.14	Providing and fixing M.S. stays and clamps for sand cast iron / centrifugally cast (spun) iron pipes of diameter :					
a)	100 mm	Each	22.0			
b)	150 mm	Each	4.0			
2.15	Providing and fixing trap of self cleansing with screwed down or hinged grating with or without vent arm complete, including cost of cutting and making good the walls and floors:					
a)	100 mm inlet and 100 mm outlet					
a l)	Sand cast iron S&S as per IS-3989	Each	180.0			
2.16	Cutting chases in brick masonry walls for following diameter sand cast iron/centrifugally cast (spun) iron pipes and making good the same with cement concrete 1:3:6 (1 cement:3 coarse sand:6 graded stone aggregate 12.5 mm nominal size) including necessary plaster and pointing in cement mortar 1:4 (1 cement: 4 coarse sand):					
a)	100 mm diameter pipe	Metre	50.0			
b)	150 mm diameter pipe	Metre	5.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
2.17	Painting sand cast iron / centrifugally cast (spun) iron soil, waste vent pipes and fittings with paint of any colour such as chocolate, grey, or buff etc. over a coat of primer (of approved quality) for new work:					
a)	100 mm diameter pipe	Metre	1800.0			
b)	75 mm diameter pipe	Metre	145.0			
c)	150 mm diameter pipe	Metre	300.0			
2.18	Providing and fixing floor drain points formed out of 65 mm dia GI elbow, including with 75mm dia Stainless Steel grating with frame, embedded in floor, all complete as directed.	Each	80.0			
2.19	Providing and fixing C.P. brass bottle trap for wash basin including CP waste fittings complete 32 mm dia complete in all respect of approved quality.	Each	190.0			
2.20	Providing and fixing C.P. brass bottle trap for sinks & urinal basin including CP waste fittings complete 40 mm dia complete in all respect of approved quality.	Each	50.0			
2.21	Providing and laying cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) 80 mm thick all-round the SCI/centrifugally S&S pipe diameter.					
a)	100 mm dia	Metre	1200.0			
c)	150 mm dia	Metre	100.0			
2.22	Providing and fixing dash fastner made of rust proof plated steel for holding the soil/waste supply pipes complete in all respect					
a)	Dash fastner for pipe more than 25 mm dia to 150 mm dia pipe of required size but not less than size 10 mm dia and 50 mm long minimum & shall be capable of taking 6 tonnes load and also include the supporting angles 35x35x5 mm/approved steel structures support as per drawing.	Each	100.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
2.23	Providing and fixing floor clean out plug consist of CI bend & GI socket heavy class with Brass cap & key for opening male threaded cap etc. including lead caulked to CI pipescomplete in all respects as per drawing/ sample approved by Engineer -in -ChargeFCO (floor clean out plug shall be flushed with floor finish					
	100 mm dia/150 mm dia	Each	10.0			
2.24	Providing and fixing clean out plug consist of GI socket/nipple heavy class with threaded pludge for opening male threaded cap etc. including lead caulked to CI pipescomplete in all respects as per drawing/ sample approved by Engineer -in -Charge					
	100 mm dia/150 mm dia	Each	80.0			
2.25	Providing and fixing G.I EXTENSION PIECE for 100 mm dia floor trap formed out of main pipe(Type A) with multiple side inlets, suitable for various dia pipes, side connections, including all fixtures and fittings as per site conditions and as per standard details and water tight sealing of joints and area surrounding the grating and as directed.	Each	180.0			
2.26	Providing and fixing cPVC. pipes complete with cPVC fittings including painting, jointing, testing the cost of cutting the chases and making good the same for waste water disposal complete as per direction of engineer incharge.					
a)	32 mm dia nominal bore (Wash basin to floor trap/floor drain)	Metre	90.0			
b)	40 mm dia nominal bore (Sink, Urinal to floor trap)	Metre	20.0			
c)	50 mm dia nominal bore (Floor Drain to Floor Trap)	Metre	100.0			
2.27	Providing & fixing SS floor trap grating 143x143x5mm thick screwablewith SS fixed frame of 150x150 mm size as per approved make & model	Metre	180.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
2.28	Providing and laying Laboratory/hospital effluent waste pipe and fitting of high density polyethelene (HDPE),CLASS -PE 100 ,pressure rating PN-10,conforming to IS :4984, electric fusion joints/flanged joints , fittings which includes bends,,junctions,cowls,offsets,access pieces.etc. complete including jointing.					
	50 mm dia	Metre	100.0			
	80 mm dia	Metre	150.0			
	100 mm dia	Metre	100.0			
	150 mm dia	Metre	100.0			
	200 mm dia	Metre	60.0			
2.29	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 for plumbing pipe support as per approved drawings and direction of Engineer in charge.	kg	1000.0			
SUB TOTAL(SOIL, WASTE AND VENT PIPES)						

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
3.00	WATER SUPPLY					
3.01	Providing and fixing Chlorinated Polyvenyl 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 1.0 m spacing.This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints ciomplete as per direction of Engineer in charge.					
	Internal work – Exposed on wall					
a)	15 mm nominal outer dia pipes (SDR-11)	Metre	50.0			
b)	20 mm nominal outer dia pipes (SDR-11)	Metre	150.0			
c)	25 mm nominal outer dia pipes (SDR-11)	Metre	200.0			
d)	32 mm nominal outer dia pipes (SDR-11)	Metre	200.0			
e)	40 mm nominal outer dia pipes (SDR-11)	Metre	150.0			
f)	50 mm nominal outer dia pipes (SDR-11)	Metre	200.0			
g)	62.5 mm nominal outer dia pipes (SDR-17)	Metre	200.0			
3.02	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
	Concealed work including cutting chases and making good the walls etc.					
a)	15 mm nominal outer dia pipes (SDR-11)	Metre	900.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
b)	20 mm nominal outer dia pipes (SDR-11)	Metre	600.0			
c)	25 mm nominal outer dia pipes (SDR-11)	Metre	200.0			
d)	32 mm nominal outer dia pipes (SDR-11)	Metre	25.0			
e)	40 mm nominal outer dia pipes (SDR-11)	Metre	10.0			
3.03	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
	External Work					
a)	25 mm nominal outer dia pipes	Metre	20.0			
b)	50 mm nominal outer dia pipes	Metre	20.0			
c)	62.5 mm nominal inner dia pipes	Metre	20.0			
3.04	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, including cutting and making good the walls etc.					
	Internal Work- Exposed on walls					
a)	80 mm dia nominal bore	Metre	300.0			
b)	100 mm dia nominal bore	Metre	250.0			
3.05	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including, cutting and threading the pipe etc. complete including obtaining approval for connection from DJB/Municipal corporation :					
a)	50 to 80 mm nominal bore (SDR-11)	Each	2.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
3.06	providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end)					
a)	25 mm nominal bore	Each	30.0			
b)	32 mm nominal bore	Each	16.0			
c)	40 mm nominal bore	Each	15.0			
d)	50 mm nominal bore	Each	12.0			
e)	65 mm nominal bore	Each	15.0			
g)	80 mm nominal bore	Each	8.0			
h)	100 mm nominal bore	Each	6.0			
3.07	Providing and fixing ball valve (brass) of approved quality, High or low pressure with plastic floats complete					
a)	20mm	Each	2.0			
3.08	Providing and fixing brass ferrule with C.I. mouth cover including boring and tapping the main					
a)	40 mm nominal bore	Each	2.0			
3.09	Providing and fixing unplasticised PVC connection pipe with brass unions:					
a)	45 cm length					
a i)	15 mm nominal bore	Each	410.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
3.11	Constructing masonry chamber 30x30x50 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for stop cock, with C.I. surface box 100x100x75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4 mix (1 cement: 2 coarse sand:4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design					
a)	With F.P.s bricks	Each	2.0			
3.12	Constructing masonry chamber 60x60x75 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for sluice valve, with C.I. surface box 100mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement: 2 coarse sand:4 graded stone aggregate 20 mm nominal size) 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					
a)	With F.P.s bricks	each	2.0			
3.13	Painting CPVC/G.I. pipes and fittings with synthetic enamel white paint over a ready mixed priming coat, both of approved quality for new work					
a)	15 mm nominal outer dia pipes	Metre	50.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
b)	20 mm nominal outer dia pipes	Metre	150.0			
c)	25 mm nominal outer dia pipes	Metre	200.0			
d)	32 mm nominal outer dia pipes	Metre	200.0			
e)	40 mm nominal outer dia pipes	Metre	150.0			
f)	50 mm nominal outer dia pipes	Metre	200.0			
g)	65 mm nominal outer dia pipes	Metre	200.0			
3.14	Painting G.I. /CPVC pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality.					
a)	25 mm diameter pipe	Metre	20.0			
b)	50 mm diameter pipe	Metre	20.0			
c)	65 mm diameter pipe	Metre	20.0			
3.15	Providing and filling sand of grading zone V or coarser grade all-round the G.I./CPVC pipes in external work					
a)	25 mm diameter pipe	Metre	20.0			
b)	50 mm diameter pipe	Metre	20.0			
c)	65 mm diameter pipe	Metre	20.0			
3.16	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI:12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank					
	Treated water Tank and Untreated water tank	per litre	60000.0			
3.17	Providing and fixing C.P brass bib cock of approved quality.					
a)	15 mm nominal bore	Each	150.0			
3.18	Providing and fixing C.P. brass long nose bib cock of approved quality conforming to IS standards and weighing not less than 810 gms.					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
a)	15 mm nominal bore	Each	80.0			
3.19	Providing and fixing C.P. brass angle valve for basin mixer and geyser/cisterns points of approved quality conforming to IS:8931.					
a)	15 mm nominal bore	Each	410.0			
3.20	Providing and fixing C.P. brass stop cock (concealed) of standard design and of approved make conforming to 18:8931.					
a)	15mm nominal bore.	Each	50.0			
3.20	Providing and fixing enclosed type water meter (bulk type) conforming to IS : 2373 and tested by muncipal board complete with bolts,nuts rubber, insersions etc. (the tail plases if required will be paid seperatly)					
a)	80mm dia nominal bore	Each	1.0			
3.21	Providing and fixing PTMT ball cock of approved quality, colour and make complete with Epoxy coated aluminium rod with L.P./H.P.H.D. plastic ball.					
a)	40 mm nominal bore, 206 mm long weighin not less than 690 gms	Each	2.0			
b)	50 mm nominal bore, 242 mm long weighin not less than 1240 gms	Each	2.0			
3.22	Cutting holes upto 30x30 cm in walls including making good the same					
	with F.P.S bricks	Each	50.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
3.23	Cutting holes up to 15x15 cm in R.C.C. floors and roofs for passing drain pipe etc. and repairing the hole after insertion of drain pipe etc. with cement concrete 1:2:4 (1 cement:2 coarse sand: 4 graded stone aggregate 20 mm nominal size) including finishing complete so as to make it leak proof	Each	100.0			
3.24	Extra for providing wash basin mixer pillar tap in place of normal pillar tap	Each	100.0			
3.25	Providing & fixing full way lever operated forged brass ball valve of brass body with forged brass hard chrome plated steel ball tested to a pressure not less than 10 Kg / sqcm with threaded / flanged joints complete with nuts, bolts, gaskets, washers etc.					
a)	15 mm diameter	Each	20.0			
b)	20 mm diameter	Each	25.0			
3.26	Providing and fixing mosquito proof coupling of approved Municipal design for scour and vent pipes for RCC overhead tanks complete in all respects					
a)	20 mm diameter	Each	5.0			
c)	40 mm diameter	Each	2.0			
d)	50 mm diameter	Each	4.0			
e)	65 mm diameter	Each	4.0			
3.27	Providing & fixing 9 mm thick thermal insulation tubing of elastomeric flexible material on hot water supply/return pipes having hermetic blistered closed cell structure of expanded synthetic rubber over pipes/ fitting as per manufacturer's specifications etc.complete.					
a	15 mm to 25 mm diameter	Meter	200.0			
b)	32 mm to 50 mm diameter	Meter	150.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
3.28	Providing and fixing C.P. brass Overhead (Rain Fall) shower (100mm) with arm and wall flange complete including cutting and making good the walls wherever required.	Each	25.0			
3.29	Extra for providing and installing INFRA-RED controlled electrically operated (220V, AC mains) automatic flushing system of approved make instead of urinals with flushing cistern. The automatic flushing system shall comprising of :					
	Light sensing device fixed in recessed metallic box with tamper resistant stainless steel outercase Solenoid valve housed in a recessed metallic box with openable cover mounted at high level (at desired height from finished floor level) complete with interconnecting control wiring in recessed PVC conduit between solenoid valve and sensing unit, including cutting and making good the walls & floor complete and all necessary fittings to make it operational as directed	Each	20.0			
3.30	Extra for in place of pillar trap in wash basin/scrub sink providing and installing INFRA-RED controlled electrically operated (220V, AC mains) automatic tap of approved make instead of pillar tap, comprising of :					
	Light sensing device fixed in tap, Solenoid valve housed in a recessed metallic box with openable cover mounted at high level (at desired height from finished floor level) complete with interconnecting control wiring in recessed PVC conduit between solenoid valve and sensing unit, including cutting and making good the walls & floor complete and all necessary fittings to make it operational as directed	Each	100.0			
3.31	Providing and fixing C.P. brass lab sink pillar tap with long elbow operating lever handle of approved model and make complete in all respect (Aqua bath, Jaquar, Marc)	Each	40.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
3.32	Providing & fixing solid state fully hygienic no touch hand drier of approved make rated for continuous repeat usage with solid state time delay LSF protection, with independent ambient light level & seasonal control temperatures including providing necessary C.I./M.S. brackets painted with two or three coats of enamel paint of approved shade over a coat of primer, wiring cables from drier to plug, plug tops etc. complete including cutting and making good the walls wherever required.	Each	20.0			
3.33	Supplying, fixing, testing and commissioning of storage type water heater (Geyser) etc. with Stainless steel body , copper container , automatic thermostatic control electric element, pressure release valve, M.S. nuts and bolts etc. conforming to IS: 2082					
a	35 Litre Capacity	Each	8.0			
b)	25 Litre Capacity	Each	25.0			
3.34	Providing & fixing water storage cooler of approved make and brand with SS body having minimum flow rate of 40 ltrs. Per hour and storage capacity 80 ltrs. Complete in respects.(VOLTAS/ BLUE-STAR/ USHA SHRIRAM)	Each	20.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
3.35	Providing and fixing approved make & suitable model of R.O. plant (fully automatic operation) 400ltrs. Per hour flow rate having capacity to treat the raw water and average recovery not less than 35% . The operating voltage to 230 volt AC +/- 10% alongwith required capacity pump of approved make (3HP minimum) and solenoid valves, dry run protection of pump, automatic tank level control, inbuilt auto flush timer for periodic flushing of membranes, storage tank (3.0 mm (minimum) thick S.S. 304 sheet) 1500 lts of suitable size and ita supporting structure, over voltage and over current protection with switch mode power supply system complete in all respects including installation and fittings with the following provisions: (IONIEXCHANGE/ KENT/AQUAPROCESS,Pantair,INDWA,Fontus)					
a)	10 micron polypropylene sediment pre filter					
b)	10 micron bacteriostatic activated carbon block on line micron filter with 5 micron rating					
c)	Required Nos. and size of reverse osmosis memberane with 0.0001 micron pore size energy saving poly amide type					
d)	UV lamp of minimum capacity 400LPM and minimum lamp wattage 15W					
e)	MS powder coated frame efficient of TDS removal more than 90%. Antiscalant dosing and acid dosing system for self flushing/cleaning.Pressure switches and gauges, pH correction dosing system, Digital TDS meter, Digital pH meter, electric panel and necessary instrumentation included Rotameter.MS structure and fibre glass sheet weather protection cover as per site condition.	Each	3.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
3.36	Providing and fixing Stainless Steel pipes confirming to EN 10312 complete with Press Type fittings with SC-Contur in accordance with DVGW regulation W534) for Hot and Cold water supply capable to withstand temprature up to 110 degree centigrade, such as sockets, bends, elbows, tees, reducers, unions.Flanges,clamps with hanger at a spacing of 2 m centre to centre min or as required etc. necessary adapters for GI/copper and CP fittings, jointing, sundries,cutting holes in walls/floors/slabs & making good complete. This includes testing of joints complete as per direction of the Engineer incharge.					
	15x1.0 mm outer dia pipe	Metre	50.0			
	18x1.0 mm outer dia pipe	Metre	40.0			
	22x1.2 mm outer dia pipe	Metre	50.0			
	28x1.2 mm outer dia pipe	Metre	20.0			
	35x1.5 mm outer dia pipe	Metre	20.0			
	42x1.5 mm outer dia pipe	Metre	10.0			
	54x1.5 mm outer dia pipe	Metre	20.0			
3.37	Providing, fixing, testing & commissioning of Labroom Drain with Sealing flange,with removable trap (Storage water height-Seal-50mm) with height adjustable and Rotatable top 100 X 100mm(Suitable for 94x94 Grate),with protection plug, with plastic frame and Stainless Steel Grate.Loading capacity class K=300kg, with rotatable supply DN40, with horizontal drain socket, adjustable due to ball joint with outlet 50 mm.Body made of environmentally friendly PP (poly propylene). Quality controlled in accordance withDIN EN 1253,	Each	10.0			
3.38	Providing, Fixing,of P- Trap For sinks (Make-Viega model no.- 7985), with horizontal outlet, quality controlled in accordance with DIN EN 274,(1 1/2" X 40mm)Body Made of PP (Poly Propylene) White in Colour.	Each	10.0			
SUB TOTAL(Water Supply)						

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
4.00	SEWARAGE & DRAINAGE					
4.01	Providing laying and jointing glazed stoneware pipes grade 'A' with stiff mixture of cement mortar in the pro-portion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete.					
a)	100 mm diameter	Metre	10.0			
4.02	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) all-round S.W. pipes including bed concrete as per standard design:					
a)	100 mm diameter S.W. pipe/RCC NP2	Metre	10.0			
b)	150 mm diameter S.W. pipe/RCC NP2	Metre	100.0			
4.03	Providing and fixing square-mouth S.W. gully trap grade 'A' complete with C.I. grating, brick masonry chamber with water tight C.I. cover with frame of 300x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design:.					
a)	150x100mm size P type					
a.i)	F.P.S. Bricks class designation 75	Each	5.0			
4.04	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement:2 fine sand) including testing of joints etc. complete					
a)	150 mm dia R.C.c. pipe	Metre	100.0			
b)	250 mm dia R.C.C. pipe	Metre	100.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
4.05	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand), R.C.C. top slab with 1:2:4 mix (1cement : 2 coarse sand : 4graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 (1cement : 4 coarse sand : 8graded stone aggregate 40 mm nominal size), inside plastering 12mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, and making necessary channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design.					
a)	Inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg):					
a i)	With F.P.S. bricks with class designation 75	Each	10.0			
4.06	Extra depth for manholes					
a)	Size 90 x 80 cm					
a i)	With F.P.S. bricks class designation 75	Metre	2.0			
4.07	Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement : 4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (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:					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
a)	0.91 m deep with S.F.R.C. 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 182kg., 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) :					
a i)	With F.P.S. bricks class designation 75	Each	1.0			
4.08	Extra depth for circular type manhole 0.91m dia (at bottom) with beyond 0.91m to 1.67 m					
a)	With F.P.S. bricks class designation 75	Metre	0.5			
4.09	Constructing brick masonry circular manhole 1.22 m internal dia at bottom and 0.56 m dia at top in cement mortar 1:4 (1 cement: 4 coarse sand) inside cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement foundation concrete 1:3:6 mix (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 nominalsize) finished with a floating coat of neat cement complete as per standard design.					
a)	1.68 m deep with SFRC cover and frame(heavy duty HD-20 grade designation) 560 mm internal diameter conforming to IS: 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 nominalsize) including centering shuttering all complete. (Excavation, foot rests and 12 mm tick cement plaster at the external surface shall be paid for separately)					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
a.i)	With F.P.S. bricks with class designation 75	Each	1.0			
4.10	Extra depth for circular type manhole 1.22 m internal dia (at bottom) with beyond 1.68 m to 2.29 m					
a)	With F.P.S. bricks with class designation 75	Metre	0.5			
4.11	Providing and fixing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS: 10910 on 12 mm dia steel bar conforming to IS: 1786 having minimum cross section as 23 mm x 25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Each	30.0			
4.12	Making connection of drain or sewer line with existing manhole including breking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cemnet mortar 1:3 (1 cement:3 coarse sand) finished with a floating coat of neat cement and making necessary channels for the drain etc. complete (including obtaining approval from DJB/Municipal corporation					
a)	For pipes 100 to 230 mm dia	Each	1.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
4.13	Providing sand cast iron drop connection externally for 60 cm drop from branch sewer line to main sewer manhole including inspection and cleaning eye with chain and lid sand cast Iron drop pipe and bend encased all-round with cement concrete 1 :5:1 0 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) with all centering and shuttering required, cutting holes in walls and making good with brick work in cement mortar 1:4 (1 cement: 4 coarse sand) plastered with cement mortar 1:3 (1 cement: 3 coarse sand) on, inside of the manhole wall lead caulked joints between sand cast iron pipes and fittings, stiff cement mortar 1:1 (1 cement: 1 fine sand) joints between sand cast iron tee and S.W. pipe, making required channels complete as per standard design and specifications:					
a)	150 mm dia. sand cast iron drop connection	Each	1.0			
4.14	Constructing brick masonry road gully chamber 50x45x60 cm with bricks of class designation 75 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:					
a)	With F.P.S. bricks	Each	30.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
4.15	Constructing brick masonry open surface drain including factory made perforated RCC cover with edge protected with MS plate of 3 mm thick with bricks of class designation 75 in cement mortar 1:4 (1 cement : 4 fine sand) including earth excavation, 10cm thick bed concrete 1:5:10 (1 cement: 5 fine sand :10 graded stone aggregate 40mm nominal size) and 25mm thick cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 12.5 mm nominal size) for filling hunches including 12mm cement plaster 1:4 (1 cement:4 coarse sand) with a floating coat of neat cement inside the drain, its top and exposed side including disposal of surplus earth complete as per standard design.					
	25cm drain 30cm average depth					
a)	With F.P.S bricks	Metre	100.0			
	45cm drain 75cm average depth					
b)	With F.P.S bricks	Metre	150.0			
4.16	Providing and laying D.I. specials of class k-12 suitable for push-on jointing as per IS:9523					
a)	Upto 600 mm dia	quintal	10.0			
4.17	Providing push-on-joints to Centrifugally (Spun) Cast Iron pipes or Ductile Iron Pipes including testing of joints and including the cost of rubber gasket					
a)	250mm dia pipes	joint	40.0			
4.18	Providing and laying S&S Centrifugally Cast (Spun)/Ductile Iron pipes confirming to is:8329:					
a)	250 mm dia Ductile Iron Class k-7 pipes	metre	150.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
4.2	Supply, installing, testing and commissioning vertical fully floodable type submersible drainage pump of non-corrosive material with shredder/cutter in close coupled design single stage, suitable for handling minimum 20 mm dia solids for transferring raw sewer from sump to outside the building with float switch for automatic start and stop arrangement with panel and wiring, chain and pulley, mechanical seal complete in all respect as per instruction of the Engineer in charge. (The shop drawing or the pumps along with its characteristics curves, model and technical data etc. are to be submitted for approval before purchase of pump).Star delta suitable starter complete in all respect for automatic/manual operation of pump,start and stop push button contactor with required overload production and single phase preventor.					
	Material of Construction (M.O.C): Corrosion Resistant in general : Casing — Cast Iron					
	: Impeller — Ductile cast iron					
	: Bearings — Anti friction, prelubricated ball bearings, packed with grease for life.					
	Motor: — Dry Motor with built in over load protection Protection - IP68. Insulation Class - F					
	Duty of each pump 50 LPM against 18 M head (Basement)	Each	3.0			
	SUB TOTAL(SEWERAGE AND DRAINAGE)					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
5.00	RAIN WATER PIPING					
5.01	Providing and fixing to the inlet mouth of rain water pipe cast iron grating 15 cm diameter and weighing not less than 440 grams	Each	25.0			
5.02	Providing and fixing rain water ,soil, waste and vent pipes.					
a)	100 mm dia.					
a i)	Centrifugally cast (spun) iron socketed pipe as per IS:3989	Metre	500.0			
c)	150 mm dia pipe as per IS:3989	Metre	700.0			
5.03	Providing and fixing M.S holder-bat clamps of approved design to Sand Cast iron/ cast iron (spun) pipe embedded in and including cement concrete blocks 10x10x10 cm of 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) including cost of cutting holes and making good the walls etc.					
a)	for 100 mm dia. pipe	Each	100.0			
c)	for 150 mm dia pipe	Each	150.0			
5.04	Providing and fixing plain bend of required degree.					
a)	100 mm					
a ii)	Sand cast iron S&S as per IS:3989	Each	10.0			
c)	150 mm	Each	15.0			
5.05	Providing and fixing heel rest sanitary bend.					
a)	100 mm dia					
a.ii)	sand cast iron S&S as per IS-3989	Each	10.0			
c)	150 mm dia	Each	15.0			
5.06	Providing and fixing collar					
a)	100 mm					
a.ii)	Sand cast iron S&S as per IS-3989	Each	20.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
c)	150 mm	Each	30.0			
5.07	Providing lead caulked joints to sand cast iron /centrifugally cast (spun) iron pipes and fittings of diameter:					
a)	100 mm	Each	110.0			
c)	150 mm	Each	160.0			
5.08	Painting sand cast iron / centrifugally cast (spun) iron soil, waste vent pipes and fittings with paint of any colour such as chocolate, grey, or buff etc. over a coat of primer (of approved quality) for new work:					
a)	100 mm diameter pipe	Metre	500.0			
c)	150 mm diameter pipe	Metre	700.0			
5.09	Providing and laying D.I. specials of class k-12 suitable for push-on jointing as per IS:9523					
a)	Upto 600 mm dia	quintal	10.0			
5.10	Providing push-on-joints to Centrifugally (Spun) Cast Iron pipes or Ductile Iron Pipes including testing of joints and including the cost of rubber gasket					
a)	300mm dia pipes	joint	30.0			
5.11	Providing and laying S&S Centrifugally Cast (Spun)/Ductile Iron pipes conforming to is:8329:					
a)	300 mm dia Ductile Iron Class k-7 pipes	metre	100.0			
	SUB TOTAL(Rain Water pipe & fitting)					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
6.00	BOREWELL(1 No)					
6.01	Drilling by suitable rig as per IS : 2800-1979 (percussion or combination rig) or Reverse Rotary to suit site condition from ground level in all kind of soils and weathered rock including boulders (excluding rock) diameter of bore 450mm including carry out hydrological survey report before boring & getting the approval based on Hydrogeological survey before start of the work.Also getting approval from local authority if any required					
a)	0-30m	metre	30.0			
b)	30-60m	metre	30.0			
c)	60-90m	metre	30.0			
d)	90-120 m	metre	30.0			
6.02	Extra additional for drilling in Ordinary Rock if any found	metre	25.0			
6.03	Extra additional for drilling in Hard Rock if any found	metre	25.0			
6.04	Providing and lowering uPVC casing/housing pipe 200mm dia. with wall thickness 10 mm conforming to IS :12818 including sockets of standard design.	metre	70.0			
6.05	Providing & fixing uPVC screen/slotted pipe with 1.5 mm to 3mm (slots as per strata condition) including sockets of standard design as per IS: 12818/1992.					
a)	200 mm dia uPVC socketed pipe with wall thickness 10.0 mm	metre	80.0			
6.06	Providing and fixing in position threaded iron cap with locking arrangement of approved design to prevent foreign matters getting into the bore-hole as required.	Each	1.0			
6.07	Providing and laying rounded pea gravel washed & served 3 to 6 mm nominal boreas per relevant ISI code.	Cum	16.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
6.08	Providing and laying cement concrete 1:2:4 mix for sanitary sealing of well at top.	Cum	1.0			
6.09	Supplying, lowering and fixing in position reducer ,PVC bail plug with "U" hooks as per IS:2800-1964.	Each	1.0			
6.10	Development of Tubewell including testing of yield depression & quality of water (for all parameters of potable water), contractor to obtain certificate for quality for water from Competent Authority approved by client or Engineer- In -Charge.					
a)	Development of Tube well by high capacity air compressor till the clear water discharge but not more than 100 hours.	per hour	80.0			
b)	Additional development of Tube well by high an over pumping unit till complete development of tube well does not clear by maximum 100 hours air compressor	per hour	50.0			
6.11	Tranportation, mobilisation and demobilisation or drilling equipment and ancillary equipment to site including clearing and cleaning the site after completion of work.	set	1.0			
6.12	Providing and fixing brass full way valve with C.I. wheel of approved make, tested to a pressure of 21 kg/sqcm.					
a)	100 mm dia	Each	1.0			
6.13	Providing and fixing gunmetal non return valve of approved make tested to a pressure of 21kg/sqcm.					
a)	100 mm dia	Each	1.0			
6.14	Providing & fixing G.I. pipes (heavy class)confirming to IS with special fittings in external works including earthwork ,excavationin all kinds of soil including ordinary rock,refilling, painting pipes & fitting complete in all respects.					
	100 mm dia	Metre	100.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
6.15	Providing & filling sand of grading zone V or coarser grade all around GI pipe in external work 100 mm dia	Metre	100.0			
6.16	Submersible pumps Providing and installing submersible pump and electrical panel suitable for 8" dia casing of bore with SS impeller, high tensile SS shaft, copper wound squirrel cage wet type induction motor 2880 rpm, 415 V, 50 Hz, 3 phase A.C. supply, conforming to ISS: 8034-1976, capacity 500 litre per minute at 70-120 m head along with a directly coupled submersible type squirrel cage electric induction 10 H.P.(minimum) . motor suitable for operation on 400 V, 3 phase, 50 c.p.s. A.C. supply, water lubricated bearings and provided with pivoted segment type thrust bearings to withstand non-vertical load with minimum wear and tear and duly fitted with device to take up the expansion of water with heating of motor, including supply, testing and commissioning of electrical panel from the same manufacturer, complete with all accessories in all respects. The contractor to obtain approval for model and make of pumpset & suitable Electrical panel after having yield report of fully developed tube well and submit actual bore strata chart.					
	including supplying laying and fixing water proof PVC insulated flat submersible cable 3x10 sqmm with end termination with its accessories. complete in all respect as required.	set	1.0			
6.17	Carrying out Electrical logging of Borewell before lowering of pipe for analysing of water quality including Electrical logging report, calculation etc.	Job	1.0			
SUBTOTAL (BOREWELL)						

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
7.00	RAIN WATER HARVESTING(4 NOS.)					
7.01	Designing and Constructing of percolation pit cum perforated well 3000mm. dia upto 4000mm deep, 230 mm thick brick masonry work around upto 1.5 m deep with 75 class brick in cement mortar 1:4, 200 mm foundation concrete in 1:4:8 mix below brick work only, 150 mm thick precast removable RCC top slab with required steel reinforcement in cement concrete 1:2:4 mix, filled with coarse aggregate, SFRC covers, river pebbles of requisite size stone as shown in the drawing including centering and shuttering, as shown complete as per detailed drawings complete.	Each	4.0			
7.02	Drilling as per IS : 2800-1964 (with percussion or combination rig) from ground level in all kind of soils including boulders (excluding rock) diameter of bore 450mm.					
a)	0-50m	Metre	120.0			
7.03	Extra for drilling in Ordinary Rock	Metre	20.0			
7.04	Extra for drilling in Hard Rock	Metre	20.0			
7.05	Providing and lowering of 200 mm dia uPVC blank/ slotted pipe with ribs, special fittings, jointing conforming to IS 12818 - 1992.	Metre	120.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
7.06	Constructing bar screen / settling tank, of sizes 4500x2500 with suitable depth up to 2.0 m in 1: 4 Cement Mortar (one cement : 4 coarse sand) height as per site requirement, in brick masonry 350mm thick walls upto water level and 230mm thick walls above water level & upto ground level, including all excavation, 20 cm thick bed concrete in 1:4:8 (one cement 4 fine sand 8 stone aggregate 40 mm), cement plaster 1:3 (one cement :3 coarse sand) with a floating coat of neat cement as inside finish , top slab in RCC 1:2:4, including centring, shuttering and steel work, also providing and fixing D.I. manhole cover & frame of size 605mm x 450mm of weight not less than 38 kg (frame + cover) and cost of 100mm dia C.I. vent pipe with C.I. Ventilating Cowl and suitable wire mesh provision for inlet, 115mm baffle walls extending 2/3 the width spaced@500mm c/c including finishing with 1:3 cement plaster 15mm thick with floating coat of neat cement slurry , all complete in every respect as per drawing and as directed to suit site condition.	Each	4.0			
SUBTOTAL (RAIN WATER HARVESTING)						

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
8	SOLAR WATER HEATING SYSTEM & RECIRCULATION OF HOT WATER SYSTEM (1 Nos)					
8.01	Supply, installation, testing and commissioning of solar water heating system, Thermosyphon type, all complete based on Flat plate collector system (Cu-Cu Type only) comprising of but not limited to the following:					
a)	Requisite number of Flat plate collectors of 2 sq. mtr. collector area. Collector absorber plate to be made of copper tubes & copper fins only					
b)	Hot water storage tank made of stainless steel 304- food grade quality with 100 mm Glass wool insulation and cladding with 24 SWG Aluminum sheet. One temperature measuring device and suitable inlet, outlet and drain connections on the storage tank to be provided. Suitable Electrical Heater backup to be provided inside the tank along with thermostat					
c)	Heat Exchanger - Cage type Internal Heat Exchanger made of SS pipes shall be provided inside the Solar Tank. Heat exchangers shall have min. heat transfer area of 0.24 sq. mtrs. for every 100 LPD calacity. Suitable make up tank for the Heat Exchanger circuit shall also be provided					
d)	Interconnecting system piping shall consist of B Class insulated GI pipes covered with 50mm thick glasswool & clad with 26 SWG Aluminium Sheet. All Gate/Ball valves shall be of ISI make.					
e)	Electrical control panel, cabling from panel to pumps and electrical heaters shall also be provided					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
f)	The solar collector shall be arranged on roof of building in such a way that shadow can be avoided and requisite number of MS support for collector/tanks of minimum 35x35x5 MS angle adequate for 150 Km/Hr wind speed.					
g)	Solar water heating system based on Flat plat collector system technology with output capacity of as mentioned below with hot water at 60 degree centigrade having required Nos. solar collectors and required nos. of electric heating element of 3 KW each controlled by thermostat. as per complete item as per technical specification of make BHEL/TATA/EMMVEE. The system has to be installed by Manufacturers authorised distributors/approved specialised firms of Solar water heating of approved make. The shop drawing of the systems shall be provided by the agency as per site condition obtain the proper efficiency. The system shall be procured after obtaining the approval of shop drawings from HSCC / Engineer-in-charge.					
i)	Solar System of Capacity 1500 Litre/day (With minimum 12 nos of Collect) of 2.0 Sqm area	each	5.0			
8.02	Recirculation system (on return line) -Designing, Supply, Installation, Commissioning & Integration with Solar System of Recirculation System consisting of - Insulated Auxiliary Tank MS with epoxy paints (2 times the solar piping system volume) and with Electrical Backup, Pump, of requisite capacity DTC, Sensor PT100, Control Panel wiring, RS 485 mod bus communication port for BMS as per technical specification, MS standard etc. (but does not include the return piping & fitting)	each	2.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
8.03	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
	Internal work- Exposed on wall					
a)	15 mm nominal outer dia pipes (SDR-11)	metre	50.0			
b)	20 mm nominal outer dia pipes (SDR-11)	metre	100.0			
c)	25 mm nominal outer dia pipes (SDR-11)	metre	75.0			
d)	32 mm nominal outer dia pipes (SDR-11)	metre	50.0			
e)	40 mm nominal outer dia pipes (SDR-11)	metre	25.0			
8.04	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
	Concealed work including cutting chases and making good the walls etc.					
a)	15 mm nominal outer dia pipes (SDR-11)	metre	150.0			
b)	20 mm nominal outer dia pipes (SDR-11)	metre	100.0			
c)	25 mm nominal outer dia pipes (SDR-11)	metre	25.0			
8.05	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end):					
a)	25 mm nominal bore	each	8.0			
b)	32 mm nominal bore	each	8.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
8.06	Providing & fixing 9 mm thick thermal insulation tubing of elastomeric flexible material having hermetic blistered closed cell structure of expanded synthetic rubber over pipes/ fitting as per manufacturer's specifications etc.complete.					
a)	15 mm dia to 25 mm dia	each	500.0			
b)	32 mm dia to 50 mm dia	each	75.0			
8.07	Providing and fixing gun metal ball valve of approved quality					
a)	15 mm nominal bore	each	4.0			
b)	20 mm nominal bore	each	6.0			
SUBTOTAL(SOLAR WATER HEATING SYSTEM & RECIRCULATING SYSTEM)						

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
9.00	WATER TREATMENT PLANT					
9.01	WATER TREATMENT PLANT (/Domestic use)					
	Planning, Designing, Detailing, Manufacturing, Supplying, Erection, Testing and Commissioning of Water treatment plant for supply of treated water for use of domestic purpose comprising of filter and pumps. The plant is to be installed in pump room and Raw water supply is available in UGT including design and execution of all Civil, Structural, Electrical, Mechanical, Plumbing and processing, ancillary equipments & works etc required to complete the package, getting approval from HSCC/client etc.					
	The shop drawings & design of WTP shall also be prepared in such a way that it comprise of the following units of required size as per detail design requirements. The work has to be carried through authorised vendor, dealer/representative of approved make (Ion exchange, Pollucon technologies, AKAR Impex, Thermax, Aquaprocess, Fontus).					
i)	Providing and fixing vertical/ multi-stage inline centrifugal raw water filter feed pumps mounting on a foundation with CI volute and SS impellar and with stainless steel shaft, mechanical seal and chrome steel shaft sleeve, connected to a TEFC induction motor suitable for 400/440 volts, 1500 RPM, 3 phase 50 cycles A.C. supply having IP 55 protection enclosure. complete with base frame, vibration eliminating pads, nuts and bolts etc. (Necessary RCC foundations as per requirement and as per instructions shall be provided by the agency)					
	Raw water (filter) feed pumps.					
	Capacity : 200 lpm (Each)					
	Head 35 m					
	Power :3.0 HP or as required					
	1 working					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
ii)	Providing and fixing C.I. "Y" Type suction strainer with stainless steel perforated sheet screen, flanged ends in installed outside water tanks. (Make: Leader / Zoloto / Kartar or equivalent)					
	65/80 mm dia (4 nos.) (min.) or required size and required number					
iii)	Providing and fixing gun metal or bronze ball valves/butterfly valve/NRV/Rotameter, tested to 15.00 Kg / cm ² , screwed end connections complete. (Make: Leader/ Zoloto or equivalent)					
	50/65 mm NB (min.) or required size and number					
iv)	Filtration Plant : Vertical Downflow Multigrade Pressure Sand Filter in MS Welded construction fabricated in accordance with IS 2825 from minimum 6 mm thick M.S. plate on shell and minimum 8 mm thick M.S. plate on dished ends as per applicable IS standards. The filter shall have :					
	a) One no pressure tight manhole and at least one no. pressure tight side hole for maintenance purposes.					
	b) Initial charge of Filter Media.					
	c) Complete underdrain system and raw water distributor as per manufacturer's design.					
	d) M.S. heavy class fabricated - epoxy coated / post galvanised face piping comprising of connections with CI Butterfly Valves of required size for inlet, outlet, backwash inlet, backwash drain and rinse drain. Air release line with GM Ball Valve of required size.					
	e) Pressure gauges (100 mm dia bourdon type pressure gauge) / Sampling points with SS isolation cocks at inlet and outlet.					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
	f) All internal parts of the filtration plant shall be coated with 6 mm thick natural rubber lining after thorough sand blasting. All external surfaces of the plant including piping shall be coated with two coats of epoxy paint and primer .					
	g) The filter shall be complete with all gaskets / fasteners of standard quality as required.					
	h) The filter shall be designed to give rated output at given raw water quality and flow rate without any operational problem and should not get any loss of performance as long as the operating pressure remains within the given range. Any additional provision is required to make the item complete, the same should be included herein. The work has to be carried through authorised vendor, dealer/representative of approved make (Ion exchange, Pollucon technologies, AKAR Impex, Thermax, Aquaprocess, Fontus). The filter water will be supplied to treated water tank through U.V. water steriliser					
	Capacity - 200lpm					
	Filtration rate - 20,000 lph/sqm (min.)					
	Filter dia approx.900 mm (min.)					
	Filter HOS Min. : 1200 mm (min.)					
	Working pressure : 3.0 Kg/sq cm.					
	Test pressure : 4.5 Kg/sq cm					
	No. of Filters : 1 working					
v)	UV WATER STERILISERS					
	High performance on line UV water sterilisers of capacity 12000 lph designed on at least 250 J/Sq. M. UV dosage, comprising of glass UV chamber in SS 316 housing, UV lamp and electrical circuit, wall mounted model / line mounted model, capacity 500lpm, minimum lamp rating :120 watts - 1Nos.					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
vi)	Providing and fixing G.I.pipes/CPVC pipes to I.S. 3589/1239 (Heavy class) with G.I./CPVC Fittings e.g., Tee, elbow reducers, unions, end cap etc., flanges & clamps, including supporting the pipes with G.I. supports, cutting and making good the walls etc. complete. For Suction & Delivery headers.					
	50/65 mm dia (min.) (Interconnection between units)/ Drain lines etc. as per plant room requirement. (All piping and fitting of required size inside the plant room included in the item)					
vii)	Painting G.I./CPVC pipes with two or more coats of synthetic enamel paint of approved quality and shade over a coat of approved priming coat as directed by the Project-in-charge (shade as per pipe colour code).					
	50 mm dia (min.) (as per required length)					
	Complete W.T.P as mentioned above including testing, training and trial run till comissioning of W.T.P. set	Job	1.00			
9.02	STRUCTURAL STEEL WORK					
i)	Supply, fabrication, erection, painting of pipe supports of structural steel, for piping work in the production areas and anchoring them. 2 coats of zinc chromate primer and one coat of finishing paint.	Kgs.	500.00			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
9.03	Supplying, assembly, erection, testing and commissioning of level controllers based on level switches and necessary auxillary circuits included in the electric panel ,including all accessories required for the performance of the system to the satisfaction of the engineer in charge complete including providing and fixing wiring from control panel to the level switches of required size,all interconnections as required . Note : The required transformers / associated equipment shall be designed keeping in view the acrual distance of various tanks from the control panel, particularly the distance of OH soft water tank from panel. The most suitable route of sensor cable travel between the panel and the tank shall have to be worked out by the contractor according to site conditions and in consultation with engineer in charge. All cabling / switch installation should be done in an easy to maintain manner.					
i)	One way one tank level controller as under.					
	To switch on the tube well pump when the level of water in the UG raw water tank is low and to cut off the pump when the level in the underground raw water tank is high. (Approx. control cable requirement - 200 meters.)	Set	1.00			
	Two way - Two tank level controller as under.					
ii)	For Filter Feed Pumps for domestic water.(Operating between the Under ground Raw water tank and the under ground treated water tank near the plant room. (Approx. control cable requirement - 50 meters.)	Set	1.00			
iii)	For Treated water supply Pumps(Operating between the under ground treated water tank near the plant room and the Terrace treated water tank . (Approx. control cable requirement - 125 meters.)	Set	1.00			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
iv)	For Raw water supply Pumps(Operating between the under ground Raw water tank near the plant room and the Terrace Raw water tank . (Approx. control cable requirement - 125 meters.)	Set	1.00			
v)	For soft water supply Pumps(Operating between the under ground soft water tank near the plant room and the Terrace soft water tank .(Approx. control cable requirement - 125 meters.)	Set	1.00			
9.04	Providing and fixing gun metal foot valve with stainer of approved quality/model complete in all respect.					
	80 mm dia	each	2.0			
	100 mm dia	each	2.0			
9.05	Supplying, installing, testing and commissioning vertical online/horizontal centrifugal pumping set with mechanical seal, C.I. Housing, C.I. volute and SS impeller & SS shaft connected to a TEFC induction motor of suitable HP for 415 volts, 3 phase, 50 cycles A.C. supply with 150 mm dia pressure gauge with gunmetal isolation cock, vibration eliminating pads, base plate wiring upto panel and equipment for water level controller to start and stop the pump automatically at predecided levels of the water in the tank with provision of protection for dry run etc. complete in all respect (The shop drawing or the pumps along with its characteristics curves, model and technical data etc. are to be submitted for approval before purchase of pump).					
	Domestic water pumps (Treated water transfer&Raw water Transfer pump to terrace tank)					
	Treated water transfer pump to terrace tank					
	Capacity 200 lpm					
	Head 65M	Each	2.00			
	Raw water transfer pump					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
	capacity 150 lpm & Head 65m	Each	2.00			
	Soft water transfer pump					
	Capacity 300 lpm					
	Head 65M	Each	2.00			
9.06	Supply, installing, testing and commissioning vertical fully floodable type submersible drainage pump in close coupled design single stage, suitable for handling minimum 10 mm dia solids for transferring waste water from sump to outside the building with float switch for automatic start and stop arrangement with panel and wiring, chain and pulley, mechanical seal complete in all respect as per instruction of the Engineer in charge . (The shop drawing or the pumps along with its characteristics curves, model and technical data etc. are to be submitted for approval before purchase of pump).					
	Material of Construction (M.O.C): Corrosion Resistant in general					
	: Casing — Cast Iron					
	: Impeller — Ductile cast Iron					
	: Bearings — Anti friction, prelubricated ball bearings, packed with grease for life.					
	Motor: — Dry Motor with built in over load protection					
	Protection - IP68.					
	Insulation Class - F					
	Duty of each pump					
	150 LPM against 18 M head	each	8.0			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
9.07	Testing Underground tank for water seepage before fixing of tiles or any other finishing including pressure grouting (if required). The tank should be disinfected and cleaned before use as per instruction of Engineer-in-charge(up to 3 lac ltr capacity of each compartment of tank)	set	1.00			
9.08	SOFT WATER TREATMENT PLANT (1 Nos)					
	WATER TREATMENT PLANT (Soft water)					
	Planning, Designing, Detailing, Manufacturing, Supplying, Erection, Testing and Commissioning of Water treatment plant for supply of treated water for use in Air conditioning and filter water for domestic purpose comprising of filter and pumps. The plant is to be installed in pump room at basement level and Raw water supply is available in UGT including design and execution of all Civil, Structural, Electrical, Mechanical, Plumbing and processing, ancillary equipments & works etc required to complete the package, getting approval from HSCC/client etc.					
	The shop drawings & design of WTP shall also be prepared in such a way that it comprise of the following units of required size as per detail design requirements. The work has to be carried through authorised vendor, dealer/representative of approved make (Ion exchange, Pollucon technologies, AKAR Impex,Thermax, Aquaprocess, Fontus).					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
	Providing and fixing horizontal/ vertical on line single/multi-stage raw water filter feed pumps mounting on a foundation with CI volute and SS impeller and with stainless steel shaft, mechanical seal and chrome steel shaft sleeve, connected to a TEFC induction motor suitable for 400/440 volts, 1500 RPM, 3 phase 50 cycles A.C. supply having IP 55 protection enclosure. complete with base frame, vibration eliminating pads, nuts and bolts etc. (Necessary RCC foundations as per requirement and as per instructions shall be provided by the agency)					
	Raw water (filter) feed pumps.(Filter before softner)					
	Capacity : 300LPM					
	Head 35 m					
	Power : 3.0HP or as required					
	1 working					
	Providing and fixing GI/CPVC epoxy coated pipe & fittings and specials for suction and discharge side of pumps as required to connect Suction strainers and isolation butterfly valves on suction side and isolation valves and NRVs on discharge size , and to make a common discharge header from 2 pumps. Individual pump suction and discharge size minimum : 50 mm x 40 mm. The pumps shall have 80 mm NB butterfly valves and 80 mm NB flanged Y type strainers on suction side and common discharge header size : 50 mm NB including required numbers of matching flange, bolts, nuts, rubber gaskets, all complete as required / as per drawings or specifications. (complete lot)					
	Providing and fixing C.I. "Y" Type suction strainer with stainless steel perforated sheet screen, flanged ends iner installed outside water tanks. (Make: Leader / Zoloto / Kartar or equivalent)					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
	65/80 mm dia (4 nos.) (min.) or required size and required number					
	Providing and fixing G / M or bronze ball valves/butterfly valve/NRV/Rotameter, tested to 15.00 Kg / cm ² , screwed end connections complete . (Make: Leader/ Zoloto or equivalent)					
	65/50 mm NB (min.) or required size and number					
	Filtration Plant : Vertical Downflow Multigrade Pressure Sand Filter in MS Welded construction fabricated in accordance with IS 2825 from minimum 6 mm thick M.S. plate on shell and minimum 8 mm thick M.S. plate on dished ends as per applicable IS standards. The filter shall have :					
	a) One no pressure tight manhole and at least one no. pressure tight side hole for maintenance purposes.					
	b) Initial charge of Filter Media.					
	c) Complete underdrain system and raw water distributor as per manufacturer's design.					
	d) M.S. heavy class fabricated - epoxy coated / post galvanised face piping comprising of connections with CI Butterfly Valves of required size for inlet, outlet, backwash inlet, backwash drain and rinse drain. Air release line with GM Ball Valve of required size.					
	e) Pressure gauges (100 mm dia bourdon type pressure gauge) / Sampling points with SS isolation cocks at inlet and outlet.					
	f) All internal parts of the filtration plant shall be coated 6 mm thick natural rubber lining after thorough sand blasting. All external surfaces of the plant including piping shall be coated with epoxy primer followed by two coats of high gloss epoxy paint .					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
	g) The filter shall be complete with all gaskets / fasteners of standard quality as required.					
	h) The filter shall be designed to give rated output at given raw water quality and flow rate without any operational problem and should not get any loss of performance as long as the operating pressure remains within the given range. Any additional provision is required to make the item complete, the same should be included herein. The work has to be carried through authorised vendor, dealer/representative of approved make (Ion exchange, Pollucon technologies, AKAR Impex, Thermax, Aquaprocess, Fontus). The filter water will be supplied to soft water tank through Softner.					
	Capacity - 300 LPM					
	Filtration rate - 20,000 lph/sqm (min.)					
	Filter dia approx. 1200 mm (min.)					
	Filter HOS Min. : 1500 mm (min.)					
	Working pressure : 3.0 Kg/sq cm.					
	Test pressure : 4.5 Kg/sq cm					
	No. of Filters :One working					
	Providing and fixing, testing and commissioning M.S. Vertical Upflow "Cation" Ion Exchange water Softener fabricated in accordance with IS 2825 from minimum 6 mm thick M.S. plate on shell and minimum 8mm thick M.S. plate on dished ends as per applicable IS standards. The vessel shall be internally lined with 6.00 mm thick rubber, tested to 60 - 80 shore hardness, 15000 RMS volts spark test for continuity. The softener shall have :					
	a) Strainer plates at top and bottom with P.P. strainers with removable nuts and check nuts fixed on the plates.					
	b) GI/CPVC heavy class fabricated internally rubber lined face piping comprising of connections with CI Diaphragm Valves of required size for inlet, outlet, and rinse drain etc.					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
	c) Regeneration assembly comprising of power valve, ejector, brine suction valve, and all necessary piping incorporated into the main pipework.					
	d) Pressure gauges (100 mm dia bourdon type pressure gauge) / Sampling points with SS isolation cocks at inlet and outlet.					
	e) All external surfaces of the plant including piping shall be coated with epoxy primer followed by two coats of high gloss epoxy paint .					
	f) The softener shall be complete with all gaskets / fasteners of standard quality as required.					
	g) Initial charge of Ion Exchange resin.					
	h) The softener shall be designed to give rated output at given raw water quality and flow rate without any operational problem and should not get any loss of performance as long as the operating pressure remains within the given range. Any additional provision is required to make the item complete, the same should be included herein.					
	i) M.S. rubber lined vertical, cylindrical self supporting open tank for salt mixing and brine saturation with air agitation arrangement comprising of G. I. heavy class air distributor laid at the bottom of tank, roots type air blower complete in all respects of suitable capacity to agitate the required quantity of brine, piping interconnection between air blower and air distributor. The brine tank to have nozzles for outlet, overflow and drain. Outside finished with high gloss enamel paint over two coats of zinc chromate primer complete including testing and commissioning. Net usable capacity of the tank excluding free board etc., should be at least 10 % more than actual capacity required.					
	Capacity of softening plant : 300 LPM					
	Raw Hardness : 700-1600 mg/l.					
	Regeneration period 8 hrs.					
	Quantity of soft water between two regenerations = 100KL					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
	Approximate Dia = 1200 mm, HOS 1500 mm (min.) or as required					
	Type of Resin : Strongly acidic cation resin					
	Make of Resin : Ion Exchange / Rohm & Haas					
	Min. qty. of resin : 250 Ltrs.					
	Operating pressure : 3.0 kg/sqcm					
	Test pressure : 5.50 kg/sqcm (Set-1)					
	No. of Softner- 1 no. working					
	Soft water quality: Commercial zero hardness(less than 4 ppm)					
	Providing and fixing G.I.pipes/CPVC pipes to I.S. 3589/1239 (Heavy class) with G.I./CPVC Fittings e.g., Tee, elbow reducers, unions, end cap etc., flanges & clamps, including supporting the pipes with G.I. supports, cutting and making good the walls etc. complete. For Suction & Delivery headers.					
	50/65 mm dia (min.) (Interconnection between units)/ Drain lines etc. as per plant room requirement. (All piping and fitting of required size inside the plant room included in the item)					
	Painting G.I./CPVC pipes with two or more coats of synthetic enamel paint of approved quality and shade over a coat of approved priming coat as directed by the Project-in-charge (shade as per pipe colour code).					
	65 mm dia (min.) (as per required length)					
	Complete W.T.P/softner as mentioned above including testing, training and trial run till comissioning of W.T.P. (Soft water/domestic use)	set	1.00			

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
9.09	Providing and fixing of OxiLyte (Mixed Oxidant) Generation System , based on ECA Technology, producing non toxic mixed Oxidant Slution at 1000 ppm of Oxidant Concentration or any other approved disinfection method excepted by HSCC. The solution should be at a pH 3+-0.5 suitable for 24x7 operations should produce 50L per hour. The system should be supplied complete with appropriate dosing pumps , valves, piping, fittings, chemical dosing tank etc. shope drawing complete in all respect.	set	2.00			
Subtotal (Water treatment Plant,Pump and Equipment)						

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
10.00	EFFLUENT TREATMENT PLANT(ETP)					
	Providing and fixing packaged type Effluent treatment plant including design/shop drawing and obtain the approval from HSCC,erection,commissioning,construction of ETP including civil,mechanical,electrical,piping work complete in all respect on turnkey basis.The system should be fully automatic with level control,compact,odor free and shall consume low power. ETP will be place in the basement of building of suitable size for 20 KLD required to treat the effluent of lab,laundry,kitchenand hospital facilities by using suitable technology complete in all respect including oil and grease trap/mixer/settler/neutralisation chamber,holding tank,including multigrade filter stand by motor pump,blower etc. pumps and piping,filter,sludge holding tank,filter press,testing kit,electrical panel,air blower,equilisation tank/holding tank.Treated water transfer pump and sump of suitable capacity.Agency has to monitor the lab waste effluent for various parameter and quantity obtaining desired no. of test reports of raw/treated lab effluent.					
	All the unit of STP shall be MS sheet min. 4 mm thickness with suitable structure support complete in all respect including min.3 layers approved epoxy or other approved corrosion resistant coating/protection of all parts.The ETP units shall be designed in such a way that the lab effluent doesnt effect the function of STP when treated lab effluent mixed in the domestic sewer line,treated effluent shall meet the DPCC norms and also obtain adequacy report and treated effluent test report for DPCC. Agency has to maintain and operate the ETP during defect liability period including cost of manpower,chemical etc except electricity cost.Work shall be carried out by specialised agency approved by HSCC.	Each	1.0			
Subtotal (Effluent Treatment Plant)						

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
11.00	WATER SUPPLY PUMP PANEL					
	Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, wall mounted type, free standing type, dust, damp and vermin proof, indoor type Distribution Board/Panel complete with busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, powder coat painted and having following incoming and outgoing switchgears complete as required.					
	INCOMER :					
	125 Amp 415 volts, 35 KA (Isc), FP MCCB with e/f protection thermal magnetic release having variable current settings .					
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 no. 0 to 500 V Digital voltmeter with selectot switch					
	1 to 0 to 125 Amps Digital ammeter with selector switch with one set of 125/5A C.T. s					
	BUSBARS :					
	160 Amp TPN busbars of aluminium					
	OUTGOINGS :					
i	2 Sets of following (Soft Water transfer pump)					
	1 No. 40 Amp. 415/500 volts,25 KA, TP, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
	1 No. 3 Phase, DOL starter, type - II of 10 HP with thermal overload relay, Push Buttons and Switches etc complete as required.					
	Single Phase preventer					
	1 Set of phase indicating lamp with 2A SP control MCBs					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
i	1 Sets of following (Tube Well)					
	1 No. 40 Amp. 415/500 volts,25 KA, TP, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 to 0 to 40 Amps Digital ammeter with selector switch with one set of 40/5A CT,s.					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
ii	2 Sets of following (For Treated water pump)					
	1 No. 32 Amp. 415/500 volts,25 KA, TP, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 3 Phase, DOL starter, type - II of 7.5 HP with thermal overload relay, Push Buttons and Switches etc complete as required.					
	Single Phase preventer					
	1 Set of phase indicating lamp with 2A SP control MCBs					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					

Name of Work: BOQ of Plumbing work of AIIMS-Surgical Block, New Delhi						
Sl. No.	Description of Item	Unit	Total Qty.	Rate (Rs) in figures	Rate (Rs) in words	Amount in figures (Rs.)
ii	4 Sets of following (Raw water feed pump, 2 for raw water transfer pump, raw water feed pump)					
	1 No. 32 Amp. 415/500 volts,25 KA, TP, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 3 Phase, DOL starter, type - II of 5 HP with thermal overload relay, Push Buttons and Switches etc complete as required.					
	Single Phase preventer					
	1 Set of phase indicating lamp with 2A SP control MCBs					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
ii	8 Sets of following (Drainage Pump)					
	1 No. 25 Amp. 415/500 volts,25 KA, TP, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 to 0 to 25 Amps Digital ammeter with selector switch with one set of 25/5A CT,s.					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
	WATER SUPPLY PUMP Panel as mentioned above	Set	1.00			
	Subtotal (Water supply pump panel)					

Fire Fighting - WORKS

PROJECT NAME: Surgical Block, AIIMS, New Delhi

ABSTRACT OF COST

S.No	DESCRIPTION OF WORK		Amount (Rs.)	Amount (Rs.) in words
1	FIRE FIGHTING			

PROJECT NAME: Surgical Block, AIIMS, New Delhi

Name of Works: Detail estimate of Fire Fighting Works

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
1.00	FIRE FIGHTING SYSTEM					
1.01	Providing and laying S&S Centrifugally Cast (Spun) / Ductile Iron Pipes conforming to IS : 8329 :					
1.01.1	150 mm dia Ductile Iron Double Flanged	Metre	250.0			
1.02	Providing and laying D.I. specials of class K-12 suitable for push-on jointing as per IS : 9523					
1.02.1	Upto 600 mm dia	quintal	11.4			
1.03	Providing push-on-joints to Centrifugally (Spun) Cast Iron Pipes or Ductile Iron Pipes including testing of joints and including the cost of rubber gasket :					
1.03.1	150 mm dia pipes	joints	110			
1.04	Excavating trenches of required width for pipes, cables etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5m including getting out the excavated soil, and then returning the soil as required, inlayers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed within a lead of 50 m					
1.04.1	Pipes, cables etc exceeding 80 mm dia but not exceeding 300 mm dia	Metre	250.0			

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
1.05	Providing, fixing jointing and testing of Heavy (class - C) G.I. pipes as per relevant IS :1239/4736 with special accessories like tees, elbow, gasket, flanges, flanged joints, rubber insertion nuts and bolts including earth work excavation and trenching, wrapping pipekot 4mm thick 500mm width tar based polymeric corrosion protection tape or equivalent suitable to GI/ MS pipe line including applying uniform coat of cold pipekot primer complete 1 m below the ground level, refilling in layers not exceeding 20 cm in depth consolidated each deposited layer by ramming & watering complete in all respect as per IS : 1022 (Under ground)					
a)	150 mm dia G.I. Pipe with flange joints (5.4 mm wall thickness)	Metre	60.0			
b)	80 mm dia G.I. Pipe with flange joints	Metre	30.0			
1.06	Heavy class G.I. pipes conforming to IS with accessories like tees, elbows, flanged joints, rubber insertion, nuts, bolts or welded joints including fixing the pipe with suitable flat iron strip clamps/brackets, structural members, dash fastener , cutting hole and chases in walls, floor, R.C.C. slab etc. and making good the same, including painting pipes and fittings with a primer coat of steel primer and two coats of postal red enamel paint etc. complete as required. (All the fitting i.e. tee /elbow, Valve shall be jointed with flanged joints for pipe above 80mm)					

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
a)	200 mm dia (with Flanged joints)	Metre	20.0			
b)	150 mm dia (with Flanged joints)	Metre	680.0			
c)	100 mm dia (with Flanged joints)	Metre	1000.0			
d)	80 mm dia	Metre	200.0			
e)	65 mm dia	Metre	300.0			
f)	50 mm dia	Metre	550.0			
g)	40 mm dia	Metre	650.0			
h)	32 mm dia	Metre	1250.0			
i)	25 mm dia	Metre	2800.0			
1.07	Providing and fixing Single headed hydrants flanged inlet with 63 mm female instantaneous outlet of gunmetal complete with male blank caps, chains conforming to IS:5290 type A with stainless steel orifice plate (if required) to keep the pressure not more than 3.5 kg/sq.cm at any point.	Each	34.0			
1.08	Providing 63mm dia 15 m long reinforced rubber lined hose pipe conforming to IS: 636-1992 Part-II with gunmetal male & female coupling wire wound with pipe as required.	Each	52.0			
1.09	Providing and fixing 63mm dia 15 m long canvas hose pipe complete with gunmetal male & female coupling wire wound with the pipe The pipe shall confirm to IS: 4927.	Each	16.0			
1.10	Providing and fixing Gunmetal branch pipe with 20mm dia nozzle conforming to IS:903. suitable for installation connections to hose coupling etc. as required.	Each	34.0			

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
1.11	Providing and fixing Four way fire brigade connection housed in steel cabinet of size 900mm x 750mm x 400mm fabricated from 1.5mm thick M.S. sheet having lockable arrangement, openable glazed door with 4mm thick glass, including painting a coat of steel primer and two coats of postal red enamel paint, with necessary supports for the cabinet etc. with 150 mm dia. non return and butterfly valves complete in all respects.					
a)	4 Way - 150mm dia	Each	1.0			
1.12	Providing and fixing Set of "Siamese" quadruplet instantaneous fire brigade connections comprising of two gunmetal instantaneous male inlet coupling 63mm dia with plug and cap, chain bends, tees etc for inlet to the static tank.	Each	1.0			
1.13	Providing & Fixing 150 mm dia, 4 way suction coupling for firebrigade withdrawal of water from the fire tank	Each	1.0			

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
1.14	Providing and fixing glazed door shutter and frame for Fire hose cabinet with hold fasts (frame fabricated from 40 x 40 x 5mm and shutter from angle) 2100 mm high x 1200 mm wide x 600mm deep 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 complete as per drawing and as directed. The words " hose cabinet" to be painted on the box complete in all respects.	Each	26.0			
1.15	Providing and fixing Weather proof standard stand post type hose cabinet (900mm x 750 mm x 400 mm) out door type made of 1.5mm thick M.S. sheet having central opening glazed door with 4mm thick glass suitable for accommodating hydrants, 2 Nos. canvas hose pipe and branch pipe including necessary locking arrangements, painting one coat of primer and two coats of postal red enamel paint.. The shutters are to be lockable type. The words " hose cabinet" to be painted on the box.	Each	8.0			
1.16	Providing and fixing cast iron body IS: 210 FG 220 and double flange gear simple operation type butterfly valve conforming to IS: 13095 with SS304 disc and shaft NITNLE rubber replaceable seat of the following size complete with bolts, nuts, washers and rubber insertions as per specification.					
a)	150 mm dia	Each	10.0			

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
b)	80 mm dia	Each	4.0			
1.17	Supplying, testing, installation & commissioning of pressure switches for pumps including necessary wiring upto the control panel.	Each	5.0			
1.18	Constructing masonry chamber 90x90x100 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 fine sand) for sluice valve, with C.I. surface box 100mm top diameter, 160mm bottom diameter and 180mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design.					
	with F.P.S. bricks	Each	1.0			
1.19	Supplying and Fixing First Aid Hose Reel , wall mounting swinging type complete with drum & bracket of MS construction, spray painted in Post office Red, confirming to IS 884/1995 with upto date amendments, complete with the following as required.					
	36 Meter long 20 mm dia water hose Thermoplastic (Textile reinforced) Type - 2 as per IS : 12585					
	20 mm dia gun metal ball valve & nozzle.					

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
	Drum and brackets for fixing the equipments on wall.					
	Connection from riser with stop valve (gun metal) & M.S. Pipe	Each	26.0			
1. 20	Providing and fixing C.I. sluice valves (With cap) of approved quality complete with bolts, nuts, rubber insertions etc. (the tail pieces if required will be paid separately) Class II					
a)	200 mm dia	Each	2.0			
b)	150 mm dia	Each	5.0			
1.21	Supply, Installation, Testing and Commissioning of 100 mm dia Bourden type, Stainless Steel dial type Pressure Gauge including brass isolation valve and siphon pipe having calibration of 0 - 16 Kg / cm ² .	Each	40.0			
1.22	Supplying and Fixing of Fire Man's axe with heavy insulated rubber as per standard conforming to IS 926	Each	26.0			
1.23	Supplying and Fixing vane type waterflow switch with contacts suitable for installation on 50 mm to 150 mm dia pipeline for a service pressure upto 20 Kg/sq.cm.	Each	26.0			

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
1.24	Providing, Fixing, Testing and Commissioning of Sprinkler Installation Control Valve of Cast iron body and brass / bronze working parts comprising of water motor, alarm, bronze seat clapper and clapper arm, hydraulically driven mechanical gong bell to sound continuous alarm when the Sprinkler system activates, pressure gauges, emergency releases, strainer, pressure switch, cock valve complete with drain valve and bypass, test control box, ball valves, MS pipe of required size, flanges, orifice plate, gasket etc. of size 200/150 mm dia, as required.	Each	1.0			
1.25	Supplying, Installation, Testing & Commissioning modular construction master control annunciation panel for sprinkler with provision for requider No. of Zone (30% additional spares),eachsprinkler hydrant will have atleast 2 zone on each floor as approved by engineer.The panel shall have but not limited to the following arrangment.					
a)	Indication of Zone sprinkler					
b)	Indication of zone fault					
c)	Fire/fault hooter					
d)	Alarm cancel for fire/fault					
e)	Battery for emergency back up of 4 Hrs.	Set	1.0			
1.26	Providing and Fixing 15 mm dia gunmetal / brass quartzoid type Sprinkler Head with quartz bulb and set to operate at specified temperature.					
a)	Pendent / Upright type, 68 C, Chrome plated	Each	1500.0			

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
b)	Side wall extended throw 20 mm dia 68 C, Chrome plated	Each	1000.0			
1.27	Fabricating, Supplying, Installation, Testing and Commissioning Air Vessel of continuous welded construction with flanged discharge header on the top of each riser fabricated out of 10 mm thick dished ends and 8 mm thick MS sheet, Air Release Valve complete with suitable drain arrangement with 25 mm dia gun metal wheel valve complete with all accessories etc. as required of the following sizes					
a)	1.2 Metre high and 250 mm dia	Each	2.0			
1.28	Supply, Installation, Testing and Commissioning External Yard Hydrant Stand Post comprising of GI pipe 80 mm dia (heavy duty C class) from existing ringmain to about 1 meter above ground level and Single Headed Yard Hydrant Valve with 80 mm dia flanged inlet, instantaneous gunmetal coupling of 63 mm dia with cast iron wheel ISI marked, conforming to IS : 5290 (Type A), with ABS cap and chain etc.complete with all accessories as required.	Each	8.0			
1.29	Providing and placing on terrace polyethylene water storage tank ISI : 12701 MARKED indicating the BIS license No with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank.	Ltrs	20000.0			

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
1.30	Supply, erection, testing & commissioning of exit glow sign board of size 200mm x 350 mm wall mounting signage consisting of photo luminescent coating on acrylic cover	Each	26.0			
1.31	Providing and fixing fire extinguisher of carbon dioxide type consisting of brand new high pressure steel cylinder bearing IS: 7285 mark and having the approval of controller of explosives Nagpur, wheel type valve bearing IS:3224 mark internal discharge tube, 1 meter long high pressure discharge hose, non conducting horn, suspension bracket, fully charged bearing IS: making fixed to wall as directed.					
a)	4.5kg capacity cylinder	Each	26.0			
1.32	Providing and fixing 9 liters capacity fire extinguisher water type gas pressure conforming to IS marking, fixed to wall.	Each	26.0			
1.33	Providing and fixing ABC type fire extinguishers complete in all respects.					
a)	Capacity 5.0 Kg.	Each	26.0			

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
1.34	Fabricating, Supplying, Installation, Testing and Commissioning Air Vessel of continuous welded construction with flanged discharge header in pump house fabricated out of 10 mm thick dished ends and 8 mm thick MS sheet, Air Release Valve, complete with drain arrangement with 25 mm dia gun metal wheel valve complete with all accessories etc. as required of the following sizes					
a)	2 Metre high and 450 mm dia suitable to operate Jockey Pump, Main Fire Pump & Diesel Engine Driven Fire Pump	Each	2.0			
1.35	Providing and fixing C.I. non-return valve complete with gunmetal seat, bolts, nuts washer & rubber insertions as required conforming to IS:5312.					
a)	150 mm dia	Each	4.0			
b)	80 mm dia	Each	3.0			
1.36	Supplying, installing, testing and commissioning of electric driven fire pump suitable for automatic operation consisting of the following (as per CPWD specification Part V-1985 for Fire Fighting and its amendments) (For Hydrant system & Sprinkler system).					

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
a)	Fire pump with stainless steel impeller, CI casing, SS shaft & mechanical seal shall be horizontal split casing centrifugal suction type multistage having following capacity and head so as to ensure a minimum pressure of 3.0 kg per square cm. at the highest and farthest out let at the specified flow complete with necessary strainer / foot valve suction side and pressure gauge on the delivery side including by pass arrangement for periodical testing of the working of the pumping set as required. The pump shall be provided with mechanical seals.					
b)	Squirrel cage type TEFC motor suitable for operation on 415V, 10%, 3 phases 50 Hz. system of suitable HP for the above pump with synchronous speed of 1500 RPM and flexible coupling. The pump motor should conform to IS: 325-1978.					
c)	Common bed plate fabricated from mild steel channel or cast iron type.					
d)	Suitable cement concrete pump foundation & vibration damping arrangement with cushy foot mounting as required.					
l)	Capacity 2850 LPM and Head 85 Metres	Each	2.0			

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
1.37	Supplying, installing, testing and commissioning of diesel engine driven fire pump suitable for automatic operation consisting of the following (as per CPWD specifications PartV 1985.) (For Hydrant system & Sprinkler system).					
a)	Horizontal centrifugal type multi-stage, fire pump with stainless steel impeller CI casing, SS shaft & mechanical seal complete of following capacity and Head so as to ensure a minimum pressure of 3.0 kg per sq.cm. at the highest & farthest outlet at the specified flow, complete with necessary strainer pressure gauge on the delivery side etc. including by pass arrangement for periodical testing of the working of the pump set as required. The pump shall be provided with mechanical seals.					
b)	Water cooled cold starting type multi cylinder 4 stroke diesel engine, developing suitable BHP at 1500 RPM for the above pump set with automatic starting mechanism, cooling system shall be with radial cool engine, maintenance free batteries, battery charge unit, flexible coupling with the pump, common bed plate for mounting diesel engine fuel day tank fuel piping and pump and vibration damping arrangement by cushy foot mounting as required complete in all respects.					

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
c)	The engine shall be capable to drive the pump at 150% rated discharge at 65% head and shall be suitable for 10% overload capacity for one hour in any period of 12 hrs. continuous run.					
d)	Common bed plate fabricated from mild steel channel or cast iron type.					
e)	Isolation Valve					
f)	Suitable cement concrete pump foundation & vibration damping arrangement with cushy foot mounting as required.					
l)	Capacity 2850 LPM and Head 85 Metres	Each	1.0			
1.38	Supplying, installation, testing and periodic commissioning of electric motor driven automatic pressurization pump set consisting of the following (as per specification) (For Hydrant system & Sprinkler system).					
a)	Centrifugal pump of 180 LPM capacity capable of building up pressure lost in any leakage in the system against atotal head (mentioned as under) complete with C.I. casing stainless steel impellor ; mechanical seal & S.S. shaft necessary strainer, pressure gauge on delivery side etc. including by-pass arrangement for testing of the working of the pumping set as required .					

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
b)	Squirrel cage A.C. induction motor suitable for operation on 415 V, 10% 3 phase 50 Hz. A.C. supply and of minimum 7.5 HP,1500 RPM, for the above pump with flexible coupling as per specification and conforming to IS: 325/ 1978 and shall be TEFC type only.					
c)	Common bed plate fabricated from mild steel channel or cast iron type.					
d)	Suitable cement concrete pump foundation with vibration damping arrangement with cushy foot or similar mounting as per required.					
l)	Head - 85 Metres	Each	1.0			
1.39	Providing & fixing puddle flanged including 40 cm long GI pipe piece welded / threaded with MS plates 450x450x6mm thick with both end screwed / flanged					
a)	For 80 mm dia pipe	Each	2.0			
b)	for 150 mm dia pipe	Each	2.0			
c)	for 200 mm dia pipe	Each	2.0			
1.4	Supplying, installing, testing and commissioning of electric motor driven type automatic pressurisation, pump set suitable for automatic operation of terrace down comer and consisting of the following (as per CPWD specifications Part V-1985) for fire fighting and its amendmendts).					

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
a	Fire pump with stainless steel impeller CI casing, SS shaft shall be horizontal end suction centrifugally type having a capacity of 900 LPM against a total head of 35m so as to ensure a minimum pressure of 3.0 kg/sqm at the highest and farthest out at the specified flow complete with necessary strainer with foot valve in suction side and pressure gauge on the delivery side including bypass arrangement for periodic testing of the working of the pumping set as required. The pump shall be provided with mechanical seals.(Including taking necessary approval of complete fire fighting scheme from local fire authority before and after start of work) {Agency also has to submit characteristic curve of the pumps, model & other technical data for approval before placing the order}					
b	Squirrel cage AC induction motor suitable for operation of 415 V ,+/-10%, 3 phase 50 HZ, AC supply and of minimum 7.5 HP,1500 RPM for the above pump with flexible coupling as per specification and conforming to IS 325-1978 and shall be TEFC type only					
c	Common base plate fabricated from mild steel channel of castiron type					
d	Star delta suitable starter complete in all respect for automatic/manual operation of pump,start and stop push button contactor with required overload protection and single phase preventor					

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
e	Suitable cement concrete pump foundation with vibration damping arrangement with cushy foot mounting as required and having provision of suitable weather protection cover.	set	2.0			
Fire Fighting PANEL(Electrical)						
B	FIRE PANEL Emergency					
1.39	Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, free standing type, wall mounted type, dust, damp and vermin proof, indoor type Distribution Board/Panel complete with busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, powder coat painted and having following incoming and outgoing switchgears complete as required.					
	INCOMER :					
	320 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings.					
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 no. 0 to 500 V Digital voltmeter with selector switch					
	1 nos. Digital ammeter with selector switch with one set of 320/5A C.T. s					

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
	BUSBARS :					
	500 Amp TPN busbars of aluminium					
	OUTGOINGS :					
	1 Sets of following					
	1 No. 200 Amp. 415/500 volts,35 KA, TP, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 3 Phase, fully automatic star-delta starter, type - II of 100 HP with thermal overload relay, Timer, Push Buttons and Auto-manual selector switch etc complete as required.					
	Single Phase preventer					
	1 to 0 to 200 Amps Digital ammeter with selector switch with one set of 200/5A CT,s.					
	1 Set of phase indicating lamp with 2A SP control MCBs					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
	2 Sets of following					
	1 No. 40 Amp. 415/500 volts,25 KA, TP, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
	1 No. 3 Phase, DOL starter, type - II of 10 HP with thermal overload relay, Push Buttons and Switches etc complete as required.					
	Single Phase preventer					
	1 Set of phase indicating lamp with 2A SP control MCBs					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
	1 Sets of following					
	1 No. 32 Amp. 415/500 volts,25 KA, TP, Moulded Case Circuit Breaker with variable current setting of 0.8 to 1.0					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 3 Phase, DOL starter, type - II of 7.5 HP with thermal overload relay, Push Buttons and Switches etc complete as required.					
	Single Phase preventer					
	1 Set of phase indicating lamp with 2A SP control MCBs					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
	1 Set of following (in a separate cubicle)					
	One no. Diesel engine auto starting kit with all necessary relay, controls, wiring etc to start 75 HP diesel engine when electrical driven fire pump fail to start.					

Item No	Description Of Item	Unit	Total Qty.	Rate(Rs) in figures	Rate(Rs) in words	Amount in figures (Rs.)
	One no rectifier circuit, battery charger, batteries, DC Voltmeter, DC Ammeter etc.					
	FIRE PUMP Panel as mentioned above					
	Sub Total	Set	1.00			

Electrical - WORKS

SUMMARY OF COST ESTIMATES FOR THE ELECTRICAL WORKS -AIIMS SURGICAL BLOCK			
S.No.	Description	Amount Figure (In Rs.)	In Amount in Words (Rs.)
1	SUBHEAD 1: H.T. SUB STATION		
2	SUB HEAD 2: MAIN LT PANEL.		
3	SUB HEAD 3 : RISING MAINS		
4	SUB HEAD 4 : DG SETS		
5	SUB HEAD 5 : MV PANELS		
6	SUB HEAD-6: MCB DISTRIBUTION BOARDS.		
7	SUB HEAD: 7 - WIRING		
8	SUB HEAD: 8 - LIGHT FIXTURE AND FANS		
9	SUBHEAD 9 : UPS SYSTEM		
10	SUB HEAD 10: TELEPHONE SYSTEM		
11	SUB HEAD 11: NURSE CALL BELL SYSTEM.		
12	SUB HEAD 12: CONDUITING FOR COMPUTER NETWORKING		
13	SUB HEAD 13: CONDUITING FOR TV OUTLETS		
14	SUB HEAD 14 : FIRE DETECTION AND ALARM SYSTEM		
15	SUB HEAD 15:PUBLIC ADDRESS SYSTEM		
16	SUB HEAD 16 : LIFTS		
17	SUB HEAD 17: OUT DOOR LIGHTING		
18	SUB HEAD 18: LT CABLES		
19	SUB HEAD 19: EARTHING SAFETY EQUIPMENT AND MISC. ITEMS		
20	SUB HEAD 20: LIGHTENING PROTECTION		
21	SUB HEAD 21: CCTV		
	GRAND TOTAL FOR ALL ELECTRICAL WORKS		

BILL OF QUANTITIES FOR THE ELECTRICAL WORKS OF SURGICAL BLOCK AT AIIMS DELHI.

S.No.	Description.	Qty.	Unit.	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount Rs.)	(in
1	2	3	4	5	6	7	
1.00	SUBHEAD 1: H.T. SUB STATION SUBSTATION EQUIPMENTS						
1.01	HT Panel, (Main)						
	Supply, erection, testing and commissioning of 5 panel, 630A ,11 kV, 3 Phase, 50 Hz., metal clad, dead front, 350 MVA rupturing capacity Vacuum Circuit Breaker Incoming & Outgoings as per the detailed specifications and drawings including inbuilt powerpack of suitable capacity, connections etc. complete with following in-comers and out-goings including door interlocking. Panel should be expendable type complete as per technical specifications and as required.						
A.	INCOMER :						
i)	2 No. VCB having following						
	1 No. 630A, 11kV, 3 Phase, 50Hz., metal clad, dead front, 350 MVA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)						
	1 set of 11kV/110V Potential Transformers with HRC fuses						
	1 Set of Phase indicating lamps with HRC fuses						
	1 No. 0-15 kV Digital voltmeter with selector switch						
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY						
	Push button for ON, OFF,TRIP&TRIP circuit healthy						
	1 set of 150/5-5A Current Transformer for metering and protection						
	1 No. 0-200 digital Amps ammeter with selector switch						
	1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay						
	Digital frequency meter,Digital Tri vector meter.						
	1 Set of undervoltage relay and Overvoltage relay						
	Trip circuit supervision relay,Auxiliary relays with shunt trip coil						

	1 No. Master Trip relay				
	1 No. Digital Power factor meter				
	BUSBARS :				
	11kV, 350 MVA, 630 Amps Three Phase busbars of aluminium				
B.	OUTGOINGS :				
	<i>2 No. VCB each having following</i>				
	1 No. 630A, 11kV, 3 Phase, 50Hz., metal clad, dead front, 350 MVA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)				
	1 set of 11kV/110V Potential Transformers with HRC fuses				
	1 Set of Phase indicating lamps with HRC fuses				
	1 No. 0-15 kV Digital voltmeter with selector switch				
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY				
	Push button for ON, OFF,TRIP&TRIP circuit healthy				
	1 No.Digital ammeter with selector switch and one set of C.T. (Rating as per SLD)				
	1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay				
	Digital frequency meter,Digital Tri vector meter.				
	1 Set of undervoltage relay and Overvoltage relay				
	Trip circuit supervision relay,Auxiliary relays with shunt trip coil				
	1 No. Master Trip relay				
	1 No. Digital Power factor meter				
	Bus Coupler				
	<i>1 No. VCB having following:</i>				
	1 No. 630A, 11kV, 3 Phase, 50Hz., metal clad, dead front, 350 MVA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)				
	1 set of 11kV/110V Potential Transformers with HRC fuses				
	1 Set of Phase indicating lamps with HRC fuses				
	1 No. 0-15 kV Digital voltmeter with selector switch				
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY				
	Push button for ON, OFF,TRIP&TRIP circuit healthy				

		1 set of 630/5-5A Current Transformer for metering and protection				
		1 No. 0-630 digital Amps ammeter with selector switch				
		HT Panel as mentioned above	1	Set		
1.02	i)	VCB Panel having following				
		1 No. 630A, 11kV, 3 Phase, 50Hz., metal clad, dead front, 350 MVA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)				
		1 set of 11kV/110V Potential Transformers with HRC fuses				
		1 Set of Phase indicating lamps with HRC fuses				
		1 No. 0-15 kV Digital voltmeter with selector switch				
		1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY				
		Push button for ON, OFF, TRIP & TRIP circuit healthy				
		1 set of 150/5-5A Current Transformer for metering and protection				
		1 No. 0-200 digital Amps ammeter with selector switch				
		1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay				
		1 Set of undervoltage relay and Overvoltage relay				
		1 No. Master Trip relay				
		Inbuilt Powerpack of suitable capacity				
		VCB as mentioned above	2	Set		

1.03	TRANSFORMER					
	Supply, installation, testing and commissioning of 1600 kVA , 11/0.433 kV, 3 Phase, 4 wire, 50 Hz., ON-AN Transformer for outdoor duty with a -15% to +5% on-load tap changer in the step of 1.25% with RTCC panel, cable box at primary and secondary end shall be connected through busduct, with double float buchholz relay protection, high winding temperature sensors, suitable earth leakage relay using CT at neutral earthing conductor with control cabling from transformer to HT Breaker (to trip primary breaker) complete with all fittings, interconnection of control cables and accessories, first filling of oil as per detailed technical specifications and as required.	2	Each			
1.04	BUS DUCT :					
	Supply, Installation, testing and commissioning of 2500 A phase and neutral TPN, 415 V, 3 Phase, 4 Wire, sandwich construction Aluminium Bus Duct including bends, flexible joints, earth bus (2 runs of aluminium strips), supports for installation, supporting arrangements, etc. i) complete as per technical specifications and as required.	100	Mtrs			
	Supply, Installation, testing and commissioning of 1600 A phase and neutral TPN, 415 V, 3 Phase, 4 Wire, sandwich construction Aluminium Bus Duct including bends, flexible joints, earth bus (2 runs of aluminium strips), supports for installation, supporting arrangements, etc. ii) complete as per technical specifications and as required.	50	Mtrs			
1.05	H.T. CABLE					
	Supply of following sizes of 11 kV grade multicore aluminium conductor XLPE armoured power cable as per IS : 7098.					
	i) 3 Core, 240 sq mm	1000	Mtrs			

1.06	Laying of one number 3 core XLPE power cable of grade exceeding 1.1 KV but not exceeding 11KV of size exceeding 120 sqmm but not exceeding 400 Sqmm direct into ground including excavation, sand cushioning, protective covering and refilling the trench complete as required.	500	Mtrs		
1.07	Laying of one number 3 core XLPE power cable of grade exceeding 1.1 KV but not exceeding 11KV of size exceeding 120 sqmm but not exceeding 400 Sqmm in the existing RCC/HUME/METAL PIPE complete as required.	100	Mtrs		
1.08	Laying of one number 3 core XLPE power cable of grade exceeding 1.1 KV but not exceeding 11KV of size exceeding 120 sqmm but not exceeding 400 Sqmm in the masonry open duct including the making of the required sized of masonry open duct complete as required as per the the electricity rule.	50	Mtrs		
1.09	Supplying and making end termination with heat shrinkable jointing kit complete with all accessories including lugs suitable for following size 3 Core, XLPE aluminium conductor cable of 11kV grade as required.				
	i) 240 sqmm	2	Each		
1.10	Supply & laying of concrete ducts for laying of cables for required no. of cables .This includes excavation & backfiling also.	50	Metre		
1.11	Making concrete manhole size 1m X 1m X 1.5 m suitable for concrete duct connection including manhole cover as per sketch enclosed.	6	Nos		
1.12	Supply & laying of 11 KV cable route marker of suitable location & internal.	20	nos		
	TOTAL FOR SUB HEAD 1: H.T. SUB STATION				

	SUB HEAD 2: MAIN LT PANEL.					
2.01	MAIN L.T. PANEL					
	Supply, installation, testing and commissioning of LT Panel, cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of 14 SWG CRCA sheet, complete with aluminium busbars, danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, necessary interlocking, powder coat painted and having incoming and outgoing switchgears with cable alley in front as mentioned below and complete as per technical specifications and as required. The size of cable alley shall be sufficient enough to accomodate the cable sizes as mentioned in the SLD/ specifications/ drawings etc.This includes civil foundation.					
	Note :					
	1. All ACBs shall have 5 NO + 5 NC contacts					
	2. All relays to operate at 240Volts, Single phase, 50Hz., AC supply thru UPS of suitable capacity. UPS is also in the scope of supply.					
A.	INCOMER:					
	i) 2 No. ACB Panels each having following:					
	2500A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have $I_{cw}=I_{cs} = 50 \text{ KA}$ for 1 sec.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
	Push button to CLOSE the ACB.					
	R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs					
	Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs					

	2500/5A CTs with CT shorting links for power factor improvement panel suitable for giving signal to APFCR at less than 10% of secondary ratio current				
ii)	1 No. ACB Panels each having following: 1 No. 1600A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have I _{cw} =I _{cs} = 50 KA for 1 sec. Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB Push button to CLOSE the ACB. R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs				
B.	BUSBARS : 3200 Amps Phase FP busbar of aluminium.				
C	BUS COUPLER :				
i)	1 No. ACB Panels each having following: 1 No. 2500 A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous & earth Fault trip including under voltage release and lockable trip push button. The ACB should have I _{cw} = I _{cs} = 50 KA for 1 sec. 1 set of indicating lamps to indicate OPEN, CLOSE, TRIP. Push button to CLOSE the ACB. 1 Set of Digital Ameter with ASS and CTs.				
D	OUTGOING.				
i)	5 No. ACB Panels each having following:				

	1250A, 415/500V, Motorised, Fully Drawout type (EDO), TPN, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have $I_{cw}=I_{cs} = 50 \text{ KA}$ for 1 sec.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
	Push button to CLOSE the ACB.					
	R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs					
	Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs					
	ii) 2 No. ACB Panels each having following:					
	1000A, 415/500V, Motorised, Fully Drawout type (EDO), TPN, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have $I_{cw}=I_{cs} = 50 \text{ KA}$ for 1 sec.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
	Push button to CLOSE the ACB.					
	R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs					
	Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs					
	iii) 1 No. ACB Panels each having following:					
	800A, 415/500V, Motorised, Fully Drawout type (EDO), TPN, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have $I_{cw}=I_{cs} = 50 \text{ KA}$ for 1 sec.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					

	Push button to CLOSE the ACB.				
	R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs				
	Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs				
	iv) 2 Nos. MCCB as per following details/ specifications:				
	320 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .				
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.				
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB				
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.				
	v) 2 Nos. MCCB as per following details/ specifications:				
	250 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings.				
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.				
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB				
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.				
	vi) 2 Nos. MCCB as per following details/ specifications:				

	160 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
vii)	7 Nos. MCCB as per following details/ specifications:					
	125 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Main LT Panel as mentioned above.	1	Set			

2.02	CAPACITOR PANEL										
	<p>Supply, installation, testing and commissioning of M.V. cubicle type totally enclosed free standing type, dust, damp and vermin proof Capacitor Panel complete with busbars, M.V. danger notice plate, ammeter, ammeter selector switch, indicating lamps, CT's, Extra heavy duty Capacitors suitable for non linear loads upto 20% (L&T model MD-XL or equivalent), contactors suitable for capacitor switching (current limiting contactor circuit to suppress switching inrush current) interconnections with suitable capacity aluminium leads/solid aluminium strips, rods, connection of incoming and outgoing cables with thimbles, stove enamelled painted and having following incoming and outgoing switchgears complete as required</p>										
	A. INCOMER :										
	<p>1 No.1000A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have $I_{cw}=I_{cs} = 50 \text{ KA}$ for 1 sec.</p>										
	<p>Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP.</p>										
	<p>R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs</p>										
	<p>10 steps Intelligent microprocessor based Automatic Power factor Correction relay having measurement sensitivity of 1 %.</p>										
	<p>Extension of incoming busbars for connection of multicore armoured aluminium cables.</p>										
	B. METERING :										
	<p>1 set of digital Amp. Meter, digital Power factor meter and Digital voltmeter</p>										
	C. BUSBARS :										
	<p>1250 Amp FP busbars of aluminum</p>										
	D. OUTGOINGS :										

i)	1 Nos . MCCB as per following details/ specification:					
	200 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to supress switching inrush current					
	ON/ OFF delay timers for switching capacitor circuit.					
	"ON" and "OFF" LED indicating lamp and 2A control SP MCBs					
	Push button for CLOSE and TRIP					
	Extended rotary operating mechanism					
	100 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					
ii)	6 Nos . MCCB as per following details/ specification:					
	100 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to supress switching inrush current					
	ON/ OFF delay timers for switching capacitor circuit.					
	"ON" and "OFF" LED indicating lamp and 2A control SP MCBs					
	Push button for CLOSE and TRIP					
	Extended rotary operating mechanism					
	50 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					
iii)	3 Nos . MCCB as per following details/ specification:					
	63 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to supress switching inrush current					
	ON/ OFF delay timers for switching capacitor circuit.					
	"ON" and "OFF" LED indicating lamp and 2A control SP MCBs					
	Push button for CLOSE and TRIP					
	Extended rotary operating mechanism					
	25 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					

	Capacitor panel as mentioned above.	2	Set			
	TOTAL FOR SUB HEAD 2: MAIN LT PANEL.					

SUB HEAD 3 : RISING MAINS						
3.01	RISING MAINS					
	Supply, installation, testing and commissioning of SANDWITCH TYPE PLUG IN , indoor type air insulated 415 V,3 phase, 4 wire, vertical Aluminium Rising main in following sizes including bends, flexible, provision of the tap off's as per the drawing on each floor, 2 nos of aluminium earthing strips 50 X 6mm through out the length of the rising mains, end cover, including all types of support and necessary hardware for installation of the rising main etc. complete as per specifications and as required. (Exact lengths to be measured at site).					
	i)	800 A,415 volts Capacity Rising Main	100	Metre		
	ii)	1250 A,415 volts Capacity Rising Main	100	Metre		
3.02	Supply, fixing, testing and commissioning of Direct End Feed Unit of following ratings, wall mounted, dust, damp and vermin proof complete with M.V. danger notice plate, interconnections with suitable capacity aluminium strips / bars, connection of incoming cables with thimbles, powder coat painted and having following incoming switchgears for rising main complete as required.					
	i)	1 No. ACB Panels each having following				
		1 No. 800A, 415/500V, Motorised, Fully Drawout type (EDO), TPN, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have I _{cw} =I _{cs} = 50 KA for 1 sec. Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB. Push button to CLOSE the ACB. R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs. Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs				

	Direct End Feed unit as mentioned above	1	Set		
ii)	1 No. ACB Panels each having following 1 No.1250A, 415/500V, Motorised, Fully Drawout type (EDO), TPN, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have Icw=Ics = 50 KA for 1 sec. Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB. Push button to CLOSE the ACB. R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs. Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs				
	Direct End Feed unit as mentioned above	1	Set		
3.03	Supply, fixing, testing and commissioning of distribution tap off box of following Capacity on the existing rising mains complete with Four Pole, Microprocessor Based, Moulded Case Circuit Breaker, interconnection, earthing etc. complete as required.				
i)	320A Tap Off Box	2	Each		
ii)	250A Tap Off Box	3	Each		
iii)	200A Tap Off Box	3	Each		
iv)	160 A Tap Off Box	6	Each		
v)	125 A Tap Off Box	3	Each		
vi)	100 A Tap Off Box	4	Each		
	TOTAL FOR SUB HEAD 3 : RISING MAINS				

	SUB HEAD 4 : DG SETS					
4.00	DG Set and Accessories					
4.01	SOUND PROOF DG SETS OF 500 KVA					
	Supply, installation, testing and commissioning of sound proof (silent type) Diesel Generating set having 500KVA Prime Power Ratings , 415 volt at 1500 RPM, 0.8 power factor at 415 V suitable for 50 Hz, 3 phase system & suitable bhp, water cooled radiator type diesel engine-alternator set mounted on common base frame, return fuel cooler, battery & battery charger, Anti Vibration mounting pads, Engine alternator safeties, electronic governor including all accessories & their wiring as per technical specification. This includes the following:					
	Supplying and fixing of suitable sizes High class MS pipe for DG exhaust complete with bends, elbow, flanges etc including silencer and catalytic convertor exhaust pipe length above the building top as per pollution control board norms and as required.					
	Supply and fixing of 50mm thick compressed mineral wool insulation (Rock wool) for D.G. exhaust pipe with 22 gauge aluminium sheet cladding etc. as required for the under mentioned dia pipe.					
	Supply, installation, testing and commissioning of suitable size fuel pipe for connecting diesel engine to individual day service tank including supply and fixing of required valves & filters etc. as required.					
	Fabrication of supports for exhaust pipe, fuel pipe or for any other purpose out of suitable M.S. structural steel including supplying and applying of enamel paint of approved shade after one coat of steel primer of reputed company.					
	Supplying and fixing of suitable capacity cable adapter box for alternator.					

	<p>Providing and fixing oil tank of 990 litres capacity complete with suitable M.S. fabricated MS stand oil level indicator gauge tank and stand duly painted, complete with float switches etc. as required.</p>				
	<p>Factory assembled Sound proof Canopy as per pollution control board requirement to achieve noise level desired during night condition, with base frame, doors, inspection window, fresh air supply fans, light fixtures for illumination with switch, two no. 15A power sockets, wiring for light fixtures and power sockets, etc.</p>				
	<p>Any other item required for completion of system above (D.G. set)</p>				
	DG Set (500 KVA) as mentioned above.	2	Each		
4.02	SYNCHRONISING-CUM-AMF PANEL (for 2 nos. DG Sets mentioned above)				
	<p>Supply, installation, testing and commissioning of Synchronising Panel, M.V. cubicle type, totally enclosed, free standing type, dust, damp and vermin proof indoor type Panel made up of 14 SWG CRCA sheet, complete with aluminium busbars, M.V. danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, powder coat painted and having incoming and outgoing switchgears as mentioned below and complete as required. Panels shall have IP-42 Protection.</p>				
	Note :				
	1. All ACBs shall have 5 NO + 5 NC contacts				
	2. All relays to operate at 240Volts, Single phase, 50Hz., AC supply through UPS				
	3. Panel shall be suitable for manual synchronising & auto synchronising and automatic operation (AMF) for 2 nos. DG Sets.				
	4. Auto change over arrangement to be provided for change over in Main LT panel.				
A.	INCOMER :				

i)	2 Nos .ACB as per following details/ specification:				
	1000Amp, 415/500V, Fully Drawout type (EDO) (Breaking Capacity=50kA), TPN separate neutral through the suitable size contactor, Air Circuit Breaker with microprocessor based overload, short circuit & earth fault release including under voltage release.				
	- Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB				
	- Push button for CLOSE and TRIP with lock & key arrangement				
	- R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs				
	- Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs				
ii)	BUSBARS :				
	- 1500 Amp FP busbars of aluminum				
B.	OUTGOING :				
i)	1 Nos .ACB Panel consisting of the following				
	1600A, 415/500V, Fully Drawout type (EDO) (Breaking Capacity=50kA), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit & earth fault release including under voltage release.				
	- Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB				
	- Push button for CLOSE and TRIP with lock & key arrangement				
	- R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs				
	- Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs				
C.	SYNCHRONISING COMPONENTS :				
	Metering & Indication :				
	- Power and Energy Monitor				
	- Set running indicating lights : 230 volts AC-22mm dia				

-	Emergency stop push button 230 volts AC-22 mm dia				
-	Governor/AVR raise/lower joy stick				
-	12 window annunciation with hooter, test accept & reset push button				
-	Motorised potential AVR				
-	Time Totalizer				
D.	Auto/ Manual Synchronising :				
-	144 mm sq. Double voltmeter				
-	144 mm sq. Double frequency meter				
-	144 mm.sq. synchroscope				
-	Check Synchronizing relay				
-	Synchronizing switch				
-	Selector switch				
-	Dark and Bright lamps				
-	Breaker Control Switch				
-	Mode selector switch (Manual/Auto/stand alone)				
-	Engine Cranking Relay.				
-	Main supply voltage monitor, alternator voltmeter monitor and Engine Starting Relays				
-	Auxillary relays, timer, push button and control fuses.				
-	Timer for AMF Circuit (2 sets)				
-	DG Start/stop push button				
-	Auxilliary relays for overspeed, low lub oil pressure (LLOP) & high water temperature				
-	8 channel temperature controller for winding/bearing protection				
-	Pulsating cable required to connect field RTD's/PTC's to temperature scanners.				
E	DG PROTECTION AND AMF COMPONENTS:				
-	Reverse power and Reactive power relay				
-	Over Voltage relay				
-	Under Voltage relay				
-	Over frequency relay				
-	Trip circuit supervision relay				
-	Master lockout relay				
-	Master trip/supervisory relay				
-	Battery charger (with trickle and boost charging).				

	- DC voltmeter and ammeter.				
	- DC ammeter.				
	8 window Alarm annunciator with separate hooter,				
	- accept, reset and rest push button.				
	- Hooter.				
	- Engine Cranking Relay.				
	Main supply voltage monitor, alternator voltmeter				
	- monitor and Engine Starting Relays.				
	- Auxillary relays, timer, push button and control fuses.				
	- Phase sequence relay				
	G. ENCLOSURE :				
	Fabrication, PVC Sleeving, Control/Power Wiring and				
	necessary hardware for complete synchronisation and load				
	- sharing control wiring from D.G set to LT panel				
	SYNCHRONISING-CUM-AMF PANEL (for 2 nos. DG				
	Sets mentioned above)	1.00	Each		
	TOTAL FOR SUB HEAD 4 : DG SETS				

	SUB HEAD 5 : MV PANELS				
5.00	MV PANELS				
	Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, wall mounted type, free standing, dust, damp and vermin proof, indoor type Distribution Board/Panel complete with busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, powder coat painted and having following incoming and outgoing switchgears complete as required. Provision of spare feeder also to be given.				
5.01	MV PANELS - NORMAL				
	i Ground, first, second, third, fourth & seventh (Normal)				
	a) INCOMER:				
	1 no. 160 Amps , 415 volts, 35KA (Isc), four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.				
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB				
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.				
	1 No. 0 to 500 V Digital voltmeter with selector switch.				
	1 No. Digital ammeter with selector switch with 160/5A C.T.'s.				
	BUSBARS:				
	b) 200 Amp TPN Aluminium busbars				
	c) OUTGOING:				
	i) 4 No. 63 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
	ii) 4 No.40 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				

		Ground, first, second, third, fourth & seventh (Normal)	6	Set			
	ii	Fifth floor, Sixth floor & Eight Floor (Normal)					
	a)	INCOMER:					
		1 no. 125 Amps , 415 volts, 35KA (lsc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		1 No. Digital ammeter with selector switch with 125/5A C.T.'s.					
		BUSBARS:					
	b)	150 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	6 No.40 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.					
		Fifth floor, Sixth floor & Eight Floor (Normal)	3	Set			
5.02		MV PANELS - EMERGENCY					
	i	MV panel Basement-1 (Emergency)					
	a)	INCOMER:					
		1 no. 200 Amps , 415 volts, 35KA (lsc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
		R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					

	1 No. 0 to 200 Amp Digital ammeter with selector switch with 200/5A C.T.'s.				
b)	BUSBARS: 250 Amp TPN Aluminium busbars				
c)	OUTGOING:				
i)	5 No. 63 Amp 415 volts, 10 KA ,Four Pole,MCB.				
ii)	18 No. 16 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
iii)	5 No. 40 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
	MV panel Basement-1 as mentioned above	1	Set		
ii	MV panel Basement-2 & 3(Emergency)				
a)	INCOMER:				
	1 no. 200 Amps , 415 volts, 35KA (Isc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.				
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB				
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.				
	1 No. 0 to 500 V Digital voltmeter with selector switch.				
	1 No. 0 to 200 Amp Digital ammeter with selector switch with 200/5A C.T.'s.				
b)	BUSBARS: 250 Amp TPN Aluminium busbars				
c)	OUTGOING:				
i)	2 No.125 Amp 415 volts, 35 KA ,TPN,MCCB.				
ii)	5 No.63 Amp 415 volts, 25 KA ,Four Pole, Miniature Circuit Breaker.				
iii)	3 No.40 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
iv)	2 No.16 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
	MV panel Basement-2 & 3 as mentioned above	2	Set		

iii	Ground floor & Fourth floor Emergency					
a)	INCOMER:					
	1 no. 250 Amps , 415 volts, 35 KA (lsc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 0 to 500 V Digital voltmeter with selector switch.					
	1 No. Digital ammeter with selector switch with 250/5A C.T.'s.					
	BUSBARS:					
b)	300 Amp TPN Aluminium busbars					
c)	OUTGOING:					
i)	2 No.16 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.					
ii)	3 No.25 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.					
iii)	5 No.32 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.					
iv)	5 No.63 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.					
v)	1 No.100 Amp 415 volts, 25KA ,TPN, MCCB..					
	Ground floor & Fourth floor(Emergency)		2	Set		
iv	First floor , Second Floor & Third floor Emergency					
a)	INCOMER:					
	1 no. 100 Amps , 415 volts, 35KA (lsc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					

	1 No. 0 to 500 V Digital voltmeter with selector switch.				
	1 No. Digital ammeter with selector switch with 100/5A C.T.'s.				
	BUSBARS:				
b)	150 Amp TPN Aluminium busbars				
c)	OUTGOING:				
i)	10 No.16 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
ii)	4 No.25 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
iii)	5 No.32 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
	First floor , Second Floor & Third floor Emergency	3	Set		
v)	Fifth floor Emergency				
a)	INCOMER:				
	1 no. 100 Amps , 415 volts, 35KA (Isc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.				
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB				
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.				
	1 No. 0 to 500 V Digital voltmeter with selector switch.				
	1 No. Digital ammeter with selector switch with 100/5A C.T.'s.				
	BUSBARS:				
b)	150 Amp TPN Aluminium busbars				
c)	OUTGOING:				
i)	3No.16 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
ii)	3No.25 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
iii)	6No.32 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.				
	Fifth floor(Emergency)	1	Set		

vi	Sixth floor & Eighth Floor (Emergency)					
a)	INCOMER:					
	1 no. 320 Amps , 415 volts, 35KA (Isc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 0 to 500 V Digital voltmeter with selector switch.					
	1 No. Digital ammeter with selector switch with 320/5A C.T.'s.					
	BUSBARS:					
b)	400 Amp TPN Aluminium busbars					
c)	OUTGOING:					
i)	2No.16 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.					
ii)	4No.25 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.					
iii)	4No.32 Amp 415 volts, 10 KA ,Four Pole, Miniature Circuit Breaker.					
iv)	2 No.125 Amp 415 volts, 35 KA ,TPN, MCCB.					
	Sixth floor & Eighth Floor (Emergency)		2	Set		
vii	Seventh floor Emergency					
a)	INCOMER:					
	1 no. 250 Amps , 415 volts, 35KA (Isc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.					
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					

	1 No. 0 to 500 V Digital voltmeter with selector switch.				
	1 No. Digital ammeter with selector switch with 250/5A C.T.'s.				
	BUSBARS:				
b)	300 Amp TPN Aluminium busbars				
c)	OUTGOING:				
	3No.16 Amp 415 volts, 10 KA ,Four Pole, Miniature				
i)	Circuit Breaker.				
	4No.25 Amp 415 volts, 10 KA ,Four Pole, Miniature				
ii)	Circuit Breaker.				
	2No.32 Amp 415 volts, 10 KA ,Four Pole, Miniature				
iii)	Circuit Breaker.				
iv)	15 No.63 Amp 415 volts, 25 KA ,TPN, MCCB.				
	Seventh floor(Emergency)	1	Set		
viii	LIFT PANEL AT BASEMENT I ELECTRICAL ROOM :				
a)	INCOMER:				
	1 no. 160 Amps , 415 volts, 35KA (Isc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings .				
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB				
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.				
	1 No. 0 to 500 V Digital voltmeter with selector switch.				
	1 No. Amp Digital ammeter with selector switch with 160/5A C.T.'s.				
b)	BUSBARS:				
	200 Amp TPN Aluminium busbars				
c)	OUTGOING:				
i)	6 No.63 Amp 415 volts, 25 KA ,Four Pole, MCCB.				
ii)	1 No.32 Amp 415 volts, 25 KA ,Four Pole, MCCB.				
	MV panel For Lift as mentioned above	1	set		

	TOTAL FOR SUB HEAD 5 : MV PANELS					
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	SUB HEAD-6: MCB DISTRIBUTION BOARDS.					
6.00	MCB DISTRIBUTION BOARD					
6.01	<p>Supplying & fixing following way, Double door DB ,three pole and neutral,prewired,sheet steel, MCB distribution board, 415 volts,on recess/surface complete with loose wire box, terminal blocks, tinned copper busbar, neutral link, earth bar,din bar, detachable gland plate, interconnections, phosphatized and powder painted including earthing etc complete with Incomer (MCB + RCCB-100mA) & outgoing (SP MCB).Before procurement of DB the contractor has to take approval of DB schedule/ drawing of each DB from the Electrical Engineer, HSCC, as per technical specifications and single line diagram and as required,</p>					
	i	4Way (8+12) Double door	25	Each		
	ii	6 Way (8+18) Double door	26	Each		
	iii	8 Way (8+24)Double door	13	Each		
6.02	<p>Supplying, installation, testing and comissioning of following way, single phase and neutral, pre wired, factory assembled Double door MCB distribution board with incomers (RCCB -100mA+ MCB) and out goings (MCB) as per drawings, Before procurement of DB the contractor has to take approval of DB schedule/ drawing of each DB from the Engineer-in-charge as per technical specifications and single line diagram as required.(For OT & Computer Point)</p>					
	i	8 Way (Double Door)	10	Each		
	ii	12 way(Double Door)	18	Each		
	iii	16 way(Double Door)	1	Each		
	TOTAL SUBHEAD: 6- MCB DISTRIBUTION BOARD.					

	SUB HEAD: 7 - WIRING					
7.00	WIRING					
7.01	Wiring for light point/ fanpoint/ exhaust fan point/ call bell point with 1.5 sq.mm. FRLS PVC insulated copper conductor cable, single core/ multi strand, in recessed ISI marked MS conduit (including Supply & laying the MS conduit with all accessories including cutting the wall and making good the same in case of recessed conduit as required) with modular switch, modular plate, suitable GI box and earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core/ multi strand cable etc as required					
	Space for fixing electronic fan regulator in case of fan point wiring.					
	Supplying and fixing Hexagonal fan Boxes with 3 mm thick hylem sheet covers in case of Fan Points					
	Supplying & Fixing Ceiling Rose in case of Exhaust Fan Points etc.					
	Point wiring as mentioned above	3288	Point			
7.02	Wiring for twin control light point with 1.5 sq.mm. FRLS PVC insulated copper conductor single core/ multi strand cable in recessed ISI marked MS conduit(includingSupply & laying the MS conduit with all accessories including cutting the wall and making good the same in case of recessed conduit as required)with 2 way modular switch, modular plate, suitable GI box and earthing the point with 1.5 Sq mm FR PVC insulated copper conductor single core/ multi strand cable etc as required.					
	i Wiring for twin control light points as mentioned above	60	Point			

7.03	Wiring for 5 A light plug point with 1.5 sq.mm. FRLS PVC insulated copper conductor cable, single core/ multi strand, insurface/ recessed ISI marked MS conduit (including Supply & laying the MS conduit with all accessories including cutting the wall and making good the same in case of recessed conduit as required) earthing the point with 1.5 sq. mm FRLS PVC insulated copper conductor single core/ multi strand cable etc as required(without modular metal box and switch & sockets) ((including supply and recess laying of ISI marked MS conduit)	126	Point			
7.04	Wiring for 16 Amp power plug, with 2X4 sqmm FRLS PVC insulated copper conductor single core cable in surface/recessed ISI marked MS conduit (includingSupply & laying the MS conduit with all accessories including cutting the wall and making good the same in case of recessed conduit as required)along with 1 no 4 Sq mm FRLS PVC insulated copper conductor single core cable for loop earthing as required(without modular metal box and switch & sockets) (including supply and recess laying of ISI marked MS conduit)	701	Point			
	Directly from MCB-Distribution Board to the Socket Outlets					
7.05	Wiring for computer points (Three sockets & one switch) with 2.5 sq.mm. PVC insulated, FRLS copper conductor cable including one number 1.5 sq.mm. PVC insulated, copper conductor cable for earthing in surface/recessed ISI marked MS conduit (including supply and recess laying of ISI marked MS conduit) as per technical specifications and as required.	100	Point			

7.06		Wiring for circuit/ submain wiring along with earth wire with the following sizes of FRLS PVC insulated copper conductor single core/ multi strand cable in surface/recessed ISI marked MS conduit as required.(including Supply & laying the MS conduit with all accessories including cutting the wall and making good the same in case of recessed conduit as required)				
	i	2X1.5 Sqmm + 1X 1.5 sqmm earth wire	6000	Metre		
	ii	2X2.5 Sqmm + 1X 2.5 sqmm earth wire	200	Metre		
7.07		Wiring for submain with the following sizes of 1.1 KV grade multicore XLPE Aluminium conductor PVC sheathed armoured AYFY cable as per IS 1554 on surface with MS clamps/ recess in existing conduit				
	i)	3X6 Sqmm	600	Metre		
	ii)	3X10 Sqmm	200	Metre		
	iii)	3X16 Sqmm	100	Metre		
	iv)	4X6 Sqmm	1600	Metre		
	v)	4X10 Sqmm	700	Metre		
	vi)	4X16 Sqmm	200	Metre		
	vii)	4X25 Sqmm	100	Metre		
7.08		Supplying and fixing 3 pin 5/6 amp modular socket outlet with shutters in suitable Module modular metal box on surface or in recess including modular cover plate, base plate, connections etc. complete as required including civil works..	126	Each		
7.09		Supplying and fixing 6 pin 15/ 16 A modular socket outlet with shutters in suitable modular metal box on surface or in recess including , modular cover plate, base plate, connections, etc. complete as required including civil works...	710	Each		

7.10	Supplying and fixing suitable Module metal box on surface or in recess including providing and fixing three nos 6 pin 5/6 amps. modular socket outlet with shutters and one no. 10 amps. modular type switch, base plate, modular cover plate, connections etc. and all civil works 'complete as required. (For computer Points)	100	Each			
7.11	Supplying, providing & fixing cordless musical bell, battries etc of approved make complete as required.	10	Each			
7.12	Supply and fixing following FP MCCB, 415 volts, 35 KA (Isc), Four Pole with thermal magnetic release having variable current setting with extended rotary operating mechanism including door interlocking with defeat feature and padlock facility in a sheet steel enclosure on surface complete with all accessories including , connections, testing and commissioning etc. as required.					
	i 32 Amp	4	Each			
	ii 63 Amp	6	Each			
	iii 100 Amp	1	Each			
	iv 125 Amp	2	Each			
	v 250Amp	2	Each			
7.13	Supply and fixing of following sizes of ISI marked Heavy duty UPVC conduit alongwith the accessories in surface/recess or cutting the wall and making good the same in case of recessed conduit as required					
	i 25 mm dia	100	Mtr			
	ii 40 mm dia	100	Mtr			
	iii 50 mm dia	100	Mtr			
TOTAL SUBHEAD: 7- WIRING						

	SUB HEAD: 8 - LIGHT FIXTURE AND FANS				
8.00	LIGHT FIXTURES AND FANS				
8.01	Supply of following light fixture with high efficiency electronic ballast, starter, capacitor, tubes/lamps, reflector, diffuser, MS body/housing holder etc. complete with all fixing accessories as required of approved makes(Approval of Quantity and make is taken from engineer incharge before procurement all these items)				
i	1X TL5 28 watt box type flourescent light fixture similar to (Philips TMS 122M 1XTL5 28W EBT or approved equivalent).	247	Each		
ii	1X TL5 28 watt box type flourescent light fixture similar to (Philips TMS 122M 1XTL5 28W EBT with reflector or approved equivalent).	74	Each		
iii	2X TL5 28 watt box type flourescent light fixture similar to Philips TMS 122M 2XTL5 28W EBT or approved equivalent.	17	Each		
iv	2X TL5 28 watt box type flourescent light fixture similar to Philips TMS 122M 2XTL5 28W EBT with reflector or approved equivalent.	471	Each		
v	2X TL5 28 watt recess mounted mirror optics flourscent light fixture (Philips TBS869 2XTL5 28W EBP D8 or approved equivalent). (236RMO)	55	Each		
vi	1X36watt recess mounted flourescent light fixture (Philips TBS 050 1XTLD36W EBE MI or approved equivalent) 136RMO1	574	Each		
vii	2X TLD 36 watt recess mounted mirror optics flourescent light fixture (Philips TBS 520 2XTLD36W EBE MI or approved equivalent).236RM3	174	Each		

	viii	2X 36 watt recess mounted square light luminaire (Philips FBS 300 M2 XPLL 36 W EBT P5 or approved equivalent).	17	Each		
	ix	2X TL5 28 watt recess mounted CAT 2 luminaire (Philips TBS669 M 2XTL528W EBP D6 or approved equivalent).236mm2	315	Each		
8.02		Supply of following compact fluorescent light fixture with electronic ballast, starter, capacitor, lamps, reflector, diffuser, MS body/housing holder etc. complete with all fixing accessories as required of approved makes(Approval of Quantity and make is taken from engineer incharge before procurement all these items)				
	i	2X10 watt Mirror top (Decon 05UB or approved equivalent) (w toilet)	123	Each		
	ii	2X18 watt indoor recessed mounted square light luminaire with CFL , horizontal lamp position (Philips FBS 300 M 2XPLL 18 W HF P5 or approved equivalent)	128	Each		
	iii	LED Aviation light (Philips XGP 400 1XLED-K2/RD 240 V (aviolite) or approved equivalent)	3	Each		
	iv	1x11 watt Bulk Head light fixture similar to Philips FXC 101 1XPL-S/2P11W ACO or approved equivalent.	82	Each		
	v	2X11 watt indoor type surface mounted luminaire with CFL (Philips 518 2X PLS/2P 11W I 240V or approved equivalent) in stair cases also	328	Each		
	vi	2x26 watt recessed mounted downlight fixture (Philips 225/226 HF, ZZG225ALR or approved equivalent)	20	Each		

	vii	1X11 watt bed side lamp with CFL (Decon 05 GF or approved equivalent)	212	Each		
	viii	Ceiling mounted Night Lamp as approved	127	Each		
8.03		Supply of following ceiling fans (Crompton Greaves-High Breeze or approved equivalent) complete with double ball bearing, motor, blades, downrod, canopies, capacitor, modular type electronic fan regulator(Five Step), etc. suitable for operation on 230 volts, 50 Hz., 1 phase, AC supply complete as required(Approval of Quantity and make is taken from engineer incharge before procurement this item)				
	i	1200 mm sweep	273	Each		
	ii	1400 mm sweep	138	Each		
8.04		Supply of 1400 RPM,300 mm Crompton Greaves transair or approved equivalent exhaust fan suitable for single phase 230 volts, 50 Hz., AC supply complete with motor, louvers/shutters etc. complete as required.(Approval of Quantity and make is taken from engineer incharge before procurement this item)	65	Each		
8.05		Supply of 450 mm sweep, crompton greaves model high flow or approved equivalent 18" wall mounted fan complete with double ball bearing, motor, blades, capacitor etc suitable for single phase 230 volts, 50 Hz., AC supply, complete as required.(Approval of Quantity and make is taken from engineer incharge before procurement this item)	10	Each		

8.06	Installation, testing and commissioning of prewired, flourescent fittings of all types, complete with all accessories and tube etc. directly on ceiling/wall, including connections with 1.5 sq.mm. PVC insulated, FRLS copper conductor, single core/ multi strand cable etc. as required.	1399	Each			
8.07	Installation, testing and commissioning of prewired, compact flourescent lamp fixture (CFL fxtures)of all types, complete with all accessories and lamp etc. directly on ceiling/wall, including connections with 1.5 sq.mm. PVC insulated, FRLS copper conductor, single core/ multi strand cable etc. as required.	896	Each			
8.08	Installation, testing and commissioning of ceiling fan and modular type electronic fan regulator(Electronic regulator to be fixed in switch board) including wiring the down rod and connection with 1.5 sqmm PVC insulated, copper conductor single core cable as required.	411	Each			
8.09	Installation, testing and commossioning of exhaust fan up to 380 mm sweep in the opening, including making the hole to suit the size of the above fan including , fixing of louvers/ shutters with frame making good the damages etc. as required.	65	Each			
8.10	Installation, testing and commissioning of wall mounted fan up to 450 mm sweep including supply and fixing wall bracket arrangement complete as required.	10	Each			
8.11	Supply and fixing of following sizes of steel conduit alongwith the accessories in surface/recess (including supply & fixing of conduit with all accessories) including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required					
	i 20 mm dia	500	Mtr			

	ii	25 mm dia	500	Mtr		
	iii	40 mm dia	300	Mtr		
	iv	50 mm dia	100	Mtr		
		TOTAL SUBHEAD 8: LIGHT FIXTURE & FANS				

	SUBHEAD 9 : UPS SYSTEM				
9.00	UPS SYSTEM				
9.01	UPS of 60 KVA (For OT's)				
	Supply of 60 KVA True Online double conversion and fully Microprocessor Controlled UPS system with IGBT based Rectifier with minimum input power factor 0.95 and connected in "parallel redundant load sharing mode (N+1) configuration". Minimum 94% over all efficiency at 50 % load condition. THDi less than 5% on non linear loads. UPS should include all accessories such as suitable Power Management software in each UPS including IGBT/PWM technology based inverter, automatic bi - directional static switch, manual bypass switch, isolation transformer, input phase reversal protection, provision for separate input for rectifier and for bypass.				
	Rack mounted external battery bank of 12 V Sealed Maintenance Free batteries for 30 mins backup for each UPS.				
	Installation & commissioning of 60 KVA UPS with battery and accessories.				
	Supply, installation , testing and commissioning of 60 KVA UPS as mentioned above.	2	Set		
9.02	UPS of 40 KVA (For Computer System)				
	Supply of 40 KVA True Online double conversion and fully Microprocessor Controlled UPS system with IGBT based Rectifier with minimum input power factor 0.95. Minimum 94% over all efficiency at 50 % load condition. THDi less than 5% on non linear loads. UPS should include all accessories such as suitable Power Management software. IGBT/PWM technology based inverter, automatic bi - directional static switch, manual bypass switch, input phase reversal protection, provision for separate input for rectifier and for bypass.				

	Rack mounted external battery bank of 12 V Sealed Maintenance Free batteries for 30 mins backup.				
	Installation & commissioning of 40 KVA UPS with battery and accessories.				
	Supply, installation , testing and commissioning of 40 KVA UPS as mentioned above.	1	Set		
9.03	UPS PANEL for OT				
a)	INCOMER:				
	1 no. 100 Amps , 415 volts, 35KA (Isc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.				
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB				
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.				
	1 No. 0 to 500 V Digital voltmeter with selector switch.				
	1 No. Digital ammeter with selector switch with 100/5A C.T.'s.				
	BUSBARS:				
b)	150 Amp TPN Aluminium busbars				
c)	OUTGOING:				
i)	8 No.63 Amp 415 volts, 10 KA ,Double Pole, Miniature Circuit Breaker.				
	UPS Panel mentioned above	2	Set		
9.04	UPS PANEL for Computer				
a)	INCOMER:				
	1 no. 100 Amps , 415 volts, 35KA (Isc),four pole, Moulded Case Circuit Breaker with thermal magnetic release having variable current settings.				
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB				
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.				

	1 No. 0 to 500 V Digital voltmeter with selector switch.					
	1 No. Digital ammeter with selector switch with 100/5A C.T.'s.					
	BUSBARS:					
b)	150 Amp TPN Aluminium busbars					
c)	OUTGOING:					
i)	1 No.63 Amp 415 volts, 10 KA ,Double Pole, Miniature Circuit Breaker.					
ii)	13 No.40 Amp 415 volts, 10 KA ,Double Pole, Miniature Circuit Breaker.					
iii)	3 No.32 Amp 415 volts, 10 KA ,Double Pole, Miniature Circuit Breaker.					
	UPS Panel mentioned above	1	Set			
	TOTAL FOR SUBHEAD 9: UPS SYSTEM.					

		SUB HEAD 10: TELEPHONE SYSTEM				
10.00		TELEPHONE SYSTEM				
10.01		Supply & layingr 0.5 Sq. mm FR MS insulated copper conductor unarmoured telephone cable in ISI marked MS conduit including providing & fixing of two module modular metal box on surface or on recess with following pair cord outlet, connections etc. complete as required.This also includes conduiting, wiring from floor Tag blocks to individual telephone outlets.				
	i	1 pair cord outlet (Jack Type)	140	Each		
	ii	2 pair cord outlet (Jack Type)	10	Each		
10.02		Supplying, Installation, testing and commissioning of following sizes of telephone distribution board in M.S. hinged type locable box duly painted complete with Krone type tag block etc. including terminations of cable as required.				
	i	200 Pair	1	Each		
	ii	20 Pair	7	Each		
	iii)	10 Pair	8	Each		
10.03		Supplying and drawing of following pairs .5 mm dia annealed bare copper conductor Polythene insulated, core twisted into pairs armoured telephone cable on surface/tray with saddels etc. complete as required.				
	i	10 Pair Telephone Cable	264.00	Metre		
	ii	20 Pair Telephone Cable	100	Metre		
10.04		Supplying and drawing of following pairs .5 mm dia annealed bare copper conductor Polythene insulated, core twisted into pairs armoured jelly filled telephone cable in the existing trench/ hume pipe/ GI pipe etc with saddels etc. complete as required.				
	i	200Pair	200.00	Metre		
10.05		EPABX				

	Supply installation testing and commissioning of IP ready voice communication server redundant & hot standby with 6 ISDN PRI (30 channel) trunk line, 16 P&T lines, 36 digital extensions and 160 analog extensions expendable to 1008 extensions including MDF. All critical equipment like power supply, processor and memory for the system should be redundant . Inbuilt voice mail for all users including PC. Clip facility for all users, PA system integration facility. Remote maintenance. UPS with SMF batteries suitable for 4 hrs backup time. One PC based operator's console including PC and headset. One digital phone based operator console with key module including software etc complete as per the enclosed technical specifications and as required.	1	Set			
i)	Digital phone sets: with 2 line display, 07 fixed function keys and with speaker.	44	Set			
ii)	Analog telephone Instrument	210	Each			
iii)						
TOTAL FOR SUB HEAD 10: TELEPHONE SYSTEM						

	SUB HEAD 11: NURSE CALL BELL SYSTEM.					
11.00	NURSES CALL BELL SYSTEM					
11.01	Supplying, fixing testing and commissioning of modular nurses station LED type terminal monitor with in built display & alarm, suitable for following way complete with back up, batteries, battery charger etc. as per technical specifications and as required.					
	i)	8 Way	1	Each		
	ii)	16 Way	4	Each		
	iii)	24 Way	1	Each		
	iv)	40 Way	3	Each		
11.02	Supplying, fixing testing and commissioning of call push button (with cord), call reset, call indication station for each bed complete as required.		201	Each		
11.03	Supply and fixing of following sizes of steel conduit alongwith the accessories in recess including painting in case of surface conduit, or cutting the wall and making good the same in case of conduit as recessed required					
	i)	25 mm dia	3015	Metre		
11.04	Supply and drawing Cat 5 wire in existing MS Conduit on recessed complete as required		5035	Metre		
11.05	Supplying, fixing testing and commissioning of LED's Indicators outside each ward		40	Each		
	TOTAL SUB HEAD 11: NURSE CALL BELL SYSTEM.					

		SUB HEAD 12: CONDUITING FOR COMPUTER NETWORKING				
12.01		Supply and fixing of following sizes of steel conduit alongwith the accessories in surface/recess (including supply & fixing of conduit with all accessories) including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required				
	i	20 mm dia	1720	Mtr		
	ii	25 mm dia	430	Mtr		
12.02		Supplying and fixing 2 module modular metal box in recess with modular cover plate,computer Jack and all accessories complete as required	86	Each		
		TOTAL FOR SUB HEAD 12: CONDUITING FOR COMPUTER NETWORKING				

SUB HEAD 13: CONDUITING FOR TV OUTLETS						
13.01		Supply and fixing of following sizes of MS conduit alongwith the accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required				
	i	20 mm dia	40	Metre		
	ii	25 mm dia	50	Metre		
13.02		Supplying and fixing 2 module modular metal box in recess with modular cover plate including fixing 1 no. coaxial TV outlet connection and all accessories complete as required	12	Each		
13.03		Supply and drawing Coaxial TV Cable RG - 6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and potected with PVC sheath in the existing surface/ recessed steel/ PVC coduit as required.	200	Metre		
TOTAL SUB HEAD 13: CONDUITING FOR TV OUTLETS						

	SUB HEAD 14 : FIRE DETECTION AND ALARM SYSTEM				
14.00	FIRE DETECTION AND ALARM SYSTEM				
14.01	Supply and drawing of following sizes of PVC insulated FRLS copper conductor single core cable in surface/recessed ISI marked MS conduit (including Supplying and fixing of ISI marked MS Conduit) complete as required.				
	i) 2X1.5 sqmm	7000	Metre		
	ii) 4x1.5 sqmm	100	Meter		
14.02	Supply, installation, testing and commissioning of the following intelligent, analog, addressable type fire detection and alarm accessories as per technical specification & complete with connections etc. as required.				
	i) Optical type Smoke Detector	794	Each		
	ii) Heat Detector	30	Each		
	iii) Manual Break Glass Unit in MS enclosure	56	Each		
	iv) Fire Alarm Bell / Hooter of suitable range to cover the complete floor, in MS enclosure.	36	Each		
	v) Response indicator	250	Each		
14.03	Supply testing and commissioning of isolator module as per specifications.	345	Set		
14.04	Supply, Installation, testing and commissioning of intelligent , addressable control modules.	125	Each		
14.05	Supply, Installation, testing and commissioning of intelligent , addressable type monitor modules.	4	Each		

14.06	Supply, Installation, testing and commissioning of 15 loop microprocessor based addressable type networkable Fire Detection & Alarm Panel complete with inbuilt power supply, battery charger with SMF batteries for minimum 24 hours back-up. Each panel shall have a communication module and RS 485 network card. The panel should have rectifier, loop card, min 80 character LCD unit to indicate fire/ fault signals with address including external/ internal printer to print the details complete as per technical specifications and requirement of Local Fire Authority and as required.	1	Set			
14.07	Supply, installation, testing and commissioning of 24 zone microprocessor based talkback master control panel with LCD display , inbuilt battery charger and battery space .The panel should have LCD and LED display for zone wise calling , & fabricated with 16 SWG sheet metal housing with red paint .	1	Each			
14.08	Supply, installation, testing and commissioning talkback unit with telephone handset in 16 SWG red body housing with locking protection.	24	Each			
TOTAL FOR SUB HEAD 14 : FIRE DETECTION AND ALARM						

	SUB HEAD 15:PUBLIC ADDRESS SYSTEM				
15.00	PUBLIC ADDRESS SYSTEM				
15.01	Supply, installation, testing and commissioning of master announcement along with Amplifier console minimum of suitable wattage duly wired with terminal strip etc complete with housing, including the following main components and as required. (Contractor has to design and submit the details of PA equipment as per the requirement of this block for approval)				
	1 Mic & 1 Aux Inputs, with individual volume control & Aux inputs jacks for each floor (B1+B2+B3+Ground + Eight floors) at one location on each floor.				
	- CD Player with FM auto/ manual programming				
	- Terminals & patch cables				
	Interconnection with EPABX system including cabling etc. & any other item required for proper working of PA system.	1	Set		
15.02	Supply and fixing of following sizes of steel conduit alongwith the accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of conduit as recessed required				
	i) 20 mm dia	2000	Metre		
15.03	Supply and drawing twin twisted 32/0.2mm PVC insulated copper conductor speaker wire in existing conduit including earth wire complete as required (for speakers). This includes wiring for the amplifier as well.	2500	Metre		

15.04	Supply and installation of metal enclosed suitable wattage false ceiling/wall mounted speaker with adjustable volume to cover all areas of floor, to be mouted in corridors & common toiletscomplete as required .	135	Each			
	PUBLIC ADDRESS SYSTEM as mentioned above					
	TOTAL FOR SUB HEAD 15:PUBLIC ADDRESS SYSTEM					

	SUB HEAD 16 : LIFTS				
16.01	Hospital Lift				
	Design, manufacture, supply, installation, testing and commissioning of 26 passenger (1768 kg) lift with travel speed 0.75 MPS serving different floors in the lift shaft including lift well pressurization as per detailed specification/ drawing enclosed and as under:				
	Speed 0.75 MPS				
	Floors : B1+B2+B3 + G+8 (Total twelve floors)				
	Travel: As per architectural drawing.				
	Stops & opening: 12 stops & 12 openings				
	Controller: A.C. variable voltage & variable frequency				
	Automatic rescue device complete with dry maintenance free batteries as required.				
	Operation:Microprocessor based single automatic push button/ simplex selective collective/duplex collective selective with / without attendant.				
	415 V, 3 phase, 50 Hz, 4 wire system				
	Type of doors: a) Car : Telescopic opening for hospital lift, horizontal sliding stainless steel scratch proof. (b) Landing doors: Stainless steel scratch proof. Lift car door and landing doors shall have a fire resistance of one hour.				
	A hand rail guide not less than 600 mm long at 900 mm above floor level or stretcher guide as the case may be to be fixed adjacent to control panel in the lift car.				
	Mirror of suitable size to be fixed inside the lift car.				
	Voice announcement system in the car to announce the position of the elevator in the hoistway as the car passes or stops at a floor served by the elevator.				
	Toe guard, PA speaker, IR curtain on full height, two phase fireman's drive control/ switch and potential free contacts, Intercom connection etc to be provided in the lift.				
	Hospital Lift as mentioned above.	4	Each		
16.02	Passenger Lift				

	Design, manufacture, supply, installation, testing and ommissioning of Passenger lift 1360 kg , with travel speed 1.5 MPS serving different floors in the lift shaft including lift well pressurization as per detailed specification/ drawing enclosed and as under:				
	Speed : 1.5 MPS				
	Floors : B1+B2+B3+ G+8 (Total twelve floors)				
	Travel: As per architectural drawing.				
	Stops & opening: 12 stops & 12 openings				
	Controller: A.C. variable voltage & variable frequency				
	Automatic rescue device complete with dry maintenance free batteries as required.				
	Operation: Microprocessor based single automatic push button/ simplex selective collective/duplex collective selective with / without attendant.				
	415 V, 3 phase, 50 Hz, 4 wire system				
	Type of doors: a) Car : Power operated, centre opening horizontal sliding stainless steel scratch proof. (b) Landing doors: Stainless steel scratch proof. Lift car door and landing doors shall have a fire resistance of one hour.				
	Voice announcement system in the car to announce the position of the elevator in the hoistway as the car passes or stops at a floor served by the elevator.				
	Telephone with minimum two connections one at operator's room and other at guard/ security room and the emergency signal with re-chargeable battries as source of supply be made in the lift car.				
	Toe guard, PA speaker, IR curtain on full height, two phase fireman's drive control/ switch and potential free contacts etc to be provided in the lift.				
	Passenger Lift as mentioned above.	1	Set		
	TOTAL SUB HEAD 16: LIFTS				

SUB HEAD 17: OUT DOOR LIGHTING					
17.01	OUT DOOR LIGHTING				
	Supply, erection, testing and commissioning of external swaged steel tubular pole with following specifications & items :				
	9.0 Mtrs. high swaged steel tubular pole (Single arm of suitable length each around 1.5 Metre), the construction of the pole shall be as per IS 410 SP-33 with base plate 450mmX450mmX6mm complete as per requirement with two coats of spray paints (shade as approved)				
	1X150 watts street light fixture with 150watts high pressure sodium vapour (HPSV) lamp complete with control gear, acrylic cover cover etc. and its wiring with 2X4 sq.mm. PVC insulated, FRLS copper conductor and 1,5 sqmm PVC insulated, FRLS copper earth wire from control box complete as required				
	i	1 No. (PhilipsSRP051/SON250W or approved equivalent)			
	ii	Suitable size 32 A DP MS Control box with 2 no. incoming and outgoing terminals and 2 nos. tap-out terminal with 6A DP MCB complete as required - 1 Set			
	iii	Suitable number(s) 40mm dia Class-B GI Pipe(s) from above control box to upto 0.5 metre below ground level for power cable entry			
	iv	Providing foundation including excavation, shuttering, alingment of poles, casting etc. including lean concrete at the bottom as per CPWD/ BIS specifications.			
	v	The above installations shall be completed as CPWD specifications and as required			
	vi	Steet Tubular Poles(9M) as mention above	25	Set	
17.02	Supply, installation, testing and commissioning of external post top lantern with following accessories and complete as required :				
	4m high (3.3m above ground) 50mm dia GI pole as approved, adopting socket at top for fixture mentioned below, base plate 300 x 300 x 6mm and provision for mounting junction box etc. -				
	i)	1 set.			

	ii) Supply, installation, testing and commissioning of Post top lantern with 70W HPSV lamp (Philips SPC 106/70(I) HPF or equivalent) and its wiring with 2 x 2.5 sq.mm PVC insulated copper wire and 1.5 sqmm PVC insulated copper earth wire from control box - 1 set.				
	iii) Suitable size 20A DP MS Control box with 2 no. incoming and outgoing terminals and 2 nos. tap-out terminal with 1 nos. 5A HRC fuses complete 1 set.				
	iv) Suitable number(s) 40mm dia Class-B GI Pipe(s) from above control box to upto 0.5 metre below ground level for power cable entry				
	v) Providing 400x400x1000mm deep 1:3:6 ratio cement concrete including excavation shuttering alignment of poles casting etc. including 100mm thick lean concrete shall be provided at the bottom				
	Supply, installation, testing and commissioning of external post top lantern as mentioned above	10	Set		
17.03	Supply, installation, testing and commissioning of bollard lamps 1X18 watts CFL (Philips HCS360 1XPLC/2P 18W GR Sonara bollard in green color or equivalent) control box - 1 set.	15	Each		
17.04	Supply, installation, testing and commissioning of post top decorative luminaire 70 watts sodium vapor lamp (Philips HPS360 1XSON70W GR in textured brown color or equivalent) control box - 1 set.	2	Each		
17.05	Road Lighting Panel				

	Supply, installation, testing and commissioning of following outdoor type with canopy, IP-54 protected M.V. cubicle type totally enclosed, free standing type, dust, damp and vermin proof, MV Panel, busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, stove enamelled painted and having following incoming and outgoing switchgears complete as required.				
	INCOMER:				
	1 No. 125 Amp 415 volts, FP MCCB,with Thermal Magnetic Release				
	1 Set of phase indicating lamp with MCB				
	1Set of Photoelectric cell and 100A TP contactor with neutral link (for street lights control)				
	BUSBARS:				
	150 Amp TPN Aluminium busbars				
	OUTGOING:				
	20 Nos. 32 Amp 415 volts, DP MCB				
	Feeder Pillar as mention above	2	Set		
17.06	Spiral earthing made out of 6 SWG GI wire , 50mm Dia, 115 turns closely wound ,1.5 mtr below ground, earth pit of 350 Dia., 1.5 mtr depth including providing charcoal and salt for earthing at alternate layers of 300 mm depth (total 3 layers),connections etc. complete as required.	35	Set		
	TOTAL SUB HEAD 17: OUT DOOR LIGHTING				

	SUB HEAD 18: LT CABLES				
18.00	LT CABLES				
18.01	Supply of following sizes of 1.1 kV grade multicore XLPE aluminium conductor PVC sheathed armoured AYYF cable as per IS 1554.(Actual quantity may be approved from site incharge before procurement)				
	i 3.5 Core 25 Sqmm.	600	Metre		
	ii 3.5 Core 70 Sqmm.	360	Metre		
	iii 3.5 Core 95 Sqmm.	60	Metre		
	iv 3.5 Core 185 Sqmm.	192	Metre		
	v 3.5 Core 300 Sqmm.	2760	Metre		
	vi 3.5 Core 400 Sqmm.	120	Metre		
	vii 3 Core 4 Sqmm.	100	Metre		
	viii 3 Core 6 Sqmm.	150	Metre		
	ix 3 Core 10 Sqmm.	100	Metre		
	x 2 Core 16 Sqmm.	200	Metre		
	xi 2 Core 10 Sqmm.	250	Metre		
18.02	Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required				
	i Size not exceeding 25 sq.mm	420	Metre		
	ii Size exceeding 25 sq.mm but not exceeding 120 sq.mm	378	Metre		
	iii Size exceeding 120 sq.mm but not exceeding 300 sq.mm	2657	Metre		
	iv Size exceeding 300 sq.mm but not exceeding 400 sq.mm	108	Metre		
18.03	Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade direct in the existing RCC/Hume/Stoneware/Metal pipe as required				
	i Size not exceeding 25 sq.mm	18	Metre		

	ii	Size exceeding 25 sq.mm but not exceeding 120 sq.mm	42	Metre		
	iii	Size exceeding 120 sq.mm but not exceeding 300 sq.mm	295.2	Metre		
	iv	Size exceeding 300 sq.mm but not exceeding 400 sq.mm	12	Metre		
18.04		Supplying and making end termination with brass double compression glands of following sizes of 1.1. kv grade multicore aluminium conductor PVC insulated and PVC sheathed				
	i	3.5 Core 25 Sqmm.	10	Each		
	ii	3.5 Core 70 Sqmm.	12	Each		
	iii	3.5 Core 95 Sqmm.	4	Each		
	iv	3.5 Core 185 Sqmm.	6	Each		
	v	3.5 Core 300 Sqmm.	64	Each		
	vi	3.5 Core 400 Sqmm.	10	Each		
	vii	3 Core 4 Sqmm.	8	Each		
	viii	3 Core 6 Sqmm.	12	Each		
	ix	3 Core 10 Sqmm.	50	Each		
	x	2 Core 16 Sqmm.	18	Each		
	xi	2 Core 10 Sqmm.	60	Each		
18.05		Fabricating and installing following size of perforated M.S. cable trays including horizontal and vertical bends, reducers, tees, cross members and other accessories as required and duly suspended from the ceiling with M.S. suspenders and including painting etc. as required :-				
	i	150 mm. width x 50 mm. depth x 1.6 mm. thickness	50	Metre		
	ii	300 mm. width x 62.5 mm. depth x 2.0 mm. thickness	50	Metre		
	iii	450 mm. width x 62.6 mm. depth x 2.0 mm. thickness	50	Metre		
	iv	600 mm. width x 62.6 mm. depth x 2.0 mm. thickness	50	Metre		
	TOTAL SUB HEAD 18: LT CABLES					

SUB HEAD 19: EARTHING SAFETY EQUIPMENT AND MISC. ITEMS						
19.01	Static earthing of OT with copper strip 25x3	700	Metre			
19.02	Earthing with Copper plate 600mmX600mmX3mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as per CPWD general specifications for electrical works Part-1, Internal - 2005 and IS:3043-1987.	34	Set			
19.03	Earthing with GI plate 600mmX600mmX6mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as per CPWD general specifications for electrical works Part-1, Internal - 2005 and IS:3043-1987	20	Set			
19.04	Extra for using charcoal and salt for GI or copper plate earth electrode as required.	54	Set			
19.05	Supplying and laying 25mmX5mm copper strip at 0.5mm below ground level as strip earth electrode, including soldering etc. as required.	150	Metre			
19.06	Supplying and laying 50mmX6mm copper strip at 0.5mm below ground level as strip earth electrode, including soldering etc. as required.	100	Metre			
19.07	Providing and fixing 50mmX6mm Copper strip on surface/on existing cable trench/RCC pipe or in recess for earth electrode as required.	50	Metre			
19.08	Supplying and laying 25mmX5mm GI strip at 0.5mm below ground level as strip earth electrode, including soldering etc. as required.	500	Metre			

19.09	Providing and fixing 40mmX6mm GI strip on surface/on existing cable trench/RCC pipe or in recess for earth electrode as required.	50	Metre			
19.10	Providing and fixing 25mmX5mm GI strip on surface/on existing cable trench/RCC pipe or in recess for earth electrode as required.	100	Metre			
19.11	Providing and laying of following sizes non pressure NP2 class (light duty) RCC pipe with collar joint with stiff mixture of cement (1 cement : 2 fine sand) including testing the joints,digging and back filling the trench etc. as required.					
	i 150mm dia	400	Metre			
19.12	Providing and fixing M.V. danger notice plate of 200mmX150mm made of mild steel, atleast 2mm thick and vitreous enamelled white on both sides and with inscription in signal red colour on front side as required.	25	Each			
19.13	Providing and fixing H.T. (11kV) danger notice plate of 250mmX150mm made of mild steel, atleast 2mm thick and vitreous enameled white on both sides and with inscription in signal red colour on front side as required.	2	Each			
19.14	Supplying and laying of 12kV grade 1 metre wide anti skid chequered type rubber mat.	30	Metre			
19.15	Supplying and laying of 1.1kV grade 1 metre wide anti skid chequered type rubber mat.	40	Metre			
19.16	Design, manufacture, supply and installation of Fire Buckets 13 litre capacity 4 Nos. duly filled with sand and GI pipe support stand for these buckets including painting etc. complete as required.	5	Set			

19.17	Supply and fixing shock treatment chart in English, Hindi and local language mounted on 5mm thick Plywood and 3mm thick plain glass front complete as required.	4	Set			
19.18	Supplying and fixing Foam type 9 ltrs capacity fire extinguishers as approved by ISI complete as required.	6	Set			
19.19	Supplying and fixing CO2 type 9 ltrs capacity fire extinguishers as approved by ISI complete as required.	6	Set			
19.20	Supplying and fixing CO2 type 4.5 ltrs capacity fire extinguishers as approved by ISI complete as required.	24	Set			
19.21	Supplying and fixing DCP type 5 KG capacity fire extinguishers as approved by ISI complete as required.	1	Set			
19.22	Supplying and fixing DCP type 10 KG capacity fire extinguishers as approved by ISI complete as required.	4	Set			
19.23	Supplying, storing, handling and fixing in position First Aid Medical Box complete as per tech. specifications as required.	2	Each			
19.24	Providing & laying of 100 mm dia class B G.I. pipe underground/ surface as per site requirement including all accessories & excavation & back filling etc. complete as required	100	Metre			
TOTAL SUB HEAD 19: EARTHING, SAFETY EQUIPMENT AND MISC. ITEMS						

	SUB HEAD 20: LIGHTENING PROTECTION				
20.00	LIGHTENING PROTECTION				
20.01	Earthing with 600 mm X 600 mm X 6 mm thick GI plate including accessories, and providing masonary enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as required.	6	Set		
20.02	Extra for using charcoal and salt for GI or copper plate earth electrode as required.	6	Set		
20.03	Providing and fixing of lightening conductor finial, made of 25mm. dia. 300mm., long GI tube, having single prong at top, with 85 mm. dia. 6 mm. thick GI base plate including holes etc. complete as required.	12	Each		
20.04	Providing and and fixing GI tape 20mm X 3 mm thick on parapet or surface of wall for lightning conductor as required. (For horizontal runs).	300	Metre		
20.05	Providing and and fixing GI tape 20mm X 3 mm thick on parapet or surface of wall for lightning conductor as required. (For vertical runs).	300	Metre		
20.06	Providing and fixing testing joint, made of 20mmX3mm thick GI strip, 125 mm. long, with 4 no.'s of GI bolts, nuts, check nuts, bar shaddles, and spring washers etc. complete as required.	6	Each		
20.07	Providing and laying GI tape, 32 mm X 6 mm thick, from test joint upto earth electrode directly in ground as required.	60	Metre		
	TOTAL SUB HEAD 20: LIGHTENING PROTECTION				

		SUB HEAD 21: CCTV				
21.00		CLOSED CIRCUIT TELEVISION SYSTEM (CCTV)				
21.01		Supply and fixing of following size of ISI marked MS conduit along with the accessories in surface/ recess including painting in case of surface conduit or cutting the wall and making good the same in case of recessed conduit as required.				
	i)	20 mm dia	1000	Metre		
	ii)	25 mm dia	200	Metre		
21.02		Cabling with 2x1.5 sq. mm PVC insulated copper conductor cable in the existing MS conduit for power supply to the camera.	1200	Metre		
21.03		Supply and drawing coaxial 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 conduit as required.	1200	Metre		
21.04	A	CAMERAS :				
	i)	Supply, installation, testing and commissioning of indoor minimum 520 TVL high resolution, weatherproof dome type, 1/3-inch CCD imager colour Day Night camera with varifocal lens, 3.6-8.0 mm including Connectors, Lens, camera Mounts. Power Supply and all ancillary equipment required for the proper functioning of the camera complete as per technical specifications and as required of approved makes.	4	Each		

	ii)	Supply, installation, testing and commissioning of indoor minimum 520 TVL high resolution, 0.1 lux, dome type, 1/3-inch CCD imager colour with varifocal lens, 3.6-8.0 mm including Connectors, Lens, camera Mounts. Power Supply and all ancillary equipment required for the proper functioning of the camera. complete as per technical specifications and as required of approved makes.	80			
	B.	DVR				
	i)	Supply, installation, testing and commissioning of 16 channel real time, 400 fps, embedded Digital Video Recorder (DVR) with 2 video outputs and facility to record multiple camera signles while simultaneously providing live multi-screen viewing, recording, play back, remote viewing and archiving of recorded data. DVR having capacity of 2 TB HDD storage capacity. DVR will do real time recording at CIF resolution & H.264 compression. DVR will be embedded IP based web enabled DVRs. DVR racks and any other item required in the commissioning is in the scope of supply complete as per technical specifications and as required of approved makes.	6	Each		
	C.	Monitor				
		Supply, installation, testing and commissioning of 22" CCTV colour LCD flat screen monitor including all accessoriess of approved makes.	6	Each		
		TOTAL SUBHEAD 21 : CCTV				
		GRAND TOTAL FOR ALL ELECTRICAL WORKS				

HVAC - WORKS

BILL OF QUANTITIES FOR SURGICAL BLOCK - HVAC WORKS						
Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
The prices are to be quoted in the below mentioned form and shall include the supply, installation, testing & commissioning at site of all the equipments, ancillary materials as specified and all such items what so ever which may be required to fulfill the intent and purpose as laid down in the specifications and or the drawings.						
The tenderer shall quote rates in figures and in words under column 5&6 and extend amount to column 7						
A)	EQUIPMENTS					
1.0	WATER CHILLING UNITS.					
1.1	Supply, installation, testing & commissioning of 350 TR (actual) capacity water cooled water chilling units (ARI Certified) as specified and shown in equipment schedule complete as per specifications with.					
	a. Screw Compressor with motor.					
	b. Drive package.					
	c. Mounting frames for all components					
	d. Water cooled condenser with accessories.					
	e. Chiller with accessories.					
	f. Refrigerant piping, fittings, accessories and valves etc.					
	g. Insulation of chiller and suction line.					
	h. First charge of refrigerant and oil.					
	i. Base frame with Vibration isolators					
	j. Automatic capacity control arrangement.					
	k. Lot Safety controls, flow switches, pressure gauge, thermometer etc. as per specifications.					
	l. Suitable capacity motor with necessary insulation , soft starter panel complete with all necessary switchgears and control complete as required					
	m. Necessary water drain & air purge valves wherever required					
	n. Necessary lubrication device as per specifications complete.					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	o. Microprocessor based control panel complete with accessories as per specifications and BMS compatible BACNET Protocol (2Working +1Stand by)					
	Chilled Water Leaving temp. 44 deg. F Chilled Water Entering temp. 54 deg. F Chiller fouling factor = 0.0005 (FPS units)					
	Condenser Water Leaving Temp. 97.5 deg F Condenser Water Entering Temp. 90 deg F Condenser fouling factor = 0.001 (FPS units)					
	ARI selection sheet required for full load and part load data at constant entering water of 90 deg. F to condenser shall be submitted.					
	Complete water chilling as above(2W+1S)	3	Nos			
2.0	WATER CIRCULATION PUMPS					
2.1	Primary Chilled Water Pumps					
	Supply, installation, testing and commissioning of vertical split casing end suction type centrifugal chilled water pump sets factory assembled and tested for rated efficiency mounted on a common base frame etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.					
	a. Pump with IP 55 TEFC induction motor with class F insulation					
	b. Channel base with vibration isolators, coupling, coupling guard etc.					
	c. Cladded insulation and anti corrosive coating/cathodic electro deposit (CED) type coating inside and outside casing etc. of chilled water pump, etc.					
	d. 2 Nos.- 150 mm dia dial type pressure gauge					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.					
	The pump characteristic shall be as follows:					
	Water flow rate=840 USGPM					
	Head = 14 Metre WC					
	Primary chilled water pumps as described above. (2W+1S)	3	Nos			
2.2	Secondary Pumps & Variable Speed Pumping System					
	Supply, installation, testing and commissioning of vertical split casing type centrifugal chilled water recirculation pumps mounted on a common base etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.					
	a. Pump with IP 55 TEFC induction motor with class F insulation					
	b. Channel base with vibration isolators, coupling, coupling guard etc.					
	c. Cladded insulation and anti corrosive coating/cathodic electro deposit (CED) type coating inside and outside casing etc. of chilled water pump, etc.					
	d. 2 Nos.- 150 mm dia dial type pressure gauge					
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.					
	f. The price will include control software and networking hardware and software for integration.					
	g. All pumps to be provided with separate VFD's (variable frequency drives). Control panel should also consist of cooling fan.					
	h. Electronic Differential Pressure Transmitters and PLC as required.					
	i. The cost will include making necessary flanged suction and delivery headers in C-Class MS					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	j. Complete set system to be mounted on a common MS base frame and shall follow following duty. The pump characteristic shall be as follows:					
	Water flow rate=960 USGPM Head = 28 Metre WC					
	Secondary chilled water pumps as described above. (2W+1S)	3	Nos			
2.3	Condenser water Pumps Supply, installation, testing and commissioning of vertical split casing end suction type centrifugal pump sets factory assembled and tested for rated efficiency mounted on a common base frame etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.					
	a. Pump with IP 55 TEFC induction motor with class F insulation					
	b. Channel base with vibration isolators, coupling, coupling guard etc.					
	c. Cladded insulation and anti corrosive coating/cathodic electro deposit (CED) type coating inside and outside casing etc. of chilled water pump, etc.					
	d. 2 Nos.- 150 mm dia dial type pressure gauge					
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.					
	The pump characteristic shall be as follows:					
	Water flow rate=1400 USGPM Head = 35 Metre WC					
	Condenser water pumps as described above. (2W+1S)	3	Nos.			
2.4	Hot water Pumps					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of vertical split casing type centrifugal hot water recirculation pump sets factory assembled and tested for rated efficiency mounted on a common base etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.					
	a. Pump with IP 55 TEFC induction motor with class F insulation					
	b. Channel base with vibration isolators, coupling, coupling guard etc.					
	c. Cladded insulation and anti corrosive coating/cathodic electro deposit (CED) type coating inside and outside casing etc. of chilled water pump, etc.					
	d. 2 Nos.- 150 mm dia dial type pressure gauge					
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.					
	The pump characteristic shall be as follows:					
	Water flow rate=255USGPM					
	Head = 28 Metre WC					
	Hot water pumps as described above. (2W+1S)	3	Nos			
3.0	COOLING TOWER					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of induced draft FRP type cooling towers for air conditioning system. Each tower shall be complete with distribution system, filling, louvers, steel ladder, fan and motor. Motor shall be IP 55 suitable for outdoor installation, 415±10% volts, 50 Hz, 3 phase power supply. Isolator enclosed in weather proof panel complete with earthing shall be included. Tower shall be selected on basis of water temperature 97.5 -90 degree F, ambient wet bulb 83 deg F and water flow rate 1400 US gpm. Cooling tower fan motor shall be compatible for working with BMS. capacity shall be as follows:- 450 TR capacity					
	Cooling Tower as described above. (2w+1s)	3	Nos.			
4.0	Hot Water Generator					
	Supply, installation, testing & commissioning of Electric Hot Water Generator for winter heating/monsoon reheating system. Hot water shall be with IP 55 protection and compatible with controls, sensors, control cabling, piping and fittings, thermal insulation, BMS control, base frame etc. as per specifications.					
4.1	Capacity : 250 KW Status : 2(W) for Winter Heating USGPM: 255 Temp IN/OUT : 110/ 125 Deg F	2	Nos.			
4.2	Capacity : 150 KW Status : 1(W) for Monsoon Reheating USGPM: 255 Temp IN/OUT : 116/ 120 Deg F	1	Nos.			
5.0	AIR HANDLING UNITS					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
5.1	Supply, installation, testing and commissioning of draw through type Air Handling Units (double skin type) of horizontal /vertical type as specified & shown in schedule of equipment complete with the following :-					
	a. Fan Section and canvas connection,Mixing Box, Thermal break profile. (double skin type)					
	b. Centrifugal blower					
	c. Coil section with cooling coil/s as per specifications.					
	d. Pre filters with filter section as required in all AHUs.					
	e. Fine and hepa filters with filter section wherever specifically specified as per AHU schedule .Wherever fine/hepa filters are specified, item shall include factory fabricated double skin plenum of same specifications as AHU panels and complete with filter frameworks,magnehlic gauges as required.Fine/hepa filter section along with discharge plenum shall be part of AHU in upper tier.					
	f. Drain pan, drain connection.					
	g. Squirrel cage induction IP 55 TEFC drive motor, drive arrangement, guard etc.All AHU motors shall be compatible for working with VFD.					
	h. Necessary vibration isolators & supporting arrangement.					
	i. Fresh air intake arrangement,necessary water drain & air purge valves wherever required etc.					
	j. Canvass connections,necessary foundations, 2 nos pressure gauge, 2 nos thermometer etc					
	k Controls for AHUs comprising of a set of 2 way modulating proportional linear type motorised diverting/ mixing valve of required size having manual override facility alongwith proportional thermostat & wiring for interconnection with 1.5 sq. mm Cu Conductor multicore armoured complete as required.					
5.1.1	AH-B-1 - 5100cfm/ 4RD Cooling Coil/2RD heating coil/80 mm static (with fine filters)	1	Nos.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
5.1.2	AH-GF-1 - 12000cfm/ 4RD Cooling Coil/ 50 mm static	1	Nos.			
5.1.3	AH-GF-2 - 11000cfm/ 4RD Cooling Coil/ 50 mm static	1	Nos.			
5.1.4	AH-GF-3 - 2200cfm / 6RD Cooling Coil/ 2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.5	AH-GF-4 - 2200cfm / 6RD Cooling Coil/ 2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.6	AH-FF-1 - 4500cfm/ 4RD Cooling Coil/ 50 mm static	1	Nos.			
5.1.7	AH-FF-02- 9000cfm/ 4RD Cooling Coil/ 50 mm static	1	Nos.			
5.1.8	AH-SF-01 - 7000cfm/ 4RD Cooling Coil/ 50 mm static	1	Nos.			
5.1.9	AH-SF-02 - 2200cfm (TFA) / 8RD Cooling Coil/ 2 RD heating coil/ 50 mm static	1	Nos.			
5.1.10	AH-SF-03 - 3900cfm / 4RD Cooling Coil/ 2 RD heating coil/ 50 mm static	1	Nos.			
5.1.11	AH-TF-01 - 7000cfm/ 4RD Cooling Coil/ 50 mm static	1	Nos.			
5.1.12	AH-TF-02 - 2100cfm (TFA) / 8RD Cooling Coil/ 2 RD heating coil/ 50 mm static	1	Nos.			
5.1.13	AH-TF-03 - 3900cfm / 4RD Cooling Coil/ 2 RD heating coil/ 50 mm static	1	Nos.			
5.1.14	AH-4F-01 - 7800cfm / 4RD Cooling Coil/ 2RD heating coil/ 50 mm static	1	Nos.			
5.1.15	AH-4F-02 - 12000cfm / 4RD Cooling Coil/ 50 mm static	1	Nos.			
5.1.16	AH-4F-03 - 13000cfm/ 4RD Cooling Coil/ 50 mm static	1	Nos.			
5.1.17	AH-5F-01 - 6800cfm/ 4RD Cooling Coil/2RD heating coil/80 mm static (with fine filters)	1	Nos.			
5.1.18	AH-5F-02 - 5500cfm/ 4RD Cooling Coil/2RD heating coil/80 mm static (with fine filters)	1	Nos.			
5.1.19	AH-5F-03 - 15000cfm/ 4RD Cooling Coil/ 50 mm static	1	Nos.			
5.1.20	AH-6F-01 - 3600cfm/ 8RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters) with HRW	1	Nos.			
5.1.21	AH-6F-02 - 2700cfm/ 6RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.22	AH-6F-03 - 2700cfm/ 6RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
5.1.23	AH-6F-04 - 2800cfm/ 6RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.24	AH-6F-05 - 2250cfm/ 6RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.25	AH-6F-06 - 2600cfm/ 6RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.26	AH-6F-07 - 6300cfm/ 4RD Cooling Coil/2RD heating coil/ 80 mm static (with fine filters)	1	Nos.			
5.1.27	AH-6F-08 - 9000cfm/ 6RD Cooling Coil/2RD heating coil/ 80 mm static (with fine filters)	1	Nos.			
5.1.28	AH-6F-09 - 5800cfm/ 4RD Cooling Coil/50 mm static	1	Nos.			
5.1.29	AH-7F-01 - 8500cfm/ 4RD Cooling Coil/ 50 mm static	1	Nos.			
5.1.30	AH-8F-01 - 3400cfm/ 6RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.31	AH-8F-02 - 3000cfm/ 6RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.32	AH-8F-03 - 3000cfm/ 6RD Cooling Coil/2RD heating coil/ 130	1	Nos.			
5.1.33	AH-8F-04 - 3300cfm/ 6RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.34	AH-8F-05 - 2600cfm/ 6RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.35	AH-8F-06 - 3500cfm/ 8RD Cooling Coil/2RD heating coil/ 130 mm static (with fine & hepa filters)	1	Nos.			
5.1.36	AH-8F-07 - 8000cfm/ 4RD Cooling Coil/2RD heating coil/ 80 mm static (with fine filters)	1	Nos.			
5.1.37	AH-8F-08 - 3800cfm/ 4RD Cooling Coil/2RD heating coil/ 80 mm static (with fine filters)	1	Nos.			
5.1.38	AH-8F-09 - 16000cfm/ 4RD Cooling Coil/ 2RD heating coil/ 50	1	Nos.			
5.2	CEILING SUSPENDED UNITS					
	Supply, installation, testing and commissioning of draw through type Air Handling Units (double skin type) of ceiling suspended type as specified & shown in schedule of equipment complete with the following :-					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	a. Fan Section and canvas connection,Mixing Box, Thermal break profile. (double skin type)					
	b. Centrifugal blower					
	c. Coil as per specifications.					
	d. Pre filters as required					
	e. Drain pan, drain connection.					
	f. Squirrel cage induction IP 55 TEFC drive motor, drive arrangement, guard etc.All AHU motors shall be compatible for working with VFD.					
	g. Necessary vibration isolators & supporting arrangement.					
	h. Fresh air intake arrangement,necessary water drain & air purge valves wherever required etc.					
	i. Canvass connections,suspension arrangement, 2 nos pressure gauge, 2 nos thermometer etc					
	j Controls for AHUs comprising of a set of 2 way modulating proportional linear type motorised mixing valve of required size having manual override facility alongwith proportional thermostat & wiring for interconnection with 1.5 sq. mm Cu Conductor multicore armoured complete as required.					
5.2.1	CSU -GF- 01 -1400cfm/4 RD Cooling Coil/2RD heating coil/65 mm static (with fine filters)	1	Nos.			
5.2.2	CSU -FF- 01 -1500cfm (TFA)/4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.3	CSU -FF- 02 -1500cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.4	CSU -FF- 03 -1600cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.5	CSU -FF- 04 -2700cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.6	CSU -FF- 05 -2000cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
5.2.7	CSU -FF- 06 -2000cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.8	CSU -FF- 07 -3050cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.9	CSU -FF- 08 -2050cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.10	CSU -SF- 01 -1500cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.11	CSU -SF- 02 -1600cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.12	CSU -SF- 03 -2650cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.13	CSU -SF- 04 -1800cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.14	CSU -SF- 05 -1950cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.15	CSU -SF- 06 -3000cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.16	CSU -TF- 01 -1500cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.17	CSU -TF- 02 -1600cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.18	CSU -TF- 03 -2650cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.19	CSU -TF- 04 -1800cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.20	CSU -TF- 05 -1950cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.21	CSU -TF- 06 -3000cfm /4 RD Cooling Coil/2RD heating coil /40 mm static	1	Nos.			
5.2.22	CSU -4F- 01 -2000cfm/4 RD Cooling Coil/35 mm static	1	Nos.			
5.2.23	CSU -5F- 01 -2850cfm/4 RD Cooling Coi/2RD heating coil/65 mm static (with fine filters)	1	Nos.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
5.2.24	CSU -5F- 02 -2850cfm/4 RD Cooling Coi/2RD heating coil/65 mm static (with fine filters)	1	Nos.			
5.2.25	CSU -5F- 03 -600cfm (TFA) /8 RD Cooling Coi/2RD heating coil/40mm	1	Nos.			
5.2.26	CSU -7F- 01 -800cfm (TFA) /8 RD Cooling Coil/2RD heating coil/40 mm static	1	Nos.			
5.3	Supply, installation, testing and commissioning of Heat Recovery Wheel suitable for housing in AHUs mentioned above and conforming to standard specification. The capacity of Heat Recovery Wheel shall be as follows. The face velocity across HRW shall be 213 MPM.					
5.3.1	3600 cfm	1	Nos.			
6.0	FAN COIL UNITS					
	Supply, installation, testing and commissioning of horizontal type sheet metal ceiling suspended FCU's each complete with 3 row deep chilled water cooling coil and 1 row deep heating coil of copper tubes aluminium fins construction, centrifugal fan, 3 speed, IP 55, class F insulation motor, aluminium cleanable filters insulated condensate drain pan, coil piping connections, condensate drain connection, 2 way modulating motorised valves with proportional thermostat, vibration isolator, wiring complete as required complete with ball valve, ball valve with strainer as required as per specification & drawings with the following capacities:-					
6.1	1.0 TR	7	Nos.			
6.2	1.5 TR	16	Nos.			
6.3	2.0 TR	3	Nos.			
6.4	2.5 TR	1	Nos.			
6.5	3.0 TR	1	Nos.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
7.0	Supply , installation , testing and commisioning of air cooled (Precision cooling) split air conditioner with scroll compressors suitable for 3 Phase 50 Hz AC supply comprising of the following.					
	a) Outdoor condensing Units					
	b) Indoor Evaporative Units with fine filters.					
	c) Interconnecting Refrigerant and drain piping with insulation wherever required, refrigerant and oil. The unit shall include refrigerant piping, power cabling and drain piping as required.					
	d) Safety and operational controls					
	e) The unit shall have advanced microcomputer controller with run time equalization, auto restart after power failure, fuzzy logic, self fault diagnostics . The controller shall have 2 digit 7 segment LED display, LED indicators and touch key pad. The controller shall have faults and alarm dispay and it shall be mounted in fire retardant box. The equipment shall be equipped with humidity control.					
7.1	Capacity :8.5 TR	2	Nos.			
8.0	Inline Fans/ Propeller Fans					
8.1	Supply, installation, testing and commissioning of Inline Fans as shown in drawings and as per equipment schedule . Each fan shall be complete with centrifugal blowers, totally enclosed fan cooled motor. Fan motor shall be suitable for single phase, 220 +/- 6% V, 50 Hz AC supply. Item shall be complete with starter & cabling.					
	Inline Fans					
8.1.1	Air Quantity :600 CFM (Toilet Exhaust)	6	Nos.			
	Static Pressure :20 mm wg					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
8.1.2	Air Quantity :550 CFM (Toilet Exhaust) Static Pressure :20 mm wg	8	Nos.			
8.1.3	Air Quantity :450 CFM (OT Defumigation) Static Pressure :25 mm wg	2	Nos.			
8.1.4	Air Quantity :400 CFM (OT Defumigation) Static Pressure :25 mm wg	8	Nos.			
8.1.5	Air Quantity :320 CFM (Toilet Exhaust) Static Pressure :15 mm wg	1	Nos.			
8.1.6	Air Quantity :300 CFM (Toilet Exhaust) Static Pressure :15 mm wg	5	Nos.			
8.1.7	Air Quantity :200 CFM (Toilet Exhaust) Static Pressure :15 mm wg	2	Nos.			
8.1.8	Air Quantity :150 CFM (Toilet Exhaust) Static Pressure :15 mm wg	1	Nos.			
8.2	Propeller fans Supplying, installing, testing and commissioning of direct driven Propeller fan for exhaust air as shown in drawings. Each fan shall be complete with permanent split capacitor or shaded pole motor, mounting plate, accessories like wire guard, bird screen and fixed louvers for weather protection as required. Fan selection arrangement and Electrical characteristics shall be as follows:					
8.2.1	150 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	47	Nos			
8.2.2	225 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	10	Nos			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
9.0	Centrifugal Fans					
	Supply, installation,testing and commisioning Double inlet double width centrifugal fans as shown in drawings, Each fan shall be complete with totally enclosed fan cooled motor, belt drive, pulley mounted on motor and fan shaft, belt guard, motor mount and vibration isolators. Fan and fan motor shall be suitable for 3 Phase, 415+/- 10% V, 50Hz AC supply as follows as per specications and to suit duty.					
9.1	Duty: Basement 1 (fresh air for Laundry, Pantry, Corridor)					
	Air Quantity : 28400 CFM					
	Static Pressure : 35mm wg	1	Nos.			
9.2	Duty: Basement 2 &3 (fresh air)					
	Air Quantity : 36100 CFM					
	Static Pressure : 40mm wg	2	Nos.			
9.3	Duty: Basement 2&3 (fresh air)					
	Air Quantity : 54200 CFM					
	Static Pressure : 40mm wg	2	Nos.			
9.4	Duty: Lift well pressurisation					
	Air Quantity : 9000 CFM					
	Static Pressure : 35 mm wg	4	Nos.			
9.5	Duty: Lift lobby pressurisation					
	Air Quantity : 10000 CFM					
	Static Pressure : 35 mm wg	2	Nos.			
10.0	Ventilation Fan Sections					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of single skin construction fan sections suitable for outdoor duty. The unit shall be complete with belt driven double inlet double width, backward curved centrifugal fan, squirrel cage induction motor, vibration isolators, canvass connections, belt drive, pulley mounted on motor and fan shaft, belt guard mounted within the housing as per specifications. The motor shall be suitable for operation on 3 Phase, 415 +/- 10% V, 50 Hz AC supply.					
	a. Casing (single skin type in 18 G GSS)					
	b. Centrifugal blower					
	c. Necessary foundations etc					
	d. Drive motor, drive arrangement, guard etc.					
	f Wiring for interconnection with AHU starter with 1.5 sq. mm Cu Conductor multicore armoured complete as required.					
10.1	Space served :OT Exhaust Air Quantity : 3200 CFM Static Pressure : 35 mm wg Motor Rating : to suit duty	1	Nos.			
11.0	Tube Axial Fans					
11.1	Supply, installation,testing and commisioning of tube axial flow fans as shown in drawings, Each fan shall be direct driven.. Fan motor shall be suitable for 3 Phase, 415+/- 10% V, 50Hz AC supply . Fan shall be complete with gravity louvers.					
11.1.1	Duty: Basement 1 Fresh Air (Store, Gas pump, Elect. Room) Air Quantity : 4100 CFM, 25 mm st. pr.	6	Nos.			
11.1.2	Duty: Basement 1 Fresh Air (Pump room) Air Quantity : 8200 CFM, 25 mm st. pr.	2	Nos.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
11.1.3	Duty: Basement 1 Fresh Air (Store, Gas pump, Elct. Room) Air Quantity : 11100 CFM, 25 mm st. pr.	2	Nos.			
11.2	Supply, installation,testing and commisioning of tube axial flow smoke spills fans as shown in drawings, Each fan shall be direct driven.. Fan motor shall be suitable for 3 Phase, 415+/- 10% V, 50Hz AC supply . Fan shall be complete with gravity louvers. Fan shall be 250 deg C, 2hrs fire rated.					
11.2.1	Duty: Basement 1 Exhaust (Store, Gas pump, Elct. Room) Air Quantity : 4100 CFM, 25 mm st. pr.	6	Nos.			
11.2.2	Duty: Basement 1 Exhaust (Pump room) Air Quantity : 8200 CFM, 25 mm st. pr.	2	Nos.			
11.2.3	Duty: Basement 1 Exhaust (CSSD) Air Quantity : 11100 CFM, 25 mm st. pr.	2	Nos.			
11.2.4	Duty: Basement 1 Exhaust (Laundry, Pantry, Corridor) Air Quantity : 28400 CFM, 35 mm st. pr.	2	Nos.			
11.2.5	Duty: Basement 2 & 3 Exhaust Air Quantity : 36100 CFM, 35 mm st. pr.	2	Nos.			
11.2.6	Duty: Basement 2 & 3 Exhaust Air Quantity : 27100 CFM, 35 mm st. pr.	4	Nos.			
12.0	Air Washer Unit					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of double skin air washer units for air cooling work constructed as per detailed specifications and drawings, complete with 50mm thick prefilter, minimum 200mm deep celdeck pad, water circulating pump DIDW centrifugal forward curved/backward curved fan, TEFC squirrel cage induction motor V-belt & drive set vibration isolators, internal piping with class 'B' piping, quick fill, make up drain, overflow connection float valve etc. complete with all respects. Mounting frame of angle iron for floor / wall mounting. Price must include starter panel, cabling, control wiring, earthing etc.					
12.1	28400 CFM with 50mm static pressure	1	No.			
13.0	EXPANSION TANK					
	Supply, installation, testing and commissioning of pressurised PVC., expansion tank of following capacities made of PVC 2 layer sheet complete with 50 mm thick fire retardant type 32 kg/mt cu density TF quality expanded polystyrene insulation finished with two layers of sand cement plaster and painted complete with vent, drain connections , float valve, quick fill connection, manhole cover etc as specified. (Of double layered Sintex or equivalent make).					
13.1	1000 ltrs. (for chilled water circuit)	1	No.			
13.2	1000 ltrs. (for hot water circuit)	1	No.			
B)	PIPING					
14.0	CONDENSER WATER PIPING & VALVES					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, laying/fixing, testing and commissioning of M.S. heavy class ERW piping confirming to IS : 3589/IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly painted as per specifications :					
14.1	300 mm dia	220	RM			
14.2	250 mm dia	90	RM			
14.3	200 mm dia	80	RM			
14.4	50 mm dia	70	RM			
14.5	40 mm dia	50	RM			
15.0	Valves					
15.1	Butterfly valves :					
	Supply, fixing and testing of following valves, strainers, in the chilled water piping complete with companion flanges, nut bolts, gaskets, supports etc. duly insulated and painted as per specifications:					
15.1.1	300 mm dia	3	Nos			
15.1.2	250 mm dia.	15	Nos			
15.1.3	200 mm dia.	3	Nos			
15.1.4	50 mm dia.	6	Nos			
15.2	Balancing valves :					
15.2.1	250 mm dia.	6	Nos			
15.3	Non return/Check valves :					
15.3.1	250 mm dia	3	Nos			
15.4	Pot strainer with drain valve					
15.4.1	300 mm dia.	1	Nos			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
15.5	Y- strainer with drain valve					
15.5.1	250 mm dia.	3	Nos			
16.0	CHILLED WATER PIPING					
	Supply, laying/fixing, testing and commissioning of M.S. heavy class ERW piping confirming to IS : 3589/IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly insulated and painted as per specifications :					
16.1	250 mm dia	150	RM			
16.2	200 mm dia	180	RM			
16.3	150 mm dia	60	RM			
16.4	125 mm dia	160	RM			
16.5	100 mm dia	150	RM			
16.6	80 mm dia	90	RM			
16.7	65 mm dia	80	RM			
16.8	50 mm dia	160	RM			
16.9	40 mm dia	150	RM			
16.10	32 mm dia	280	RM			
16.11	25 mm dia	410	RM			
16.12	20 mm dia	360	RM			
17.0	VALVES & STRAINERS					
	Supply, fixing and testing of following valves, strainers, in the chilled water piping complete with companion flanges, nut bolts, gaskets, supports etc. duly insulated and painted as per specifications:					
17.1	Butterfly valves :					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
17.1.1	250 mm dia	2	Nos			
17.1.2	200 mm dia.	20	Nos			
17.1.3	150 mm dia	2	Nos			
17.1.4	125 mm dia.	12	Nos			
17.1.5	100 mm dia.	2	Nos			
17.1.6	80 mm dia.	4	Nos			
17.1.7	65 mm dia	16	Nos			
17.1.8	50 mm dia.	38	Nos			
17.1.9	40 mm dia.	32	Nos			
17.1.10	32 mm dia	62	Nos			
17.1.11	25 mm dia	84	Nos			
17.1.12	20 mm dia	30	Nos			
17.2	Balancing valves :					
17.2.1	250 mm dia	1	Nos			
17.2.2	200 mm dia.	6	Nos			
17.2.3	125 mm dia.	3	Nos			
17.2.4	100 mm dia.	1	Nos			
17.2.5	80 mm dia.	2	Nos			
17.2.6	65 mm dia	8	Nos			
17.2.7	50 mm dia.	19	Nos			
17.2.8	40 mm dia.	16	Nos			
17.2.9	32 mm dia	31	Nos			
17.2.10	25 mm dia	42	Nos			
17.2.11	20 mm dia	15	Nos			
17.3	Non return/Check valves :					
17.3.1	200 mm dia	6	Nos			
17.3.2	125 mm dia.	3	Nos			
17.4	Y- strainers with drain valve					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
17.4.1	200 mm dia.	6	Nos			
17.4.2	125 mm dia.	3	Nos			
17.4.3	100 mm dia.	1	Nos			
17.4.4	80 mm dia.	2	Nos			
17.4.5	65 mm dia	8	Nos			
17.4.6	50 mm dia.	19	Nos			
17.4.7	40 mm dia.	16	Nos			
17.4.8	32 mm dia	31	Nos			
17.4.9	25 mm dia	42	Nos			
17.4.10	20 mm dia	15	Nos			
17.5	Providing and fixing in position the following Gate Valves duly insulated as per specifications:					
17.5.1	50 mm dia Valves	4	Nos.			
17.5.2	40 mm dia Valves	4	Nos.			
17.5.3	32 mm dia Valves	4	Nos.			
17.6	Supply, installation, testing and commissioning cooling / heating thermostats :-					
17.6.1	For AHUs	116	Nos.			
17.6.2	For FCUs	56	Nos.			
18.0	DRAIN PIPING					
	Supply, laying/fixing, testing and commissioning of G.I. medium class ERW piping conforming to IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly insulated and painted as per specifications for condensate drain from air handling units and chillers etc.					
18.1.1	50 mm dia	80	RM			
18.1.2	40 mm dia	100	RM			
18.1.3	32 mm dia	160	RM			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
18.1.4	25 mm dia	250	RM			
18.1.5	20 mm dia	250	RM			
19.0	On-line non-chemical water treatment system					
	Supply, Installation, Testing and Commissioning of On line, Non-Chemical Water Treatment Scale Preventor System : "Scale Guard" for 350 TR AC Chiller, having flow rate 1400 USGPM	3	Nos.			
C)	<u>AIR DISTRIBUTION</u>					
20.0	GSS DUCTING					
	Supply, installation, testing, commissioning and balancing of G.S.S ducting of following thickness including necessary supports, hangers, nut bolts, gaskets, splitter dampers, vanes canvass connections etc. complete as per specifications & drawings. Firerated ducts shall be fabricated from 1.25 mm thk GI sheets of 275 GSM irrespective of duct size.(All accessories shall be suitably fire rated for 250 deg C for 2 hrs)complete					
20.1	1.25 mm(18 G) GSS	3500	Sqm.			
20.2	1.0 mm (20 G) GSS	850	Sqm.			
20.3	0.80 mm (22 G) GSS	1600	Sqm.			
20.4	0.63 mm (24 G) GSS	4200	Sqm.			
21.0	ALUMINIUM DUCTING					
	Supply, fabrication, installation and testing of aluminium ducts in accordance with the approved shop floor drawing and specifications. Material should confirm to IS 737 latest edition.					
21.1	22 gauge	1100	Sqm.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
21.2	20 gauge	600	Sqm.			
21.3	18 gauge	250	Sqm			
22.0	FIRE DAMPERS					
22.1	Supply, installation, testing and commissioning of motorized combined smoke & fire dampers made out of GI sheet of at least 120 minutes fire rating complete with GI damper of required size, smoke sensor, etc as per specifications and shop drawings.					
22.1.1	Fire/smoke Damper	60	Sqm			
22.1.2	Actuator & control panel	70	sets			
23.0	VOLUME CONTROL DAMPERS					
	Supply, installation and testing of volume control dampers of GI sheet, box type to be provided in ducts complete with suitable links, levers and quadrants for manual control of air volume and air balancing as per specifications and drawings.	80	Sqm.			
24.0	CEILING DIFFUSERS					
24.1	Supply, Installation, testing and balancing of square/circular supply air diffusers of powder coated aluminium construction with attached volume control dampers as per specs. and drawings.	75	Sqm.			
24.2	Supply, installation, testing and balancing of square/circular return air diffusers of powder coated aluminium construction without volume control dampers as per specifications and drawings	80	Sqm.			
25.0	GRILLES					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
25.1	Supply, installation, testing and balancing of supply/return air grilles with/without volume control dampers of powder coated aluminium construction suitable for installation in walls, false ceiling boxing etc as per specifications and drawings.					
25.1.1	Supply air grilles in single louvers with volume control dampers.	15	Sqm.			
25.1.2	Return air grilles in single louvers without volume control dampers.	15	Sqm.			
25.2	Supply, installation, testing and balancing of powder coated extruded M.S. Air Grilles with / without volume control dampers.					
25.2.1	Supply air grilles in single louvers with volume control dampers.	60	Sqm.			
25.2.2	Exhaust air grilles in single louvers without volume control dampers.	60	Sqm.			
25.2.3	Painted metal jali with M.S. frames for the duct termination in the blower room.	20	Sqm.			
26.0	LINEAR GRILLES					
	Supply, installation,testing and balancing of air linear grilles of powder coated aluminium construction suitable for installation in walls/false ceiling, boxing etc as per specifications and drawings.	20	Sqm.			
27.0	GRILLE DAMPERS					
	Supply, installation and balancing of aluminium construction volume control dampers for linear grills.	20	Sqm.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
28.0	SLOT DIFFUSER					
	Supply, installation,testing and balancing of slot diffusers of powder coated extruded aluminium construction suitable for installation in walls/false ceiling, boxing etc as per specifications and drawings.the diffusers shall be with hit and miss damper at the supply air portion as per specification and approved shop drawings.	15	Sqm.			
29.0	LAMINAR FLOW DIFFUSERS					
29.1	Providing & fixing of stainless steel plenum duly reinforced and made 100% air tight complete with 55% free perforated grilles(18 Gauge SS) at bottom for laminar flow in OTs. The plenum shall be insulated with 15 mm closed cell polyethylene insulation & shall be manufactured & installed by specialised agency as per designed to be approved by customer/Consultant Size: 1000 x 600	112	Nos.			
29.2	Providing & fixing of aluminium powder coated grilles with 60% face area. The grill shall be complete with damper & complete 25 mm thick aluminium filters	18	Sqm			
30.0	FRESH AIR GRILLES with bird screen					
30.1	Supply, installation,testing and balancing of extruded aluminium fresh air grilles with louvers and bird screen as per specification and drawings.(for fresh air supply during fire)	15	Sqm.			
30.2	Supply, installation,testing and balancing of extruded aluminium exhaust air grilles with louvers and bird screen as per specification and drawings.	15	Sqm.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
30.3	Supply, installation, testing, commissioning and balancing of fresh air opening comprising of powder coated extruded aluminium louvers with bird screen, projection with frame and volume control damper with lever mounting arrangement etc. as per specifications and drawings.	20	Sqm.			
31.0	Pan type Humidifier					
	Supply, installation, testing and commissioning of electric pan type humidifiers in each Air Handling Rooms to provide humidification during winter months heating operation. The humidifier shall evaporate 12 liters water per hour and complete with all required water valves incoming MCB, humidistat and ,electrical & control wiring and earthing as required.					
31.1	9 KW	16	Sets			
31.2	6 KW	28	Sets			
D)	<u>INSULATION</u>					
32.0	DUCT INSULATION					
32.1	Supply and fixing resin bonded fibre glass insulation on supply/return air ducts covered with polythene and finished as specified.					
32.1.1	50 mm thick insulation (For duct in Non AC area)	200	Sqm.			
32.1.2	25 mm thick insulation (For duct in AC area)	3500	Sqm.			
32.2	Supply and fixing of 15 mm thick foil faced FR Closed Cell Chemically Crossed Linked PolyEthylene Foam insulation for supply air ducting as per the specifications and approved shop drawings.	1500	Sqm.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
32.3	Supply and application/fixing of underdeck insulation with 50 mm thick TF quality expanded polystyrene of exposed roof as per specification.	980	Sqm.			
33.0	DUCT ACOUSTIC LINING					
33.1	Supply,application and fixing of resin bonded fibre glass hard board acoustic insulation in supply air ducting/plenum covered with tissue paper and perforated aluminium sheet as specified.	1550	Sqm.			
34.0	PLANT ROOMS ACOUSTIC INSULATION					
34.1	Supply and fixing of acoustic insulation on walls and ceiling of Air handling units rooms with 50mm thick resin bonded fibre glass slabs fixed in frame work and finished with vapour barrier and perforated aluminium sheet complete as per specifications and drawings.	650	Sqm.			
E)	<u>ELECTRICAL</u>					
35.0	AIR- CONDITIONING PANELS					
	All bill of items are to be read in conjunction with specifications and drawings.					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of A/C panels suitable for 415 V, 3 phase, 4 wires, 50 Hz power distribution system. The panel shall be cubicle non draw out type free standing floor mounting sheet metal enclosed flush front with aluminium busbars, separate earth bus bars to be provided throughout the length of the panel. The incoming & outgoing feeder breakers, fuses, indicating lamps etc. shall be accommodated in a modular multitier arrangement. The painting shall be done as per relevant IS codes as specified in the specifications. Adequate size cable alley shall be provided all round the panel and in the back for each cable bending and termination. The outgoing feeders inside the panel shall be connected through solid bus bar. Flexible cable links are not acceptable. Bus bars shall be provided with sleeves or heat resistant insulated paint. The panel shall be suitable for cable entry from top. The panel shall be fabricated after the approval of fabrication drawings. All the panels shall have minimum 20% spare capacity.					
	i) All doors to have pad locking and shrouding arrangement.					
	ii) All switches to be heavy duty type base mounted having operating handle.					
35.1	Main/ Emergency Air-conditioning MCC in plant room in basement					
	INCOMER					
	2 No. 1250A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based; overload, short circuit, Instantaneous & earth Fault trip including; under voltage release and lockable trip push button. The ACB; should have I _{cw} = I _{cs} = 50KA for 1 sec. R, Y & B Phase; indicating lamps (LED type) with 2A control SP MCBs. Digital; multi function meter with one set of suitable CTs, CT shorting; links, R/Y/B LED indicating lamps and 2A control SP MCBs.					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP. Push button to CLOSE the ACB. 1 Set of A meter with ASS and CTs. All ACBs should be computer compatible.					
	BUSBARS :2000 A TPN					
	Bus Coupler					
	1 No. 1250A, 415/500V, Motorised, Fully Drawout type (EDO); Four Pole, Air Circuit Breaker with microprocessor based; overload, short circuit, Instantaneous & earth Fault trip including; under voltage release and lockable trip push button. The ACB; should have Icw =Ics= 35KA for 1 sec. 1 set of indicating lamps to indicate OPEN, CLOSE, TRIP. Push button to CLOSE the ACB. 1 Set of A meter with ASS and CTs. All ACBs should be computer compatible.					
	OUTGOING					
i)	3 No. 800A, 415/500V, Motorised, Fully Drawout type (EDO); Four Pole, Air Circuit Breaker with microprocessor based; overload, short circuit, instantaneous & earth Fault trip; including under voltage release and lockable trip push button. The ACB should have Icw=Ics=35 KA for 1 sec.1 set of; indicating lamps to indicate OPEN, CLOSE, TRIP.1 set of; indicating lamps to indicate OPEN, CLOSE, TRIP.Push button; to CLOSE the ACB. 1 Set of A meter with ASS and CTs. For; Water chilling machines(3W)).					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
ii)	2 nos 630 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS.For hot water genetators.(2W)					
iii)	1 nos 400 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS.For hot water genetators.(2W)					
iv)	4 Nos. 250 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 90 hp condenser water pumps.(3W+1S)					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
v)	4 Nos. 125 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0; In.Extended rotary operating mechanism with door interlock; with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A; protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's; and ASS with fully automatic star delta starter suitable for 20 hp Primary chilled water pumps.(3W+1S)					
vi)	4 Nos. 250 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0; In.Extended rotary operating mechanism with door interlock; with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A; protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's; and ASS with fully automatic star delta starter suitable for 45 hp Secondary chilled water pumps.(3W+1S)					
vii)	1 Nos. 250 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0; In.Extended rotary operating mechanism with door interlock; with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A; protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's; and ASS. Spare .					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
viii)	4 Nos. 63 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0; In.Extended rotary operating mechanism with door interlock; with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A; protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's; and ASS with fully automatic star delta starter suitable for 15 hp Hot water pumps.(3W+1S)					
ix)	3 Nos. 63 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0; In.Extended rotary operating mechanism with door interlock; with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A; protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's; and ASS with fully automatic star delta starter suitable for 7.5 hp Hot water pumps.(2W+1S)					
x)	8 Nos. 63 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0; In.Extended rotary operating mechanism with door interlock; with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A; protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's; and ASS with fully automatic star delta starter suitable for 10/12.5 hp cooling towers fans.(6W+2S)					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
xi)	1 No. 630A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, instantanoious & earth Fault trip including under voltage release and lockable trip push button. The ACB should have Icw=Ics=35 KA for 1 sec.1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.Push button to CLOSE the ACB. 1 Set of A meter with ASS and CTs. Spare.					
	Complete panel as above	1	Panel			
35.2	AHU STARTER PANELS (AHSP)					
	Supply, installation, testing and commissioning of cubicle type totally enclosed wall/floor mounted free standing type, dust, damp and vermin proof for AHU made of 2mm thick CRCA sheet steel in compartmentalized design as per specification and drawings. These distribution boards shall be mounted on 50x50x6 MS angle frame work grouted to floor/walls of recessed. The rate includes the angle iron frame, support, painting, numbering, earthing etc. as required					
35.2.1	STARTER PANEL (for OT & ICUs)					
	INCOMER					
	1 no. 63A, FP MCCB 36 KA with					
	1 set phase indication lamps with control fuses.					
	1 no. voltmeter with VSS.					
	1 no. ammeter with ASS and CTs.					
	100 A TPN Aluminium conductor bus bar dully sleeved.					
	OUTGOING :					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	1 No. 32 Amps MCCB 10 KA for 5 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.					
	1 No. 32 Amps MCCB 10 KA ,contactors,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for humidifier as required.					
	1 No. 32 Amps MCCB 10 KA for 5 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs as spare.					
	Complete panel as above	15	Nos.			
35.2.2	STARTER PANEL					
	OUTGOING :					
	1 No. 100 Amps MCCB 10 KA for 30 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	6	Nos.			
35.2.3	STARTER PANEL					
	OUTGOING :					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	1 No. 100 Amps MCCB 10 KA for 25 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	1	Nos.			
35.2.4	STARTER PANEL					
	OUTGOING :					
	1 No. 100 Amps MCCB 10 KA for 20 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	5	Nos.			
35.2.5	STARTER PANEL					
	OUTGOING :					
	1 No. 63 Amps MCCB 10 KA for 15 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	7	Nos.			
35.2.6	STARTER PANEL					
	OUTGOING :					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	1 No. 63 Amps MCCB 10 KA for 12.5 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	1	Nos.			
35.2.7	STARTER PANEL					
	OUTGOING :					
	1 No. 32 Amps MCCB 10 KA for 10 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	5	Nos.			
35.2.8	AHU STARTER PANEL (AHSP -					
	OUTGOING :					
	1 No. 32 Amps MCCB 10 KA for 7.5 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	16	Nos.			
35.2.9	AHU STARTER PANEL					
	OUTGOING :					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	1 No. 16 Amps MCCB 10 KA for 5 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	9	Nos.			
35.2.10	AHU STARTER PANEL					
	OUTGOING :					
	1 No. 16 Amps MCCB 10 KA for 3 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	9	Nos.			
35.2.11	AHU STARTER PANEL					
	OUTGOING :					
	1 No. 16 Amps MCCB 10 KA for 1.5/2 HP Motor with suitable Starters for motor with thermal overload protection,single phase preventor,spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button,ammeter with ASS and CTs for AHU motor as required.	26	Nos.			
35.2.12	AHU STARTER PANEL					
	OUTGOING :					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	1 No. 16 Amps MCCB 10 KA for 1/0.75/0.5 HP Motor with suitable Starters for motor with thermal overload protection, single phase preventor, spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button, ammeter with ASS and CTs for AHU motor as required.	13	Nos.			
36.0	CABLING					
	Supplying, laying, effecting proper connections, testing & commissioning of following size of 1.1 kv PVC insulated aluminium conducting armoured cables as per IS 1554 Part-1 laid underground/cable tray/on surface of wall/hume pipe etc. & termination with brass compression glands as required.					
36.1	3.5Cx 300 sq.mm cable	210	Mtr			
36.2	3.5Cx 240 sq.mm cable	75	Mtr			
36.3	3.5C x 185 sq.mm cable	250	Mtr			
36.4	3.5C x 95 sq.mm cable	100	Mtr			
36.5	3.5C x 70 sq.mm cable	100	Mtr			
36.6	3.5C x 50 sq.mm cable	450	Mtr			
36.7	3.5C x 35 sq.mm cable	450	Mtr			
36.8	4Cx 25 sq.mm Cable	80	Mtr			
36.9	3 C X 16 sq. mm. Cable	400	Mtr			
36.10	4 C X10 sq. mm. Cable	80	Mtr			
36.11	4 C X 6 sq. mm. Cable	250	Mtr			
36.12	3 C X 4 sq. mm. Cable	800	Mtr			
36.13	4C X4 sq. mm. Cable	100	Mtr			
37.0	CABLE TRAYS					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply & installation of following sizes of perforated MS cable trays including horizontal & vertical bends, reducers, tees, cross members and other accessories as required and duly supported from the ceiling/wall/floor with MS suspenders/supports and including painting etc. as required					
37.1	300 mm widthx50 mm deep x1.6 mmthickness	100	Mtr			
37.2	200 mm widthx50 mm deep x1.6 mmthickness	100	Mtr			
37.3	150 mm widthx50 mm deep x1.6 mmthickness	500	Mtr			
37.4	100 mm widthx50 mm deep x1.6 mmthickness	200	Mtr			
38.0	EARTHING					
38.1	Earth pits with GI earth plate of size 600mmx600mmx6mm thick including all accessories , down watering GI pipes 40mm dia and providing masonry enclosure with cover plate having interlocking arrangement and watering pipe etc. with charcoal (or coke and salt) complete as required	2	Set			
38.2	Providing & fixing GI earth strip 40mm x 6mm on surface or in recess for earth connections etc. as required	70	Mtr			
38.3	Providing and fixing GI earth strip on walls/ trenches complete as per specifications and as required.					
38.3.1	38mmx 6mm	100	Mtr			
38.3.2	25mm x 3mm	180	Mtr			
38.4	Providing and fixing earth wire of complete as per specifications as required.					
38.4.1	4 SWG wire	100	Mtr			
38.4.2	6 SWG wire	250	Mtr			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
38.4.3	8 SWG wire	900	Mtr			
39.0	CONTROL CABLING					
	Supply, laying, effecting proper connections, testing & commissioning of 1.5 sq.mm. PVC insulated copper multicore cables from AHU's and AC equipments to central control console					
39.1	44 core cable	150				
39.2	37 core cable	120				
39.3	27 core cable	120				
39.4	19 core cable	50				
39.5	14 core cable	80				
39.6	10 core cable	800				
39.7	8 core cable	300				
39.8	6 core cable	600				
39.9	5 core cable	500				
39.10	3 core cable	200				
39.11	2 core cable	150				
40.0	CONTROL CONSOLE /DESK					
	Supplying, installation, testing & commissioning of floor mounted desk type control console cum indicating panel in the A.C. plant room containing various indications and controls for the complete air-conditioning system comprising chilling units, chilled/ Hot/ condenser water pumps, cooling towers and AHUs/ Ex. blower/ Fans etc , Hot water boiler with test push button facility. The panel shall be fabricated from minimum 1.6mm thick M.S. powder coated sheet of approved design. The air-conditioning module of the central control cum indicating panel shall contain the following accessories.					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Status indication (ON, OFF & fault) of each compressor for each chilling machine, hot water boiler etc.					
	Push buttons and indicating lamps for remote start & stop and status indication for every nos of the water circulating pumps, Air Handling Units, Ex blower, Fans etc.					
	Push buttons and indication lamps for remote start & stop and status indication (On, Off & Fault) for every nos. cooling tower motors and low water level indication for every Nos. cooling towers.					
	Hooter and flashing lamp to indicate operation of any safety/ shut down with necessary contactors, accept, reset and test push buttons.					
	Complete wiring with copper conductor PVC insulated multicore 2.5 sq.mm stranded cable (including supply of cable, tray, clamps etc) from various equipments in the A.C. plant room, AHU's Terrace plant room and cooling towers etc to the control console panel as required.					
	COMPLETE PANEL AS ABOVE	1	Panel			
	Total For HVAC Works					

	<u>SURGICAL BLOCK, AIIMS , NEW DELHI</u>		
	<u>SUMMARY SHEET FOR HVAC WORKS</u>		
SECTION	DESCRIPTION OF WORK		AMOUNT(Rs.)
A	EQUIPMENTS		
B	PIPING		
C	AIR DISTRIBUTION		
D	INSULATION		
E	ELECTRICAL		
	GRAND TOTAL		