

**DEPARTMENT OF HEALTH & FAMILY WELFARE,  
GOVT. OF HIMACHAL PRADESH**

**TENDER**

**FOR**

**Construction of Dr. Y. S. Parmar Government  
Medical College at Nahan, District Sirmour,  
Himachal Pradesh & Pt. Jawaharlal Nehru  
Govt. Medical College at Chamba, District  
Chamba, Himachal Pradesh**

**VOLUME – V**

**BOQ**

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**HSCC (INDIA) LTD.  
(CONSULTANTS & ENGINEERS FOR MEGA HOSPITALS & LABORATORIES)  
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**Tender No. HSCC/DHFW/NAHAN & CHAMBA /HP/2017**

**Project Name: Construction of Hospital, Teaching Block, Housing, Hostels & Service Block and associated works for Medical College NAHAN, (H.P).**

Bill of Quantities for Civil Works

Item No	Description Of Item	Total Qty	Unit	Rate in Figures (Rs)	Rate in Words (Rs)	Amount in Figures (Rs)
1	2	3	4	5	6	7
<b>1.00</b>	<b>EARTH WORK</b>					
<b>1.01</b>	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth. 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5m, disposed earth to be levelled and neatly dressed.					
<b>a)</b>	All kinds of soil	14662.00	Cum			
<b>b)</b>	Ordinary rock	11010.00	Cum			
<b>c)</b>	Hard rock (blasting prohibited)	10868.00	Cum			
<b>1.02</b>	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, 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.					
<b>a)</b>	All kinds of soil.	195.00	Cum			
<b>b)</b>	Ordinary rock	147.00	Cum			
<b>c)</b>	Hard rock (blasting prohibited)	147.00	Cum			
<b>1.03</b>	Filling available (at site premises) 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, with all leads and lifts.	9674.00	Cum			
<b>1.04</b>	Extra for every additional lift of 1.5 m or part there of in excavation/banking excavated or stacked materials.					
<b>a)</b>	All kinds of soil.	12352.00	Cum			
<b>b)</b>	Ordinary or hard rock	16643.00	Cum			
<b>1.05</b>	Supplying and filling in plinth with Zone-V sand under floors including, watering, ramming consolidating and dressing complete.	816.00	Cum			
<b>1.06</b>	Supplying and stacking of good earth at site including royalty and carriage complete (earth measured in stacks will be reduced by 20% for payment).	375.00	Cum			
	<b>Total of sub-head</b>					

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<b>2.00</b>	<b>CONCRETE WORK</b>					
<b>2.01</b>	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)	10.00	Cum			
b)	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).	868.00	Cum			
c)	1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size)	816.00	Cum			
<b>2.02</b>	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets, sunken floor,etc., up to floor five level, 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)	48.00	Cum			
<b>2.03</b>	Providing and laying damp-proof course 40 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 12.5 mm nominal size).	286.00	Sqm			
<b>2.04</b>	Extra for providing and mixing water proofing material in cement concrete work in doses by weight of cement as per manufacturer's specification	77.00	per 50 kg cement			
<b>2.05</b>	Applying a coat of residual petroleum bitumen of grade of VG-10 of approved quality using 1.7 kg per square metre on damp proof course after cleaning the surface with brushes and finally with a piece of cloth lightly soaked in kerosene oil.	286.00	Sqm			
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<b>3.00</b>	<b>REINFORCED CEMENT CONCRETE</b>					
<b>3.01</b>	Providing and laying in position machine batched and machine mixed design mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design mix, including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS: 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge.					
	(Note :- Cement content considered in this item is @ 330 kg/cum. Excess/less cement used as per design mix is payable/recoverable separately).					
a)	All works upto plinth level.	8419.00	Cum			
b)	All works above plinth level upto floor V level.	12578.00	Cum			
<b>3.02</b>	Providing and laying in position ready mixed M-25 grade concrete for reinforced cement concrete work, using fly ash and cement content as per approved design mix, and manufactured in fully automatic batching plant and transported to site of work in transit mixer for all leads, having continuous agitated mixer, manufactured as per mix design of specified grade for reinforced cement concrete work, including pumping of R.M.C. from transit mixer to site of laying, excluding the cost of centering, shuttering, finishing and reinforcement, including cost of admixtures in recommended proportions as per IS : 9103 to accelerate / retard setting of concrete, improve workability without impairing strength and durability as per direction of the Engineer - in - charge.					
	NOTE- (1) Cement content considered in this item is @ 330 kg/cum. Excess/ less cement used as per design mix is payable/ recoverable separately.					
	(2) Fly ash conforming to grade I of IS 3812 (Part-1) only be used as part replacement of OPC as per IS : 456. Uniform blending with cement to be ensured in accordance with clauses 5.2 and 5.2.1 of IS:456 -2000 in the items of BMC and RMC.					
a)	All works up to Plinth level.	869.00	Cum			
b)	All works above plinth & up to floor V level.	1396.00	Cum			
	Note :- The above item shall be used judiciously where specified quality of Fly Ash is available for mixing in concrete. Also, the guidelines issued by CDO, CPWD, vide circular no. CDO/SE(RR)/Fly Ash (Main)/102 dated 9th April 2009 shall be followed in such cases.					
<b>3.03</b>	Extra for providing richer mixes at all floor levels.					
	Note:- Excess/less cement over the specified cement content used is payable /recoverable separately.					
i)	Providing M-30 grade concrete instead of M-25 grade BMC/ RMC. (Note: Cement content considered in M-30 is @ 340 kg/cum)	22951.00	Cum			
<b>3.04</b>	Centering and shuttering including strutting, propping etc. and removal of form for :					
a)	Foundations, footings, bases of columns, etc. for mass concrete	1745.00	Sqm			
b)	Walls (any thickness) including attached pilasters, buttresses, plinth and string courses etc.	9067.00	Sqm			
c)	Suspended floors, roofs, landings, balconies and access platform	43210.00	Sqm			
d)	Shelves (Cast in situ)	1121.00	Sqm			
e)	Lintels, beams, plinth beams, girders, bressumers and cantilevers	32761.00	Sqm			
f)	Columns, Pillars, Piers, Abutments, Posts and Struts	21163.00	Sqm			
g)	Stairs, (excluding landings) except spiral-staircases	1524.00	Sqm			
h)	Small lintels not exceeding 1.5 m clear span, moulding as in cornices, window sills, string courses, bands, copings, bed plates, anchor blocks and the like	1445.00	Sqm			
i)	Edges of slabs and breaks in floors and walls					
j)	Under 20 cm wide	200.00	Metre			
k)	Extra for shuttering in circular work for					
i)	columns	100.00	Sqm			
ii)	Beams	100.00	Sqm			
iii)	Slabs	100.00	Sqm			
l)	Weather shade, Chajjas, corbels etc., including edges	4087.00	Sqm			
<b>3.05</b>	Extra for additional height in centering, shuttering where ever required with adequate bracing, propping etc., including cost of de-shuttering and decentering at all levels, over a height of 3.5 m, for every additional height of 1 metre or part thereof (Plan area to be measured).					
a)	Suspended floors, roots, landing, beams and balconies (Plan area to be measured)	33448.00	Sqm			

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3.06	Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete at all levels.					
a)	Thermo-Mechanically Treated bars.	4388651.00	kg			
3.07	Add/deduct for using extra/less cement in the items of design mix over and above the specified cement content therein.	1150.00	Quintal			
3.08	Extra for R.C.C./ B.M.C/ R.M.C. work above floor V level for each four floors or part thereof.	5620.00	Cum			
3.09	Providing precast cement concrete Jali 1:2:4 (1 cement : 2 coarse sand:4 graded stone aggregate 6 mm nominal size), reinforced with 1.6 mm dia mild steel wire, including centering and shuttering, roughening cleaning, fixing and finishing in cement mortar 1:3 (1 cement: 3 fine sand) etc. complete, excluding plastering of the jambs, sills and soffits.					
a)	40 mm thick	96.00	Sqm			
<b>Total of sub-head</b>						

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<b>4.00</b>	<b>Walls and Partitions</b>					
<b>4.01</b>	Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in foundation and plinth in:					
a)	Cement mortar 1:6 (1 cement : 6 coarse sand)	321.00	Cum			
<b>4.02</b>	Providing and laying autoclaved aerated cement blocks masonry with 150mm/230mm/300 mm thick AAC blocks in super structure above plinth level up to floor V level with RCC band at sill level and lintel level with approved block laying polymer modified adhesive mortar all complete as per direction of Engineer-in-Charge. (The payment of RCC band and reinforcement shall be made for seperately).	3410.00	Cum			
<b>4.03</b>	Providing and fixing in position, 200 mm thick factory made Expanded Polystyrene Core (EPS Core) wall panels consisting of EPS core sandwiched between two Engineered sheets of welded wire fabric mesh duly finished with shotcrete materials on outer faces. The fabric mesh shall be made of 3 mm dia G.I. wire mesh with 50 mm pitch in both the directions and on both faces of the wall, kept at 120-135 mm gap and connected by the zig zag G.I. wire of 3 mm dia at alternate row by welding (at an angle ranging from 50-70 degree). The EPS core shall consist of 100 mm thick EPS of density not less than 20 kg/ per cum. Both the outer faces of the panel shall be finished by applying the layer of 50 mm thick cement mortar 1:3 (1 cement: 3 coarse sand (not having more than 40% stone chips of size upto 6 mm)). A with the help of shotcreting/guniting equipment etc at a pressure not less than 1 bar (100Kn/m <sup>2</sup> ) and both surfaces finished with trowel. Fixing operations of wall panels shall be completed in all respect as per drawings and specifications and under the overall direction of the Engineer-in-charge.	578.00	Sqm			
<b>4.04</b>	Brick work with non modular fly ash bricks conforming to IS:12894, class designation 10 average compressive strength in super structure above plinth level up to floor V level in :					
a)	Cement mortar 1:6 (1 cement : 6 Coarse sand)	4214.00	Cum			
<b>4.05</b>	Half brick masonry with non modular fly ash bricks of class designation 10, conforming to IS :12894, in super structure above plinth and upto floor V level.					
a)	Cement mortar 1 : 4 (1 cement : 4 coarse sand)	23710.00	Sqm			
<b>4.06</b>	Extra for providing and placing in position 2 Nos 6mm dia. M.S. bars at every third course of half brick masonry.	23710.00	Sqm			
<b>4.07</b>	Extra for brick work / AAC block masonry / Tile brick masonry in superstructure above floor V level, for each four floors or part thereof by mechanical means.	3364.00	Cum			
<b>4.08</b>	Extra for half brick masonry in superstructure, above floor V level for every four floors or part thereof by mechanical means.	7973.00	Sqm			
<b>4.09</b>	Brick edging 7cm wide 11.4 cm deep to plinth protection with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 including grouting with cement mortar 1:4 (1 cement : 4 fine sand).	1339.00	Metre			
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<b>5.00</b>	<b>DOORS &amp; WINDOWS</b>					
<b>5.01</b>	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazings, paneling to be paid for separately) :					
<b>a)</b>	For fixed portion					
<b>i)</b>	Polyester Powder coated aluminium (minimum thickness of polyester powder coating 50 micron)	29188.00	Kg			
<b>5.02</b>	For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately).					
<b>a)</b>	Polyester Powder coated aluminium (minimum thickness of polyester powder coating 50 micron)	14380.00	Kg			
<b>5.03</b>	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 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 dash fastener of required dia and size.	4526.00	kg			
<b>5.04</b>	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.					
<b>a)</b>	Upto 5mm depth and 5 mm width	1934.00	Metre			
<b>5.05</b>	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item):					
<b>a)</b>	With float glass panes of 5.50 mm thickness	1169.00	Sqm			
<b>5.06</b>	Providing and fixing double glazed hermetically sealed glazing in aluminium windows, ventilators and partition etc. with 6 mm thick clear float glass both side having 12 mm air gap including providing EPDM gasket, perforated aluminium spacers, desiccants, sealant (Both primary and secondary sealant) etc. as per specifications, drawings and direction of Engineer-in-charge complete.	1287.00	Sqm			
<b>5.07</b>	Providing and fixing anodised aluminium grill (anodised transparent or dyed to required shade according to IS: 1868 with minimum anodic coating of grade AC 15) of approved design/pattern, with approved standard section and fixed to the existing window frame with C.P. brass/ stainless steel screws @ 200 mm centre to centre, including cutting the grill to proper opening size for fixing and operation of handles and fixing approved anodised aluminium standard section around the opening, all complete as per requirement and direction of Engineer-in-charge. (Only weight of grill to be measured for payment).	949.00	kg			
<b>5.08</b>	Extra for polyester powder coating 50 micron on Aluminium Grill instead of anodising vide item no.5.07 above	949.00	kg			
<b>5.09</b>	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:					
<b>a)</b>	30 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	1757.00	Sqm			
<b>b)</b>	25 mm thick (for cupboard) including ISI marked nickel plated bright finished M.S. piano hinges with necessary screws	1398.00	Sqm			
<b>5.10</b>	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured) :					

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a)	Rectangular or square.	487.00	Sqm			
5.11	Extra for providing frosted glass panes 5.5 mm thick instead of ordinary float glass panes 5.5 mm thick in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	296.00	Sqm			
5.12	Providing glass panes, with wooden fillets wherever necessary.					
a)	Float glass panes of thickness 4 mm	42.00	Sqm			
5.13	Extra for providing lipping with 2nd class teak wood battens 6 mm depth on all edges of flush door shutters (over all area of door shutter to be measured).including polishing etc complete.	1757.00	Sqm			
5.14	Extra if louvers (not exceeding 0.2 sqm) are provided in flush door shutters (overall area of door shutters to be measured).					
a)	Decorative type door	75.00	Sqm			
5.15	Extra for cutting rebate in flush door shutters (Total area of the shutter to be measured).	1757.00	Sqm			
5.13	Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt / suede finish with high density protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S, including cost of adhesive of approved quality.					
a)	1.0 mm thick.	4907.00	Sqm			
5.14	Providing and fixing factory made door frame (single rebate) made out of single piece extruded solid PVC foam profile with homogenous fine cellular structure having smooth outer integral skin having 62 mm width & 32 mm thickness, frame will be mitred & jointed with self driven self tapping screws of size 38 mm x 4 mm & PVC solvent cement , including fixing the frame to wall with suitable dia & length anchor fastener as per manufacturer's specification and direction of Engineer-in-charge.	2564.00	mtr			
5.15	Providing and fixing factory made 30 mm thick door shutter made of solid PVC foam profile. The styles & rails shall be of size 75 mm x 30 mm having wall thickness 5 mm. The styles, top & bottom rails shall have one side wall thickness of 15 mm integrally extruded on the hinge side of the profile for better screw holding power. The styles and rails shall be reinforced with M.S. tubes of size 33 mm x 17 mm x 1 mm, painted with primer , all four corners of reinforcement to be welded or sealed. Solid PVC extruded bidding (push fit type) will be set inside the styles and the rails with a cavity, to receive single piece extruded 5 mm PVC sheet as panel. The styles and rails will be mitred cut and joint with the help of PVC solvent cement & self driven self tapping screws. Single piece extruded solid PVC lock rail of size 100 mm x 30 mm with wall thickness 5 mm & 15 mm integrally extruded in the middle of the lock rail & fixed with styles with the help of PVC solvent cement & self driven self tapping screws of size 100 mm x 8 mm complete as per manufacturer's specifications and direction of Engineer-in-charge.					
a)	Decorative finish (both side wood grained finish)	861.00	sqm			
5.16	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, of minimum 50 mm thickness, comprising of 75mm x 44mm hardwood internal timber frame work, with infill of 96 kg/m3, ceramic fiber blankets, coated with intumescent coating on both sides for insulation. The coated insulation shall be sandwiched between 12mm thick, Non combustible Boards (Calcium Silicate of approved quality and manufacture) on both sides (edge to edge on internal Hardwood frame) and clad with 3mm thick commercial ply of approved quality & 1mm thick laminate of approved brand and manufacture on both sides, with 50mm x 14mm 2nd class teak wood lipping all round the shutter.					



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	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 100x75x3mm of approved quality 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. The rate shall include all the materials, labour and T&P for the works described in the item above.					
a)	Single/Double Shutter	589.00	Sqm			
5.17	Providing and fixing door frames as per BS: 476 part 22, IS:3614 Part II as per the prototype certified by CBRI Roorkee made out of 2nd class Teak Wood (Ivory Coast) frame of section 120 X 70 mm 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 881 or equivalent un thinned on cleared hard wood surface of door frames (@3.5 sq.m. per litre per coat) including preparation 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 to achieve desired fire rating.	1028.00	Metre			
5.18	Providing and fixing UL listed door Co-ordinator of approved Make for coordination of double leaf 120 min fire rated doors, of approved brand and manufacture.	106.00	Each			
5.19	Supply & fixing of Fire-stop Fire sealing System Board Type(barriers) of approved make for sealing of floors, wall openings under control panels for the purpose of compartmentation.The FPSS consists of 100mm thick mineral wool insulation pad of approved make having density of 48 kg/m <sup>3</sup> coated with FR in tumescent compound encased with 10 mm thick calcium silicate board of approved make, sealed with intumescent Fire Seal Putty of approved Make. The system is coated and fixed with openings with the help of slotted angles of size 40x40mm of 16 SWG thickness, nutbolts of size 1.5"x8mm Dia. The FPSS system all provide 2 hours fire rating as per IS 12458-1989.After insulation of this system it will be painted with Fire Retardant Paint of approved Make.	146.00	sqm			
5.20	Providing and fixing glazing in fire resistant door shutters, fixed panels & partitions etc., with G.I. beading made out of 1.6 mm thick G.I. sheet (zinc coating not less than 120 gm/m <sup>2</sup> ) of size 20 x 33 mm screwed with M4 x 38 mm SS screws at distance 75 mm from the edges and 150 mm c/c , including applying a coat of approved fire resistant primer/powder coating of not less than 30 micron on G.I. beading & special ceramic tape of 5 x 20 mm size etc complete in all respect as per direction of Engineer-in-charge.The glass shall be clear, toughened, interlayered, non-wired fire resistant having 11 mm thickness of approved brand with 120 minutes of fire resistance both integrity & radiation control (EW120) and minimum 15 min of insulation (EI15) and having a sound reduction of 37dB and LT of 86%. Glass shall be compliant to class 2(B)2 category of Impact Resistance as per EN 12600. The glass should be manufactured in UL & TUV audited Facility and including UL-EU Certification.The maximum glazing size cannot be more than 1100 mm x 2200 mm (w x h) or 2.42 sq mts in total area. The test report for the complete system (Glazed Door or Partition) will be considered valid only if it contains the stamp and signature of the authorized signatory from the glass manufacturer. (Actual glass size is to be measured at site for payments).	33.00	Sqm			
5.21	Providing and fixing aluminium extruded section body tubular type universal hydraulic door closer (having brand logo with ISI, IS : 3564, embossed on the body, door weight upto 36 kg to 80 kg and door width from 701 mm to 1000 mm), with double speed adjustment with necessary accessories and screws etc. complete.	1216.00	Each			

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5.22	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)	250x16 mm	595.00	Each			
5.23	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	4477.00	Each			
b)	150x10 mm	5255.00	Each			
5.24	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	2980.00	Each			
b)	100 mm	2873.00	Each			
5.25	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	820.00	Each			
5.26	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 of approved quality with necessary screws etc. complete.					
		599.00	Each			
5.27	Providing and fixing stainless steel (SS 304 grade) adjustable friction windows stays of approved quality with necessary stainless steel screws etc. to the side hung windows as per direction of Engineer-in-charge complete.					
a)	255 X 19 mm	3154.00	Each			
5.28	Providing and fixing aluminium casement windows fastener of required length for aluminium windows with necessary screws etc. complete.					
a)	Polyester powder coated minimum thickness 50 micron aluminium	1588.00	Each			
5.29	Providing and fixing of UL listed fire rated single/double leaf panic exit devices for two hours fire rated door with min one year warrantee.					
a)	Double Leaf Panic Bar Set	106.00	Each			
5.30	Providing and fixing of heavy duty door closer of approved quality for 120 min fire door with minimum one year warranty.					
		150.00	Each			
5.31	Providing and fixing fire rated mortice lock with lever handle with 80 mm long cylinder of approved manufacturer for 120 min fire rated door.					
		65.00	Each			
5.32	Supply & installation of Panic Trim of approved brand & manufacture for 120 min fire rated door.					
		20.00	Each			
5.33	Providing and fixing 300 mm long stainless steel grade 304 D type back to back pull handle of approved make with necessary bolts with allen key arrangement etc complete for 120 min fire rated door.					
		191.00	Each			
5.34	Providing and fixing wire gauge shutters using stainless steel grade 304 wire gauge with wire of dia 0.5 mm and average width of aperture 1.4 mm in both directions for doors, windows and clerestory windows with necessary screws:					
a)	30 mm thick shutters					
i)	With ISI marked stainless steel butt hinges of required size					
	Second class teak wood	46.00	Sqm			
5.35	Providing and fixing aluminium pull bolt lock, 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 bolts, nut and washers etc. complete.					
		26.00	Each			
5.36	Providing and fixing oxidised M.S. Safety chain with necessary fixtures for doors, (weighting not less than 450 gms).					
		26.00	Each			

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5.37	Providing and fixing non-decorative core of block board (Duromac/ Ecotech/ sainik or equivalent) with frame of 1st class hard wood & well matched commercial 3 play veneering with vertical grains or cross bands & face veneers on both face in shelves with screws and fittings wherever required, (fittings to be paid separately).					
a)	18 mm thick	2016.00	Sqm			
5.38	Providing and fixing magnetic catcher of approved quality in cupboard / ward robe shutters, including fixing with necessary screws etc. complete.					
a)	Double strip (horizontal type)	194.00	Each			
5.39	Providing and fixing powder coated telescopic drawer channels 300 mm long with necessary screws etc. complete as per directions of Engineer-in-charge.	50.00	one set			
5.40	Providing and fixing special quality chromium plated brass cupboard locks with six levers of approved quality including necessary screws etc. complete.					
a)	Size 40 mm	500.00	Each			
5.41	Providing and fixing curtain rods of 1.25 mm thick chromium plated brass plate, with two chromium plated brass brackets fixed with C.P. brass screws and wooden plugs, etc., wherever necessary complete :					
a)	20 mm dia	448.00	Metre			
5.42	Providing and fixing 50 mm bright finished brass cup board or wardrobe knob of approved quality with necessary screws.	50.00	Each			
5.43	Providing and fixing double action hydraulic floor spring of approved brand and manufacture conforming to IS : 6315, having brand logo embossed on the body / plate with double spring mechanism and door weight upto 125 kg, for doors, including cost of cutting floors, embedding in floors as required and making good the same matching to the existing floor finishing and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.					
a)	With brass cover plate minimum 1.25 mm thickness	309.00	Each			
5.44	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)	Polyester powder coated minimum thickness 50 micron aluminium tubular handle bar	113.00	Each			
5.45	Providing and fixing aluminium round shape handle of outer dia 100mm with SS screws etc. complete as per direction of Engineer-in-charge					
a)	Polyester Powder coated minimum thickness 50 micron aluminium	502.00	Each			
5.46	Providing and fixing bright finished 100 mm mortice lock with 6 levers without pair of handles of approved quality for aluminium door, with necessary screws etc complete as per direction of Engineer-in-charge.	187.00	Each			
5.47	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength conforming to IS: 4454 - part 1 and M.S. top cover of required thickness for rolling shutters.					
a)	80x1.25 mm M.S. laths with 1.25 mm thick top cover	55.00	sqm			
5.48	Providing and fixing ball bearing for rolling shutters.	13.00	Each			
5.49	Providing and fixing PVC rigid foam sheet 1 mm thick on door shutters (bathroom and W.C. doors) using synthetic rubber based adhesive	137.00	Sqm			
<b>Total of sub-head</b>						

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<b>6.00</b>	<b>STEEL WORK</b>					
<b>6.01</b>	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.					
<b>a)</b>	In stringers, treads, landings etc. of stair cases, including use of chequered plate wherever required, all complete	866.00	Kg			
<b>b)</b>	In gratings, frames, guard bar, ladder, railings, brackets, gates, signage and similar works.	10304.00	Kg			
<b>6.02</b>	Providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing, staircase railing and similar works, including applying priming coat of approved steel primer.					
<b>a)</b>	M.S. tube	3907.00	kg			
<b>6.03</b>	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. including priming cost with approved steel primer all complete.					
<b>a)</b>	Fixed to steel windows by welding.	10905.00	kg			
<b>6.04</b>	Providing and fixing stainless steel ( Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners , stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer-in-charge, ( for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts, fasteners etc.).	9450.00	Kg			
<b>6.05</b>	Providing & fixing fly proof wire gauze to windows, clerestory windows & doors with M.S. Flat 15x3 mm and nuts & bolts complete.					
<b>a)</b>	Galvanised M.S. Wire gauze with 0.63 mm dia wire and 1.4 mm aperture on both sides	338.00	Sqm			
	<b>Total of sub-head</b>					

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<b>7.00</b>	<b>FLOORING</b>					
<b>7.01</b>	Cement concrete flooring 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete.					
<b>a)</b>	40mm thick with 20mm nominal size stone aggregate.	1010.00	Sqm			
<b>7.02</b>	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.					
<b>a)</b>	18 mm thick	45.00	Sqm			
<b>7.03</b>	Marble stone flooring with 18 mm thick marble stone, as per sample of marble 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 :					
<b>a)</b>	Raj Nagar plain	3854.00	Sqm			
<b>b)</b>	Udaipur green/Jaiselmer marble	15174.00	Sqm			
<b>7.04</b>	Providing and fixing machine cut, mirror / eggshell polished , Marble stone work for wall lining (vaneer work) including dado, skirting, risers of steps etc., in required design and pattern wherever required, stones of different finished surface texture, on 12 mm (average) thick cement mortar 1:3 (1 cement : 3 coarse sand) laid and jointed with white cement slurry @ 3.3 kg/sqm including pointing with white cement slurry admixed with pigment of matching shade, including rubbing, curing, polishing etc. all complete as per Architectural drawings, and as directed by the Engineer-in-Charge.					
<b>a)</b>	18 mm thick Flamed/polished granite stone slab Jet Black, Cherry Red, Elite Brown, Cat Eye or equivalent	1094.00	Sqm			
<b>7.05</b>	Providing and laying Polished / flamed finish Granite stone flooring in required design and patterns, in linear as well as curvilinear portions of the building, all complete as per the architectural drawings, with 18 mm thick stone slab over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand), laid and jointed with cement slurry and pointing with white cement slurry admixed with pigment of matching shade, including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge.					
<b>a)</b>	Granite stone slab jet Black, Cherry Red, Elite Brown, Cat Eye or equivalent.	545.00	Sqm			
<b>7.06</b>	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) :					
<b>a)</b>	25 mm thick.	6164.00	Sqm			
<b>7.07</b>	Kota stone slabs 20 mm thick in risers of steps, skirting, dado and pillars laid on 12 mm (average) thick cement mortar 1:3 (1 cement 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.	597.00	Sqm			
<b>7.08</b>	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.	3460.00	Sqm			
<b>7.09</b>	Providing and laying rectified/ antiskid 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.	1100.00	Sqm			

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7.10	Providing and laying vitrified floor 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 600x600 mm	22326.00	Sqm			
7.11	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer) with water absorption less than 0.08 % and conforming to I.S. 15622, of approved make in all colours & shade in skirting, riser of steps and dado over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand), including grouting the joint with white cement & matching pigments etc. complete.					
a)	Size of Tile 600x600 mm	14116.00	Sqm			
7.12	Providing and fixing 10 mm 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)					
l)	Acid and alkali resistant tile	166.00	sqm			
7.13	In dado/skirting on 12 mm thick mortar 1:4 (1 acid proof cement : 4 coarse sand)					
a)	Acid and alkali resistant tile	9.00	sqm			
7.14	P/L 8mm thick (EN13329) HDF laminated wooden Flooring including skirting of approved brand and manufacture(class use of 23/32 AC 4 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 including the cost of 0.6 mil. PE Film and 2 mm PU Foam with accessories like Skirting (100/60 mmx 12 mm), T Profile (45x15 mm), beading (18x18 mm), stair nose etc all complete.	424.00	sqm			
7.15	<b>Providing &amp; fixing PVC Grab Rail Crash Guard System</b> The system of approved brand and manufacturing with different colour strips fixed to wall at 900mm center high from finish floor level comprising continuous aluminium rail retainer, adjustable rail mounting base, with impact absorbing strip, end cap & high impact vinyl acrylic snap-on textured surface cover. 138 mm high x 76 mm thickness.	1500.00	mtr			
7.16	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels					
a)	Raj Nagar Plain white marble/ Udaipur green marble/ Zebra black marble					
i	Area of slab upto 0.50 sqm	72.00	Sqm			
ii	Area of slab over 0.50 sqm.	20.00	Sqm			
b)	Granite of any colour and shade					
i	Area of slab upto 0.50 sqm	216.00	Sqm			
ii	Area of slab over 0.50 sqm.	654.00	Sqm			
7.17	Extra for fixing marble /granite stone, over and above corresponding basic item, in facia and drops of width upto 150 mm with epoxy resin based adhesive, including cleaning etc. complete.	1277.00	Metre			
7.18	Extra for providing opening of required size & shape for wash basin/ kitchen sink in kitchen platform, vanity counter and similar location in marble/Granite/stone work, including necessary holes for pillar taps etc. including moulding, rubbing and polishing of cut edges etc. complete.	564.00	Each			
7.19	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) :					
a)	Medium shade using 50%white cement 50% ordinary cement	52.00	Sqm			

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7.20	Providing & fixing 2 mm thick homogeneous jointless, scratch resistant, chemical resistant, anti fungal and anti bacterial class A clean room certified, Phthalate free PVC Vinyl flooring and skirting/ coving good for laboratories of approved quality including the cost of suitable adhesive of approved quality and manufacture.(Cost of coving to be paid seperately)	838.00	Sqm			
7.21	Extra for providing and fixing coving of suitable material for PVC flooring including the cost of labour and materials for coving. Length of coving shall be measured for payment.	47.00	mtr			
<b>Total of sub-head</b>						

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<b>8.00</b>	<b>ROOFING</b>					
<b>8.01</b>	Providing and fixing mineral fibre false ceiling tiles at all heights of size 595X595mm of approved texture, design and pattern. The tiles should have Humidity Resistance (RH) of 99%, Light Reflectance > 85%, Thermal Conductivity k = 0.052 - 0.057 w/m K, Fire Performance as per (BS 476 pt - 6 & 7) in true horizontal level suspended on interlocking T-Grid of hot dipped all round galvanized iron section of 0.33 mm thick (galvanized @120 gsm ) comprising of main T runners of 15x32 mm of length 3000 mm, cross T of size 15x32mm of length 1200 mm and secondary intermediate cross T of size 15x32 mm of length 600 mm to form grid module of size 600x600 mm suspended from ceiling using galvanized mild steel item (galvanised @80gsm) 50 mm long 8mm outer diameter M-6 dash fasteners, 6 mm diameter fully threaded hanger rod upto 1000mm length and L-shape level adjuster of size 85x25x2 mm, spaced					
	at 1200 mm centre to centre along main 'T'. The system should rest on periphery walls /partitions with the help of GI perimeter wall angle of size24x24x3000 mm made of 0.40 mm thick sheet, to be fixed to the wall with help of plastic rawl plug at 450 mm centre to centre & 40 mm long dry wall S.S. screws. The exposed bottom portion of all T-sections used in false ceiling support system shall be pre-painted with polyester baked paint, for all heights. The work shall be carried out as per specifications, drawings and as per directions of the engineer-in-charge.					
<b>a)</b>	With 16 mm thick beveled tegular mineral fibre false ceiling tile (NRC 0.55 to 0.6)	6391.00	Sqm			
<b>b)</b>	With 16 mm thick beveled tegular mineral fibre Antimicrobial false ceiling tile	8545.00	Sqm			
<b>8.02</b>	Providing and fixing GI Clip in Metal Ceiling System of 600x600 mm module which includes providing and fixing 'C' wall angle of size 20x30x20 mm made of 0.5 mm thick pre painted steel along the perimeter of the room with help of nylon sleeves and wooden screws at 300 mm center to centre, suspending the main C carrier of size 10x38x10 mm made of G.I steel 0.7 mm thick from the soffit with help of soffit cleat 37x27x25x1.6 mm, rawl plugs of size 38x12 mm and C carrier suspension clip and main carrier bracket at 1000 mm c/c. Inverted triangle shaped Spring Tee having height of 24 mm and width of 34 mm made of GI steel 0.45 mm thick is then fixed to the main C carrier and in direction perpendicular to it at 600 mm centers with help of suspension brackets. Wherever the main C carrier and spring T have to join, C carrier and spring T connectors have to be used. All sections to be galvanized @ 120 gms/sqm (both side inclusive), fixing with clip in tiles into spring 'T' with :					
<b>a)</b>	GI Metal Ceiling Clip in plain Beveled edge global white color tiles of size 600x600 and 0.5 mm thick with 25 mm height, made of GI sheet having galvanizing of 100 gms/sqm (both sides inclusive) and electro statically polyester powder coated of thickness 60 microns (minimum), including factory painted after bending.	674.00	Sqm			
<b>8.03</b>	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling					



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	section and perimeter channel with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :					
a)	12.5 mm thick tapered edge gypsum fire resistant board conforming to IS: 2095- Part I	6219.00	Sqm			
<b>8.04</b>	Providing & fixing false ceiling at all height including providing & fixing of framework made of special section, power pressed from M.S. sheets and galvanised with zinc coating of 120 gms/ sqm (both side inclusive) as per IS : 277 and consisting of angle cleat of size 25mm wide x 1.6mm thick with flanges of 27mm and 37mm, at 1200mm c/c, one flange fixed to the ceiling with dash fastener 12.5mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25 x10 x0.50mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I channels 45 x15 x 0.90mm running at the spacing of 1200 mm c/c, to which the ceiling section 0.5mm thick bottom wedge of 80mm with tapered flanges of 26 mm each having lips of 10.5mm, at 450mm c/c, shall be fixed in a direction perpendicular to G.I intermediate channel with connecting clip made out of 2.64mm dia x 230mm long G.I wire at every junction, including fixing perimeter channels 0.50mm thick 27mm high having flanges of 20mm and 30mm long, the perimeter of ceiling fixed to wall/ partitions with the help of Rawl plugs at 450mm centre, with 25mm long dry wall screws @ 230mm interval, including fixing of					
	Calcium Silicate Board to ceiling section and perimeter channels with the help of dry wall screws of size 3.5 x25mm at 230mm c/c, including jointing & finishing to a flush finish of tapered and square edges of the board with recommended jointing compounds, jointing tapes,finishing with jointing compounds in three layers covering up to 150mm on both sides of joints and two coats of primer suitable for boards, all as per manufacture's specification and also including the cost of making opening for light fittings, grills, diffusers, cut outs made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in charge but excluding the cost of painting with:					
a)	8 mm thick Calcium Silicate Board made with Calcareous & Siliceous materials reinforced with cellulose fiber manufactured through autoclaving process.	2848.00	Sqm			
<b>8.05</b>	Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound consisting of applying :					
	First layer of slurry of cement @ 0.488 kg/sqm mixed with water proofing cement compound @ 0.253 kg/ sqm. This layer will be allowed to air cure for 4 hours.					
	Second layer of slurry of cement @ 0.242 kg/sqm mixed with water proofing cement compound @ 0.126 kg/sqm. This layer will be allowed to air cure for 4 hours followed with water curing for 48 hours. The rate includes preparation of surface, treatment and sealing of all joints, corners, junctions of pipes and masonry with polymer mixed slurry.	2754.00	Sqm			
<b>8.06</b>	Providing and fixing 10mm thick clear multi wall solar control 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.					

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	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 sealant and also with masonry/ RCC work, at all heights including double heights, straight or curved etc. complete in all respect. ( Surface Area shall be measured for the payment) ( M.S. Framing to be paid for separately )					
a)	For Dome Structure	50.00	Sqm			
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 conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls upto 300 mm height including rounding of junctions of walls and slabs c) After two days of proper curing applying a second coat of cement slurry using 2.75kg/ 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 120 mm and minimum thickness at khurra as 65 mm.	7654.00	Sqm			
8.08	Providing and fixing thermal insulation with Resin Bonded rock wool conforming to IS: 8183, having density 48 kg/m <sup>3</sup> 3.50 mm thick, wrapped in 200 G Virgin Polythene Bags fixed to wall with screw, rawel plug & washers and held and in position by criss crossing GI wire etc. complete as per directions of Engineer-in-Charge.	396.00	sqm			
8.09	Providing and fixing frame work for partitions/ wall lining etc. made of 50x50x1.6 mm hollow MS tube, placed along the walls, ceiling and floor in a grid pattern with spacing @ 60 cm centre to centre both ways (vertically & horizontally) or at required spacing near opening, with necessary welding fasteners of 8 mm dia, 75 mm long bolt, including making provision for opening for doors, windows, electrical conduits, switch boards etc., including providing with two coats of approved steel primer etc. complete, all as per direction of Engineer-in-charge.	5936.00	kg			
8.10	Providing and fixing Pre -laminated medium density fibre board exterior grade (Grade-I) IS:14587:1998 marked, to frame, backing or studding with screws etc. complete ( Frames, backing or studding to be paid separately).					
a)	Pre-laminated with decorative lamination on both side exterior Grade - I MDF Board 12 mm thick confirming to IS:14587	396.00	sqm			
<b>Total of sub-head</b>						

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures (Rs)	Rate in Words (Rs)	Amount in Figures (Rs)
1	2	3	4	5	6	7
<b>9.00</b>	<b>FINISHING</b>					
<b>9.01</b>	12 mm cement plaster of mix :					
<b>a)</b>	1:6 (1 cement: 6 fine sand)	45708.00	Sqm			
<b>9.02</b>	15 mm cement plaster on the rough side of single or half brick wall of mix:					
<b>a)</b>	1:4 (1 cement: 4 fine sand)	4801.00	Sqm			
<b>b)</b>	1:6 (1 cement : 6 fine sand)	68330.00	Sqm			
<b>9.03</b>	20 mm cement plaster of mix :					
<b>a)</b>	1:4 (1 cement: 4 fine sand)	27701.00	Sqm			
<b>9.04</b>	6 mm cement plaster of mix :					
<b>a)</b>	1:3 (1 cement : 3 fine sand)	25909.00	Sqm			
<b>9.05</b>	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.	71440.00	Sqm			
<b>9.06</b>	Providing and applying plaster of paris putty of 2 mm thickness over plastered surface to prepare the surface even and smooth complete.	139936.00	Sqm			
<b>9.07</b>	White washing with lime to give an even shade :					
<b>a)</b>	New work (three or more coats)	3513.00	Sqm			
<b>9.08</b>	Distemping with 1st quality acrylic distemper, having VOC (Volatile Organic Compound ) content less than 50 grams/ litre, of approved brand and manufacture, including applying additional coats wherever required, to achieve even shade and colour.					
<b>a)</b>	Two Coats	50526.00	Sqm			
<b>9.09</b>	Finishing walls with Acrylic Smooth exterior paint of required shade :					
<b>a)</b>	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including priming coat of exterior primer applied @ 2.20 kg/ 10 sqm)	14863.00	Sqm			
<b>9.10</b>	Applying priming coats with primer of approved brand and manufacture, having low VOC (Volatile Organic Compound ) content.					
<b>a)</b>	With ready mixed red oxide zinc chromatic on steel / iron works having VOC content less than 250 grams/ litre	9786.00	Sqm			
<b>b)</b>	With water thinnable cement primer on wall surface having VOC content less than 50 grams/litre	139936.00	Sqm			
<b>9.11</b>	Finishing walls with textured exterior paint of required shade:					
<b>a)</b>	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/10 sqm.	14066.00	Sqm			
<b>9.12</b>	Wall painting with premium acrylic emulsion paint of interior grade, having VOC (Volatile Organic Compound ) content less than 50 grams/ litre of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.					
<b>a)</b>	Two Coats	87649.00	Sqm			
<b>9.13</b>	<b>PU Wall Coating</b>					
	Preparing the wall using sand paper cleaning etc. Providing and applying epoxy / acrylic wall putty over prepared wall surfaces to achieve smooth surface to take wall coating.					
	Providing and applying water dispersed polyurethane wall coating of approved quality in 2 coats and finishing as per manufacturer specifications. A chemical resistant pre-packed, two part water dispersed polyurethane wall coating The total dry film thickness shall not be less than 90 microns in two coats. The cured film shall be hygienic and provide hard, flexible matt and chemical resistant surface.	1761.00	sqm			
<b>9.14</b>	Painting with synthetic enamel paint, having VOC (Volatile Organic Compound) content less than 150 grams/ litre, of approved brand and manufacture, including applying additional coats wherever required to achieve even shade and colour.					
<b>a)</b>	Two Coats	9786.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures (Rs)	Rate in Words (Rs)	Amount in Figures (Rs)
1	2	3	4	5	6	7
9.15	Providing and fixing 150 mm wide, 22 gauge and 18mm square chicken wiremesh at junctions of concrete and brick work and other locations at all heights placed symmetrically on the joint, including cutting to required size, fixing in position with cement and nails etc complete in all respects as per specifications/drawings and to the entire satisfaction of the Engineer in Charge.	3792.00	Sqm			
<b>Total of sub-head</b>						

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1	2	3	4	5	6	7
10.00	MISCELLANEOUS					
10.01	Providing and supplying aluminium extruded tubular and other aluminium sections as per the architectural drawings and approved shop drawings , the aluminium quality as per grade 6063 T5 or T6 as per BS 1474,including super durable powder coating of 60-80 microns conforming to AAMA 2604 of required colour and shade as approved by the Engineer-in-Charge. ( The item includes cost of material such as cleats, sleeves, screws etc. necessary for fabrication of extruded aluminium frame work. Nothing extra shall be paid on this account).	5965.00	Kg			
10.02	Designing, fabricating, testing, protection, installing and fixing in position semi (grid) unitized system of structural glazing (with open joints) for linear as well as curvilinear portions of the building for all heights and all levels, including: a) Structural analysis & design and preparation of shop drawings for the specified design loads conforming to IS 875 part III (the system must passed the proof test at 1.5 times design wind pressure without any failure), including functional design of the aluminum sections for fixing glazing panels of various thicknesses, aluminium cleats, sleeves and splice plates etc. gaskets, screws, toggles, nuts, bolts, clamps etc., structural and weather silicone sealants, flashings, fire stop (barrier)-cum-smoke seals, microwave cured EPDM gaskets for water tightness, pressure equalisation & drainage and protection against fire hazard including: b) Fabricating and supplying serrated M.S. hot dip galvanised / Aluminium alloy of 6005 T5 brackets of required sizes, sections and profiles etc. to accommodate 3 Dimentional movement for achieving perfect verticality and fixing structural glazing system rigidly to the RCC/masonry/structural steel framework of building structure using stainless steel anchor fasteners/ bolts, nylon seperator to prevent bimetallic contacts with nuts and washers etc. of stainless steel grade 316, of the required capacity and in required numbers. c) Providing and filling, two part pump filled, structural silicone sealant and one part weather silicone sealant compatible with the structural silicone sealant of required bite size in a clean and controlled factory / work shop environment , including double sided spacer tape, setting blocks and backer rod, all of approved grade, brand and manufacture, as per the approved sealant design, within and all around the perimeter for holding glass. d) Providing and fixing in position flashings of solid aluminium sheet 1 mm thick and of sizes, shapes and profiles, as required as per the site conditions, to seal the gap between the building structure and all its interfaces with curtain glazing to make it watertight. e) Making provision for drainage of moisture/ water that enters the curtain glazing system to make it watertight, by incorporating principles of pressure equalization, providing suitable gutter profiles at bottom (if required), making necessary holes of required sizes and of required numbers etc. complete. This item includes cost of all inputs of designing, labour for fabricating and installation of aluminium grid, installation of glazed units, T&P, scaffolding and other incidental charges including wastages etc., enabling temporary structures and services, cranes or cradles etc. as described above and as specified. The item includes the cost of getting all the structural and functional design including shop drawings checked by a structural designer, dully approved by Engineer-in-charge. The item also includes the cost of all mock ups at site, cost of all samples of the individual components for testing in an approved laboratory, field tests on the assembled working structural glazing as specified, cleaning and protection till the handing over of the building for occupation. In the end, the Contractor shall provide a water tight structural glazing having all the performance characteristics etc. all complete as required, as per the Architectural drawings, as per item description, as specified, as per the approved shop drawings and as directed by the Engineer-in-Charge.					
	Note:- 1. The cost of providing extruded aluminium frames, shadow boxes, extruded aluminium section capping for fixing in the grooves of the curtain glazing and vermin proof stainless steel wire mesh shall be paid for separately under relevant items under this sub- head. However, for the purpose of payment, only the actual area of structural glazing (including width of grooves ) on the external face shall be measured in sqm. up to two decimal places.					

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	Note:-2. The following performance test are to be conducted on structural glazing system if area of structural glazing exceeds 2500 Sqm from the certified laboratories accredited by NABL(National Accreditation Board for Testing and Calibration Laboratories), Department of Science & Technologies, India. Cost of testing is payable separately. The NIT approving authority will decide the necessity of testing on the basis of cost of the work, cost of the test and importance of the work. Performance Testing of Structural glazing system Tests to be conducted in the NBL Certified laboratories					
	1. Performance Laboratory Test for Air Leakage Test (-50pa to -300pa) & (+50pa to +300pa) as per ASTM E-283-04 testing method for a range of testing limit 1 to 200 mVhr"					
	2. Static Water Penetration Test. (50pa to 1500pa) as per ASTM E-331-09 testing method for a range up to 2000 ml."					
	3. Dynamic Water Penetration (50pa to 1500pa) as per AAMA 501.01-05 testing method for a range upto 2000 ml"					
	4. Structural Performance Deflection and deformation by static air pressure test (1.5 times desing wind pressure without any failure) as per ASTM E-330-10 testing method for a range upto 50 mm"					
	5. Seismic Movement Test (upto 30 mm) as per AAMA 501.4-09 testing method for Qualitative test" Tests to be conducted on site					
	6. Onsite Test for Water Leakage for a pressure range 50 kpa to 240 kpa (35psi) upto 2000ml"	797.00	Sqm			
10.03	Providing, assembling and supplying vision glass panels (IGUs) comprising of hermetically-sealed 6-12- 6 mm insulated glass (double glazed) vision panel units of size and shape as required and specified, comprising of an outer heat strengthened float glass 6mm thick, of approved colour and shade with reflective soft coating on surface # 2 of approved colour and shade, an inner Heat strengthened clear float glass 6mm thick, spacer tube 12mm wide, dessicants, including primary seal and secondary seal (structural silicone sealant) etc. all complete for the required performances, as per the Architectural drawings, as per the approved shop drawings, as specified and as directed by the Engineer-in-Charge. The IGUs shall be assembled in the factory/ workshop of the glass processor. (Payment for fixing of IGU Panels in the curtain glazing is included in cost of item No.26.2) For payment, only the actual area of glass on face # 1 of the glass panels (excluding the areas of the grooves and weather silicone Sealant) provided and fixed in position, shall be measured in sqm.					
	(i) Coloured tinted float glass 6mm thick substrate with reflective soft coating on face # 2. + 12mm Airgap + 6mm Heat Strengthened clear Glass of approved make having properties as visible Light transmittance (VLT) of 25 to 35 %, Light reflection internal 10 to 15%, light reflection external 10 to 20 %, shading coefficient (0.25- 0.28) and U value of 3.0 to 3.3 W/m2 degree K etc. The properties of performance glass shall be decided by technical sanctioning authority	797.00	Sqm			
10.04	Extra for openable side / top hung vision glass panels (IGUs) including providing and supplying at site all accessories and hardwares for the openable panels as specified and of the approved make such as heavy duty stainless steel friction hinges, min 4 -point cremone locking sets with stainless steel plates, handles, buffers etc. including necessary stainless steel screws/ fasteners, nuts, bolts, washers etc. all complete as per the Architectural drawings, as per the approved shop drawings, as specified and as directed by the Engineer- in-Charge.	80.00	Sqm			
10.05	Making plinth protection 50 mm thick of cement concrete 1:3:6 (1 cement: 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) over 75mm thick bed of dry brick ballast 40 mm nominal size, well rammed and consolidated and grouted with fine sand, including finishing the top smooth.	1076.00	Sqm			

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10.06	Providing and applying integral crystalline slurry of hydrophilic in nature for waterproofing treatment to the RCC structures like retaining walls of the basement, water tanks, roof slabs, podiums, reservoir, sewage & water treatment plant, tunnels/ subway and bridge deck etc., prepared by mixing in the ratio of 5 : 2 (5 parts integral crystalline slurry : 2 parts water) for vertical surfaces and 3 : 1 (3 parts integral crystalline slurry : 1 part water) for horizontal surfaces and applying the same from negative (internal) side with the help of synthetic fiber brush. The material shall meet the requirements as specified in ACI-212-3R-2010 i.e by reducing permeability of concrete by more than 90% compared with control concrete as per DIN 1048 and resistant to 16 bar hydrostatic pressure on negative side. The crystalline slurry shall be capable of self-healing of cracks up to a width of 0.50mm. The work shall be carried out all complete as per specification and the direction of the engineer-in-charge. The product performance shall carry guaranteed for 10 years against any leakage.					
a)	For vertical surface two coats @0.70 kg per sqm per coat	2222.00	Sqm			
b)	For horizontal surface one coat @1.10 kg per sqm.	1721.00	Sqm			
10.07	Random rubble masonry with hard stone in foundation and plinth including levelling up with cement concrete 1:6:12 (1 cement : 6 coarse sand : 12 graded stone aggregate 20 mm nominal size) upto plinth level with :					
a)	Cement mortar 1:6 (1 cement : 6 coarse sand)	435.00	Cum			
10.08	Pointing on stone work with cement mortar 1:3 (1 cement : 3 fine sand) :					
a)	Flush/ Ruled pointing	630.00	Sqm			
10.09	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 levelling course (levelling 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 cum/sqm thoroughly embedded in the 2nd layer.					
a)	Using rough kota stone.	152.00	Sqm			
10.10	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	326.00	Sqm			
10.11	Manufacturing, supplying and fixing retro reflective overhead signage boards made up of 2 mm thick aluminium sheet, face to be fully covered with high intensity and encapsulated lens type heat activated retro reflective sheeting conforming to type - III of ASTM-D-4956-01 as approved by Engineer-in-charge, letters, borders etc. as per IRC : 67-2001 in silver white with blue colour back ground and with high intensity grade, pasted on substrate by pressure sensitive adhesive backing which shall be activated by applying pressure conforming to class II of ASTM-D-4956-01 and fixing the same to the plate of structural frame work by means of suitable sized aluminium alloys, rivets or bolts & nuts @ 300 mm centre to centre all along the periphery as well as in two vertical rows along with theft resistant measures, including the cost of painting with two or more coats of epoxy paint in grey colour on the back side of aluminium sheet including appropriate priming coat.					

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	The rate includes the cost of rounding off the corners, lowering down the structural frame work from the gantry, fixing and erecting the same in position all complete as per drawings, specification and direction of the engineer-in-charge.(Structural frame work including M.S. plate to be provided separately. Rectangular area of the sheet only shall be measured for separately.					
a)	Overhead informatory road signage	20.00	Sqm			
10.12	Providing and applying 2.5 mm thick road marking strips (retro- reflective) of specified shade/ colour using hot thermoplastic material by fully/ semi automatic thermoplastic paint applicator machine fitted with profile shoe, glass beads dispenser, propane tank heater and profile shoe heater, driven by experienced operator on road surface including cost of material, labour ,T&P, cleaning the road surface of all dirt, seals, oil, grease and foreign material etc. complete as per direction of Engineer-in-charge and accordance with applicable specifications.	50.00	Sqm			
10.13	Providing & fixing of external signages of varying sizes & shapes using GI sheet of atleast 19G, painting the entire board both surfaces with 1 coat of primer & 2 coats of synthetic enamel painting, lettering of approved type on board of any sizes in English / Hindi or Local language complete as per technical specifications & directions of Engineer.	20.00	sqm			
10.14	Providing & Fixing Wall Mounted Nonlit Fire Exit 24" x 9" Internal sign of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	150.00	Nos			
10.15	Providing & Fixing Wall Mounted Nonlit Utility 6" x 6" Internal sign of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	150.00	Nos			
10.16	Providing & Fixing Wall Mounted Nonlit Identification sign 18"x5" of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	150.00	Nos			
10.17	Providing & Fixing Wall Mounted Nonlit Fire Exit 24" x 9" Internal sign of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	150.00	Nos			
10.18	Providing & Fixing Wall Mounted Nonlit directory sign 2' x 3' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	40.00	Nos			
10.19	Providing & Fixing Wall Mounted Nonlit directory sign 3' x 4' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	20.00	Nos			
10.20	Providing & Fixing Wall Mounted Nonlit directory sign 3' x 3.5' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	20.00	Nos			



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10.21	Providing & Fixing Suspended Nonlit sign 48"x9" of approved make & made of 1" Aluminium framing duly PU painted and 10mm Acrylic element mounted to it from either side with the required text matters stuck on it with plotted Self Adhesive Vinyl bracketed at suitable locations, including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	200.00	Nos			
10.22	Providing & Fixing Wall Mounted Nonlit directory sign 15' x 11' of approved make & made of 10mm Acrylic with the required text matters stuck on it with plotted self adhesive vinyl & Mounted on 3mm Aluminium Composit Panel bracketed at suitable locations including necessary fittings & fastening etc. complete & as directed by The Engineer in charge.	2.00	Nos			
<b>Total of sub-head</b>						

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<b>11.00</b>	<b>ROAD WORK &amp; HORTICULTURE</b>					
11.01	Preparation and consolidation of sub grade with power road roller of 8 to 12 tonne capacity after excavating earth to an average of 22.5 cm. depth, dressing to camber and consolidating with road roller including making good the undulations etc. and re-rolling the sub grade and disposal of surplus earth lead upto 50 metres.	8690.00	Sqm			
11.02	Construction of dry lean cement concrete sub base over a prepared sub-grade with coarse and fine aggregate conforming to IS:383, the size of coarse aggregate not exceeding 25 mm, aggregate cement ratio not to exceed 15:1, aggregate gradation after blending to be as per specifications, cement content not to be less than 150 Kg/cum, optimum moisture content to be determined during trial length construction, concrete strength not to be less than 10 Mpa at 7 days, mixed in a batching plant, transported to site, for all leads & lifts, laid with a mechanical paver, compacting with 8-10 tonne vibratory roller, finishing and curing etc. complete as per direction of Engineer-in- charge.	360.00	Cum			
11.03	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).	360.00	Cum			
11.04	Providing and laying in position bitumen hot sealing compound for expansion joints etc.					
a)	Using grade 'A' sealing compound.	48000.00	Per cm depth per cm width per m length			
11.05	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 fine sand, filling the joints with fine sand etc. all complete as per the direction of Engineer-in-charge.	6290.00	sqm			
11.06	Providing and laying at or 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).	146.00	Cum			
11.07	Trenching in ordinary soil upto a depth of 60cm including removal and stacking of serviceable materials and then disposing surplus soil, by spreading and neatly levelling with in a lead of 50m and making up the trenched area to proper levels by filling with earth or earth mixed with sludge or/and manure before and after flooding trench with water (excluding cost of imported earth, sludge or manure).	600.00	Cum			
11.08	Supplying and stacking sludge at site including royalty and carriage complete (sludge measured in stacks will be reduced by 8% for payment).	100.00	Cum			
11.09	Supplying and stacking at site dump manure from approved source, including carriage complete (manure measured in stacks will be reduced by 8% for payment).	100.00	Cum			
a)	Screened through sieve of I.S. designation 16 mm					
11.10	Rough dressing the trenched ground including breaking clods & Uprooting weeds from the trenched area after 10 to 15 days of its flooding with water including disposal of uprooted vegetation.	2000.00	Sqm			
11.11	Fine dressing the ground	2000.00	Sqm			

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11.12	Spreading of sludge, dump manure or/and good earth in required thickness including mixing earth and sludge or manure in the required proportion specified or directed by the Officer in Charge (Cost of sludge, dump manure or/ and good earth to be paid separately).	200.00	Cum			
11.13	Proving & fixing Selection no.1 grass turf with earth 50 mm to 60 mm thickness of existing ground prepared with proper level and ramming with required tools wooden (Dhurmos) and than rolling the surface with light roller make the surface smoothening and watering.	2000.00	Sam.			
11.14	Digging holes in ordinary soil and refilling the same with the excavated earth mixed with manure or sludge in the ratio of 2:1 by volume (2 parts of stacked volume of earth after reduction by 20% : 1part of stacked volume of manure after reduction by 8%) flooding with water, dressing including removal of rubbish and surplus earth, if any with all leads and lifts (cost of manure, sludge or extra good earth if needed to be paid for separately):					
a)	Holes 1.2 m dia and 1.2 m deep.	50.00	Each			
b)	Holes 60 cm dia, and 60 cm deep.	50.00	Each			
11.15	Providing and displaying of Araucaria cookie plant, having ht. 75 cm to 90 cm, straight, well developed, fresh and healthy with lush green leaves from bottom to top in 25 cm size of Earthen pot / Plastic pot & as per direction of the officer-in-charge.	10.00	Each			
11.16	Providing and displaying of Chamaedorea elegans palm plant, having ht. 60 cm to 75 cm, well developed with fresh and healthy leaves in 25 cm size of Earthen pot / Plastic pot . & as per direction of the officer-in-charge.	10.00	Each			
11.17	Providing and displaying of Croton golden (Broad Leaves) plant, having ht.60 cm to 75 cm with 3 to 4 branches, well developed, fresh and healthy leaves in 25 cm size of Earthen pot / Plastic pot . & as per direction of the officer-in-charge.	10.00	Each			
11.18	Providing and displaying of Croton Duck foot (Elite) plant, having ht. 45 cm and above with 3 to 4 branches, well developed, fresh and healthy leaves in 25 cm size of Earthen pot / Plastic pot. & as per direction of the officer-in-charge.	10.00	Each			
11.19	Providing and displaying of Croton petra Bangalore variety plant, having ht.60 cm to 75 cm with 4 to 6 branches, well developed, fresh and healthy colourfull leaves in 25 cm size of Earthen pot / Plastic pot & as per direction of the officer-in-charge.	10.00	Each			
11.20	Providing and displaying of Philodendron Burgundy plant mounted on moss stick 90 cm ht., well developed with full of fresh & healthy leaves from bottom to top in 25 cm size of Earthen pot / Plastic pot & as per direction of the officer-in-charge.	10.00	Each			
11.21	Providing and displaying of Philodendron Oxycodium Golden Colour plant,Mounted on moss stick 1.20 m ht., having 3 to 4 plants placed at equal distance, well developed with full of fresh & healthy leaves in 25 cm size of Earthen pot / Plastic pot & as per direction of the officer-in-charge	10.00	Each			
11.22	Providing and displaying of Raphis palm plant, having ht. 45 cm to 60 cm with 5 to 7 suckers, well developed, full of fresh and healthy leaves in 25cm size of Earthen pot / Plastic pot & as per direction of the officer-in-charge.	10.00	Each			
11.23	Providing and displaying of Phoenix palm plant, having ht. 75 cm to 90 cm with 10 to 15 or more leaves, well developed, fresh and healthy in 25 cm size of Earthen pot / Plastic pot & as per direction of the officer-in-charge.	10.00	Each			
11.24	Providing and displaying of Syngonium golden plant, mounted on moss stick 90 cm ht., 3 to 4 plants placed in each pot at equal distance, well developed with full of fresh & healthy leaves from bottom to top in 25 cm size of Earthen pot / Plastic pot & as per direction of the officer-in-charge.	10.00	Each			
<b>Total of sub-head</b>						

**Project Name: Construction of Hospital, Teaching Block, Housing, Hostels & Service Block and associated works for Medical College NAHAN, (H.P).**

**ABSTRACT OF COST (CIVIL)**

<b>S.No</b>	<b>DESCRIPTION OF WORK</b>	<b>Amount (Rs)</b>
1	EARTHWORK	
2	CONCRTE WORK	
3	RCC WORK	
4	WALLS AND PARTITIONS	
5	DOORS & WINDOWS	
6	STEEL WORK	
7	FLOORING	
8	CEILING & ROOFING	
9	FINISHING	
10	MISCELLANEOUS	
11	ROAD WORK & HORTICULTURE	
	<b>TOTAL</b>	
	<b>Cost index 26.47%</b>	
	<b>Grand Total</b>	

## Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works

Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
	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					
<b>1.00</b>	<b>SANITARY FIXTURES</b>					
1.01	Providing&fixing <b>water closet squatting pan( Indian W.C.Pan)</b> 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.(Parryware model no. C0117 or other equivalent model a per approved make)					
a)	White <b>vitreous china orissa pattern W.C.</b> pan of size 580 x 440 mm with integral type foot rests.	Each	<b>40</b>			
1.02	Providing and fixing white vitreous china <b>Pedestal type water closet (European type)</b> 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:(Parryware model no. C0271 or other equivalent as per approved make					
a)	W.C. pan with ISI black solid plastic seat & lid.	Each	<b>314</b>			
1.03	Providing and fixing <b>wash basin with C.I. brackets, 15mm C.P. brass pillar taps,</b> 32mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required:.(Roca model no. RS325463, RT5A4225CA1,RF5054018A1 or other equivalent approved make.					
a)	White Vitreous China Wash basin size 550x400 mm with a pair of 15 mm C.P. brass pillar taps	Each	<b>257</b>			
b)	White <b>Vitreous China Surgeon type wash basin</b> of size 660x460 mm with single 15 mm	Each	<b>50</b>			
1.04	Providing and fixing <b>wash basin</b> with C.I. brackets, 15 mm dia <b>CP Brass single hole basin mixer</b> of approved quality and make, including painting of fittings and brackets, cutting and making good the walls wherever required:- (a) White Vitreous China Wash basin size 550x400 mm with a 15 mm CP Brass single hole basin mixer. (Roca model no RT5A3127CA1 &RS325463 OR other equivalent model as per approved make					
	White Vitreous China Wash basin size 550x400 mm with a 15 mm CP Brass single hole basin mixer	Each	<b>10</b>			
1.05	Providing and fixing Stainless Steel A ISI 304 (18/8) <b>kitchen sink</b> 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:					
	Kitchen sink with drain board					

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works

Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
a)	510x1040 mm bowl depth 200mm.	Each	13			
1.06	Providing and fixing white vitreous china <b>laboratory sink</b> with C.I. brackets, C.P. brass chain with rubber plug, 40 mm C.P brass waste and 40mm C.P. brass trap with necessary C.P. brass unions complete, including painting of fittings and brackets, cutting and making good the wall wherever required : Size 600x450x200 mm	Each	10			
1.07	Providing and fixing 8 mm dia <b>C.P. / S.S. Jet with flexible tube</b> upto 1 metre long with S.S. triangular plate to European type W.C. of quality and make as approved by Engineer - in -charge.	Each	90			
1.08	Providing and fixing CP Brass 32mm size <b>Bottle Trap</b> of approved quality & make and as per the direction of Engineerin-charge.	Each	200			
1.09	Providing and fixing CP Brass <b>Single lever telephonic wall mixer</b> of quality & make as approved by Engineer in charge. (a) 15 mm nominal dia	Each	10			
1.10	Providing and fixing <b>superior glass mirror</b> (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	200			
	Rectangular shape 1500x450 mm	Each	100			
1.11	Providing and fixing 600x120x5 mm <b>glass shelf</b> with edges round of supported and anodised alominium angle frame with C.P. brass brackets and guard rail complete fixed with 40 mm long screws, rawl plugs etc., complete.	Each	100			
1.12	Providing and fixing <b>toilet paper holder</b> . (Roca model no. 816070159 or other equivalent model as per approved make)					
a)	Vitreous china	Each	314			
1.13	Providing and fixing white vitreous china extended <b>wall mounting water closet</b> of size 780x370x690 mm of approved shape including providing & fixing white vitreous china cistern with dual flush fitting, of flushing capacity 3 litre/ 6 litre (adjustable to 4 litre/ 8 litres), including seat cover, and cistern fittings, nuts, bolts and gasket etc complete.(Roca model no.RS342617460 & RA80N612001 or other equivalent model as per approved make	Each	10			
1.14	Providing and fixing white vitreous china <b>battery based infrared sensor operated urinal</b> of approx. size 610 x 390 x 370 mm having pre & post flushing with water (250 ml & 500 mlconsumption), havingwater inlet from back side, including fixing to wall with suitablebrackets all as per manufacturers specification and direction of Engineer-in-charge ROCA model no. RS35945E000 or other equalvalent model as per approved make.	Each	165			

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Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
1.15	Providing and fixing <b>floor mounted</b> , white vitreous china single piece, double traps syphonic water closet of approved brand/ make, shape, size and pattern including integrated white vitreous china cistern of capacity 10 litres with dual flushing system, including all fittings and fixtures with seat cover, cistern fittings, nuts, bolts and gasket etc including making connection with the existing P/S trap, complete in all respect as per directions of Engineer-in-Charge.(ROCA model no. RS349467000 & RE80P467001 or other equivalent model as per approved make)	Each	2			
1.16	Providing and fixing white <b>vitreous china urinal</b> of approx. size 797x 425 mm having top inlet urinal with <b>CP brass pressmatic urinal valve</b> auto closing system with built in control cock & wall flanged complete including fixing to wall with suitable brackets all as per manufacturers specification and direction of Engineer-in-charge.(roca model no. RS35945H000 & Jaquar model no.PRS-077 or other equivalent model as per approved make)	Each	10			
1.17	<b>Rectangular shape mirror</b> more than 0.6 sq.m. area with teak wooden polish moulded frame	Sqm	2			
1.18	Providing and fixing <b>health faucet</b> with pipe and hook complete ( Roca model no. RF9060A1 or other equivalent model as per approved make)	Each	50			
1.19	Providing and fixing stainless steel <b>Grab Bar</b> 20mm dia of required length with PVC cleats, C.P. brass screws etc. complete.	Each	10			
1.20	P&F wall <b>Soap Holder</b> with brackets' , complete fittings of roca or other equivalent approved make (Roca model no RA816371001 or other equivalent model as per approved make)	Each	50			
1.21	Providing and fixing <b>Liquid Soap Dispenser</b> all complete (Roca model No. RA 816070105 or equivalent)	Each	100			
1.22	Providing and fixing CP brass <b>towel rail</b> size of 600x20 mm of approved make complete with CP brackets fixed to wooden cleats with CP brass screws.(Roca model no RA816710001 or other equivalent model as per approved make).	Each	150			
1.23	providing & fixing <b>double robe hook</b> with all complete fittings(roca model no.RA815491001 or other equivalent model as per approved make)	Each	50			
1.24	Extra for providing and fixing white vitreous china <b>oval shape wash basin</b> in place of normal wash basin of size 580x440					
a)	<b>under Counter oval shape wash basin</b> size 600x390mm approx. (centre tap hole) along with , single 15 mm CP brass pressmatic type pillar tap.(Roca model no. RS327893000 and RT5A4277C00 or other equivalent model as per approved make)	Each	200			
1.25	Providing & fixing SS body solid state fully hygienic no touch <b>Hand Drier</b> 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			

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
1.26	Providing and fixing vitreous china <b>division plate</b> of size 750x165x365 mm of approved make and design including brass cleats,C.P. brass screws all fittings etc. complete in all respect	Each	20			
3.24	Providing and installing <b>INFRA-RED</b> controlled electrically operated (220V, AC mains) automatic flushing system of approved make . 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			
1.27	Providing and fixing Hospital S S 304 -18 SWG(thickness 1.2 mm) <b>bed pan sink</b> with P trap, size 850W x 600Dx300Hmm + SPL with 10 litres PVC. flushing cistern , 32 mm dia flush pipe cpvc , C.I./M.S. bracket with painting with 3 coats of white paint complete with accessories, C.P. brass long body bib cock and health fucet fittings (CMP.METAL ) or equivalent approved make as approved by Engineer-in-charge.	Each	8			
1.28	Supply , installation, testing and commissioning of compact floor mounted pedestal base <b>surgical scrub sink</b> 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 thickness 1.6 mm 304 type stainless steel seamless 304 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 (CMP.METAL ,MPS) or equivalent approved make as approved by Engineer-in-charge.					
	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	8			
1.3	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	200			
<b>SUB TOTAL( SANITARY FIXTURES)</b>						-
<b>2.00</b>	<b>SOIL, WASTE AND VENT PIPES</b>					
2.01	Providing and fixing <b>soil, waste and vent pipes.</b>					
a)	100 mm dia.					
a i)	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905	Metre	4500			
	150 mm dia		100			



Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works

Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
2.02	Providing and fixing <b>bend</b> of required degree with access <b>door</b> , insertion rubber washer 3 mm thick, bolts and nuts complete.					
a)	100 mm dia					
a ii)	Hubless centrifugally cast (spun) iron epoxy coated inside & outside as per IS:15905	Each	225			
	150 mm dia	Each	5			
2.03	Providing and fixing <b>plain bend</b> of required degree.					
a)	100 mm					
a ii)	Hubless centrifugally cast (spun) iron pipes epoxy coated inside & outside IS:15905	Each	430			
	150 mm dia		8			
2.04	Providing and fixing <b>single equal plain junction</b> of required degree with access <b>door</b> , insertion rubber washer 3mm thick, bolts and nuts complete.					
a)	100x100x100mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	250			
	150 mm dia		4			
2.05	Providing and fixing <b>single equal plain junction</b> of required degree					
a)	100x100x100mm					
a.ii)	Hubless centrifugally cast (spun) iron epoxy coated inside & outside as per IS:15905	Each	220			
a.iii)	Providing and fixing single unequal plain junction of required degree					
	150x150x100 mm dia		4			
2.06	Providing and fixing <b>door piece</b> , insertion rubber washer 3mm thick, bolts and nuts complete					
a)	100 mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	195			
2.07	Providing and fixing <b>terminal guard</b> .					
a)	100 mm					
a.ii)	Hubless centrifugally cast (spun) iron epoxy coated inside & outside as per IS:15905	Each	210			
a.iii)	150 mm dia	Each	4			
2.08	Providing and fixing <b>shielded coupling for Hubless centrifugally cast iron pipe</b> of same manufactureing					
a)	100 mm dia					
a.ii)	SS 304 grade coupling with EPDM rubber gasket	Each	3520			
a.iii)	150 mm dia	Each	25			
2.09	Providing and fixing <b>M.S. stays and clamps</b> for sand cast iron / centrifugally cast (spun) iron pipes of diameter :					
a)	100 mm	Each	210			
a.ii)	150 mm dia	Each	5			
2.10	Providing and fixing <b>trap</b> of self cleansing design with screwed down or hinged grating with or without vent arm complete, including cost of cutting and making good the walls and floors:					
a)	100 mm inlet and 100 mm outlet					

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Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
a i)	Sand cast iron S&S as per IS-3989	Each	245			
2.11	<b>Cutting chases</b> 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	100			
2.12	<b>Painting</b> 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	3000			
2.13	Providing and fixing <b>M.S. holder bat clamp</b> of approved design to sand cast iron/ cast iron (spun) pipes comprising of M.S. flat brackets made of 50x5 mm flat of specified shape, projecting 75 mm outside the wall surface and fixed on wall with 4nos, 6mm dia expansion hold fasteners, including drilling necessary holes in brick wall/ CC/ RCC surface and the cost of bolts etc. The pipes shall be fixed to the already fixed brackets with the help of 30 mm x1.6 mm galvanised M.S. flats of specified shape and of total length 420 mm and shall be fixed with M.S. nuts, bolts, & washers of size 25x6 mm, one bolts on each side of the pipe.					
	Total bracket length 580 mm of approved shape and design (for single 100 mm dia pipe)	Each	900			
	Total bracket length 810 mm of approved shape and design (for two 100 mm dia pipes)	Each	650			
	Total bracket length 1040 mm of approved shape and design (for three 100 mm dia pipes)	Each	460			
	150 mm dia		10			
2.14	Providing and fixing GI pipes complete with GI fittings and clamps, i/c cutting and making good the walls etc 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	300			
b)	40 mm dia nominal bore (Sink,Urinal to floor trap)	Metre	210			
c)	50 mm dia nominal bore (Floor Drain to Floor Trap)	Metre	200			
2.15	Providing and fixing <b>floor drain</b> & balcony drain made of 100 x 50 mm dia elbow / tee as applicable connected with 50 mm dia GI pipe painted with primer, two coats of black bituminastic paint,wrapping 1 mm thick PVC tape and final coat of black bituminastic paint B109 complete in all complete including cutting and making good the walls and floor wherever required	Each	300			
2.16	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 SCl/centrifugally S&S pipe diameter.					
a)	100 mm dia	Metre	800			
2.17	Providing and fixing <b>dash fastner</b> made of rust proof plated steel for holding the soil/waste supply pipes complete in all respect					

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Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
a)	Dash fastner for pipe more than 25 mm dia to 150 mm dia pipe of size 25 mm dia and 75 mm long minimum & shall be capable of taking 6 tonnes load and also include the supporting angles 35x35x5 mm/ of required size or MS bars steel structures as per drawing.	Each	550			
2.18	Providing and fixing floor <b>clean out plug</b> 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	Each	50			
2.19	Providing and fixing <b>G.I EXTENSION PIECE</b> 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	450			
2.20	Providing & fixing SS floor trap grating 143x143x5mm thick screwablewith SS fixed frame of 150x150 mm size as per approved make & model	Each	319			
<b>SUB TOTAL(SOIL, WASTE AND VENT PIPES)</b>						-
<b>3.00</b>	<b>WATER SUPPLY</b>					
3.01	Providing and fixing <b>Chlorinated Polyvinyl Chloride (CPVC) pipes</b> , having thermal stability for hot & cold water supply, including all CPVC plain & brass threaded fittings, including fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and testing of joints complete as per direction of Engineer in Charge. INTERNAL WORK - EXPOSED ON WALL					
	<b>Internal work – Exposed on wall</b>					
	20 mm nominal outer dia Pipes(SDR-11)	Metre	250			
	25 mm nominal outer dia Pipes(SDR-11)	Metre	400			
	32 mm nominal outer dia Pipes(SDR-11)	Metre	300			
	40 mm nominal outer dia Pipes(SDR-11)	Metre	820			
	50 mm nominal outer dia Pipes(SDR-11)	Metre	200			
	62.5 mm nominal outer dia Pipes(SDR-11)	Metre	150			
	75 mm nominal outer dia Pipes(SDR-11)	metre	20			
3.02	Providing and fixing <b>Chlorinated Polyvenyl Chloride(CPVC)pipes</b> 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.					
	<b>Concealed work including cutting chases and making good the walls etc.</b>					
a	15 mm nominal outer dia pipes (SDR-11)	Metre	100			
b	20 mm nominal outer dia pipes (SDR-11)	Metre	950			
c	25 mm nominal outer dia pipes (SDR-11)	Metre	350			
	32 mm nominal outer dia pipes (SDR-11)	Metre	100			

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Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
3.03	Providing and fixing <b>Chlorinated Polyvinyl Chloride (CPVC) pipes</b> , 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.					
	<b>External Work</b>					
b)	25 mm nominal outer dia pipes (SDR-11)	Metre	20			
c)	40 mm nominal outer dia pipes (SDR-11)	Metre	60			
d)	62.50 mm nominal inner dia Pipes (SDR-11)	Metre	10			
e)	75 mm nominal inner dia Pipes (SDR-11)	Metre	10			
3.04	<b>Making connection of G.I. distribution branch</b> with G.I. main of following sizes by providing and fixing tee, including, cutting and threading the pipe etc. commplete including obtaining approval for connection from DJB/Municipal corporation :					
a)	50 to 80 mm nominal bore (SDR-11)	Each	15			
3.05	providing and fixing <b>Gun metal gate valve</b> with C.I. wheel of approved quality (screwed end)					
a)	25 mm nominal bore	Each	100			
b)	32 mm nominal bore	Each	30			
c)	40 mm nominal bore	Each	15			
d)	50 mm nominal bore	Each	20			
	65 mm nominal bore	Each	2			
3.06	Providing and fixing <b>Ball valve</b> (brass) of approved quality, High or low pressure with plastic floats complete					
a)	20mm	Each	20			
3.07	Providing and fixing brass <b>ferrule</b> with C.I. mouth cover including boring and tapping the main					
a)	25 mm nominal bore	Each	2			
3.08	Providing and fixing <b>unplasticised PVC connection</b> pipe with brass unions:					
a)	45 cm length					
a i)	15 mm nominal bore	Each	750			
3.09	<b>Constructing masonry chamber</b> 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	10			

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1	2	3	4	5	6	7
3.10	Providing and placing on <b>terrace</b> (at all floor levels) polyethylene <b>water storage tank</b> 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	<b>110000</b>			
3.11	Providing and fixing C.P brass <b>Bib Cock</b> of approved quality.(Roca model no RT5A7825CA1 or other equivalent model as per approved make)					
a)	15 mm nominal bore	Each	<b>310</b>			
3.12	Providing and fixing C.P. brass <b>Long nose bib cock</b> of approved quality conforming to IS standards and weighing not less than 810 gms. ( Or other approved make Roca/Jaquar/Parryware.)					
a)	15 mm nominal bore	Each	<b>250</b>			
3.13	Providing and fixing C.P. brass <b>Angle Valve</b> for basin mixer and geyser/cisterns points of approved quality conforming to IS:8931.(Roca model no. RT5A8009CA1 or other equivalent model as per approved make)					
a)	15 mm nominal bore	Each	<b>950</b>			
3.14	Providing and fixing C.P. brass <b>stop cock</b> (concealed) of standard design and of approved make conforming to 18:8931.(Roca or other equivalent of approved make (RT5A1525CA1)					
a)	15mm nominal bore.	Each	<b>50</b>			
3.15	Providing and fixing enclosed type <b>water meter</b> ( bulk type) conforming to IS : 2373 and tested by municipal board complete with bolts,nuts rubber, insersions etc. ( the tail plases if required will be paid seperatly )					
a)	80mm dia nominal bore	Each	<b>2</b>			
3.16	Providing and fixing PTMT <b>ball cock</b> 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	<b>30</b>			
b)	50 mm nominal bore, 242 mm long weighin not less than 1240 gms	Each	<b>20</b>			
3.17	<b>Cutting holes</b> upto 30x30 cm in walls including making good the same					
a)	with F.P.S bricks	Each	<b>100</b>			
3.18	<b>Cutting holes</b> 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	<b>50</b>			
3.19	Providing and fixing <b>divertor type shower mixer</b> with provision for shower & single tap complete in all respect.(roca model no.RT5A1725CA1 or other equivalent model as per approved make)	Each	<b>90</b>			

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
3.20	Providing & fixing <b>full way lever operated forged brass ball valve</b> 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			
b)	20 mm diameter	Each	25			
c)	25 mm diameter	Each	10			
3.21	Providing and fixing <b>mosquito proof coupling</b> of approved Municipal design for scour and vent pipes for RCC overhead tanks complete in all respects					
a)	20 mm diameter					
b)	25 mm diameter	Each	10			
c)	32 mm diameter	Each	10			
d)	40 mm diameter	Each	10			
e)	50 mm diameter	Each	10			
3.22	Supplying, storing, handling, shifting, installation, testing and commissioning of C.P. <b>head shower</b> set comprising head shower with arm and wall flange chrome with ball joint adjustable shower jet. (Roca- RF18700A1 or other equivalent model as per approved make).	Each	90			
3.23	Providing & fixing 9 mm thick <b>thermal insulation tubing</b> 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	910			
3.24	Supplying, fixing, testing and commissioning of storage type <b>water heater (Geyser)</b> etc. with outer body of ABS, 2 MM Thick Mild Steel inner Tank with glass line coating,option of 1/2/3 KW electrically operated single phase 230V, including Glass Lined Double Heating Element,Digital Display, Multifunction Safety Device, ELCB, Anode Rod System, and Brackets for fixing on wall with connecting Wire & plug etc. conforming to IS: 2082 and energy efficient star rated model.					
a)	25 Litre Capacity	Each	55			
b)	35 litre capacity	Each	20			
3.25	Providing & fixing <b>water storage cooler</b> of approved make and brand with SS body Complete in respects-230V Single Phase. (Voltas/Shriram/BLUE-STAR) minimum flow rate of 40 ltrs. Per hour and storage capacity 80 ltrs.	Each	6			
3.26	Providing and fixing approved make & suitable model of <b>R.O. plant</b> 100 ltrs. Per hour flow rate having capacity to treat the raw water having TDS 1200 ppm and not less than 40%. The treated water should have TDS less than 100 ppm and hardness less than 50 ppm. The operating voltage to 230 volt AC +/- 10% alongwith required capacity pump and solenoid valves, dry run protection of pump, automatic tank level control, inbuilt auto flush timer for periodic flushing of membranes, hydro pneumatic tank, over voltage and over current protection with switch mode power supply system antiscaling dosing system complete in all respects including installation and fittings with the following provisions: (IONIEXCHANGE/ KENT/AQUAPROCESS/Pantair )					
a)	10 micron polypropylene sediment pre filter					

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
b)	10 micron bacteriostatic activated carbon block on line micron filter with 5 micron rating					
c)	3 Nos. of reverse osmosis memberane with 0.0001 micron pore size energy saving poly amide type					
d)	UV lamp of minimum capacity 100 LPM and minimum lamp wattage 9W	Each	12			
3.27	Providing and fixing approved make & suitable model of R.O. plant (fully automatic operation) 600ltrs. 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 on line SS 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 )					
	10 micron polypropylene sediment pre filter					
	10 micron bacteriostatic activated carbon block on line micron filter with 5 micron rating					
	Required Nos. and size of reverse osmosis memberane with 0.0001 micron pore size energy saving poly amide type					
	UV lamp of minimum capacity 600LPH and minimum lamp wattage 15W					
	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	10			
<b>SUB TOTAL(Water Supply)</b>						
<b>4.00</b>	<b>SEWORAGE &amp; DRAINAGE</b>					
4.01	Providing laying and jointing <b>glazed stoneware pipes</b> 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	100			
4.02	Providing and <b>laying cement concrete</b> 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	100			
b)	150 mm diameter S.W. pipe/RCC NP2	Metre	350			
c)	250 mm diameter S.W. pipe/RCC NP2	Metre	300			
4.03	Providing and laying cement concrete 1:5:10 (1 cement:5 coarse sand:10 graded stone aggregate 40 mm nominal size) up to haunches of S.W. pipes including bed concrete as per standard design:					
a)	150 mm diameter S.W.pipe	Metre	150			
b)	250 mm diameter s.W. pipe	Metre	950			
	300 mm diameter s.W. pipe	Metre	150			

**Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works**

Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
4.04	Providing and fixing <b>square-mouth S.W. gully trap</b> 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	52			
4.05	Providing and laying <b>non-pressure NP2 class (light duty) R.C.C. pipes</b> 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	500			
b)	250 mm dia R.C.C. pipe	Metre	1250			
	300 mm dia R.C.C. pipe	Metre	150			
4.06	Constructing brick masonry <b>manhole</b> 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)	<b>Inside size 90x80 cm and 45 cm deep</b> 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	35			
4.07	Extra depth for manholes					
a)	Size 90 x 80 cm					
a i)	With F.P.S. bricks class designation 75	Metre	5			
4.08	Constructing brick masonry <b>circular type manhole</b> 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:					
a)	<b>0.91 m deep</b> 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	20			
4.09	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	5			



Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
4.10	Constructing brick masonry <b>circular manhole</b> 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)	<b>1.68 m deep</b> 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)					
a.i)	With F.P.S. bricks with class designation 75	Each	10			
4.11	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	2			
4.12	Providing and fixing orange colour <b>safety foot rest</b> 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	200			
4.13	<b>Making connection of drain</b> 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 cement 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	6			
4.14	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	10			

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
4.15	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	150			
4.16	Providing and fixing S.W.intercepting trap in manholes with stiff mixture of cement mortar 1:1 (1 cement:1 fine sand) including testing of joints etc. complete					
a)	150 mm dia	Each	5			
	Providing and fixing factory made precast RCC perforated drain covers, having concrete of strength not less than M-25, of size 1000 x 450x50 mm, reinforced with 8 mm dia four nos longitudinal & 9 nos cross sectional T.M.T. hoop bars, including providing 50 mm dia perforations@ 100 to 125 mm c/c, including providing edge binding with M.S. flats of size 50 mm x 1.6 mm complete, all as per direction of Engineer-in-charge	Each	450			
4.17	Constructing brick masonry <b>open surface drain</b> including 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.					
a)	300mm drain 450 mm average depth With F.P.S bricks	Metre	950			
4.18	Providing and laying Laboratory/hospital effluent waste pipe and fitting of high density polyethelene (HDPE),CLASS -PE 80 ,pressure rating PN-6,conforming to IS :4427, electric fusion joints/flanged joints , fittings and jointing					
a)	160 mm dia	Metre	350			
b)	200 mm dia	Metre	75			
<b>SUB TOTAL(SEWERAGE AND DRAINAGE)</b>						
<b>5.00</b>	<b>EARTH WORK</b>					
5.01	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30 cm in depth,1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50 m and lift up to 1.5 m , disposed earth to be levelled and neatly dressed.					
a)	All kinds of soil	Cum	70			
5.02	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth up to 1.5 m including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m:					
a)	All kinds of soil					
a.ii)	Pipes, cables etc. exceeding 80 mm dia but not exceeding 300 mm dia	Metre	1100			

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
5.03	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20 cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m	Cum	20			
<b>SUB TOTAL(EARTH WORK)</b>						-
<b>6.00</b>	<b>EXTERNAL WATER SUPPLY</b>					
6.01	Excavating trenches of required width for pipes, cables, etc including excavation for sockets, and dressing of sides, ramming of bottoms, depth upto 1.5 m, including getting out the excavated soil, and then returning the soil as required, in layers not exceeding 20 cm in depth, including consolidating each deposited layer by ramming, watering, etc. and disposing of surplus excavated soil as directed, within a lead of 50 m :					
a)	All kinds of soil					
a.ii)	Pipes, cables etc. exceeding 80 mm dia but not exceeding 300 mm dia	Metre	1300			
6.02	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings This includes jointing of pipes & fittings with one step CPVC solvent cement, trenching, refilling & testing of joints complete as per direction of Engineer in Charge.					
	<b>External Work</b>					
a	50 mm nominal outer dia Pipes	Metre	150			
b	62.5 mm nominal outer dia Pipes	Metre	200			
	75 mm nominal outer dia Pipes	Metre	180			
6.03	Providing and fixing G.I. pipes complete with G.I. fittings and clamps, i/c cutting and making good the walls etc.					
	<b>Internal work - Exposed on wall</b>					
a	50 mm dia nominal bore	Metre	50			
b	80 mm dia nominal bore	Metre	50			
6.04	Providing and fixing gun metal gate valve with CI wheel of approve quality ( screwed end )					
a)	80 mm dia nominal bore	Each	10			
6.05	Providing and fixing gun metal non-return valve of approved quality (screwed end)					
a)	50 mm nominal bore					
a.i)	Horizontal	Each	4			
b)	80 mm nominal bore					
b.i)	Horizontal	Each	4			
6.06	Providing and fixing C.I. sluice valves (with cap) complete with bolts, nuts, rubber insertions etc. (the tail pieces if required will be paid separately):					
a)	100 mm diameter					
a.i)	Class I	Each	6			

**Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works**

Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
6.07	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	6			
6.08	Constructing masonry chamber90x90x100 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			
6.09	Providing and fixing G.I. Union in existing G.I. pipe line, cutting and threading the pipe and making long screws including excavation, refilling the earth or cutting of wall and making good the same complete wherever required:					
a)	50 mm diameter pipe	Each	5			
b)	80 mm diameter pipe	Each	5			
6.10	Providing and fixing C.I. double acting air valve of approved quality with bolts, nuts, rubber insertions etc. complete (The tail pieces, tapers etc. if required will be paid separately):					
a)	50 mm dia	Each	2			
b)	80 mm dia	Each	2			
6.11	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	60			
6.12	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)	100mm dia pipes	Joint	750			
b)	150 mm dia pipes	Joint	10			
c)	200 mm dia pipes	Joint	2			
d)	250 mm dia pipes	Joint	2			
6.13	Providing and laying S&S Centrifugally Cast (Spun)/Ductile Iron pipes confirming to is:8329:					
a)	100 mm dia Ductile Iron Class k-7 pipes	Metre	2200			
b)	150 mm dia Ductile Iron Class k-7 pipes	Metre	100			
c)	200 mm dia Ductile Iron Class k-7 pipes	Metre	10			
d)	250 mm dia Ductile Iron Class k-7 pipes	Metre	10			

**Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works**

Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
6.14	Providing and fixing puddle flanged including 40 cm long GI pipe piece welded/threaded with MS plates 450x450x6 mm thick with both end screwed/flanged.					
	For 80 mm dia pipe	Each	2.0			
	For 100 mm dia pipe	Each	4.0			
	For 150 mm dia pipe	Each	4.0			
6.15	Providing and fixing double seal type D.I. Manhole cover of 560 mm clear internal diameter of over all heavy duty with locking arrangement complete in all respects.	Each	6.0			
6.16	Providing and fixing gun metal foot valve with stainer of approved quality/model complete in all respect					
	50 mm dia	Each	6			
	80 mm dia	Each	6			
<b>SUBTOTAL (EXTERNAL WATER SUPPLY)</b>						
<b>7.00</b>	<b>RAIN WATER PIPING</b>					
7.01	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	150			
7.02	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	1250			
c)	150 mm dia pipe as per IS:3989	Metre	550			
7.03	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	350			
c)	for 150 mm dia pipe	Each	210			
7.04	Providing and fixing plain bend of required degree.					
a)	100 mm	Each	50			
a ii)	Sand cast iron S&S as per IS:3989					
c)	150 mm	Each	30			
7.05	Providing and fixing heel rest sanitary bend.					
a)	100 mm dia					
a.ii)	sand cast iron S&S as per IS-3989	Each	50			
c)	150 mm dia	Each	30			
7.06	Providing and fixing collar					
a)	100 mm					
a.ii)	Sand cast iron S&S as per IS-3989	Each	50			
c)	150 mm	Each	30			
7.07	Providing lead caulked joints to sand cast iron /centrifugally cast (spun) iron pipes and fittings of diameter:					
a)	100 mm	Each	350			
c)	150 mm	Each	230			

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
7.08	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	50			
c)	150 mm diameter pipe	Metre	30			
	<b>SUB TOTAL(Rain Water pipe &amp; fitting)</b>					-
8.00	<b>BOREWELL(2 Nos.)</b>					
8.01	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level :Providing and laying cement concrete 1:2:4 mix (for sanitary sealing of well at top.) "1:2:4 (1 cement : 2 coarse sand (zone-III) : 4 graded stone aggregate 20 mm nominal size).	Cum	1			
8.02	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc 65 mm dia nominal bore	Metre	30			
	80 mm dia nominal bore	Metre	50			
8.03	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end) 80 mm dia(horizontal)	Each	1			
8.04	Providing and fixing gunmetal non return valve of approved make tested to a pressure of 21kg/sqcm. 80 mm dia(horizontal)	Each	1			
8.05	Boring/drilling bore well of required dia for casing/ strainer pipe, by suitable method prescribed in IS: 2800 (part I), including collecting samples from different strata, preparing and submitting strata chart/ bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of Engineer-in-charge. upto 90 metre depth below ground level					
	<b>All types of soil</b> 400mm	Metre	90			
	<b>Rocky strata including Boulders</b> 400 mm dia	Metre	10			
8.06	Boring/drilling bore well of required dia for casing/ strainer pipe, by suitable method prescribed in IS: 2800 (part I), including collecting samples from different strata, preparing and submitting strata chart/ bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of Engineer - in-charge, beyond 90 metre & upto 150 metre depth below ground level.					
	All types of soil 400 mm dia	Metre	50			
	Rocky strata including Boulders 400 mm dia	Metre	10			

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
8.07	Gravel packing in tubewell construction in accordance with IS: 4097,including providing gravel fine/ medium/ coarse, in required grading & sizes as per actual requirement, all complete as per direction ofEngineer-in-charge.	Cum	5			
8.08	Supplying, assembling, lowering and fixing in vertical position in bore well, ERW (Electric Resistance Welded) FE 410 mild steel screwed and socketed/ plain ended casing pipes of required dia, conforming to IS: 4270, of reputed & approved make, including painted with outside surface with two coats of anticorrosive paint of approved brand and manufacture, including required hire & labour charges, fittings & accessories, all complete, for all depths, as per direction of Engineer-in-charge. 200 mm nominal size dia having minimum wall thickness5.00 mm	Metre	100			
8.09	Supplying, assembling, lowering and fixing in vertical position in bore well, ERW (Electric Resistance Welded) FE 410 plain slotted (having slot of size 1.6/3.2 mm) mild steel threaded and socketed/ plain bevel ended pipe (type A) of required dia, conforming to IS: 8110, of reputed and approved make, having wall thickness not less than 5.40 mm, including painted with outside surface with two coats of anticorrosive bitumestic paint of approved brand and manufacture, including hire & labour charges, fittings & accessories, all complete, for all depths, as per direction of Engineer - in-charge 200 mm nominal size dia	Metre	50			

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
8.10	Development of tube well in accordance with IS : 2800 (part I) and IS: 11189, to establish maximum rate of usable water yield without sand content (beyond permissible limit), with required capacity air compressor, running the compressor for required time till well is fully developed, measuring yield of well by "V" notch method or any other approved method, measuring static level & draw down etc. by step draw down method, collecting water samples & getting tested in approved laboratory, i/c disinfection of tubewell, all complete, including hire & labour charges of air compressor, tools & accessories etc., all as per requirement and direction of Engineer-in-charge..	Hour	5			
8.11	Providing and fixing suitable size threaded mild steel cap or spot welded plate to the top of bore well housing/ casing pipe, removable as per requirement, all complete for borewell of: 200 mm dia	Each	1			
8.12	Providing and fixing M.S. clamp of required dia to the top of casing/ housing pipe of tubewell as per IS: 2800 (part I), including necessary bolts & nuts of required size complete. 200 mm clamp	Each	1			
8.13	Providing and fixing Bail plug/ Bottom plug of required dia to the bottom of pipe assembly of tubewell as per IS:2800 (part I). 150 MM DIA	Each	1			
8.14	<b>Submersible pumps</b> Providing and installing submersible pump and electrical panel suitable for 200 mm 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 300-500 LPM at 80-120 m head along with a directly coupled submersible type squirrel cage electric induction 7.5 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 lead 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. 1 No. 3 Phase, fully automatic star-delta starter, type - II of 15 HP with thermal overload relay, contactor, Timer, Push Buttons and Auto-manual selector switch etc complete as required.	Set	1			
8.15	Carrying out Electrical logging of Borewell before lowering of pipe for analysiing of water quality including Electrical logging report, calculation etc. 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	Job	1			
<b>SUBTOTAL (BOREWELL)</b>						-



Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
<b>9.00</b>	<b>RAIN WATER HARVESTING</b>					
9.01	Boring/drilling bore well of required dia for casing/ strainer pipe, by suitable method prescribed in IS: 2800 (part I), including collecting samples from different strata, repairing and submitting strata chart/ bore log, including hire & running charges of all equipments, tools, plants & machineries required for the job, all complete as per direction of Engineer-in-charge, upto 90 metre depth below ground level					
	<b>All types of soil</b>					
	400mm	Metre	60			
	<b>Rocky strata including Boulders</b>					
	400 mm dia	Metre	60			
9.02	Supplying, assembling, lowering and fixing in vertical position in bore well, unplasticized PVC medium well casing (CM) pipe of required dia, conforming to IS: 12818, including required hire and labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer -in-charge.					
	150 mm dia	Metre	30			
9.03	Supplying, assembling, lowering and fixing in vertical position in bore well unplasticized PVC medium well screen (RMS) pipes with ribs, conforming to IS: 12818, including hire & labour charges, fittings & accessories etc. all complete, for all depths, as per direction of Engineer-in-charge.					
	150 mm nominal size dia	Metre	6			
9.04	Supplying, filling, spreading & leveling stone boulders of size range 5 cm to 20 cm, in recharge pit, in the required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge	Cum	6			
9.05	Supplying, filling, spreading & leveling gravels of size range 5 mm to 10 mm, in the recharge pit, over the existing layer of boulders, in required thickness, for all leads & lifts, all complete as per direction of Engineer-in-charge.	Cum	6			
9.06	Supplying, filling, spreading & leveling coarse sand of size range 1.5 mm to 2 mm in recharge pit, in required thickness over gravel layer,for all leads & lifts, all complete as per direction of Engineer -in-charge.	Cum	6			
9.07	Gravel packing in tubewell construction in accordance with IS: 4097,including providing gravel fine/ medium/ coarse, in required grading & sizes as per actual requirement, all complete as per direction of Engineer-in-charge	Cum	4			
9.08	Providing and fixing factory made precast RCC perforated drain covers, having concrete of strength not less than M-25, of size 1000 x 450x50 mm, reinforced with 8 mm dia four nos longitudinal & 9 nos cross sectional T.M.T. hoop bars, including providing 50 mm dia perforations @ 100 to 125 mm c/c, including providing edge binding with M.S. flats of size 50 mm x 1.6 mm complete, all as per direction of Engineer-in-charge	Each	12			

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
9.09	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 hart. f 1.2mm GI/CRCA	Each	6			
<b>SUBTOTAL (RAIN WATER HARVESTING)</b>						
<b>10.00</b>	<b>SOLAR WATER HEATING SYSTEM &amp; RECIRCULATION OF HOT WATER SYSTEM</b>					
10.01	<b>Supply, installation, testing and commissioning of solar water heating system, Thermosyphon type, all complete based on Flat plat collector system (Cu-Cu Type only) comprising of but not limited to the following:</b>					
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					
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.					

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
g)	Solar water heating system based on Flat plat collector systmem technology with output capacity of as mentioned below with hot water at 60 degree centigrade having required Nos. solar collectors as per complete item as per technical specification of make BHEL/TATA/EMMVEE/ inter-solar. The system has to be installed by Manufacturers authorised distributors/approved specialised firms of Solar water heating of approved makeThe 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.(Electric heating element shall not be provided in the system as the solar hot water system will supply the hot water to the individual gevser).					
	Solar System of Capcity 1000 Litre/day (With minimum 8nos of Collector of 2.0 Sqm area each)	Each	10			
	Solar System of Capcity 1500 Litre/day (With minimum 12 nos of Collect) of 2.0 Sqm area	Each	4			
10.02	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold					
	<b>Internal work- Exposed on wall</b>					
a)	15 mm nominal outer dia pipes (SDR-11)	Metre	50			
b)	20 mm nominal outer dia pipes (SDR-11)	Metre	200			
c)	25 mm nominal outer dia pipes (SDR-11)	Metre	250			
10.03	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.					
	<b>Concealed work including cutting chases and making good the walls etc.</b>					
a)	15 mm nominal outer dia pipes (SDR-11)	Metre	450			
b)	20 mm nominal outer dia pipes (SDR-11)	Metre	200			
10.04	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end):					
a)	25 mm nominal bore	Each	50			
10.05	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	950			
10.06	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 nominal bore	Each	15			
b)	20 mm nominal bore	Each	35			
	<b>SUBTOTAL(SOLAR WATER HEATING SYSTEM &amp; RECIRCULATING SYSTEM)</b>					

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
11.01	<b>WATER TREATMENT PLANT (Domestic use),</b> 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.					
i)	Providing and fixing vertical on line SS raw water filter feed pumps 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. with suction stainer ( Necessary RCC foundations as per requirement and as per instructions shall be provided by the agency )					
	<b>Raw water , filter feed pumps(only for domestic use).</b>					
	<b>Capacity : 250 lpm (Each)</b>					
	Head 35 m					
	Power : 5 HP or					
	<b>with 100% standby pumps(1W+1S) 2 Sets</b>					
ii)	Providing and fixing C.I. "Y" Type suction strainer with stainless steel perforated sheet screen,flangfd ends iner installed outside water tanks. (Make: Leader / Zoloto / Kartar or equivalent)					
	50/80 mm dia (min.) or required size and required number( 1 Set)					
iii)	Providing and fixing gun metal or bronze ball valves/butterfly valve/NRV/Rotameter, tested to 15.00 Kg / cm2, screwed end connections complete . (Make: Leader/ Zoloto or equivalent)					
	80/50 mm NB (min.) or required size and number(1 Set)					
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.					

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Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
	f) All internal parts of the filtration plant shall be coated with two coats of food grade epoxy paint after thorough sand blasting. All external surfaces of the plant including piping shall be coated with two coats of red iron oxide / zinc chromate primer followed by two coats of high gloss enamel paint .					
	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. The filter water will be supplied to treated water tank through U.V. water steriliser					
	<b>Capacity - 250lpm</b>					
	Filtration rate - 20,000 lph/sqm ( min.)					
	<b>Filter dia approx. 0.90 m (min.)</b>					
	Filter HOS Min. : 1600 mm (min.)					
	Working pressure : 3.0 Kg/sq cm.					
	Test pressure : 4.5 Kg/sq cm					
	No. Of Unit - 1 Set					
v)	UV WATER STERILISERS(between filter &clear water tank)					
	High performance on line UV water sterilisers of capacity 250 lpm 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 250 lpm, minimum lamp rating :150 watts - 1 Nos.					
vi)	Providing and fixing G.I.pipes/CPVC pipes to I.S. 3589/1239 ( <b>Heavy class</b> ) 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 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).					
	Complete W.T.P as mentioned above including testing, training and trial run till comissioning of W.T.P. [Total of Sub Head WTP(i) to (vii)]	Set- 1	1.00			
11.02	Providing and fixing of Oxilyte (Mixed Oxidant ) Generation System , based on ECA technology, producing non toxic mixed oxidant solution 30 Ltrs/hr at 1000 ppm of Oxidant concentration with auto flushing system . The solution should be at a pH 3+-0.5 suitable for 24x7 operations should produce 720 L per day. The system should be supplied complete with appropriate dosing pumps, valves,piping,fittings,chemical dosing tank etc. complete in all respect( shope drawing model and technical data etc. are to be submitted for approval before purchase ). The system shall install to dose the oxylite solution in the treated water transfer pumping main and synchronised with the operation of transfer pump	Lot	1.00			

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
11.03	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.	100.00			
11.04	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 actual distance of various tanks from the control panel, particularly the distance of Terrace 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.					
	One way one tank level controller as under.					
i)	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 -100 meters. )	Set	1.00			
	Two way - Two tank level controller as under.					
ii)	For Filter Feed Pumps for Domestic Water.( Operating between the 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 Feed Pumps for Softener.( Operating between the Treated water tank and the under ground soft water tank near the plant room. ( Approx. control cable requirement - 50 meters. )	Set	1.00			
iv)	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 - 50 meters. )	Set	1.00			
v)	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 - 50 meters. )	Set	1.00			
vi)	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 - 50 meters. )	Set	1.00			
11.05	Providing and fixing gun metal foot valve with stainer of approved quality/model complete in all respect					
a)	80 mm dia	Each	2.00			
b)	100 mm dia	Each	2.00			

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Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
11.06	Supplying, installing, testing and commissioning vertical on line multi stage centrifugal pumping set with mechanical seal, 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 SS/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 efficiency of the pump shall be more than 60% (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).					
a)	<b>Domestic water pumps (Treated water transfer pump to terrace tank)</b>					
	Capacity <b>540 lpm</b>					
	Head <b>65 M</b>	Each	<b>2.00</b>			
b)	<b>Domestic water pumps (Raw water Transfer pump to terrace tank)</b>					
	Capacity <b>340 lpm</b>					
	Head <b>65 M</b>	Each	<b>2.00</b>			
11.07	Supply, installing, testing and commissioning vertical fully floodable type <b>submersible drainage pump of non-corrosive material</b> 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).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 — SS					
	: 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 250 LPM against 15 M head	Each	<b>2.00</b>			
11.08	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 5 lac ltr tank)	Set	<b>1.00</b>			
<b>11.09</b>	<b>WATER TREATMENT PLANT (for A/C use)</b>					

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
	Supplying, Installing, testing & commissioning of indoor package type soft water treatment plant of capacity 7 cum per hr. with 10 hours operation time, comprising of the following including all necessary piping, control valves, other accessories etc. complete as per drawing and as per drawing and as directed.					
a)	<b>FILTER</b>					
	Supply, installation & testing and commissioning of MULTI GRADE Filter vertical floor mounted fabricated IN MSEP with frontal piping & valves, back wash system & filter media etc.					
	Flow rate = 7 cub. m/hour,					
	DIA- 600mm with 1875HOS					
	Working pressure = 3.5 kg/Sq. cm.					
b)	<b>Softener</b>					
	Supply, installation & testing and commissioning of downflow cation Ion exchange resin water Softener fabricated with MSEP with frontal piping & valves, back wash system & strongly acidic cation resin with regeneration assembly comprising of power valve ejector,brine suction valve,tankl etc. with single lever operated multiport valve system with standard fittings like pressure gauge at inlet & outlet, sampling cock, rinse drain valve, air vent valve with piping, bolts, nuts & rubber gaskets, pump and Panel complete in all respect.					
	Flow rate = 7.0 cub. m/hour					
	Working pressure = 3.5 kg/Sq. cm.					
	Raw Hardness-400-500mg/l					
	Soft water quality-Commercial zero hardness(less than 5ppm)					
	Output per Regeneration-70 cum.(min.) with minimum 300Ltrs Resin and 600DIA with 1875HOS	SET	1.0			
	<b>Total (Water treatment Plant,Pump and Equipment)</b>					-
12.00	<b>EFFLUENT TREATMENT PLANT(ETP) SITE 1</b>					
	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 placed near STP site of the building of suitable size for <b>25KLD</b> required to treat the effluent of lab,laundry,kitchen and hospital facilities by using suitable technology complete in all respect including oil and grease trap/chemical reaction with suitable chemical dosing such as Fentons reagent or any other suitable for effluent/mixer/settler/neutralisation chamber,dosing pump and agitator ,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					



Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
	.Agency has to monitor the lab waste effluent for various parameter and quantity obtaining desired no. of test reports of raw/treated lab effluent The ETP work includes pumps,blower,raw and treated water tank PVC,electric Panel, electric wire inside the ETP area, 1 No. mixed oxident generation system based on ECA Technology of approved make 30 Ltrs/hr capacity. SS Agetor in reactor Tanks, Dosing pumps & tanks , ladder,working platform,painting,interconnecting pipe valve,foundation, support etc., complete in all respect.					
	All the unit of ETP shall be MS sheet min. 4/5 mm thickness with suitable structure support complete in all respect including min2-.3 layers approved epoxy / FRP or other approved corrosion resistant coating/protection of all parts.The ETP units shall be designed in such a way that the lab effluent doesnot effect the function of STP when treated lab effluent mixed in the domestic sewer line,treated effluent shall meet the SPCB norms and also obtain adequacy report and treated effluent test report for SPCB. 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	1.00			
<b>Subtotal (Effluent Treatment Plant)</b>						
<b>13.00 SEWAGE TREATMENT PLANT (SITE 1)</b>						
13.01	Planning,Designing,Detailing,Supplying, Erection,Testing and Commissioning of Package Sewage treatment plant based on MBBR (Moving bed Bio Reactor)/FAB technology of average flow rate of 300 cu.m/day for sewer including provision of recirculation of treated sewage/effluent for the use of horticulture/flushing/A/c purposes including design and execution of all civil,structural,electrical,mechanical, plumbing and processing,ancillary equipments and works etc required to complete the package, getting approval from state pollution control board and other statutory bodies as well as from consultant (consultant) /Client including the cost of STP building for electrical room, treated sewage under ground storage tank etc.					
	All the water retaining structure shall be designed as water retaining structure as per provision of IS code and water proofing with fixed or any other approved chemical shall be carried out by approved agency with 10 year (minimum) garanty. All the unit shall be painted by epoxy or fixed with the white glazed tiles of approved make. The civil works of entire STP will be carried out by agency as per drawings prepared by STP E&M agency. The shop drawings & design of STP shall also be prepared in such a way that it comprise of the following units of required size as per detail design requirements & meeting the following requirments The work has to be carried by approved make agancy / through authorised vendor/dealer of approved make under overall supervision of main approved agancy as per list of approve make .					
i)	The shop drawings & design of STP shall be prepared by the agency . As per site condition/available space most of the unit will be placed below ground under road/green area/ as per site condition and equipment and Panel room may be above the ground level as per approved drawings .The STP shall be comprising of the following units of required size as per detail process and hydraulic design.The structure design shall be carried as per provision of IS code.The agency has to get their structure drawing checked and approved by any govt. Engineering college approved by consultant.(Set-1)					

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
ii)	RCC Suitable size mechanical <b>Bar Screen chamber</b> with minimum free board 300 mm and minimum size 1.5 mx1.0mx0.40 m SWD and additional manual suitable size SS Bar screen is installed at suitable angle at the inlet of raw sewage sump before pumping and mechanical system to collect and lifts/transport the screening material . The unit shall be designed for peak flow , and one no. SS slotted additional manual fine screen 2 mm thick after mechanical bar screen to be fixed in chamber itself. Inlet chamber of suitable size with SS manual operated spindle riser SS 304 gate shall also be provided before Bar Screen.					
a)	<b>Complete mechanical Bar Screen and SS slotted fine screen Electrical &amp; mechanical Works , screening material collection and lifting system upto Ground formation level (excluding civil works) (Set-1)</b>					
iii)	RCC 2 nos., Suitable size <b>Grit chamber</b> with grit removal arrangement at one end of the chamber operated at a fixed interval. The grit chamber shall be suitable for surface overflow rate 959 m <sup>3</sup> / m <sup>2</sup> / day, The unit shall be designed for peak flow.					
	Cost of deflector (MOC- SS 304) at upstream and proportional flow weir (MOC-SS 304 ) at downstream of Grit Chamber.					
iv)	Supply, installing, testing and commissioning vertical fully floodable type <b>submersible drainage pump of non-corrosive material</b> in close coupled design single stage, suitable for handling 40 mm(approx.) 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 protection and single phase preventor.					
	Material of Construction (M.O.C): Corrosion Resistant in general : Casing — Cast Iron : Impeller — Ductile cast iron/SS					
	: 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					
	<b>RAW SEWAGE PUMP</b>					
	Capacity -125LPM (min.)					
	Head - 12 m					
	Solid handling - 20-40mm					
a)	<b>RAW SEWAGE PUMP Electrical &amp; mechanical Works , excluding civil works (2 working+ 2 stand by) Total 4 Nos.</b>					
b)	<b>Drainage Sump Pump-300LPM &amp; 10 M head (2 Nos.)</b>					
c)	<b>Sludge recirculation pump: 100 LPM &amp; 10 m Head(2 Nos.)</b>					

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
v)	RCC <b>Equalisation tank</b> with hydraulic retention time <b>Min.6 Hrs HRT</b> of STP designing Average flow with suitable Size free Board 500 mm,the effluent of equalisation tank is agitated with diffused air that is fed by an air blower, including pipe non-corrosive material and its complete system.					
a)	<b>Equalisation tank Electrical &amp; mechanical Works , excluding civil works (Set-1)</b>					
vi)	RCC Moving bed Bio Reactor ( <b>MBBR</b> ) with minimum <b>5hr.</b> retention time of STP designing Average flow rate for each reactor of suitable size with Air grid CPVC/SS - 304 pipe material of construction or corrosion resistant material,Air diffusers (fine bubble), HDPE approved make Bio media for each aeration tank,with minimum water depth of 3.8 m.					
a)	<b>Moving bed Bio Reactor - Electrical &amp; mechanical Works , excluding civil works -(4 nos.)</b>					
vii)	<b>ROTARY AIR BLOWERS</b> Providing and Installation of Rotary air blowers for air scouring, driver through v-belt or directly coupled through flaxble coupling. Motor shall be of suitable HP for 400-440 volts, ,1500RPM, 3 phase, alongwith air filter, non-return valve, safetyvalve, base plate and necessary air piping fittings, valves, flowmeters etc.					
	(Blower capacity - 100 cfm at 4000 mm wc(minimum) shall be provided as per detail design calculation. It is use for equalisation tank and MBBR reactor - <b>(2 working +2 stand by)</b> Blowers shall be fully automatic. with fine bubble Air diffusers (tubeler type, Rating -5 -6 cfm at normal working condition, MOC diaphragm- Neoprene/silicon ) - Complete including Electrical & mechanical Works , excluding civil works. <b>Make of diffuser - Rehau, Techpro , OTT, MM Aqua</b> <b>Make of Blowers- Kay, Everest , Usha , Swam</b>					
a)	<b>ROTARY AIR BLOWERS - Electrical &amp; mechanical Works , excluding civil works( 4 nos. Blower &amp;etc)</b>					
viii)	<b>RCC secondary tube settler/Lamella Clarifier</b> - maximum Hydraulic loading 1.75 cu.m/sq.m/hr /1.5 cu.m/sq.m./hr. respectively and with approved quality media with minimum water depth of 2.4 m.+ Free board & hopper bottom. The lamina clarifier media shall be of acarlic plate min. 10 mm thick					
a)	<b>Tube settler - Electrical &amp; mechanical Works , excluding civil works (Set-2)</b>					
ix)	Providing and fixing of OxiLyte (Mixed Oxidant) Generation System, based on ECA Technology, producing non toxic mixed Oxidant Slution 30 ltrs/hr at 1000 ppm of Oxidant Concentration . The solution should be at a pH 3+-0.5 suitable for 24x7 operations should produce 720 litre per Day. The system should be supplied complete with appropriate dosing pumps , valves, piping, fittings, chemical dosing tank etc. complete in all respect. with auto flushing system.					
a)	<b>OxiLyte (Mixed Oxidant) Generation System - Electrical &amp; mechanical Works , excluding civil works (Set-2)</b>					
x)	RCC <b>supernatant tank/Filter feed tank</b> minimum 50 cu.m capacity <b>(1 unit)</b> with following filter feed pumps -					
	<b>FILTER FEED PUMPSETS</b>					

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
	Providing and installation horizontal single/multistage centrifugal monoblock pumping set with CI body, SS impeller, coupled with totally enclosed fan cooled induction motor mounted on common structural base plate with all pump accessories complete as per specifications inclusive rubber vibration eliminators motor suitable for 415 volts, 1500RPM. 3 phase 50 HZ. A/c supply. Type of pump - Horizontal Capacity -250LPM (Mini.) Head - 30 M <b>(1working +1stand by) -2 set</b>					
a)	<b>Filter feed tank &amp; Pumps - Electrical &amp; mechanical Works , excluding civil works</b>					
xi)	<b>MULTI GRADE FILTER</b> Providing and installation of mild steel pressure vessel ( as per IS:2825) 6 mm thick natural rubber lining fabrication standard multi grade filter complete in all respects, with dished ends, supporting legs, manhole cover, frontal pipe work fitting with valves. Plant shall be provided with inlet, outlet pressure gauge, sample cocks, charge of filter media graded sand and internals consisting of strainers fitted on plate for collection. Dia of vessel -800 mm (minimum)&1.6 m height Shell thickness -6mm (minimum.) Filtration rate - 20,000 lph/sqm ( min.) & Dish end thickness-8mm (minimum.) Nozzie plate -10mm thick (minimum.) Manhole -450mm Total capacity -250 LPM each Filter, complete (mini.)					
a)	<b>MULTI GRADE FILTER - Electrical &amp; mechanical Works , excluding civil works-2 nos.</b>					
xii)	<b>ACTIVATED CARBON FILTER</b> Providing and installation of mild steel pressure vessel ( as per IS:2825) 6 mm thick natural rubber lining fabrication standard multi grade filter complete in all respects, with dished ends, supporting legs, manhole cover, frontal pipe work fitting with valves. Plant shall be provided with inlet, outlet pressure gauge, sample cocks, charge of approved quality activated carbon media. Provision of backwash and recharging of activated carbon etc. complete Depth of Activated carbon media- 1.0 m Activated carbon type-(950 IV 4/8 mesh) Dia of vessel -800mm (minimum)& 1.6 m ht. Shell thickness -6mm (minimum.) Dish end thickness-8mm (minimum.) Nozzie plate -10mm thick (minimum.) Manhole -450mm capacity -250LPM,					
a)	<b>ACTIVATED CARBON FILTER - Electrical &amp; mechanical Works , excluding civil works-2 nos.</b>					
xiii)	<b>RCC 2 nos. Suitable size sludge sump of min. capacity 20 cu.m with min. free board 500 mm. The sludge of sludge sump is agitated with diffused air that is fed by an air blower (Common for MBBR tank), including pipe non-corrosive material and its complete system.</b>					

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
	<b>Cost of Screw type sludge feed pump set with CI body, SS screw and shaft coupled with to a totally enclosed fan cooled induction motor complete with CPVC / SS 304 pipings, sluice valves, non return valves, fittings etc as required. Motor suitable for 415 volts, 3 phase 50Hz. A/c supply with control auto start float switch / level controller for automatic operation - Electrical &amp; mechanical Works , excluding civil works (2 Nos.)</b>					
	<b>SLUDGE FEED PUMP-(2 Nos)</b>					
	Capacity -50 LPM(minimum)					
	Head - 20 m					
a)	Type of pump - Screw type					
xiv)	<b>Cost of centrifuge</b> including drive, feeding arrangement, withdrawn arrangement, MOC- All wetted part SS 304, etc complete with PE Dosing System (Each set consist of 1 No. 500 ltr capacity dosing tank with 2 nos positive displacement dosing pump of min. capacity 50 lpm, CPVC / SS 304 pipings, valves, fittings etc as required(One set)					
	Capacity -100 LPM(minimum)					
	Type - Solid bowl					
	Make - Alfa, humboldt ,Penwalt					
xv)	RCC 1 No. suitable size treated water tank of minimum 70 cu. M capacity with min.free board 500 mm(1 unit)					
	<b>Treated Water Transfer Pump Sets</b>					
	Providing and installation horizontal single/multistage centrifugal monoblock pumping set with CI body, SS impeller, coupled with totally enclosed fan cooled induction motor mounted on common structural base plate with all pump accessories complete as per specifications inclusive rubber vibration eliminators motor suitable for 415 volts, 1500RPM, 3 phase 50 HZ. A/c supply, complete with CPVC / SS 304 pipings, sluice valves, non return valves, fittings etc as required.					
	Type of pump - Horizontal single/multistage centrifugal, monoblock					
	Capacity -250 LPM					
	Head - 60 M					
	<b>Treated Water Transfer Pumps - Electrical &amp; mechanical Works , excluding civil works (A set means 1 Pump with allied work) total 2 nos.</b>					
	<b>RCC Treated water tank of minimum 70 cu.m capacity with min. free board 500 mm(1 unit)</b>					
xvi)	Providing and fixing Hydropneumatic filter press of 24 plates 1000 x 1000mm size, with suitable sludge pump(screw type) alongwith piping, fittings valve etc. complete in all respects.					
a)	<b>Filter press &amp; sludge pump(screw type) - Electrical &amp; mechanical Works , excluding civil works(Set-I)</b>					
xvii)	Providing and fixing dust and vermine proof cubical type motor control <b>panel centre</b> for the various pumps, blower etc. required. It is fabricated from 2mm thick CRCA sheet with stove enamelled finish and comprising of:Panel should have at least 20% spare feeders.					
a.	One incoming main MCCB of required capacity suitable rating					
b.	MCCB/MPCB, one for each motor					
c.	Fully automatic DOL/star delta starters suitable for different motors/pumps used in the ETP.Upto 7.5 HP DOL may be used and above star/delta starter used with push buttons one for each motor and on/off indicating neon lamps.					
d.	Single phasing preventors of appropriate rating for each motor.					

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
e	rotary type selector switch					
f	Panel type ampere meters, one for each motor shall be with rotary selector switch to monitor line currents.					
g	Panel type volt meters, on incoming main with rotary selecting switch to monitor voltage between phase to neutral and phase to phase.					
h	Neon phase indicating lamps and indicating lamp for each motor on incoming mains.					
l	Rotary switch for manual or auto operation for each pump					
j	Fully taped separate aluminium bus bar of required capacity for normal and emergency supply.					
k	The panel shall be pre-wired with coded wiring. All intercnnting wiring from incoming main to switchgear, meters and accessories within the switchboard panel shall have suitable copper ferrules (Complete 1 set)					
xviii)	<b>Electrical works</b> (including supply, installation and termination of cables of suitable size as per HP of all pumps with all structural supports, clamps and cable trays as per approved design/specifications,installation will be as per relevant Indian standard and CPWD specification alongwith control cable of suitable size).(1 lot). Axial exhaust Fan GI Sheet ducxtng for desire ventilation of Pump Room area as per approved Drawings. Any other electrical and mechanical item required to complete the work. <b>(Set-1)</b>					
xix)	Providing and fixing digital type flow meter and energy meter etc. complete in all respects. <b>(Set-1)</b>					
xx)	Providing and fixing lab. Equipments including digital type pH meter, COD kit, TDS kit, bicker, conical flask etc. complete in all respects. <b>(Set-1)</b>					
xxi)	<b>Rooms for Pumps &amp; control panel</b> (100 sq.m. ) (minimum size) - Electrical & mechanical Works , Ventillation fan & ducts with minimum air change 20 CFM and lighting etc.,excluding civil works. <b>(Set-1)</b>					
	<b>Note:</b> The cost of chemical & mampower for trial run for period of two month from the date of handing over obtaining approval from Local Pollution Department including the cost of consumables complete as specification as directed .Obtain required no. of test report of treated/raw sewer during trial run. No additional payment shall be made on this account.					
	<b>Complete STP work as mentioned above</b>					
	<b>SUB TOTAL(Sewage Treatment Plant)-[Total of Sub Head STP(i) to (xxi)]</b>	SET	1.00			
					SUBTOTAL(STP)	
13.02	<b>Operation and maintance Cost (STP &amp; ETP)</b>					
i)	Testing charges of Raw and treated effluent for all the required parameter from approved lab (after defect and liability period)	Set	4.00			
ii)	Providing chemical and consumables for satisfactory operation of STP etc. completed in all respect in all respect excluding cost of electricity and manpower and spare parts during defect liability period i.e. 1 year and also including the cost for providing the on plant training to the respective personnels for operation and maintenance of STP.	Month	12.00			

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
iii)	Providing (operator & one Helper) i.e. manpower to operate the STP in each shift. In case the additional manpower required for proper operation, the same will be considered as part of this item only.					
a)	Helper - 3 no./day(i.e one in each shift)	Month	12.00			
b)	technical operator - 2 no./day	Month	12.00			
c)	Supervisor (1 No. Per day)	Month	12.00			
iv)	AMC of all equipments, components and spares of STP after one year defect liability period.The consumables will be reimbursed by owner as per actual cost.	Year	1.00			
<b>SubTotal(O &amp; M)</b>						
<b>Grand total STP (Including O&amp;M)</b>						

Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
14.00	<b>Water Supply Pump Panel</b>					
	Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, powder coated, 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, and having following incoming and outgoing switchgears complete as technical specification & as required.					
	<b>Note :</b>					
	All MCCBs shall have Ics=Icu =100%					
	<b>New Hospital BLOCK</b>					
14.01	<b>INCOMER :</b>					
	160 Amp 415 volts, 35 KA (Ics=Icu), FP MCCB microprocessor based, with O/L, S/C & inbuilt E/F protection release.					
	R,Y&B phase indicating lamp (LED type) with 6A control SP MCB					
	"ON" ,"OFF" and "TRIP" LED indicating lamp and 6A control SP MCBs					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 no. Digital voltmeter with selector switch					
	1 no Digital ammeter with selector switch with one set of suitable C.T. s					
	<b>BUSBARS :</b>					
	300 Amp TPN busbars of aluminium					
	<b>OUTGOINGS :</b>					
i	<b>2 Sets of following (Treated water transfer pump )</b>					
	32 Amp. 415 volts, 35 KA (Ics=Icu), 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 have spreader links & phase barriers.					
	1 No. 3 Phase, fully automatic Star Delta starter of 10 HP with thermal overload relay with inbuilt single phase preventer , contactor, Timer, Push Buttons and Auto-manual selector switch etc complete as required.					
	LED indicating Lamps for "ON" , "OFF" & "TRIP".					
	Digital ammeter with selector switch with one set of suitable cast resin C.T' s					
ii	<b>4 Sets of following ( Raw water transfer pump &amp; Filter Feed Pump FOR WTP )</b>					
	32 Amp. 415 volts, 35 KA (Ics=Icu), 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 have spreader links & phase barriers.					
	1 no 3 Phase,DOL starter of 7.5 HP with thermal overload relay with inbuilt single phase preventor , contactor, Push Buttons and Switches etc complete as required.					
	LED indicating Lamps for "ON" , "OFF" & "TRIP".					
	Digital ammeter with selector switch with one set of suitable cast resin C.T' s					



Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of Plumbing Works						
Sl. No.	Description of Item	Unit	Total Qty	Rate (Rs.) in figures	Rate (Rs.) in words	Amount in figures( Rs.)
1	2	3	4	5	6	7
iii	<b>2 Sets of following ( Drainage Pump )</b>					
	32 Amp. 415 volts, 35 KA (Ics=Icu), 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 have spreader links & phase barriers.					
	1 no 3 Phase,DOL starter of 2 HP with thermal overload relay with inbuilt single phase preventor , contactor, Push Buttons and Switches etc complete as required.					
	LED indicating Lamps for "ON" , "OFF" & "TRIP".					
	Digital ammeter with selector switch with one set of suitable cast resin C.T' s					
iv	<b>2 Sets of following (Tube Well Pump 21 HP)</b>					
	63 Amp. 415 volts, 35 KA (Ics=Icu), 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 have spreader links & phase barriers.					
	Digital ammeter with selector switch with one set of suitable CT,s.					
	LED indicating Lamps for "ON" , "OFF" & "TRIP".					
v	<b>2 Sets of following (Spare)</b>					
	32 Amp. 415 volts, 35 KA (Ics=Icu), 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 have spreader links & phase barriers.					
	Digital ammeter with selector switch with one set of suitable CT,s.					
	LED indicating Lamps for "ON" , "OFF" & "TRIP".					
	Digital ammeter with selector switch with one set of suitable CT,s.					
	<b>Water supply PUMP PANEL in pump room as above</b>	Set	1.00			
14.02	<b>Starter for Tubewell</b>					
	I nos . 3 Phase, fully automatic star Delta starter of 25HP with thermal overload relay with inbuilt/separate single phase preventer , contactor, Timer, Push Buttons and Auto-manual selector switch etc including its mounting on the wall and control cables for starting of the motor complete as required.	Each	4.00			
	<b>Subtotal(Water supply Pump Panel)</b>					-

**Name of Work : Construction of Proposed Medical College Nahan (H.P)- BOQ of**

<b>S.No.</b>	<b>DESCRIPTION</b>	<b>Amount in Rs.</b>
<b>A</b>	<b>INTERNAL PLUMBING</b>	
1.00	SANITARY FIXTURES	
2.00	SOIL, WASTE AND VENT PIPES	
3.00	WATER SUPPLY	
4.00	SEWERAGE AND DRAINAGE	
5.00	EARTH WORK	
<b>B</b>	<b>EXTERNAL PLUMBING</b>	
6.00	EXTERNAL WATER SUPPLY	
7.00	RAIN WATER PIPING	
8.00	BOREWELL	
9.00	RAIN WATER HARVESTING	
10.00	SOLAR WATER HEATING SYSTEM & RECIRCULATING SYSTEM	
11.00	WATER TREATMENT PLANT	
12.00	EFFLUENT TREATMENT PLANT	
13.00	SEWAGE TREATMENT PLANT(INCLUDING O & M)	
14.00	WATER SUPPLY ELECTRICAL PANEL	
	<b>TOTAL</b>	

Name of Work: Construction of proposed Medical College at Nahan(H.P)						
BOQ of Fire Fighting Works						
Item No	Description Of Item	Unit	Total Qty	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	2	3	4	5	6	7
	<b>Note: Based on the tender drawing the agency has to prepare the internal &amp; external fire fighting shop drawing and obtain the approval of the same before start of work</b>					
1.00	<b>FIRE FIGHTING SYSTEM</b>					
1.01	Providing and laying S&S Centrifugally Cast (Spun) / <b>Ductile Iron Pipes</b> conforming to IS : 8329 :					
a	150 mm dia Ductile Iron Double Flanged pipe- class K-9	Metre	480			
1.02	Providing and laying <b>D.I. specials</b> of class K-12 suitable for Mechanical joint(Flange Joint) as per IS : 9523					
a	Upto 600 mm dia	quintal	21			
1.03	Providing Flange joints for <b>Ductile Iron Pipes</b> including testing of joints and including the cost of rubber gasket etc complete in all respect.					
a	150 mm dia pipes	joints	207			
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					
a	Pipes, cables etc exceeding 80 mm dia but not exceeding 300 mm dia	Metre	480			
1.05	Providing, fixing jointing and testing of <b>Heavy (class -C) G.I. pipes</b> as per relevant IS :1239/4736 with special accessories like tees, elbow, gasket, flanges, flanged joints, rubber insertion nuts and bolts including earth work excavatin and trenching, wrapping pipekot 4mm thick 500mm width tar based plymaric 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 pe IS : 1022 ( <b>Under ground</b> )					
a)	150 mm dia G.I. Pipe with flange joints (5.4 mm wall thickness)	Metre	100			
b)	80 mm dia G.I. Pipe with flange joints	Metre	50			
1.06	<b>Heavy class G.I. pipes</b> 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 joint the pumps will flanged joints)					

Item No	Description Of Item	Unit	Total Qty	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	2	3	4	5	6	7
a)	250 mm dia (with Flanged joints)	Metre		10		
b)	200 mm dia (with Flanged joints)	Metre		10		
c)	150 mm dia (with Flanged joints)	Metre		725		
d)	100 mm dia (with Flanged joints)	Metre		1450		
e)	80 mm dia	Metre		200		
f)	65 mm dia	Metre		100		
g)	50 mm dia	Metre		175		
h)	40 mm dia	Metre		700		
i)	32 mm dia	Metre		1000		
j)	25 mm dia	Metre		4500		
1.07	Providing and fixing <b>Single headed hydrants</b> flanged inlet with 63 mm female instantaneous outlet of gunmetal/SS 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		98		
1.08	Providing 63mm dia 15 m long <b>reinforced rubber lined hose pipe</b> conforming to IS: 636-1992 Part-II with gunmetal/SS male & female coupling wire wound with pipe as required.	Each		162		
1.09	Providing and fixing 63mm dia 15 m long <b>canvas hose pipe</b> complete with gunmetal/SS male & female coupling wire wound with the pipe The pipe shall conform to IS: 4927.	Each		34		
1.10	Providing and fixing Gunmetal/SS <b>branch pipe</b> with 20mm dia nozzle conforming to IS:903. suitable for installation connections to hose coupling etc. as required.	Each		98		
1.11	Providing and fixing <b>Four way fire brigade</b> connection housed in steel cabinet of size 900mm x 750mm x 400mm fabricated from 2 mm thick S.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		6		
1.12	Providing and fixing Set of " <b>Siamese</b> " <b>quadraplet instantaneous</b> fire brigade connections comprising of two gunmetal/SS instantaneous male inlet coupling 63mm dia with plug and cap, chain bends, tees etc for inlet to the static tank.	Each		6		
1.13	Providing & Fixing 150 mm dia, <b>3 way collecting head</b> complete with 3 nos. 63 mm dia male coupling, NRV and rubber blank cap with chain as per IS 904( suction coupling for firebrigade withdrawal of water from the fire tank)	Each		6		
1.14	Providing & fixing fire authority approved <b>Alluminium shutter</b> (size 1200 (L) x 2100 (H) mm ), The shutter size shall be as per approved drawing capable of accommodating fire hose reel, fire hydrant, hose pipe, fittings & accessories. The box shall have a single or double glazed front glass door (with 4 mm thick glass) with lock & key arrangement & shall be painted with Fire red as per IS:5, shade no. 536 complete in all respects. (For Internal Hydrant) (Excluding the cost of alluminium work which will be paid as per civil work items)	Each		81		

Item No	Description Of Item	Unit	Total Qty	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	2	3	4	5	6	7
1.15	Providing and fixing <b>stand post type hose cabinet</b> for external hydrant of size (750 x 600 mm x 300 mm) fabricated from 2 mm thick SS sheet having openable glazed door shutter with 4mm thick glass suitable to accommodate hydrants, 2 Nos. canvas hose pipe bearing ISI mark Under IS:639-992 type B ( not less then 30 Meter length) and branch pipe including necessary locking arrangements, painting inside and external part shall be natural polished in matt finish including SS 304 angle stand and PCC foundation 1:2:4 complete with locking arrangement and inbuilt key box.	Each		17		
1.16	Providing and fixing cast iron body IS: 210 FG 200 and double flange gear simple operation type <b>butterfly valve</b> 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)	200 mm dia	Each		8		
b)	150 mm dia	Each		100		
c)	100 mm dia	Each		4		
d)	80 mm dia	Each		4		
1.17	Supplying, testing, installation & commissioning of <b>pressure switches</b> for pumps including necessary wiring upto the control panel.	Each		30		
1.18	Constructing <b>masonry chamber</b> 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		10		
1.19	Supplying and Fixing <b>First Aid Hose Reel</b> , 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.					
	Drum and brackets for fixing the equipments on wall.					
	Connection from riser with stop valve (gun metal) & M.S. Pipe	Each		80		
1. 20	Providing and fixing <b>C.I. sluice valves</b> (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		8		
b)	150 mm dia	Each		20		

Item No	Description Of Item	Unit	Total Qty	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	2	3	4	5	6	7
1.21	Supply, Installation, Testing and Commissioning of 100 mm dia Bourden type, Stainless Steel dial type <b>Pressure Gauge</b> including brass isolation valve and siphon pipe having calibration of 0 - 16 Kg / cm <sup>2</sup> .	Each	98			
1.22	Supplying and Fixing of <b>Fire Man's axe</b> with heavy insulated rubber as per standard conforming to IS 926	Each	81			
1.23	Supplying and Fixing vane type <b>waterflow switch</b> with contacts suitable for installation on 50 mm to 150 mm dia pipeline for a service pressure upto 20 Kg/sq.cm.	Each	98			
1.24	Providing, Fixing, Testing and Commissioning of <b>Sprinkler Installation Control Valve</b> 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	4			
1.25	Supplying, Installation, Testing & Commissioning modular construction <b>master control annunciation panel</b> for sprinkler with provision for requider No. of Zone (30% additional spares),eachsprinkler hydrant will have atleast 4 zone on each floor as approved by engineer.The panel shall have but not limited to the following arrangement.					
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	2			
1.26	Providing and fixing <b>SS flexible sprinkler drop unbraided 20 mm NB</b> UL listed having a working pressure of 12 kg/sq.cm complete with GI nipple, sprinkler fixing adaptor and fixing clamps complete as per Manufacturer's catalogue and decorative 65 mm dia CP brass/SS flange for fixing sprinkler below false ceiling					
a)	20mm NBx700 mm long	each	750			
b)	20mm NBx1000 mm long	each	950			
c)	20mm NBx1200 mm long	each	400			
d)	20mm NBx1500 mm long	each	200			
1.27	Providing and Fixing 15 mm dia gunmetal / brass quartzoid type <b>Sprinkler Head</b> with quartz bulb and set to operate at specified temperature.					
a)	<b>Pendent / Upright</b> type, 68 C, Chrome plated With cp cover	Each	2800			
b)	<b>Side wall extended</b> throw 20 mm dia 68 C, Chrome plated	Each	700			
1.28	Providing and fixing of C.I. <b>'Y' type strainer</b> flanged with SS 304 perforated screen including nuts, bolts and rubber insertions etc					
a)	200mm dia	Each	4			
b)	150 mm dia	Each	8			
1.29	Providing and fixing of <b>foot valve</b> complete with including M.S. flange nuts, bolts, washers, gaskets insertions etc.					

Item No	Description Of Item	Unit	Total Qty	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	2	3	4	5	6	7
a)	150 mm dia	Each		4		
b)	200 mm dia	Each		2		
1.30	Fabricating, Supplying, Installation, Testing and Commissioning <b>Air Vessel</b> 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		14		
1.31	Supply, Installation, Testing and Commissioning <b>External Yard Hydrant Stand Post</b> 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 accessroies as required.	Each		17		
1.32	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		100000		
1.33	Supply, erection, testing & commissioning of exit glow sign board of size 200mm x 350 mm wall mounting signage consisting of photo luminescent coating, non radioactive on acrylic cover					
a)	Single sided luminescent exit glow sign board	Each		82		
b)	Double sided luminescent exit glow sign board	Each		82		
1.34	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:3224/15683 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		82		
1.35	Providing and fixing 9 liters capacity fire extinguisher water type gas pressure conforming to IS marking, fixed to wall.	Each		82		
1.36	Providing and fixing ABC type fire extinguishers complete in all respects.					
a)	Capacity 6.0 Kg.	Each		82		
1.37	Providing and fixing ABC type automatic modular ceiling mounted type extinguisher with body powder coated 10 lts. Capacity min. 300 mm dia 68 degree centigrade bul temperature complete in all respect of approved make and model	Each		6		
1.38	<b>Supression System</b>					

Item No	Description Of Item	Unit	Total Qty	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	2	3	4	5	6	7
(i)	S/F 10 LB capacity NOVEC 1230 DLP Assembly with Automatic valve, push in connector for tube, 5 LB NOVEC 1230 gas, mounting bracket, end of line adopter and low pressure switch for monitoring system activation of automatic linear pneumatic tube detection system complete etc. as reqd as one job make: Fire Trex /Seimens / UTCake: Fire Trace/Servo System/FireTEC.	JOB		5		
(ii)	S/F 2.5 LB capacity NOVEC 1230 DLP Assembly with Automatic valve, push in connector for tube, 2.5 LB NOVEC 1230 gas, mounting bracket, end of line adopter and low pressure switch for monitoring system activation of automatic linear pneumatic tube detection system, complete etc. as reqd as one job make: Fire Trex /Seimens / UTC	JOB		38		
(iii)	S/F linear pneumatic heat detection tube and suppression system operated on 92-100 deg, Cent temp. With all necessary fittings and supports, fixing in the existing electrical panel board, complete etc as required at site . Make: FireTraco/Srevo System/Fire System/Fire TEC	MTR		600		
(iv)	S/F audio visual alarm system for automatic linear fire trace tube detection system, complete etc as required at site	Each		41		
1.39	Fabricating, Supplying, Installation, Testing and Commissioning <b>Air Vessel</b> 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		
1.40	Providing and fixing C.I. double flanged horizontal/vertical type <b>check valve NRV</b> including nuts, bolts, rubber insertions as required conforming to IS:5312					
a)	200 mm dia	Each		2		
b)	150 mm dia	Each		12		
c)	80 mm dia	Each		2		
1.41	Providing and fixing of 150mm dia <b>deluge valve</b> of cast iron body and brass/bronze working parts comprising of water motor, alarm, bronze seat clapper and clapper alarm, pressure gauges, emergency releases, pressure switch cock valve complete with drain valve, ball valve, flanges, gasket etc.	Each		4		
1.42	Supplying, installing, testing and commissioning of <b>electric driven fire pump</b> 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 in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	2	3	4	5	6	7
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)	<b>Capacity 2280 LPM and Head 80 Metres</b>	Each		2		
1.43	Supplying, installing, testing and commissioning of <b>diesel engine driven fire pump</b> 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.					
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.					

Item No	Description Of Item	Unit	Total Qty	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	2	3	4	5	6	7
	<b>i) Capacity 2280 LPM and Head 80 Metres</b>	Each		1		
1.44	Supplying, installation, testing and periodic commissioning of <b>electric motor driven automatic pressurization pump</b> set consisting of the following (as per specification) (For Hydrant system & Sprinkler system).					
a)	Centrifugal pump of specified 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 .					
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.					
	<b>i) 180 LPM &amp; Head - 80 Metres</b>	Each		1		
1.45	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		4		
b)	for 150 mm dia pipe	Each		6		
c)	for 200 mm dia pipe	Each		2		
1.46	Supplying, installing, testing and commissioning of <b>electric motor driven type automatic pressurisation, pump set</b> suitable for automatic operation of <b>terrace down comer</b> and consisting of the following (as per CPWD specifications Part V-1985) for fire fighting and its amendmendts).					
a	Fire pump with stainless steel impeller CI casing, SS shaft shall be horizontal end suction centrifugally type having a capacity of <b>900 LPM</b> against a total head of <b>25m</b> 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 characterstic curve of the pumps, model & other technical data for approval before placing the order}					

Item No	Description Of Item	Unit	Total Qty	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	2	3	4	5	6	7
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	1 No. 3 Phase, fully automatic DOL starter, type - II of 10 HP with thermal overload relay, contactor, Timer, Push Buttons and Auto-manual selector switch etc complete as required.					
e	Suitable cement concrete pump foundation with vibration damping arrangement with cushy foot mounting as required and having provision of suitable weather protection cover.	Each		6		
<b>2.00</b>	<b>FIRE -FIGHTING PANEL</b>					
<b>2.01</b>	<b>FIRE -FIGHTING PANEL (In Pump Room)</b>					
	Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, powder coated, free standing type, dust, damp and vermin proof, indoor type 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, and having following incoming and outgoing switchgears complete as required.					
	Note :					
	All MCCBs shall have Ics=Icu .					
	<b>INCOMER :</b>					
	200 Amp 415 volts, 35 KA (Ics=Icu), FP MCCB microprocessor based, with O/L, S/C & E/F protection.					
	R,Y&B phase indicating lamp (LED type) with 6A control SP MCB					
	"ON" ,"OFF" and "TRIP" LED indicating lamp and 6A control SP MCBs					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 no. Digital voltmeter with selector switch					
	1 no Digital ammeter with selector switch with one set of suitable C.T.s					
	<b>BUSBARS :</b>					
	500 Amp TPN busbars of aluminium					
	<b>OUTGOINGS :</b>					
i	<b>2 Sets of following( electric Driven fire pump )</b>					
	200 Amp. 415 volts, 35 KA (Ics=Icu), 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 have spreader links & phase barriers.					
	3 Phase,star-delta starter of 90 HP with thermal overload relay with inbuilt/separate single phase preventer , contactor, Timer, Push Buttons and Auto-manual selector switch etc including its mounting on the wall and control cables for starting of the motor complete as required.					
	LED indicating Lamps for "ON" , "OFF" & "TRIP" .					

Item No	Description Of Item	Unit	Total Qty	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	2	3	4	5	6	7
	1 no Digital ammeter with selector switch with one set of suitable C.T. s					
<b>ii</b>	<b>1 Sets of following (Jockey pump)</b> <b>32 Amp. 415 volts, 35 KA (Ics=Icu), TPN MCCB, with Thermal magnetic release having variable current settings. .</b> Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers. 3 Phase,DOL starter of 7.5 HP with thermal overload relay with inbuilt single phase preventor , contactor, Push Buttons and Switches etc complete as required. LED indicating Lamps for "ON" , "OFF" & "TRIP" .					
<b>iii</b>	<b>2 Sets of following (Spare)</b> 32 Amp. 415 volts, 35 KA (Ics=Icu), TPN MCCB, with Thermal magnetic release having variable current settings. . <b>Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links &amp; phase barriers.</b> LED indicating Lamps for "ON" , "OFF" & "TRIP" .					
<b>iv</b>	<b>1 Set of following in a separate cubicle (Diesel engine auto starting kit)</b> One no. Diesel engine auto starting kit with all necessary relay, controls, wiring etc to start 45 HP diesel engine when electrical driven fire pump fail to start including one no rectifier circuit, battery charger, batteries, DC Voltmeter, DC Ammeter and its interconnection with control cables etc complete in ready to use condition.					
	<b>Fire Fighting Pump Panel in Pump room as above</b>	Set	1			
	<b>Sub Total(Fire fighting)</b>					

Name of Work: Construction of proposed Medical College at Nahan(H.P)		
ABSTRACT OF COST		
S.No	DESCRIPTION OF WORK	Amount in figures(Rs.)
1	FIRE FIGHTING	0.00
	GRAND TOTAL	0.00

**BILL OF QUANTITIES OF ELECTRICAL WORKS FOR CONSTRUCTION OF HOSPITAL ,MEDICAL COLLEGE & RESIDENTIAL BLOCK AT NAHAN, HIMACHAL PRADESH**

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	<b>SUB HEAD 1: HT SUB STATION</b>					
<b>1.00</b>	<b>HT PANEL</b>					
<b>1.01</b>	Supply, erection, testing and commissioning of 3 panel, 630A , 11 kV, 3 Phase, 50 Hz., metal clad, dead front, 500 MVA (26.3 KA) rupturing capacity Vacuum Circuit Breaker Incoming & Outgoings as per the detailed specifications and drawings including connections etc. including door interlocking and expendable type etc. As per technical specifications and as required.					
	<b>a) INCOMER:</b>					
	<b>i) 1 No. VCB each having the following:</b>					
	1 No. 630A, 11kV, 3 Phase, 50Hz., metal clad, dead front, 500 MVA rupturing capacity, Fully Draw out type, Vacuum Circuit Breaker (VCB).					
	1 set of 11kV/110V -110 V Potential Transformers with HRC fuses for metering & protection.					
	1 Set of Phase indicating lamps with HRC fuses.					
	1 No. Digital voltmeter.					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY.					
	Push button for ON, OFF & TRIP circuit healthy.					
	1 set of 500/5 A Current Transformer for metering and protection.					
	1 No. digital Ammeter with selector switch to select R, Y or B phase current.					
	1 Set of Microcontroller based numerical relay having 4 element relay (30C+1E/F). Relay should have display of phase current and trip history.					
	Digital frequency meter, Digital Tri vector meter.					
	1 Set of undervoltage relay and Overvoltage relay.					
	1 Trip circuit supervision relay, Auxiliary relays with shunt trip coil (W11 & Door open trip).					
	1 No. Master Trip relay.					
	1 No. Digital Power factor meter.					
	8 window annunciator					
	1 no. Phase reversal Relay.					
	<b>b) BUSBARS:</b>					
	11kV, 500 MVA, 630 Amps Three Phase busbars of copper.					
	<b>c) OUTGOINGS:</b>					
	<b>i) 2 No. VCB each having the following:</b>					
	1 No. 630A, 11kV, 3 Phase, 50Hz., metal clad, dead front, 500 MVA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB).					
	1 set of 11kV/110V -110 V Potential Transformers with HRC fuses for metering & protection.					
	1 Set of Phase indicating lamps with HRC fuses.					
	1 No. Digital voltmeter.					
	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 100/5-5 A, For measurement & protection.					
	1 Set of Microcontroller based numerical relay having 4 element relay (30C+1E/F). Relay should have display of phase current and trip history.					
	Digital frequency meter, Digital Tri vector meter.					
	1 Set of undervoltage relay and Overvoltage relay.					
	1 Trip circuit supervision relay, Auxiliary relays with shunt trip coil.					
	8 window annunciator					
	1 No. Master Trip relay.					
	1 No. Digital Power factor meter.					
	<b>HT PANEL AS MENTIONED ABOVE</b>	Set	2			
	<b>RING MAIN UNIT</b>					
<b>1.02</b>	Supply installation testing and commissioning of Ring Main Unit - Single Unit consisting of 2 Nos 630A load break switches and 1 No. 630 A Tee-Off with SF6 / vacuum Circuit Breaker and with OC + EF relay type (for Local Transformer control.) with SF6 Gas Pressure Indicator suitable for outdoor installation for use on 11 KV 50 C/S earthed system having a short circuit rating of 21KA for 1 Sec. at 11 KV including copper bus bars. Panel shall be equipped with following accessories as per specifications and schematic drawing.					
	<b>A Each load breaking switch shall be comprising of:</b>					
	a. Manually operated 630 A Load Break switch and Earthing Switch with making capacity					
	b. Mechanical ON/OFF/EARTH Indication.					
	c. Cable Testing facility without opening the cable compartment and without disconnecting the cable terminations.					
	d. Live Cable Indicating LEDs energized through Capacitive Voltage Dividers					
	e. Cable box suitable for cable termination upto 2 nos. 3Cx 300 sq.mm. XLPE cable.					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	f. Right angle boots eqvt to TP 300 of MECP make ( Push on type ).					
	<b>B Each SF-6/ Vacuum Circuit Breaker shall be comprising of:</b>					
	a. Manually operated 630 A SF6 / Vacuum circuit breaker and Earthing Switch with full making capacity					
	b. Anti reflex operating handle.					
	c. Shunt Trip coil (230V AC) for external trip signal					
	d. Self powered OC + E/F relay type VIP55					
	e. Mechanical ON/OFF/EARTH Indication.					
	f. Live Cable " Indicating LEDs energized through Capacitive Voltage Dividers					
	g. Cable box for termination of cable upto 2 No. 3Cx 300 sq.mm. XLPE cable					
	h. Right angle boots eqvt to TP 300 of MECP make ( Push on type ).	Set	1			
	<b>RING MAIN UNIT AS MENTIONED ABOVE</b>					
	<b>TRANSFORMER</b>					
1.03	(a) Supply, installation, testing and commissioning of 1600 KVA, 11kV/0.433 kV, 3 Phase, 4 wire, 50 Hz, ON-AN Transformer, Dyn11 Vector group, copper bound Class A insulation with outdoor duty type, On load tap changer on HV Side range -15%, 0, +5% in the steps of 2.5% per step, type transformer with RTCC+AVR inclusive of all control cable. Cable box connection including cable adapter box at primary and secondary end (LT side) shall be connected through busduct/ cable, complete with all accessories including first filling of oil, double float buchholz relay protection, high winding temperature, oil temperature sensors and gauges etc. as per to IS 1180 ammended upto date, interconnection of control cables and accessories etc complete including Foundation .	Each	2			
1.04	(b) Supply, installation, testing and commissioning of 400 KVA, 11kV/0.433 kV, 3 Phase, 4 wire, 50 Hz, ON-AN Transformer, Dyn11 Vector group, copper bound Class A insulation with outdoor duty type, On load tap changer on HV Side range -15%, 0, +5% in the steps of 2.5% per step, type transformer with RTCC+AVR inclusive of all control cable. Cable box connection including cable adapter box at primary and secondary end (LT side) shall be connected through busduct/ cable, complete with all accessories including first filling of oil, double float buchholz relay protection, high winding temperature, oil temperature sensors and gauges etc. as per to IS 1180 ammended upto date, interconnection of control cables and accessories etc complete including Foundation .	Each	2			
	<b>BATTERY CHARGER PANEL</b>					
1.05	Supply, erection, testing and commissioning of battery charger panel with 24 Volts DC continuous out put for control supply of HT panel complete with battery, control cabling etc. as required. Capacity of battery charger panel should be suitable for above mentioned HT Panels.					
	2 numbers battery of minimum 180 AH ampere hour capacity.					
	Boost and Trickle charger suitable for above items.					
	1 No. AC Voltmeter (0-500Volt).					
	1 No. DC Voltmeter.					
	1 No. DC Ammeter.					
	1 set of AC and DC indicating lamps.					
	1 No. DC Battery charging position indicator.					
	DC distribution board suitable for above application to incoming & outgoing MCBs include tripping, closing and indication etc.					
	Control cabling between DC Distribution panel to the HT panel of the Substation with suitable core 1.5 sqmm copper cable.	Each	2			
1.06	<b>BUS DUCT</b>					
	Supply, Installation, testing and commissioning of <b>following rating</b> 3 Phase, 4 Wire, sandwich construction Aluminium Bus Duct having 50 kA short ckt for one Second with temperature rise of 55Deg. above ambient of 40deg. In extruded aluminium/ sheet steel housing suitable for operation on 415V, 50Hz AC supply with 50% neutral complete with all accessories bends, flange ends with adaptor box, Tinned copper laminated flexibles for all the panels, flexible joints, earth bus (minimum 2 runs of suitable rating aluminium strips), plug in point at required positions, expansion joints, transposition joint, end covers, ceiling/wall/ floor mounted support structure of painted/ powder coated with required hardware for installation, supporting arrangements, etc. Indoor type busduct shall be IP54 & Outdoor Busduct shall be IP65 protected. Outdoor/indoor duty type complete as per technical specifications and as requirement. <b>Note-</b> for outdoor installtion canopy will be mounted on bus duct for protection. Canopy Fabricated out of 1.2mm GI/CRCA powder painted					
	<b>OUTDOOR TYPE BUSDUCT (IP65) with Canaopy Fabricated out of 1.2mm GI / CRCA Powder Painted.</b>					
	A) 2500 Amp	Meter	40			
	B) <b>INDOOR TYPE BUSDUCT (IP54)</b>					
	1 2500 Amp	Meter	20			

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	<b>HT CABLE</b>					
1.07	Supply of following sizes of 11 kV grade multicore aluminum conductor XLPE armoured power cable as per IS : 7098.					
	i) 3 Core, 240 sq mm	Mtrs.	500			
1.08	Laying of one number PVC insulated and PVC sheathed/ XLPE power cable of 11 KV grade of following size direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc as required.					
	i) upto 400 Sq mm	Metre	500			
1.09	Laying of one number PVC insulated and PVC sheathed/ XLPE power cable of 11 KV grade of following size in the existing RCC/HUME/METAL pipe as required.					
	i) upto 400 Sq mm	Metre	100			
1.1	Laying of one number PVC insulated and PVC sheathed/ XLPE power cable of 11 KV grade of following size in the existing masonry open duct/cable tray as required.					
	i) upto 400 Sq mm	Metre	100			
1.11	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 3 core (Heat Shrink Type) Indoor Type	Each	6			
	ii) 240 sqmm 3 core (Heat Shrink Type) Outdoor Type	Each	6			
1.12	Providing, laying and fixing following dia RCC pipe NP2 class (light duty) in ground complete with RCC collars, jointing with cement mortar 1:2 (1 cement : 2 fine sand) including trenching (75 cm deep) and refilling etc as required.					
	i) 300 mm dia	Metre	300			
	<b>CABLE ROUTE MARKER</b>					
1.13	Supplying and fixing cable route marker with 10 cm x 10 cm x 5 mm thick G.I. plate with inscription there on, bolted/welded to 35 mm x 35 mm x 6 mm angle iron, 60 cm long and fixing the same in ground as required.					
		each	30			
	<b>SAFETY EQUIPMENT</b>					
1.14	i) Providing and fixing HT (11 kV) danger notice plate of 250 x 150 mm made of mild steel, atleast 2 mm thick and vitreous enamelled white on both sides and with inscription in signal red colour on front side as required.	Each	2			
	ii) Providing and fixing MV danger notice plate of 200 x 150 mm made of mild steel, atleast 2 mm thick and vitreous enamelled white on both sides and with inscription in signal red colour on front side as required.	Each	25			
	iii) Supply & erection of the following Safety and testing Equipment including miscellaneous items like Clamps, nuts & Bolts, rawl plugs etc. at suitable places in the Substation building as required.					
	a) GI buckets, 4 nos of 5 Litres Capacity duly painted white inside and red oxide paint out side and with 'FIRE' written in white paint & Filled with Dry sand and mounted on MS angel iron bracket of Size 50 x 50 x 6 mm thick and 1200 mm long including grouting in wall / floor etc as required	Each	5			
	b) Supplying, storing, handling and fixing in position First Aid Medical Box complete as per technical specifications as required.	Each	2			
	c) Shock Treatment Chart duly glazed mounted on Aluminum Frame with Sheet Glass as required.	Each	1			
	d) Supplying and laying of 12 kV grade 1 metre wide anti skid chequered type rubber mat.	Metre	10			
	e) Supplying and laying of 1.1 kV grade 1 metre wide anti skid chequered type rubber mat.	Metre	10			
	f) Supply rubber hand gloves 11 kV grade as per I.S. Code.	Set	1			
	g) Supplying of digital Earth Tester complete with probes etc as required	Set	1			
	h) Supplying of Telescopic folding Aluminium ladder folding double with sitting stand 6 M etc as required.	Each	1			
1.15	Providing and fixing of M.S Slotted angle iron with fixing materials and painting for cable racks in trenches/ on wall etc as required.	KG	300			
1.16	Providing and fixing of M.S Slotted angle C channel/ Ladder type rack/ tray including fixing material grouted in wall or hanning with M.S rod hanger from ceiling including 2 coat synthetic enamel painting over 1 coat of red oxide primer etc. as required.	KG	300			
1.17	Fabrication and Installing following size of preforted M.S Cable tray including Horizontal and vertical bends, reducers, tee, crossmember and other accessories as required and duly Suspended from the ceiling with M.S 12 mm rod suspenders and including painting etc. as required.					
	i) 150 mm width x 50 mm depth x 1.6 mm thickness	Metre	200			
	ii) 300 mm width x 50 mm depth x 1.6 mm thickness	Metre	150			
	iii) 450 mm width x 62.5 mm depth x 2.0 mm thickness	Metre	100			
	iv) 600 mm width x 62.5 mm depth x 2.0 mm thickness	Metre	100			
1.18	Fabrication and Installing following size of Ladder type M.S Cable tray including Horizontal and vertical bends, reducers, tee, crossmember and other accessories as required and duly Suspended from the ceiling with M.S 12 mm rod suspenders and including painting etc. as required.					
	i) 450 mm width x 62.5 mm depth x 2.0 mm thickness	Metre	100			
	ii) 600 mm width x 62.5 mm depth x 2.0 mm thickness	Metre	100			



S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	<b>TOTAL SUB HEAD 1: HT SUB STATION AS MENTIONED ABOVE</b>					
	<b>SUB HEAD 2: MAIN LT PANEL</b>					
2.00	<b>MAIN LT PANEL ESS-1 (HOSPITAL)</b>					
2.01	Supply, installation, testing and commissioning of LT Panel, cubicle type, totally enclosed, free standing type, dust damp and vermin proof panel, powder coated, made up of CRCA sheet, complete with aluminum busbars, danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, necessary interlocking, and having incoming and outgoing switchgears as mentioned below. Complete as per technical specifications and as required.					
	<b>Note:</b>					
i	Automatic Change over of DG on Emergency LT Panel at the time of power failure and visa versa.					
ii	All ACBs shall have spare contacts					
iii	All relays to operate at 240Volts, Single phase, 50Hz., AC supply through UPS, UPS of suitable Rating is also in the scope of Supply					
iv	Intelligent Panel Meter; Flush mounting, 96 x 96 mm size class 1 accuracy and LCD display. Panel meter should be suitable for true RMS reading. Meter should measure line and phase voltage, current of all 3 phases and neutral, HZ, PF, KW, KWH, KVAR, KVARH, KVA, KVAH, Voltage and current including one set of CT. Meter should be EMI/ EMC compliant.					
v	All ACBs shall have 50 KA for 1 second.					
vi	All ACBs should have $I_{cw} = I_{cs} = 100\%$					
vii	All MCCBs shall have $I_{cw} = I_{cs} = 100\%$					
	<b>LT PANEL ESS-1 (HOSPITAL)</b>					
a)	<b>INCOMER:</b>					
i)	<b>2 Nos. ACB Panels each having following:</b>					
	2500 A, 415 V, 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. ACB should have $I_{cw} = I_{cs} = 50$ KA for 1 sec.					
	Indicating lamps (LED Type) with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB.					
	Push button to Close the ACB.					
	R, Y & B Phase indicating lamps (LED type) with 6A control SP MCBs.					
	Intelligent Panel Meter as mentioned above with one set of CTs.					
	One set of dual core dual ratio CT of 2500/1600/5/5A for capacitor panel.					
b)	<b>BUSBARS:</b>					
	2500 Amps TPN busbars of aluminium with temperature rise of 40° C over and above Ambient temperature, of 45 Degree Celsius.					
c)	<b>BUS COUPLER:</b>					
i)	<b>1 No. ACB Panels each having following:</b>					
	2500 A, 415 V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous & Earth Fault trip including and lockable trip push button. The ACB should have $I_{cw} = I_{cs} = 50$ KA for 1 sec.					
	Indicating lamps (LED Type) with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB.					
	Push button to CLOSE the ACB.					
	1 Set of Ammeter with ASS and CTs.					
d)	<b>OUTGOING:</b>					
i)	<b>6 Nos. ACB Panels each having following:</b>					
	1250 A, 415 Volts, Fully Motorised, Fully Drawout type (EDO), 50 KA, Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous, Earth fault trip and lockable trip push button.					
	Indicating lamps (LED Type) with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB.					
	Push button to CLOSE the ACB.					
	Intelligent Panel Meter as mentioned above.					
ii)	<b>4 Nos. ACB Panels each having following:</b>					
	800 A, 415 Volts, Fully Motorised, Fully Drawout type (EDO), 50 KA, Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous, Earth fault trip and lockable trip push button.					
	Indicating lamps (LED Type) with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB.					
	Push button to CLOSE the ACB.					
	Intelligent Panel Meter as mentioned above.					
iii)	<b>5 Nos. MCCB feeder as per following details/ specifications:</b>					
	630 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C and inbuilt E/F protection.					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
	<b>v) 4 Nos. MCCB feeder as per following details/ specifications:</b> 400 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
	<b>v) 4 Nos. MCCB feeder as per following details/ specifications:</b> 250 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
	<b>vi) 8 Nos. MCCB feeder as per following details/ specifications:</b> 160 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
	<b>MAIN LT PANEL AS MENTIONED ABOVE</b>	Set	1			
<b>2.02</b>	<b>LT PANEL (EMERGENCY)</b>					
	<b>a) INCOMER:</b>					
	<b>i) 2 No. ACB Panels each having following:</b> 800 A, 415 V, 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. ACB should have $I_{cw}=I_{cs}=I_{cu}=50$ KA for 1 sec. Indicating lamps (LED Type) with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB. Push button to Close the ACB. R, Y & B Phase indicating lamps (LED type) with 6A control SF MCBs. Intelligent Panel Meter as mentioned above with one set of CTs					
	<b>b) BUSBARS:</b> 800 Amps TPN busbars of aluminium with temperature rise of 40 ° C over and above Ambient temperature of 45 Degree Celsius.					
	<b>c) BUS COUPLER:</b>					
	<b>i) 1 No. ACB Panels each having following:</b> 800 A, 415 V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous & Earth Fault trip including and lockable trip push button. The ACB should have $I_{cw}=I_{cs}=I_{cu}=50$ KA for 1 sec. Indicating lamps (LED Type) with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB. Push button to CLOSE the ACB. 1 Set of Ammeter with ASS and CTs.					
	<b>d) OUTGOING:</b>					
	<b>i) 1 Nos. MCCB feeder as per following details/ specifications:</b> 630 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
	<b>ii) 2 Nos. MCCB feeder as per following details/ specifications:</b> 400 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection.					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
iii)	<b>6 Nos. MCCB feeder as per following details/ specifications:</b> 250 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
iv)	<b>4 Nos. MCCB feeder as per following details/ specifications:</b> 125 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
	<b>LT PANEL EMERGENCY AS MENTIONED ABOVE</b>	Set	1			
2.03	<b>LT PANEL ESS-2</b>					
a)	<b>INCOMER:</b>					
i)	<b>2 No. ACB Panels each having following:</b> 800 A, 415 V, 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. ACB should have $I_{cw}=I_{cs}=50$ KA for 1 sec. Indicating lamps (LED Type) with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB. Push button to Close the ACB. R, Y & B phase indicating lamps (LED type) with 6A control SF MCBs. Intelligent Panel Meter as mentioned above with one set of CTs					
b)	<b>BUSBARS:</b> 800 Amps TPN busbars of aluminium with temperture rise of 40 ° C over and above Ambient temperture of 45 Degree Celsius.					
c)	<b>BUS COUPLER:</b>					
i)	<b>1 No. ACB Panels each having following:</b> 800 A, 415 V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous & Earth Fault trip including and lockable trip push button. The ACB should have $I_{cw}=I_{cs}=50$ KA for 1 sec. Indicating lamps (LED Type) with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB. Push button to CLOSE the ACB. Set of Ammeter with ASS and CTs.					
a)	<b>OUTGOING:</b>					
i)	<b>6 Nos. MCCB feeder as per following details/ specifications:</b> 400 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
ii)	<b>4 Nos. MCCB feeder as per following details/ specifications:</b> 250 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
iii)	<b>2 Nos. MCCB feeder as per following details/ specifications:</b> 160 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
b)	<b>2 Nos. MCCB feeder as per following details/ specifications:</b> 125 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. Intelligent Panel Meter as mentioned above.					
	<b>LT PANEL ESS-2 AS MENTIONED ABOVE</b>	Set	1			
2.09	<b>CAPACITOR PANEL (650 KVAR at 415V) Nahah Hospital</b> Supply, installation, testing and commissioning of LV cubicle type totally enclosed free standing type, powder coated, dust, damp and vermin proof Capacitor Panel complete with busbars, MV danger notice plate, ammeter, ammeter selector switch, indicating lamps, CTs, heavy duty, MPP resin filled, type Capacitors suitable for non linear loads upto 15% with Copper wound 14% D-tuned filters with linearity should not be less than 143%, total operating losses of capacitor shall not more than 0.5 W/ KVAR. Contactors suitable for capacitor switching or Capacitor duty switching contactor with 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, and having following incoming and outgoing switchgears complete as per technical Specifications as required.					
a)	<b>INCORDER:</b> 1250 A, 415 Volts, Fully Motorised, Fully Drawout type (EDO), 50 KA, TP, Air Circuit Breaker with microprocessor based overload, short circuit & Instantaneous Earth fault trip including lockable trip push button. Indicating lamps with 6A protection MCBs to indicate OPEN, CLOSE, TRIP. R, Y & B Phase indicating lamps (LED type) with 6A control SP MCBs. Day & Night mode selector Switch. 14 steps Intelligent microprocessor based Automatic Power factor Correction relay having measurement sensitivity of 1 % or better. Extension of incoming busbars for connection of multicore armoured aluminium cables. ON/ OFF delay timers for switching capacitor circuit.					
b)	<b>METERING:</b> 1 set of Digital Amp. Meter, Digital Power factor meter and Digital voltmeter.					
c)	<b>BUSBARS:</b> 1250 Amps TP busbars of aluminum with temperature rise of 40 degree celsius over and above Ambient temperature of 45 degree celsius.					
d)	<b>OUTGOINGS:</b>					
i)	<b>5 Nos. 100KVAR at 415V Delta connected step as per following details/ specification:</b> 200 Amps, 415 volts, 50 KA TP MCCB with Thermal Magnetic release having variable current settings. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. 415 volts, TP Capacitor duty Contactor Suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current and suitable for 100KVAR step. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. 100 KVAR heavy duty MPP type resin filled capacitors suitable for non linear loads upto 15% & total operating losses not more than 0.5 W per KVAR. 415Volts, 14% copper wound D-tuned reactor suitable for 50KVAR step. This 50KVAR further connect parallel (2x50KVAR) to make physicaly 100KVAR steps for effective heat dissipation.					
ii)	<b>2 Nos. 50Kvar at 415V Delta connected step as per following details/ specification:</b> 100 Amps, 415 volts, and having O/L, S/C & inbuilt E/F protection. TP MCCB with Thermal Magnetic release having variable current settings. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. 415 volts, TP Capacitor duty Contactor Suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current and suitable for 50KVAR step. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. 50 KVAR heavy duty MPP type resin filled capacitors suitable for non linear loads upto 15% & total operating losses not more than 0.5 W per KVAR. 415Volts, 14% copper wound D-tuned reactor suitable for 50KVAR step.					
ii)	<b>5 Nos. 10Kvar at 415V Delta connected step as per following details/ specification:</b>					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	63 Amps, 415 volts, and having O/L, S/C & inbuilt E/F protection. TP MCCB with Thermal Magnetic release having variable current settings. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. 415 volts, TP Capacitor duty Contactor Suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current and suitable for 50KVAR step. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. 10 KVAR heavy duty MPP type resin filled capacitors suitable for non linear loads upto 15% & total operating losses not more than 0.5 W per KVAR. 415Volts, 14% copper wound D-tuned reactor suitable for 10KVAr step.					
	<b>CAPACITOR PANEL AS MENTIONED ABOVE</b>	Set	2			
2.10	<b>CAPACITOR PANEL (160 KVAR) NAHAN RESIDENTIAL.</b> Supply, installation, testing and commissioning of LV cable type totally enclosed free standing type, powder coated, dust, damp and vermin proof Capacitor Panel complete with busbars, MV danger notice plate, ammeter, ammeter selector switch, indicating lamps, CTs, heavy duty, MPP resin filled, type Capacitors suitable for non linear loads upto 15% with Copper wound 14% D-tuned filters with linearity should not be less than 143%, total operating losses of capacitor shall not more than 0.5 W/ KVAR. Contactors suitable for capacitor switching or Capacitor duty switching contactor with 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, and having following incoming and outgoing switchgears complete as per technical Specifications as required.					
	<b>a) INCOMER:</b> 400 Amp, 415 volts, 50 KA, Four Pole, Microprocessor release based MCCB with variable current settings and having O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCBs to indicate OPEN, CLOSE, TRIP. R, Y & B Phase indicating lamps (LED type) with 6A control SP MCBs. Day & Night mode selector switch. 14 steps Intelligent microprocessor based Automatic Power factor Correction relay having measurement sensitivity of 1 % or better. Extension of incoming busbars for connection of multicore armoured aluminium cables. ON/OFF delay timers for switching capacitor circuit.					
	<b>b) METERING:</b> 1 set of Digital Amp. Meter, Digital Power factor meter and Digital voltmeter.					
	<b>c) BUSBARS:</b> 400 Amps TP busbars of aluminum with temperature rise of 40 degree celsius over and above Ambient temperature of 45 degree celsius.					
	<b>d) OUTGOINGS:</b>					
	<b>i) 2 Nos. 50Kvar at 415V Delta connected step as per following details/ specification:</b> 100 Amps, 415 volts, and having O/L, S/C & inbuilt E/F protection. TP MCCB with Thermal Magnetic release having variable current settings. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. 415 volts, TP Capacitor duty Contactor Suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current and suitable for 50KVAR step. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. 50 KVAR heavy duty MPP type resin filled capacitors suitable for non linear loads upto 15% & total operating losses not more than 0.5 W per KVAR. 415Volts, 14% copper wound D-tuned reactor suitable for 50KVAr step.					
	<b>ii) 6 Nos. 10Kvar at 415V Delta connected step as per following details/ specification:</b> 63 Amps, 415 volts, and having O/L, S/C & inbuilt E/F protection. TP MCCB with Thermal Magnetic release having variable current settings. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. 415 volts, TP Capacitor duty Contactor Suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current and suitable for 50KVAR step. Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP. 10 KVAR heavy duty MPP type resin filled capacitors suitable for non linear loads upto 15% & total operating losses not more than 0.5 W per KVAR. 415Volts, 14% copper wound D-tuned reactor suitable for 10KVAr step.					
	<b>CAPACITOR PANEL AS MENTIONED ABOVE</b>	Set	2			

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	<b>TOTAL SUB HEAD 2: MAIN LT PANEL AS MENTIONED ABOVE</b>					
	<b>SUBHEAD 3: DG SET &amp; ACCESSORIES</b>					
3.01	<b>SOUND PROOF DG SETS OF 380 KVA.</b>					
	<b>DG SET OF 380 KVA</b>					
	Supply, installation, testing and commissioning of sound proof (silent type) Diesel Generating set having 380 KVA Prime Power Ratings, 415 volt at 1500 RPM, 0.8 power factor 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 and control cable between DG set and panel etc. is also in the scope of supply, including its connections etc. complete as per technical specification. DG set should be PLC/PC compatible. This includes the following:					
	- Supplying and fixing of suitable sizes Heavy class MS pipe for DG exhaust complete with bends, elbow, flanges etc including silencer and catalytic convertor exhaust pipe chimney as per CPCB norms for exhaust of DG sets.					
	- Supply and fixing of 50mm thick compressed mineral wool insulation (Rock wool) for D.G. exhaust pipe with 24 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.					
	- 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.					
	- 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 etc					
	- Any other item required for completion of system above (D.G. set).					
	<b>A. AMF PANEL</b>					
	Supply, installation, testing and commissioning of AMF Components Panel for above 380 KVA DG Set cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of 14/16SWG CRCA sheet, (load bearing members 14 SWG and doors 16 SWG), complete with aluminum busbars, M.V. danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, powder coated. AMF panel should be capable of change over Main power and DG supply automatically at the time of power failure and vice versa.					
	DG should start automatically and will have automatic change over at LT panel through AMF panel.					
	Indicating lamps with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
	Push button to CLOSE the ACB.					
	1 set of suitable set of CT for measurement and protection.					
	R, Y & B Phase indicating lamps (LED type) with 6A control SP MCBs					
	1 set of Digital multi function meter with LCD display and measurement of parameters like voltages, currents, p.f, frequency, active and reactive power and energies etc					
	<b>B. AMF panel should have following protection and AMF components for above mentioned DG set.</b>					
	- Auto/manual/test/off selector switch					
	- 2 Nos over voltage relay, 2 nos. reverse power relay and 2 nos. under voltage relay.					
	- 3 sets of current transformers 15 P 10 accuracy for protection and 15 VA class -1 for metering					
	- Energy analyzer unit to indicate current voltage frequency power factor and KWH					
	- Indicating lamps for load on mains and load on set.					
	- Fuse for instruments.					
	- Battery charger, complete with transformer/rectifier, DC voltmeter and ammeter, selector switch for trickle, off and boost the current adjustment.					
	- Main supply failure monitor.					
	- Restoration timer.					
	- Control unit with three impulse automatic engine start / stop and failure to start lockout.					
	- Impulse counter with locking and reset facility.					
	- On/Off Control circuit switch with indicator.					
	- Audio/ Video annunciation for :					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	a) High winding temperature.					
	b) Low lubricating oil pressure					
	c) Engine over speed					
	d) Engine fails to start					
	e) Full load/maximum load warning.					
	<b>C. ENCLOSURE:</b>					
	Fabrication, PVC Sleeving, Control/Power Wiring and necessary electrical/ mechanical interlocking etc any other item required for proper functioning of the system complete as required.					
	<b>DG SET WITH AMF PANEL AS MENTIONED ABOVE</b>	Set	1			
<b>3.02</b>	<b>SOUND PROOF DG SETS OF 250 KVA.(Teaching Block)</b>					
	<b>DG SET OF 250 KVA</b>					
	Supply, installation, testing and commissioning of sound proof (silent type) Diesel Generating set having 250 KVA Prime Power Rating, 415 volt at 1500 RPM, 0.8 power factor 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 and control cable between DG set and panel etc. is also in the scope of supply, including its connections etc. complete as per technical specification. This includes the following:					
	- Supplying and fixing of suitable sizes Heavy class MS pipe for DG exhaust complete with bends, elbow, flanges etc including silencer and catalytic convertor exhaust pipe chimney as per CPCB norms for exhaust of DG sets.					
	- Supply and fixing of 50 mm thick compressed mineral wool insulation (Rock wool) for DG exhaust pipe with 24 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 MS 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. (if required)					
	- Providing and fixing oil tank of 990 litres capacity complete with suitable MS fabricated MS stand, oil level indicator, gauge tank and stand duly painted, complete with float switches etc. as required.					
	- Supply of suitable hand manual pump with 20 Meter Hard PVC pipe for filling the Oil from drum in DG set					
	- First filling of Full capacity of Diesel in DG set after complete testing of DG set at site. For commissioning of DG set Diesel will be provided by the contractor.					
	- Initial Supply as well as first replacement of lube oil, fuel for 8 hrs for full load test run would be provided by vendor before handing over DG Set to the Client.					
	- 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 etc					
	- Any other item required for completion of system above (DG set).					
	<b>DG Set (250 KVA) as mentioned above</b>					
	<b>A. AMF PANEL</b>					
	Supply, installation, testing and commissioning of AMF Components Panel for above 250KVA DG Set cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of 14/16SWG CRCA sheet, (load bearing members 14 SWG and doors 16 SWG), complete with aluminum bushbars, M.V. danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, powder coated. AMF panel should be capable of change over Main power and DG supply automatically at the time of power failure and vice versa .					
	DG should start automatically and will have automatic change over at LT panel through AMF panel.					
	Indicating lamps with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
	Push button to CLOSE the ACB.					
	1 set of suitable set of CT for measurement and protection.					
	R, Y & B Phase indicating lamps (LED type) with 6A control SP MCBs					
	1 set of Digital multi function meter with LCD display and measurement of parameters like voltages, currents, p.f, frequency, active and reactive power and energies etc					
	<b>B. AMF panel should have following protection and AMF components for above mentioned DG set.</b>					
	- Auto/manual/test/off selector switch					
	- 2 Nos over voltage relay, 2 nos. reverse power relay and 2 nos. under voltage relay.					
	- 3 sets of current transformers 15 P 10 accuracy for protection and 15 VA class -1 for metering					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	- Energy analyzer unit to indicate current voltage frequency power factor and KWH					
	- Indicating lamps for load on mains and load on set.					
	- Fuse for instruments.					
	- Battery charger, complete with transformer/rectifier, DC voltmeter and ammeter, selector switch for trickle off and boost the current adjustment.					
	- Main supply failure monitor.					
	- Restoration timer.					
	- Control unit with three impulse automatic engine start / stop and failure to start lockout.					
	- Impulse counter with locking and reset facility.					
	- On/Off/ Control circuit switch with indicator.					
	- Audio/ Video announcement for :					
	a) High winding temperature.					
	b) Low lubricating oil pressure					
	c) Engine over speed					
	d) Engine fails to start					
	e) Full load/maximum load warning.					
	<b>C. ENCLOSURE :</b>					
	Fabrication, PVC Sleeving, Control/Power Wiring and necessary electrical/ mechanical interlocking etc any other item required for proper functioning of the system complete as required.					
	<b>DG SET WITH AMF PANEL AS MENTIONED ABOVE</b>	Set	1			
<b>3.03</b>	<b>SOUND PROOF DG SETS OF 82.5 KVA (Residential Block)</b>					
	<b>DG SET OF 82.5 KVA</b>					
	Supply, installation, testing and commissioning of sound proof (silent type) Diesel Generating set having 82.5 KVA Prime Power Rating, 415 volt at 1500 RPM, 0.8 power factor suitable for 50 Hz, 3 phase system, suitable bhp, <b>Water Cooled Radiator type</b> 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 and control cable between DG set and panel etc. is also in the scope of supply, including its connections etc. complete as per technical specification. This includes the following:					
	- Supplying and fixing of suitable sizes Heavy class MS pipe for DG exhaust complete with bends, elbow, flanges etc including silencer and catalytic convertor exhaust pipe chimney as per CPCB norms for exhaust of DG sets.					
	- Supply and fixing of 50 mm thick compressed mineral wool insulation (Rock wool) for DG exhaust pipe with 24 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 MS 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. (if required)					
	- Providing and fixing oil tank of 990 litres capacity complete with suitable MS fabricated MS stand, oil level indicator, gauge tank and stand duly painted, complete with float switches etc. as required.					
	- Supply of suitable hand manual pump with 20 Meter Hard PVC pipe for filling the Oil from drum in DG set					
	- First filling of Full capacity of Diesel in DG set after complete testing of DG set at site. For commissioning of DG set Diesel will provided by the contractor.					
	- Initial Supply as well as first replacement of lube oil, fuel for 8 hrs for full load test run would be provided by vendor before handing over DG Set to the Client.					
	- 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 etc					
	- Any other item required for completion of system above (DG set).					
	<b>DG Set (82.5 KVA) as mentioned above</b>					
	<b>DG AMF PANEL (For the DG set as mentioned above)</b>					
	Supply, installation, testing and commissioning of AMF Components Panel for above 82.5 KVA DG Set cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of 14/16SWG CRCA sheet, (load bearing members 14 SWG and doors 16 SWG) ,complete with aluminium bushbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, powder coated. AMF panel should be capable of change over Main power and DG supply automatically at the time of power failure and vice versa .					



S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	DG should start automatically and will have automatic change over at LT panel through auto change over arrangement of suitable capacity in the panel. Indicating lamps with 6A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB. Push button to CLOSE the ACB. 1 set of suitable set of CTs for measurement and protection. R, Y & B phase indicating lamps (LED type) with 6A control SP MCBs. 1 set of Digital multi function meter with LCD display and measurement of parameters like voltages, currents, p.f, frequency, active and reactive power and energies etc.					
a)	<b>AMF panel should have following protection and AMF components for above mentioned DG set:</b> - Auto/ manual/ test/ off selector switch. - 2 Nos over voltage relay, 2 nos. reverse power relay and 2 nos. under voltage relay. - 3 sets of current transformers 5 P10 accuracy for protection, class-1 for metering and 15 VA burden. - Energy analyzer unit to indicate current voltage frequency power factor and KWH. - Indicating lamps for load on mains and load on set. - Fuse for instruments. - Battery charger complete with transformer/ rectifier, DC voltmeter and ammeter, selector switch for trickle, off and boost the current adjustment. - Main supply failure monitor. - Restoration timer. - Control unit with three impulse automatic engine start/ stop and failure to start lockout. - Impulse counter with locking and reset facility. - On/ Off/ Control circuit switch with indicator. - Audio/ Video annunciation for: i) High winding temperature. ii) Low lubricating oil pressure iii) Engine over speed iv) Engine fails to start v) Full load/ maximum load warning.					
b)	<b>ENCLOSURE:</b> Fabrication, PVC Slewing, Control/ Power Wiring and necessary electrical/ mechanical interlocking etc. any other item required for proper functioning of the system complete as required.					
	<b>DG SET WITH AMF PANEL AS MENTIONED ABOVE</b>	Set	1			
	<b>TOTAL SUBHEAD 3: DG SETS AS MENTIONED ABOVE</b>					
	<b>SUBHEAD 4: RISING MAINS</b>					
4.00	<b>RISING MAINS</b>					
4.01	Supply, installation, testing and commissioning of plug in type, indoor sandwich type with high conductivity Aluminium Conductor, 415 V, 3 phase, 4 wire, vertical Aluminium Rising main Class B or better in following sizes including bends, flexible, provision of the tap off's as per requirement, Adaptor boxes for cable connection if required are inclusive, 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) 400 A, 415 volts ii) 630 A, 415 volts iii) 800 A, 415 volts iv) 1250 A, 415 volts	Metre	35			
		Metre	32			
		Metre	35			
		Metre	32			
4.02	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) <b>1 No. MCCB Panels each having following</b> 1 no. 400 Amps, 415 volts, four pole, Moulded Case Circuit Breaker with microprocessor based release with variable current settings and having O/L, S/C & inbuilt E/F protection. Separate fault indication for O/L, S/C, & E/F to be provided on Panel Door. Indicating lamps with 6 A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB. 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 400 Amp digital ammeter with selector switch with 400/5A C.T.s.	Set	1			
	ii) <b>1 No. MCCB Panels each having following</b>					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	1 no. 630 Amps, 415 volts, four pole, Moulded Case Circuit Breaker with microprocessor based release with variable current settings and having O/L, S/C & inbuilt E/F protection. Separate fault indication for O/L, S/C & E/F to be provided on Panel Door. Indicating lamps with 6 A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB. 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 630 Amp digital ammeter with selector switch with 630/5A C.T.s.	Set	1			
iii)	<b>1 No. ACB Panels each having following</b> 800A 415V, 4P 50 KA EDO ACB with Microprocessor based release having Overload, Short circuit and Earth fault Protection. ON /OFF/TRIP Indications with MCB. 1 No. digital voltmeter with selector switch. 1 No Digital ammeter with selector switch and 800/5A CTs.	Set	1			
iv)	<b>1 No. ACB Panels each having following</b> 1250A 415V, 4P 50 KA EDO ACB with Microprocessor based release having Overload, Short circuit and Earth fault Protection. ON /OFF/TRIP Indications with MCB. 1 No. digital voltmeter with selector switch. 1 No Digital ammeter with selector switch and 1250/5A CTs.	Set	1			
4.03	Supply, fixing, testing and commissioning of distribution tap off box of following Capacity on the existing rising mains complete with Four Pole, Moulded Case Circuit Breaker, interconnection, earthing etc. complete as required.					
i)	63 Amps with MCCB 35 KA	Nos	11			
ii)	100 Amps with MCCB 35 KA	Nos	10			
iii)	125 Amps with MCCB 35 KA	Nos	9			
iv)	160 Amps with MCCB 35 KA	Nos	3			
v)	200 Amps with MCCB 35 KA	Nos	2			
vi)	250 Amps with MCCB 35 KA	Nos	1			
vii)	400 Amps with MCCB 35 KA	Nos	9			
viii)	500 Amps with MCCB 35 KA	Nos	2			
4.04	Supply, installation, testing and commissioning off Load Manual two way Change over Switch in a sheet steel enclosure on surface complete with all accessories including, connections etc. as required.	Each	1			
	<b>TOTAL SUBHEAD 4: RISING MAINS AS MENTIONED ABOVE</b>					
	<b>SUB HEAD 5: MV PANELS</b>					
5.00	<b>MV PANELS</b> Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, wall mounted/free standing type, powder coated, 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, and having following incoming and outgoing switchgears complete as per technical specification and as required.					
	NOTE					
i)	All MCCBs shall have Ics=Icu.					
ii)	MCB Should be connected through terminal Strip of suitable rating					
	<b>Hospital Block</b>					
5.01	<b>MV Panel Emergency (-3 Level, -2 Level, Service Block)</b>					
a)	<b>INCOMER:</b>					
i)	<b>1 No. MCCB Panels each having following</b> 63 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.T.s.					
b)	<b>BUSBARS:</b> 300 Amp ITPN Aluminium busbars					
c)	<b>OUTGOING:</b>					
i)	4 no. 40 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	MV Panel Emergency (-3 Level & -2 Level) as mentioned above	Set	3			
5.02	MV Panel Emergency (-1 Level , Ground, Sixth & Seventh Floor)					
	a) INCOMER:					
	i) 1 No. MCCB Panels each having following 63 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	b) BUSBARS: 300 Amp TPN Aluminium busbars					
	c) OUTGOING:					
	i) 9 no. 40 Amps, 415 volts, 9 KA , Four Pole, Miniature Circuit Breaker.					
	MV Panel Emergency (-1 Level , Ground, Sixth & Seventh Floor) as mentioned above	Set	4			
5.03	MV Panel Emergency (First, Second , Third , Fourth & Fifth Floor)					
	a) INCOMER:					
	i) 1 No. MCCB Panels each having following 100 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	b) BUSBARS: 300 Amp TPN Aluminium busbars					
	c) OUTGOING:					
	i) 14 no. 40 Amps, 415 volts, 9 KA , Four Pole, Miniature Circuit Breaker.					
	ii) 2 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	MV Panel Emergency (First, Second , Third , Fourth & Fifth Floor) as mentioned above	Set	5			
5.04	MV Panel Normal (-3 Level , -2 Level & Seventh Floor)					
	a) INCOMER:					
	i) 1 No. MCCB Panels each having following 100 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	b) BUSBARS: 300 Amp TPN Aluminium busbars					
	c) OUTGOING:					
	i) 5 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	MV Panel Normal (-3 Level , -2 Level & Seventh Floor) as mentioned above	Set	3			
5.05	MV Panel Normal (-1 Level , Sixth Floor)					
	a) INCOMER:					
	i) 1 No. MCCB Panels each having following					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	200 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type).					
	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.					
	Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 400 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	i) 8 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	<b>MV Panel Normal (-1 Level , Sixth Floor) as mentioned above</b>	Set	2			
5.06	<b>MV Panel Normal (Ground Floor)</b>					
	<b>a) INCOMER:</b>					
	i) <b>1 No. MCCB Panels each having following</b> 250 Amp 415 volts, 35 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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.					
	Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 400 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	i) 14 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	ii) 2 no. 40 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	<b>MV Panel (Ground Floor) as mentioned above</b>	Set	1			
5.07	<b>MV Panel Normal (First ,Second, Third,Fourth &amp; Fifth Floor)</b>					
	<b>a) INCOMER:</b>					
	i) <b>1 No. MCCB Panels each having following</b> 400 Amp 415 volts, 35 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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.					
	Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 500 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	i) 16 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	<b>MV Panel (First, Second, Third,Fourth &amp; Fifth Floor) as mentioned above</b>	Set	5			
5.08	<b>UPS INPUT PANEL</b>					
	<b>a) INCOMER:</b>					
	i) <b>1 No. MCCB Panels each having following</b> 250 Amp 415 volts, 35 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	1 No. 0 to 500 V Digital voltmeter with selector switch.					
	Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b>					
	400 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	<b>i) 3 Nos. MCCB as per following details/ specifications:</b>					
	125 Amp 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection release.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	ON, OFF, TRIP indication (LED Type).					
	Digital Ampere Metre of suitable range with suitable set of CTs and ASS.					
	<b>UPS INPUT PANEL as mentioned above</b>	Set	2			
<b>5.09</b>	<b>UPS OUTGOING Panel</b>					
	<b>a) INCOMER:</b>					
	<b>i) 2 No. MCCB Panels each having following</b>					
	125 Amp 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module.					
	R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type).					
	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.					
	Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b>					
	400 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	<b>i) 1 Nos. MCCB as per following details/ specifications:</b>					
	250 Amp 415 volts, 35 KA TP+NL MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	ON, OFF, TRIP indication (LED Type).					
	Digital Ampere Metre of suitable range with suitable set of CTs and ASS.					
	<b>UPS OUTGOING Panel as mentioned above</b>	Set	2			
<b>5.10</b>	<b>ICU &amp; OT Panel</b>					
	<b>a) INCOMER:</b>					
	<b>i) 2 No. MCCB Panels each having following</b>					
	250 Amp 415 volts, 35 KA, Motorised, FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release.					
	R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type).					
	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.					
	Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b>					
	400 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	<b>i) 10 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker</b>					
	<b>OT Panel as mentioned above</b>	Set	2			
<b>5.11</b>	<b>Lift Panel</b>					
	<b>a) INCOMER:</b>					
	<b>i) 1 No. MCCB Panels each having following</b>					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	250 Amp 415 volts, 35 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release.					
	R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 400 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	<b>i) 12 Nos. MCCB as per following details/ specifications:</b> 63 Amp 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection release. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. ON, OFF, TRIP indication (LED Type). Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>Lift Panel as mentioned above</b>	Set	1			
5.12	<b>Main Computer Panel (Ground Floor)</b>					
	<b>a) INCOMER:</b>					
	<b>i) 1 Nos. MCCB as per following details/ specifications:</b> 200 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication. 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 300 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	<b>i) 14 Nos. MCCB as per following details/ specifications:</b> 63 Amp 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection release. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. ON, OFF, TRIP indication (LED Type). Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>ii) 10 no. 40 Amps, 250 volts, 9 KA, Double Pole Miniature Circuit Breaker.</b> <b>Main Computer Panel (Ground Floor) as mentioned above</b>	Set	1			
5.13	<b>Sub Computer Panel (-2 Level, -1 level, First, Second, Third, Fourth, Fifth, Sixth &amp; Seventh Floor) &amp; UPS Light panel</b>					
	<b>a) INCOMER:</b>					
	<b>i) 1 Nos. MCCB as per following details/ specifications:</b> 63 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 300 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	<b>i) 2 no. 63 Amps, 250 volts, 9 KA, Double Pole Miniature Circuit Breaker.</b>					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	ii) 6 no. 40 Amps, 250 volts, 9 KA, Double Pole Miniature Circuit Breaker.					
	Sub Computer (-2 Level, -1 level, First, Second, Third, Fourth, Fifth, Sixth & Seventh Floor) as mentioned above.	Set	10			
5.14	<b>Equipment Panel</b>					
	a) <b>INCOMER:</b>					
	i) <b>1 Nos. MCCB as per following details/ specifications:</b>					
	800 Amp 415 volts, 35 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release.					
	R, Y & B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type).					
	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.					
	Digital ammeter with selector switch with one set Suitable C.Ts.					
	b) <b>BUSBARS:</b>					
	800 Amp TPN Aluminium busbars.					
	c) <b>OUTGOING:</b>					
	i) <b>3 Nos. MCCB as per following details/ specifications:</b>					
	400 Amp 415 volts, 35 KA TP+NL MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	ON, OFF, TRIP indication (LED Type).					
	Digital Ampere Metre of suitable range with suitable set of CTs and ASS.					
	ii) <b>3 Nos. MCCB as per following details/ specifications:</b>					
	250 Amp 415 volts, 35 KA TP+NL MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	ON, OFF, TRIP indication (LED Type).					
	Digital Ampere Metre of suitable range with suitable set of CTs and ASS.					
	iii) <b>2 Nos. MCCB as per following details/ specifications:</b>					
	160 Amp 415 volts, 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/ F Module.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	ON, OFF, TRIP indication (LED Type).					
	Digital Ampere Metre of suitable range with suitable set of CTs and ASS.					
	Equipment Panel as mentioned above.	Set	1			
	<b>Teaching Block</b>					
5.15	<b>Main Panel Teaching Block (Normal)</b>					
	A. <b>INCOMER :</b>					
	i) <b>1 Nos. ACB as per following details/ specification:</b>					
	1250 A, Fully Drawout type (EDO) (Breaking Capacity:50 KA), FP contractor with suitable rating contactor Air Circuit Breaker with microprocessor based overload, short circuit & earth fault release.					
	Indicating lamps with 6A 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 6A control SP MCBs					
	Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 6A control SP MCBs					
	ii) <b>BUSBARS :</b>					
	1600 Amp TPN busbars of aluminum					
	c) <b>OUTGOING:</b>					
	i) <b>1 Nos. ACB as per following details/ specification:</b>					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	800 A, 415V, Fully Drawout type (EDO) (Breaking Capacity=50 kA), FP contractor with suitable rating contactor Air Circuit Breaker with microprocessor based overload, short circuit & earth fault release.					
	Indicating lamps with 6A 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 6A control SP MCBs					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>2 Nos. MCCB as per following details/ specifications:</b>					
ii)	630 Amp 415 volts, 35 KA (Ics=Icu) FP MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.					
	R,Y&B phase indicating lamp (LED type) with 6A control SP MCB					
	ON, OFF, TRIP indication for MCCB with 6A Control SP MCB					
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>1 Nos. MCCB as per following details/ specifications:</b>					
iii)	400 Amp 415 volts, 35 KA (Ics=Icu) FP MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.					
	R, Y & B phase indicating lamp (LED type) with 6A control SP MCB					
	ON, OFF, TRIP indication for MCCB with 6A Control SP MCB					
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>2 Nos. MCCB as per following details/ specifications:</b>					
iv)	250 Amp 415 volts, 35 KA (Ics=Icu) FP MCCB with variable current settings and having microprocessor based O/L, S/C & E/F protection release.					
	R, Y & B phase indicating lamp (LED type) with 6A control SP MCB					
	ON, OFF, TRIP indication for MCCB with 6A Control SP MCB					
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>Main Panel Teaching Block (Normal) as mentioned above</b>	SET	1			
5.16	<b>Main Panel Teaching Block (Emergency)</b>					
a)	<b>INCOMER:</b>					
i)	<b>1 Nos. MCCB as per following details/ specifications:</b>					
	630 Amp 415 volts, 35 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release.					
	R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type)					
	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	No. 0 to 500 V Digital voltmeter with selector switch					
	Digital ammeter with selector switch with one set Suitable CT's.					
b)	<b>BUSBARS:</b>					
	800 Amp TPN Aluminium busbars					
c)	<b>OUTGOING:</b>					
i)	<b>1 Nos. MCCB as per following details/ specifications:</b>					
	400 Amp 415 volts, 35 KA TP+NL MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	ON, OFF, TRIP indication (LED Type).					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
ii)	<b>1 Nos. MCCB as per following details/ specifications:</b>					



S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	250 Amp 415 volts, 35 KA TP+NL MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	ON, OFF, TRIP indication (LED Type).					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>iii) 2 Nos. MCCB as per following details/ specifications:</b>					
	160 Amp 415 volts, 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module.					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	ON, OFF, TRIP indication (LED Type).					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>Main Panel Teaching Block (Emergency) as mentioned above</b>	Set	1			
5.17	<b>MV Panel Normal (Ground Floor) &amp; MV Panel Emergency (Ground Floor)</b>					
	<b>a) INCOMER:</b>					
	<b>i) 1 No. MCCB Panels each having following</b>					
	100 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module.					
	R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type).					
	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.					
	Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b>					
	300 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	<b>i) 4 no. 40 Amps, 415 volts, 9 KA , Four Pole, Miniature Circuit Breaker.</b>					
	<b>ii) 2 no. 63 Amps, 415 volts, 9 KA , Four Pole, Miniature Circuit Breaker.</b>					
	<b>MV Panel Normal (Ground Floor) &amp; MV Panel Emergency (Ground Floor) as mentioned above</b>	Set	2			
5.18	<b>MV Panel Emergency (First , Second, Third, Fourth,Fifth,Sixth,Seventh, Eighth&amp; Ninth Floor)</b>					
	<b>a) INCOMER:</b>					
	<b>i) 1 No. MCCB Panels each having following</b>					
	125 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module.					
	R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type).					
	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.					
	Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b>					
	300 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	<b>i) 8 no. 40 Amps, 415 volts, 9 KA , Four Pole, Miniature Circuit Breaker.</b>					
	<b>ii) 2 no. 63 Amps, 415 volts, 9 KA , Four Pole, Miniature Circuit Breaker.</b>					
	<b>MV Panel Emergency (First , Second, Third, Fourth,Fifth,Sixth,Seventh, Eighth&amp; Ninth Floor) as mentioned above</b>	Set	9			
5.19	<b>MV Panel Normal (First ,Fourth, Fifth&amp; Sixth Floor)</b>					
	<b>a) INCOMER:</b>					
	<b>i) 1 No. MCCB Panels each having following</b>					
	400 Amp 415 volts, 35 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release.					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 630 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	i) 12 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	<b>MV Panel Normal (First, Fourth, Fifth &amp; Sixth Floor) as mentioned above</b>	Set	4			
5.20	<b>MV Panel Normal (Second &amp; Third Floor)</b>					
	<b>a) INCOMER:</b>					
	i) 1 No. MCCB Panels each having following 500 Amp 415 volts, 35 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 630 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	i) 12 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	ii) 4 no. 40 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	<b>MV Panel Normal (Second &amp; Third Floor) as mentioned above</b>	Set	2			
5.21	<b>MV Panel Normal (Seventh, Eighth &amp; Ninth Floor)</b>					
	<b>a) INCOMER:</b>					
	i) 1 No. MCCB Panels each having following 160 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 300 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	i) 10 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	<b>MV Panel Normal (Seventh, Eighth &amp; Ninth Floor) as mentioned above</b>	Set	3			
5.22	<b>Main Computer Panel (Ground Floor)</b>					
	<b>a) INCOMER:</b>					
	i) 1 Nos. MCCB as per following details/ specifications: 125 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication. 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b>					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	300 Amp TPN Aluminium busbars					
	c) <b>OUTGOING:</b>					
	d) <b>14 Nos. MCCB as per following details/ specifications:</b>					
	63 Amp 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection release. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. ON, OFF, TRIP indication (LED Type). Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	ii) 6 no. 40 Amps, 250 volts, 9 KA, Double Pole Miniature Circuit Breaker.					
	<b>Main Computer Panel (Ground Floor) as mentioned above</b>	Set	1			
5.23	<b>Sub Computer Panel (First ,Second ,Third ,Fourth Fifth , Sixth ,Seventh, Eighth &amp; Ninth Floor)</b>					
	a) <b>INCOMER:</b>					
	i) <b>1 Nos. MCCB as per following details/ specifications:</b>					
	63 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/ F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	b) <b>BUSBARS:</b>					
	300 Amp, TPN Aluminium busbars					
	c) <b>OUTGOING:</b>					
	i) 2 no. 63 Amps, 250 volts, 9 KA, Double Pole Miniature Circuit Breaker.					
	ii) 6 no. 40 Amps, 250 volts, 9 KA, Double Pole Miniature Circuit Breaker.					
	<b>Sub Computer Panel (First ,Second ,Third ,Fourth Fifth , Sixth ,Seventh, Eighth &amp; Ninth Floor) as mentioned above</b>	Set	9			
5.24	<b>LIFT Panel (Teaching Block)</b>					
	a) <b>INCOMER:</b>					
	i) <b>1 Nos. MCCB as per following details/ specifications:</b>					
	160 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/ F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication. 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	b) <b>BUSBARS:</b>					
	300 Amp TPN Aluminium busbars					
	c) <b>OUTGOING:</b>					
	i) <b>8 Nos. MCCB as per following details/ specifications:</b>					
	63 Amp 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection release. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. ON, OFF, TRIP indication (LED Type). Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>Lift Panel Teaching (Ground Floor) as mentioned above</b>	Set	1			
	<b>HOSTEL BLOCKS (A&amp; B)</b>					
5.25	<b>MV Panel (Emergency ) ESS-2</b>					
	a) <b>INCOMER:</b>					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	<b>i) 1 No. MCCB Panels each having following</b>					
	100 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b>					
	300 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	<b>i) 2 Nos. MCCB as per following details/ specifications:</b>					
	100 Amp 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection release. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. ON, OFF, TRIP indication (LED Type). Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>ii) 6 Nos. MCCB as per following details/ specifications:</b>					
	63 Amp 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection release. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. ON, OFF, TRIP indication (LED Type). Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	MV Panel ( Emergency) ESS-2 as mentioned above	Set	1			
5.26	<b>MV PANEL NORMAL (Ground Floor)</b>					
	<b>a) INCOMER:</b>					
	<b>i) 1 No. MCCB Panels each having following</b>					
	400 Amp 415 volts, 35 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt EPF protection release. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b>					
	500 Amp TPN Aluminium busbars					
	<b>c) OUTGOING:</b>					
	<b>i) 6 Nos. MCCB as per following details/ specifications:</b>					
	100 Amp 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection release. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. ON, OFF, TRIP indication (LED Type). Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	<b>ii) 4 no. 63 Amps, 415 volts, 9 KA, Double Pole Miniature Circuit Breaker.</b>					
	<b>iii) 4 no. 40 Amps, 415 volts, 9 KA, Double Pole Miniature Circuit Breaker.</b>					
	MV Panel (Ground Floor) as mentioned above	Set	2			
5.27	<b>MV Panel Normal (-1 Level , -2 level First , Second &amp; Third Floor)</b>					
	<b>a) INCOMER:</b>					
	<b>i) 1 No. MCCB Panels each having following</b>					
	100 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type).					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	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. Digital ammeter with selector switch with one set Suitable C.Ts.					
b)	<b>BUSBARS:</b> 300 Amp TPN Aluminium busbars					
c)	<b>OUTGOING:</b>					
i)	4 no. 40 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
ii)	2 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	<b>MV Panel Normal (-1 Level, -2 level First, Second &amp; Third Floor) &amp; MESS BLOCK as mentioned above</b>	Set	10			
5.28	<b>MV Panel Emergency</b>					
a)	<b>INCOMER:</b>					
i)	1 No. MCCB Panels each having following 100 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
b)	<b>BUSBARS:</b> 300 Amp TPN Aluminium busbars					
c)	<b>OUTGOING:</b>					
i)	2 Nos. MCCB as per following details/ specifications: 40 Amp 35 KA TP+NL MCCB with thermal magnetic release having variable current settings of O/L, S/C protection release. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. ON, OFF, TRIP indication (LED Type). Digital Ampere Metre of suitable range with suitable set of CTs and ASS.					
ii)	2 no. 63 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
iii)	2 no. 40 Amps, 415 volts, 9 KA, Four Pole, Miniature Circuit Breaker.					
	<b>MV Panel Emergency as mentioned above</b>	Set	2			
5.29	<b>MV Panel Sub Emergency for Common Light</b>					
a)	<b>INCOMER:</b>					
i)	1 No. MCCB Panels each having following 40 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication (LED type). 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
b)	<b>BUSBARS:</b> 300 Amp TPN Aluminium busbars					
c)	<b>OUTGOING:</b>					
i)	10 no.25 Amps, 240 volts, 9 KA, Double Pole, Miniature Circuit Breaker.					
	<b>MV Panel Sub Emergency for Common Light as mentioned above</b>	Set	2			
5.30	<b>MV PANEL EMERGENCY (TYPE - IV) &amp; Mess Block</b>					
a)	<b>INCOMER:</b> 63 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection and E/F Module. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	ON, OFF, TRIP indication (LED Type) 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 500 Amp TPN Aluminium busbars.					
	<b>c) OUTGOING:</b>					
	i) 4 no. 40 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	ii) 4 no. 63 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	<b>MV PANEL EMERGENCY (( TYPE -IV ) :- as mentioned above</b>	Set	3			
	<b>FEEDER PILLAR</b> Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, with canopy for protection, free standing type with locking arrangement, dust, damp and vermin proof in G.I. sheet powder coat with 100% polyester based painted ,Outdoor Feeder pillar 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, and having following incoming and outgoing switchgears complete as required.  <b>NOTE:</b> i All MCCBs shall have less than 100% ii MCCB Should be connected through terminal Strip of suitable rating.					
<b>5.31</b>	<b>FEEDER PILLAR (TYPE -IV )Normal</b>					
	<b>a) INCOMER:</b> 250 Amp 415 volts, 35 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB ON, OFF, TRIP indication (LED Type) 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. Digital ammeter with selector switch with one set Suitable C.Ts.					
	<b>b) BUSBARS:</b> 500 Amp TPN Aluminium busbars.					
	<b>c) OUTGOING:</b>					
	i) <b>2 Nos. MCCB as per following details/ specifications:</b> 63 Amp 415 volts, 35 KA , TP+NL 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. ON, OFF, TRIP indication (LED Type).					
	ii) 16 no. 63 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker.					
	<b>FEEDER PILLAR (TYPE -IV ) Normal :- as mentioned above</b>	Set	2			
<b>5.32</b>	<b>METER BOARD THREE PHASE</b> Supply, installation, testing and Commissioning following Three phase digital KWH meters mounted on the common base with cable alley for incoming cables from the feeder pillar and a cable alley for outgoing cables to individual MCB DB installed in flats. The Outgoing MCB & Digital KWH meter will be of following rating in individual lockable cubical of suitable size. Energy meter duly approved, tested and sealed by state electricity board. The cubicle should be fabricated with load bearing member of 2 mm and doors etc 1.6 mm thick MS powder coated sheet with a suitable size glass on the door of cubicle in order to read the meter reading . It should be Free standing/ wall mounted, as per technical specifications & as required.					
	a) 12 Nos. 63 Amp Three Phase Digital Energy Meter with 63 Amps FP MCB in the outgoing duly wired for Type IV	Each	2			
	<b>METER BOARD THREE PHASE - AS Mentioned Above</b>					
	<b>TOTAL SUB HEAD 5: MV PANEL AS MENTIONED ABOVE</b>					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	<b>SUB HEAD 6: MCB DISTRIBUTION BOARDS.</b>					
<b>6.00</b>	<b>MCB DISTRIBUTION BOARD</b>					
6.01	Supplying & fixing following way, three pole and neutral 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 coated including earthing connection bolt etc. as per technical specifications and as required. (but without MCB & RCCB).	Each	107			
i	4 way (8+12), Double door	Each	107			
ii	6 way (8+18) Double door	Each	112			
iii	8 way (8+24), Double door	Each	152			
6.02	Supplying & fixing following way, single pole and neutral, sheet steel, MCB distribution board, 240 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. 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 as required. (but without MCB & RCCB).					
i	8 way Double door	Each	86			
ii	12 way Double door	Each	22			
6.03	Supplying & fixing 6 Amps to 32 Amps rating, 240 volts, 'B' series, miniature circuit breaker suitable for lighting & other loads of following poles in the existing MCB DB complete with connections, testing & commissioning etc. as per technical specifications & as required.					
i	Single pole	Each	7900			
ii	Triple pole & neutral	Each	20			
6.04	Supplying & fixing following rating, four pole, 415 volts, Miniature Circuit Breaker (MCB) in the existing MCB DB complete with connections, testing & commissioning etc. as per technical specifications and as required.					
i	25 Amps	Each	103			
ii	32 Amps	Each	39			
iii	40 Amps	Each	71			
iv	63 Amps	Each	160			
6.05	Supplying & fixing following rating, four pole, 415 volts, Residual Current Circuit Breaker (RCCB) having a sensitivity current upto 300 mA in the existing MCB DB complete with connections, testing & commissioning etc. as per technical specifications and as required.					
i	25 Amps	Each	103			
ii	32 Amps	Each	39			
iii	40 Amps	Each	71			
iv	63 Amps	Each	160			
6.06	Supplying and fixing following rating, double pole, 240 volts, MCB (B/C/D/ Curve) in the existing MCB DB complete with connections, testing and commissioning etc. as required.					
i	32 amps	Each	86			
ii	40 amp	Each	22			
6.07	Supplying & fixing following rating, Double pole, 240 volts, Residual Current Circuit Breaker (RCCB) having a sensitivity current upto 300 mA in the existing MCB DB complete with connections, testing & commissioning etc. as per technical specifications and as required.					
i	32 amps	Each	86			
ii	40 amp	Each	22			
6.08	Supplying and fixing Single pole Blanking plate in the existing MCB DB complete as required.	Each	560			
	<b>TOTAL SUB HEAD 6: MCB DISTRIBUTION BOARDS AS MENTIONED ABOVE</b>					
<b>7.00</b>	<b>SUBHEAD 7: UPS SYSTEM</b>					
7.01	<b>UPS 40 KVA. (ICUs &amp; OTS)</b>					
	Supply, Installation, Testing and Commissioning of micro processor based 2 x 40 KVA at 0.8 power factor at out put, with over all efficiency of minimum 92% at full load, True Online Double Conversion UPS using PWM IGBT technology, 3 Phase input 415 V +10% -15% and input frequency 50 Hertz plus minus 5%, 3 phase input and 3 phase output fixed setting at 380, 400 and 415V. UPS operating in parallel redundant load sharing mode (N+1) configuration and each comprising of the following:					
	(a) 125% rated Rectifier cum charger unit + 100% rated inverter, integrated in UPS module					
	(b) IGBT Rectifier input for achieving THDi < 5% and Input power factor of greater than 0.99					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	(c)100% rated external isolation transformer of H-class Delta/Star at the UPS output, after static bypass including cabling between UPS and transformer					
	(d) 100% rated Inbuilt static switch					
	(f) 100% rated Inbuilt Maintenance Bypass					
	(g) 100% rated moulded case circuit breaker having I thermal, magnetic and automatic U/V trip mechanics					
	(h) RS 485 port for BMS connectivity					
	(j) Supplying and installing Built-in suitable air-circulating fan .					
	Input phase reversal protection to be provided as standard, UPS should shift on battery and provide alarm.					
	(k) Supply, Installation, Testing and Commissioning of 12 V sealed maintenance free, Valve Regulated Lead Acid (VRLA) batteries for providing 30 minutes back up on each UPS at full load at 0.8 power factor.					
	(l) Supply, Fixing of battery rack for each UPS system along with interconnecting links, BCB etc as required					
	(m) UPS Should be provided with of Static Bypass Module having High Switching Frequency Microprocessor Based with builtin Technical Protections like Short Circuit, Overload, High/ Low Voltage cutoff protection of load from source inclusive of Bypass facility, SBM is activated during malfunctioning conditions of Load like:- - Short Circuit - Overload - Over temprature - Bypassing of particular load if reqd.					
	<b>UPS 40 KVA (ICU) AS MENTIONED ABOVE.</b>	Set	2			
	<b>TOTAL SUBHEAD 7: UPS SYSTEMS</b>					
	<b>SUB HEAD 8: WIRING</b>					
<b>8.00</b>	<b>WIRING</b>					
<b>8.01</b>	<b>i</b> Wiring for light point/fanpoint/ exhaust fan point/call bell point with 1.5 sq.mm. PVC insulated, fire retardant low smoke (FRLS) copper conductor cable, single core/ multi strand, in steel conduit (Including supplying & recess laying of MS conduit and accessories) including the following and complete as required.					
	<b>ii</b> Supplying and Fixing Modular type switches (modular Bell push in case of call bell points) in suitable size modular metal boxes, base plate & modular cover plates, space for fixing electronic fan regulator in case of fan point wiring & space for fixing 5A socket on the board etc.					
	<b>iii</b> Supplying and fixing Hexagonal fan Boxes with 3 mm thick hylem sheet covers in case of Fan Points					
	<b>iv</b> Supplying & Fixing Ceiling Rose in case of Exhaust Fan Points etc.					
	<b>Note :</b> b) Unless otherwise specified all the conduiting work to be done in recess					
	<b>Point wiring as mentioned above Group B</b>	Point	2380			
	<b>Point wiring as mentioned above Group C</b>	Point	5900			
<b>8.02</b>	<b>i</b> Wiring for twin control light points with 1.5 sq.mm. PVC insulated, FRLS copper conductor cable in MS conduit (including supplying and recess laying of MS conduit) including the following and complete as required.					
	<b>ii</b> Supplying and Fixing Modular type two numbers 2 Way switches in suitable size modular metal boxes, base plate & modular cover plates etc.					
	<b>Note :</b> b) Unless otherwise specified all the conduiting work to be done in recess					
	<b>Wiring for twin control light points as mentioned above</b>	Point	460			
<b>8.03</b>	Wiring for Submain/ circuit wiring with following size of PVC insulated FRLS copper conductor single core/multi strand cable in recessed steel conduit (including supply & laying of recessed conduit) as required.					
	<b>i</b> 2X1.5 Sqmm with 1 No. 1.5 sqmm PVC FRLS insulated, copper conductor for earthing.	Metre	11750			
	<b>ii</b> 2X2.5 Sqmm with 1 No. 2.5 sqmm PVC FRLS insulated, copper conductor for earthing.	Metre	19613			
	<b>iii</b> 2X4 Sqmm with 1 No. 4 sqmm PVC insulated FRLS copper conductor for earthing	Metre	27380			
	<b>iv</b> 2X6 Sqmm with 1 No. 6 sqmm PVC insulated FRLS copper conductor for earthing	Metre	3200			
	<b>v</b> 2X10 Sqmm with 1 No. 6 sqmm PVC insulated FRLS copper conductor for earthing	Metre	2925			
	<b>vi</b> 4X4 Sqmm with 2 No. 4 sqmm PVC insulated FRLS copper conductor for earthing	Metre	2140			
	<b>vii</b> 4X6 Sqmm with 2 No. 6 sqmm PVC insulated FRLS copper conductor for earthing	Metre	2140			
	<b>viii</b> 4X10 Sqmm with 2 No. 6 sqmm PVC insulated FRLS copper conductor for earthing	Metre	2240			
	<b>ix</b> 4X16 Sqmm with 2 nos 6 sq mm PVC insulated FRLS copper conductor for earthing.	Metre	3040			



S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)	
8.04	Supplying and fixing suitable Modular GI box on surface or in recess including providing and fixing 3 pin 5/6 amps. modular socket outlet with shutters and 5/6 amps. modular type switch with indicator type, base plate, modular cover plate, connections etc. and all civil works complete as required.	Each	870				
8.05	Supplying and fixing suitable modular GI box on surface or in recess including providing and fixing 6 pin 15/16 A modular socket outlet with shutters and 15/16 A modular switch with indicator, base plate, modular cover plate, connections, etc. and all civil works complete as required.	Each	1678				
8.06	Supplying and fixing suitable Modular metal box on surface or in recess including providing and fixing three nos 3 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)	Each	430				
8.07	Supplying and fixing suitable Modular metal box on surface or in recess including providing and fixing two nos 3 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. ( comb hostels)	Each	422				
8.08	Supplying and fixing suitable Module metal box on surface or in recess including providing and fixing two nos 3 pin 5/6 amps. & two 6 pin 15/16 amp modular socket outlet with shutters and one no. 25 amps. modular Indicating type switch, base plate, modular cover plate, connections etc. and all civil works complete as required. (For Comb-1/ Bed Point)	Each	440				
8.09	Supplying and fixing suitable Module metal box on surface or in recess including providing and fixing two nos 3 pin 5/6 amps. & one 6 pin 15/16 amp modular socket outlet with shutters and one no. 20 amps. modular Indicating type switch, base plate, modular cover plate, connections etc. and all civil works complete as required. (For Comb-2)	Each	620				
8.1	Supplying and fixing suitable Modular metal box surface or in recess including providing and fixing two nos 3 pin 5/6 amps. modular socket outlet with shutters and one no. 5 amps. modular type switch, base plate, modular cover plate, connections etc. and all civil works complete as required. ( COMBO POINT-3/ TV Point )	Each	140				
8.11	Supplying and fixing suitable module modular GI box on surface or in recess including providing and fixing 3 pin 20 A modular socket outlet with shutters and 20 AMP SP MCB, base plate, modular cover plate, etc. on surface or recess complete with all accessories including connections, testing and commissioning etc. as required.	Each	150				
8.12	Supply and fixing following 20/32 Amps, 240 volts, 2P+E, Industrial Socket Outlet (with plugs) in a metal box with 20/32 SP MCB in a sheet steel cover on surface or recess complete with all accessories including connections, testing and commissioning etc. as required.	Each	90				
8.13	Supply and fixing following 63/100 Amps, 240 volts, 2P+E, Industrial Socket Outlet (with plugs) in a metal box with 63/100 SP MCB in a sheet steel cover on surface or recess complete with all accessories including connections, testing and commissioning etc. as required.	Each	9				
8.14	Supplying, providing & fixing cordless musical bell with batteries etc of approved make complete as required.	Each	70				
8.15	Supply and fixing following FP MCCB, 415 volts, 35 KA (Isc), Four Pole with thermal magnetic release having variable current setting (0.8 to 1.0 In) 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 63 Amp	Each	17				
	ii 125 Amp	Each	2				
	iii 250 Amp	Each	1				
	iv 320Amp	Each	2				
8.16	Supplying and fixing modular blanking plate on the existing modular plate & switch box excluding modular plate as required.	Each	100				
8.17	Supply, Installation, Testing & Commissioning of 360 degree Ceiling recess mountable 360 degree multifunction sensor that combines motion detection (PIR), Infrared remote control reception (IR) and ambient light level detection (PE) into one device.	Nos.	25				
8.18	Supply, Installation, Testing & Commissioning of Standalone Ceiling Mounted Motion PIR sensor 360 degree.	Nos.	80				
8.19	Supply, Installation, Testing & Commissioning of Standalone Wall Mounted Motion PIR sensor 90 degree.	Nos.	30				
	<b>TOTAL SUBHEAD 8: WIRING AS MENTIONED ABOVE</b>						

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	<b>SUB HEAD 9: LIGHT FIXTURE AND FANS</b>					
<b>9.00</b>	<b>LIGHT FIXTURES AND FANS</b>					
<b>9.01</b>	Supply of following LED light fixture with high efficiency with Driver , tubes/lamps, reflector, diffuser, body/housing holder etc. complete with all fixing accessories as required.					
i	1 x 20 W LED box type fluorescent light fixture (LED ASTRA, Philips BN 150 W LED 20S-6500 PSE OD GR with minimum system lumen 2000 or approved equivalent from list of Makes)(120bw )	Each	700			
ii	1 x 20 W LED box type fluorescent light fixture (Philips TMC501 P 1 x T-LED with minimum system lumen 2100 or approved equivalent from list of Makes )(136w/ 136bw)	Each	630			
iii	2 x 20 W LED box type fluorescent light fixture (Philips TMC501 P 2 x T-LED with minimum system lumen 4200 or approved equivalent from list of Makes)(236w, service block)	Each	20			
iv	LED Recessed flush mounted light fixture (Full Glow (1200mm), Philips RC380B LED-32S-6500 L120W30 PSU OD or Crompton LCTLR-40-CDL as per requirement with minimum system lumen 3000 or approved equivalent from list of Makes)(RMSQ3, ICU)	Each	50			
v	LED recessed flush mounted light fixture (Full Glow (600mm), Philips RC380B/62 LED33S-6500 PSU OD WH or Crompton LCTLRN-36-FO-CDL per requirement with minimum system lumen 3000 or approved equivalent from list of Makes)(RMSQ3, ICU)	Each	150			
vi	LED recessed flush mounted light fixture (Serenio Philips RC869B LED-30S-6500 PSE W30L 120 D8 GR Size 600 x 600 mm/ 1200 mm as per requirement, with minimum system lumen 3000 or approved equivalent from list of Makes)(236RMO2)	Each	60			
viii	LED Surface mounted light fixture (Philips SP824P LED 29S-5000 GR OD or Crompton LCTLS-40-CDL as per requirement with minimum system lumen 3000 or approved equivalent from list of Makes)(236SM01)	Each	2612			
ix	1 x TL-5 28 W box type fluorescent light fixture without reflector (Philips TMS122M 1 x TL5 28 W EBT or approved equivalent from list of Makes)(136w/136w)	Each	20			
x	2 x TL-5 28 W box type fluorescent light fixture with reflector (Philips TMS122M 2 x TL5 28 W EBT or approved equivalent from list of Makes)(236b)	Each	20			
xi	2 x 36 watt Surface mounted type fluorescent light fixture with opal acrylic diffuser (Philips TCS019 2 x TL-D 36W EBT or approved equivalent from list of Makes).(236AC1)	Each	40			
xii	Surface / Recess Mounted fluorescent light fixture (Philips TCS 306 1XTL-36W EBE with LED Lamp with minimum system lumen 2000 or approved equivalent from the list of approved makes) (136 SMO1)	Each	260			
xiii	LED recessed flush mounted light fixture (AURA I Crompton LCPL-36-CDL/TL Size 600 x 600 mm/ 1200 mm as per requirement, with minimum system lumen 3000 or approved equivalent from list of Makes)	Each	50			
i	1 x 10 W Bulk Head light fixture (Philips WT202 W LED 6S CW PSU S1 PC or approved equivalent from list of Makes)(BH)	Each	176			
ii	1 x 10 W Mirror top with diffuser in 2ft variant (Crompton Greaves LINNET # LCL-10-CDL or approved equivalent from list of Makes)(wtoilet)	Each	414			
iii	Surface mounted Batten holder (Plastic) with 9 watt LED	Each	44			
iv	1 x 15 W LED Surface mounted down light fixture (Philips DN170C LED 105-6500 PSU WH or approved equivalent from list of Makes)(DL1)	Each	764			
v	LED Recessed flush mounted down light fixture (Philips DN194B LED 15S -6500 PSU WH or Crompton LCDD-18-CDL/TLWW or approved equivalent from list of Makes)(DL0)	Each	431			
vi	1 x 18 W LED Surface mounted down light fixture (Crompton Greaves Pearl Round LCD SPL-R-18-CDL or approved equivalent from list of Makes )	Each	268			
vii	1X37.5 W LED Surface /Recessed flush mounted light fixture to be used as night lamp Ceiling mounted (NLCM)	Each	75			
viii	1X37.5 W LED Recessed flush mounted light fixture to be used as night lamp wall mounted (NLWM)	Each	82			
ix	1 x 10 W wall Bracket (Philips LED-1 x 10 W 45617/17 Vase or approved equivalent from list of Makes)(WB)	Each	168			
x	1X36 LED Surface mounted down light fixture (Crompton Greaves Pensile LCSA1-36-CDLS or approved equivalent ) (DL2)	Each	15			
xi	1X50 LED Recess mounted down light fixture (Crompton Greaves Prakhar LCDNR-50-CDL/WW or approved equivalent )	Each	15			
<b>9.03</b>	Supply of following ceiling fans (BEE -5 Star Rated) complete with double ball bearing, motor, blades, downrod, canopies, capacitor, modular type electronic fan regulator, suitable for operation on 230 volts, 50 Hz., 1 phase, AC supply complete as required.					
i	1400 mm Sweep	Each	50			
ii	1200 mm Sweep	Each	1407			
iii	900mm Sweep	Each	20			
<b>9.04</b>	Supply of 1380 RPM, 300 mm (Crompton Greaves Trans Air or approved equivalent) exhaust fan suitable for single phase 230 volts, 50 Hz., AC supply complete with motor, louvers/shutters etc. complete as required.	Each	40			
<b>9.05</b>	Supply of 1250 RPM, 250 mm (Crompton Greaves Brisk Air or approved equivalent) exhaust fan suitable for single phase 230 volts, 50 Hz., AC supply complete with motor, louvers/shutters etc. complete as required.	Each	205			

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
9.06	Supply of 400 mm sweep, Crompton greaves model high flow 16" 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.	Each	20			
9.07	Installation, testing and commissioning of prewired, fluorescent 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.	Each	7064			
9.08	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 FR PVC insulated, copper conductor single core/multi strand cable including providing & fixing phenolic laminated sheet cover on the fan box, etc. as required.	Each	1477			
9.09	Installation, testing and commissioning of exhaust fan up to 400 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.	Each	245			
9.10	Installation, testing and commissioning of wall mounted fan up to 400 mm sweep including supply and fixing wall bracket arrangement complete as required.	Each	20			
9.11	Supply, installation, testing and Commissioning of LED Type Aviation light Philips XGP400 1xLED-K2/RD240V or approved equivalent including its wiring.	Each	4			
<b>TOTAL SUBHEAD 9: LIGHT FIXTURE &amp; FANS AS MENTIONED ABOVE</b>						
<b>SUB HEAD 10: TELEPHONE SYSTEM</b>						
<b>10.00 TELEPHONE SYSTEM</b>						
10.01	Supplying drawing, connecting and testing of 0.5mm dia annealed copper conductor PVC insulated PVC sheathed telephone Wire/cables in Existing M.S/PVC conduit or a racks as required.					
i	2 pair Telephone cable, (0.5 mm)	Meter	12725			
10.02	Supplying and fixing of following sizes of steel conduit along with accessories in surface/recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required.					
i	20 mm	Metre	7635			
ii	25 mm	Metre	2545			
10.03	Supply, fixing, connecting and testing of telephone modular sockets modular plate anodised MS box and blanking plate in surface /recessed including connection etc as required.					
i	Telephone socket outlet (RJ-11 telephone Jack Single with Shutter)	Each	469			
ii	Telephone socket outlet (RJ- 11 telephone Jack double with Shutter)	Each	40			
10.04	Supplying, installation, testing and commissioning of following sizes of telephone distribution board in M.S. hinged type lockable box duly painted complete with Krone type tag block etc. including terminations of cable as required.					
i	200 Pair	Each	2			
ii	100 Pair	Each	1			
iii	20 Pair	Each	28			
iv	10 Pair	Each	31			
10.05	Supplying and drawing of following pairs 0.5mm dia annealed bare copper conductor Polythene insulated, core twisted into pairs armoured telephone cable on surface/tray with saddels including termination of cables at both sides in Krone Tag Block etc. complete as required.					
i	20 Pair	Metre	1210			
ii	10 Pair	Metre	899			
10.06	Supplying and drawing of following pairs 0.5 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. including termination of cables in both sides at krone tag block complete as required.					
i	200 pair	Metre	500			
ii	100 Pair	Metre	100			
10.07	<b>DIGITAL EPABX SYSTEM (COMMUNICATION SERVER)</b>					
A	Supply, installation, testing & commissioning of 32 bit microprocessor based, fully digital, 100% non blocking, PCM-TDM, true ISDN & PRI Line and IP ready digital EPABX with distributed architecture for power supply cards, as per specifications with following configuration:					
	IP PBX 400 Extensions Expandable type					
	IP User :10 users					
	Configured For					
	Analog P&T Lines- 16 (Expandable upto 12 Lines)					
	ISDN PRI Line (30 Channels)- 2 nos with CLIP Facility					
	24 Extension Digital Card : 1no					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	<b>SUBSCRIBER INTERFACE:</b>					
	Voice Mail system Consisting of Voice mail Boxes for all Users , Auto attended system with greeting messages PC for Attending voice mail system					
	Redundant Lan Port and Wan Port-2					
	Redundant Call Processor					
	Redundant Power Supply					
	Full Software Licences & Support					
	In-built Music on Hold					
	Remote maintenance.					
	Ethernet port for LAN connectivity and System Management					
	Support for Voice over IP (VoIP)					
	Day/Night service					
	3 party conference Facility					
	Speed Dial					
	Support for OFC Connectivity					
	Support for Wi-Fi based wireless extensions.					
	System Documentation on CD-ROM					
	Hot Standby Duplication of all common control card without call disconnection.					
	IP Based operator Console with PC - 1 Nos.					
	should support IP Telephony and should be able to intergrate other EPBAX System on IP					
	<b>DIGITAL EPABX SYSTEM AS MENTIONED ABOVE</b>	Set	1			
<b>B</b>	Float Cum Boost Charger (FCBC) for Above EPBAX System 48 V/125 Amp Including SMS Batteries with 2 hr Battery Back Up.	Set	1			
<b>C</b>	Supply, installation, Testing and commissioning of IP Digital Phone having following features					
	IP Hard Console Phone					
	Full Colour VGA Display with 4096 different colours					
	Full alphabetic keyboard					
	Key-based navigation					
	Hands free operation					
	Best in Class loudspeaker for speakerphone operation; also includes microphones					
	Jack for headset expansion					
	Compatible with PC applications					
	Bluetooth connectivity for the ultimate in integration					
	2 Ethernet ports					
	Downloadable admin softwar					
	Eight Personalized Ring Patterns.					
	Either desk or wall mountable.					
	<b>DIGITAL IP PHONES AS MENTIONED ABOVE</b>	Set	10			
<b>D</b>	24 port Layer 2 Switch 10/100/1000 GBPS for IP phone	Set	1			
<b>E</b>	Supply, installation, Testing and commissioning of Digital Phone having following features (Before procurement of this item, the contractor shall have necessary approval approval of quantity from HSCC/Client.					
	Adjustable graphical display					
	Resolution 64X128 pixels					
	Size 70X38 mm					
	Socket for headset					
	40 Programmable keys					
	2X contextual keys, 2 personal keys/LED					
	Navigator keys 4 directions					
	Alphabetic keyboard (Dial by name)					
	Feature keys Like: Message + LED, Redial, End Key, Volume +/-, Mute with LED, Help, Handsfree with LED					
	<b>Digital Phone as mentioned above</b>	Set	6			
<b>F</b>	Supply of Analog phones having following features(Before procurement of this item, the contractor shall have necessary approval approval of quantity from HSCC/Client.					
	FSK/DTMF Compatible Caller-Id					
	16 Digit LCD single Display					
	30 Incoming Memory					
	5 Outgoing Memory					
	Real Time Clock with Year, Date and Month display					
	Conversation Time Display (Approx.)					
	6 Step LCD Contrast Adjustable					
	30 Digits Redial Memory					
	Auto Filter Local Area Code up to 5-digit					
	Real time & Date in Idle Mode					
	Real time & Date in Idle Mode					
	<b>Analog phones as mentioned above</b>	Set	40			

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
G	Supply of Analog phones Without display having following features ; Pulse or tone Dialing 3 repertory Keys, 10 Speed Dialing Number, Last Number redial , Manual Pause, Adjustable volume etc (Before procurement of this item, the contractor shall have necessary approval approval of quantity from HSCC/Client.	Set	334			
10.08	Supply, installation, testing and commissioning of Main Distribution frame Exchanger side - Krone type for above system with IPM (protection Magazine) including mounting frame, etc/ Complete as required as per specifications.	Set	1			
10.09	Supply, installation, testing and commissioning of Field Side Distribution frame Exchanger side - Krone type for above system with IPM (protection Magazine) including mounting frame, etc/ Complete as required as per specifications.	Set	1			
	<b>TOTAL SUBHEAD 10: TELEPHONE SYSTEM AS MENTIONED ABOVE</b>					
	<b>SUBHEAD 11: CONDUITING FOR COMPUTER SYSTEM</b>					
11.00	<b>CONDUITING FOR COMPUTER SYSTEM.</b>					
11.01	Supply and fixing of following sizes of 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	Metre	6450			
	ii 25 mm dia	Metre	2150			
11.02	Supplying and fixing two module modular plate in recess flush mounted with clear acrylic cover (suitable for RJ-45 computer socket) with GI box complete as required.	Each	430			
	<b>TOTAL SUBHEAD: 11 CONDUITING FOR COMPUTER SYSTEM AS MENTIONED ABOVE</b>					
	<b>SUB HEAD 12: CONDUITING FOR TV OUTLETS</b>					
12.00	<b>CONDUITING FOR TV OUTLETS</b>					
12.01	Supply and fixing of following sizes of 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	Metre	4350			
	ii 25 mm dia	Metre	725			
12.02	Supplying and fixing 2 module modular metal box in recess flush mounted with clear acrylic cover with modular cover plate including fixing 1 no. coaxial TV outlet connection and all accessories complete as required	Each	145			
12.03	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/PVC conduit as required.	Metre	5800			
	<b>TOTAL SUB HEAD 12: CONDUITING FOR TV OUTLETS AS MENTIONED ABOVE</b>					
	<b>SUBHEAD 13: ADDRESSABLE &amp; CONVENTIONAL FIRE ALARM SYSTEM</b>					
13.00	<b>ADDRESSABLE FIRE ALARM SYSTEM</b>					
13.01	Supply, installation, testing and commissioning of Networkable Microprocessor based multiloop capacity, Networkable analogue addressable type fire alarm control panel with minimum 640 character LCD display/ Touch Screen Display. The panel should be equipped with sufficient numbers of loop with 15% Spare capacity in each loop. The panel shall be capable of taking atleast 200 analog addressable devices in one loop in any combination/ quantities of the Detectors and Devices, Four access levels, flash EPROM, sufficient numbers of programmable relay controls for controlling AHUs, pressurization fans, ventilation fans at fire pump room, monitoring of fire sprinkler and fire hydrant pump, 240 volts AC power supply, automatic battery charger, 24 volts sealed lead acid batteries sufficient for 24 hours normal working and then be capable of operating the system for 2 hours during an emergency conditions as required. The Panel shall be compatible for backnet card for BMS interfacing. (UL Approved)					
	i 5 Loop Capacity	Nos.	2			
13.02	Supply, installation, testing and commissioning of Networkable & Microprocessor based 640 - characters LCD/ Touch Screen LCD Display Network Repeater panel. The LCD shall display all events/ detectors, devices status of complete systems in the networked, The repeater shall be equipped with Mounting options etc. (UL Approved).	Nos.	2			
13.03	Supply, installation, testing and commissioning of Automatic Analog addressable Photo - Thermal multicriteria detector with mounting Base, alarm LED. The Detector shall have automatic Electronic/ dip switch addressing feature & each of these shall be equipped with fault Isolator/ External Fault Isolator complete with the GI Mounting Box and the hardware etc. as required. (UL Approved)	Nos.	150			

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
13.04	Supply, installation, testing and commissioning of Automatic Analog addressable Photoelectric smoke detector with mounting Base, alarm LED shall be viewable from 360 degrees. The Detector shall have automatic Electronic/ dip switch addressing feature & each of these shall be equipped with fault Isolator/ External Fault Isolator complete with the GI Mounting Box and the hardware etc. as required. (UL Approved).	Nos.	830			
13.05	Supply, installation, testing and commissioning of Automatic Analog addressable Fixed Temperature rate of Rise type Heat detector with mounting Base, alarm LED shall be viewable from 360 degrees. The Detector shall have automatic Electronic/ dip switch addressing feature & each of these shall be equipped with fault Isolator/ External Fault Isolator complete with the GI Mounting Box and the hardware etc. as required. (UL Approved).	Nos.	55			
13.06	Supply, installation, testing and commissioning of Automatic Analog addressable Duct Detector with Duct Housing and Duct probe tubes complete with Photoelectric Smoke Detector with mounting Base, alarm LED shall be viewable from 360 degrees. The Detector shall have automatic Electronic/ dip switch addressing feature & each of these shall be equipped with fault Isolator/ External Fault Isolator complete with the GI Mounting Box and the hardware etc. as required. (UL Approved).	Nos.	15			
13.07	Supply, installation, testing and commissioning of Automatic Addressable control module for AHU & Stair Pressurization fan. The Module shall have automatic Electronic addressing feature & each of these shall be equipped with fault Isolator complete with the GI Mounting Box and the hardware etc. as required. (UL Approved).	Nos.	24			
13.08	Supply, installation, testing and commissioning of Automatic Addressable Monitor module for Flow Switch Monitoring etc. The Module shall have automatic Electronic/ dip switch addressing feature & each of these shall be equipped with fault Isolator complete with the GI Mounting Box and the hardware etc. as required. (UL Approved).	Nos.	15			
13.09	Supply, installation, testing and commissioning of Dual LED Response indicator for indicating the activation of the Remotely located Detector.	Nos.	430			
13.10	Supply, installation, testing and commissioning of Addressable Manual call Station. The Call Point shall have automatic Electronic/ dip Switch addressing feature & each of these shall be equipped with fault Isolator/ external fault isolator complete with the Mounting Box and the hardware etc. as required. (UL Approved).	Nos.	60			
13.11	Supply, installation, testing and commissioning of Addressable electronic Sounder. The Sounder shall have automatic Electronic/ dip switch addressing feature & each of these shall be equipped with fault Isolator/ External fault isolator complete with the Mounting Box and the hardware etc. as required. The Sounders shall be Loop powered i.e. should not require additional cable to feed the Power & shall be programmable from the Fire Panel for Multiple type of tones selection. (UL Approved).	Nos.	60			
13.12	Supply, installation, testing and commissioning of Addressable electronic Sounder with Optical Beacon. The unit shall have automatic Electronic addressing/ dip switch feature & each of these shall be equipped with fault Isolator/ External fault isolator complete with the Mounting Box and the hardware etc. as required. The unit shall be Loop powered i.e. should not require additional cable to feed the Power & shall be programmable from the Fire Panel for Multiple type of tones selection. (UL Approved).	Nos.	16			
13.13	Supply, installation, testing and commissioning of full duplex Fire Fighter's talk Back system with operator command centre and sufficient no. of point . The full duplex emergency communication system shall be able to display customized address of the location from which the Call is being made to the Fire Fighter's command Centre.	Nos.	2			
13.14	Supply, installation, testing and commissioning of Addressable Fire Fighter's Telephone Jack for full duplex emergency communication with the Fire Fighter's command Centre.	Nos.	21			
13.15	Supply, installation, testing and commissioning of 2 way communication Fire Fighter's Handset complete with suitable leads for insertion.	Nos.	21			
13.16	Supply and laying of following size of MS Conduit pipe in recess including all accessories MS pull junction boxes, GI fish wire of 6 SWG, fixing hardware etc., including cutting, chasing the walls/ floor and plastering the chased portion and making good the damages etc., complete as required.	Meter	7120			
	i 25 mm dia	Meter	200			
	ii 32 mm dia	Meter	200			
13.17	Supply and drawing of 2C x 1.5 Sq.mm. Sheathed annealed flexible copper Conductor FRLS cable in existing M. S. Conduit, Complete with termination and testing as per requirement.	Meter	8140			
13.18	Supply and drawing of 4C x 1.5 Sq.mm. annealed flexible copper Conductor, Copper braided shielding and overall Sheathed FRLS cable in existing MS Conduit, Complete with termination and testing as per requirement.	Meter	340			
13.20	Supply and drawing of two pair, 0.71 sq. mm ATC Copper conductor cable in existing MS Conduit, Complete with termination and testing as per requirement.	Meter	1600			

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	<b>CONVENTIONAL (MICROPROCESSOR BASED SYSTEM)</b>					
13.21	Supply, Installation, Testing & Commissioning of Main fire alarm panel of 6 Zone microcontroller based with its own fire detection zone interface card for initiating and indicating devices, power supply & Battery Charger, with LED for fault / isolate / fire alarm condition, short, open condition. The batteries shall be sufficient for 30 Mins. in alarm Condition and 48 Mins in normal condition.	Nos.	4			
13.22	Supply, installation, testing & commissioning of MANUAL CALL POINT complete with UPVC box duly painted in red colour including connections etc.	Nos.	24			
13.23	Supply, Installation, testing & commissioning of Hooter Cum Speaker with 24 volt circuit complete as required	Nos.	24			
13.24	Supply, Installation, testing & commissioning of Optical smoke detector with mounting base complete as required	Nos.	6			
	<b>TOTAL SUB HEAD 13: ADDRESSABLE FIRE ALARM SYSTEM as mentioned above</b>					
	<b>SUB HEAD 14: PUBLIC ADDRESS SYSTEM</b>					
14.00	<b>PUBLIC ADDRESS SYSTEM</b>					
14.01	Supply, Installation, Testing and Commissioning of IP based PA Controller capable of handling 8 zones, Digital audio controller complying to IEC EN 60849/ DVA016 with built-in high and low pass filters and parametric equalizer. With in built 500 W digital amplifier and 8 Outputs Led Indication of each zone independent output control button and volume control, Network input, BGM input, local emergency Mic input, can work with One Extra stand by amplifier, when the inbuilt amplifier come out faulty the standby amplifier takes over automatically. Support 24 V DC input interface.	Set	1			
14.02	<b>Supply, Installation, Testing and Commissioning of Power Amplifier</b> Power Amplifier SCPA500/ 70V, 100 V & 4-16 ohm, 2 channel power amplifier - Inrush restraint and softstart - Integrated electronic protection against thermal overload and short circuit. - Temperature controlled fans, airflow from front to rear. - Method of control: Class AB - Power output of amplifier: 1 x 500W sin./100V - Output range: 50 Hz – 22kHz; 0/-0.5 dB - Signal to noise ratio (not valuated): > 105 dB - Channel separation: > 75 dB - THD (total harmonic distortion): < 0.08% - Input level at max. output voltage: 0 dBu - The amplifier has to be switched into Stand-by Mode in case of power loss by the control centre.	Set	1			
	<b>POWER AMPLIFIER as mentioned above</b>					
14.03	<b>Supply, Installation, Testing and Commissioning of DIGITAL CALL STATION 8 ZONE</b> Fully digital call station with electret microphone (cardioid-characteristics) on flexible 300 mm swan neck complete with wideband loudspeaker for monitoring, pre-listen and intercom operation for the networked PA system. - Permanent inaudible supervision of the microphone and its capsule in accordance to EN 60849. - 16 free programmable and label able keys.	Set	1			
	<b>DIGITAL CALL STATION 8 ZONE as mentioned above</b>					
14.04	Supply, Installation, Testing & Commissioning of Volume Controller for all the closed areas.	Each	10			
14.05	Supply, Installation, Testing & Commissioning of 6 W, transformer tapping 100 volt line multitap, driver impedance 8 ohm, SPL @ 1m, 1 Watt.(Ceiling speaker)	Each	100			
14.06	Supply, Installation, Testing and Commissioning of Wall mountable type column type Speaker 6 watt, SPL 90 dB, Freq response 200-15000 Hz, rated input voltage 100 Volts & rated impedance 1667 Ohms.	Each	20			
14.07	Supply, Installation, Testing & Commissioning of Music source CD/ MP3 Player 1 U table top and rack mount clearly visible LCD display, micro computer and touch button operation complete as required.	Each	1			
14.08	Supply and drawing of 2 x 1.5 sqmm ATC Copper conductor cable/wire in existing MS Conduit, Complete with termination and testing as per requirement.	Metre	2500			
14.09	Supply and fixing of following sizes of 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					
	1 25 mm dia	Metre	2200			

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
14.10	Supply, installation, testing and commissioning of 19" Equipment Rack with power coated finish with front lockable Door with MS Framed translucent Acrylic material, 2 Nos of fans for heat exhaust, Top & Bottom entry knock outs, back side lockable Door, inbuilt MCB, Power Pains, raceways and partitions, one no. sliding Tray etc. complete as required	Each	1			
	<b>TOTAL SUB HEAD 14: PUBLIC ADDRESS SYSTEM as mentioned above</b>					
	<b>SUB HEAD 15: CCTV SURVEILLANCE SYSTEM</b>					
15.00	<b>CCTV SURVEILLANCE SYSTEM</b>					
15.01	Supply, Installation, Testing and Commissioning of Day/night fixed dome with a discreet, dust and IK rated vandal-resistant indoor casing, Varifocal 2.8-10 mm P-Iris lens, remote focus and zoom. Multiple, individually configurable H.264 and Motion JPEG streams; max HDTV 720p or 1 MP resolution at 30 fps. WDR more than 70dB. Video motion detection and active tampering alarm. Memory card slot for optional local video storage. Power over Ethernet. Includes mounting bracket for wall/ ceiling or junction boxes.	Nos.	5			
15.02	Supply, Installation, Testing and Commissioning of Ultra-compact, indoor fixed mini dome with dust and vandal-resistant casing for easy mounting on wall or ceiling. Fixed lens. Multiple, individually configurable H.264 and Motion JPEG streams; max HDTV 720p or 1 MP resolution at 30 fps. MicroSD/ microSDHC memory card slot for optional local video storage. Video motion detection and active tampering alarm. Comes with a 2 m (6.6 ft.) network cable and is powered using Power over Ethernet.	Nos.	20			
15.03	Supply, Installation, Testing and Commissioning of Intel Xeon Processor E5-2609 v3, 1.90 GHz, 15MB Cache, Memory: 8GB (2 x 4GB), storage: 16TB usable after RAID, HDD speed of 7200 rpm, 64MB Cache, SATA 6Gb/s interface, RAID 5 Hotplugable, RAID controller: PERC H730, 1GB NV, Graphics: Matrox 200 eR, recording Shall support recording up to 64 video channels with a total recording rate up to 256 Mbit per second, software Compatible with Cameras, Encoders including HD, Standard resolution, High Resolution, Pant Tilt, Zoom, Thermal, Cameras, playback upto 64x or frame by frame upto 25 cameras synchronized playback, power supply Dual, Hot-plug, Redundant Power Supply, 495 W, AXIS S1048, connector 4 x USB 2.0, 2 x VGA, Serial port (DB9), 4 x Ethernet (RJ45), 2 x Power inlet complete as required.	Nos.	1			
15.04	Supply, Installation, Testing and Commissioning of Client system with processor Intel i5-4570S 2.90 GHz, memory 4 GB DDR3-SDRAM PC3-12800 (800 MHz) - [DDR3-1600] storage 500 GB, 7200 rpm HDD with 64 MB cache and SATA 6Gb/s interface, graphics AMD Radeon R5 A240 1 GB DDR3 with DVD-RW, NETWORK CARD Integrated Intel I217LM Ethernet LAN 10/ 100/ 1000 Mbit Live VIDEO stream/ Minimum Support for resolutions upto 5 Mpixel upto 15 fps or 3MP upto 20 fps or 2MP upto 25 fps, client software Compatible for all cameras, encoders, PTZ Cameras, Thermal Cameras, 6 x USB 2.0, 4 x USB 3.0, 3 x Display Port, 1 x VGA, 1 x Dual link DVI-I, AXIS S 9001, Network connector, Line-in/ out connectors, Computer mouse and keyboard connectors with two display monitor output with Mouse, Keyboard USB Type complete as required.	Nos.	1			
15.05	<b>CCTV COLOR MONITOR</b> Supply, installation, testing & commissioning of 32" Flat LED Color Monitors.	Nos.	2			
15.06	<b>ETHERNET SWITCHES</b>					
	i Supply, installation, testing & commissioning of PoE Layer II Managed Ethernet switch: 16 port RJ45 10/ base 100 T with 2 Fibre Ports.	Nos.	12			
	ii Supply, installation & testing of Layer III Managed Ethernet switch: 24 port RJ45 10 base 1000T with 2-Fibre Ports	Nos.	1			
15.07	<b>19 INCH RACK MOUNT</b>					
	i Supply, installation, testing & commissioning of 19 inch rack mount console unit - 42 U with 4 cooling fans on top and bottom at control room.	Nos.	1			
	ii Supply, installation, testing & commissioning of 19 inch rack mount console unit - 6 U for Layer 2 switches on field.	Nos.	8			
	iii Any other network equipment like Patch Chords, Patch Panels, Jack Panels, Splicing and LIU required for successful operation.	Lot	1			
15.08	Supply, laying & testing of Cat 5/6 UTP cable with all termination crimping etc.	Metre	4000			
15.09	Supply, laying & testing of 2 x 1.5 sqmm Power Cable for powering all the SWITCHES.	Metre	200			
15.10	Supply and fixing of following sizes of 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 25 mm dia	Metre	3000			
15.11	Supply, installation, testing and commissioning of 2 kVA UPS with batteries 30minutes backup etc. complete in ready to use condition	SET	1			
	<b>TOTAL SUB HEAD 15: CCTV SURVEILLANCE SYSTEM as mentioned above</b>					
	<b>SUB HEAD 16: NURSE CALL SYSTEM</b>					
16.00	<b>NURSE CALL SYSTEM</b>					



S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
16.01	Supply, Installation Testing and Commissioning of Microprocessor controller Nurses station with terminal monitor with in built power supply , with charger enclosed in a powder coated cabinet . Having with Reset, alarm/ buzzer, Call acknowledge with battery back up, battery charger complete system as per technical specifications and as per required of following suitable configuration.omni call complete as required					
	i 40 Way	Nos.	10			
	ii 24 Way	Nos.	2			
	iii 16 Way	Nos.	2			
16.02	Supply, Installation, Testing & Commissioning of Bed Call Push Button with LED indication and flexible Cord with button, Call Reset, Call Indication, station for each Bed omni call complete as required.	Nos.	360			
16.03	Supply, Installation, Testing & Commissioning of Toilet Call Push Button with LED indication and flexible cord with button, Call Reset, Call Indication, station for each Bed omni call complete as required.	Nos.	20			
16.04	Supply, Installation, Testing & Commissioning of LED Indicators Module at Outside of each ward omni call complete as required.	Nos.	45			
16.05	Supply, laying and testing of 6C X 0.5 Sqmm diameter multistrand copper conductor PVC cable in existing MS/ PVC Conduit on recessed/ surface with all accessories complete as required	Meter	3000			
16.06	Supply, laying and testing of 2C X 0.5 Sqmm diameter multistrand copper conductor PVC cable in existing MS/ PVC Conduit on recessed/ surface with all accessories complete as required	Meter	800			
16.07	Supply and fixing of following sizes of Medium Class FRSL PVC 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 25 mm dia	Meter	500			
16.08	Supply and fixing of following sizes of 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					
	ii 25 mm dia	Meter	2500			
	<b>TOTAL SUB HEAD 16: NURSE CALL SYSTEM AS MENTIONED ABOVE</b>					
	<b>SUBHEAD 17: INVERTER</b>					
17.01	Supply, installation, testing and commissioning of 2 kVA inverter with batteries 30minutes backup etc. complete in ready to use condition. Make Sukam, Microtek & Luminous	SET	1			
	<b>TOTAL SUB HEAD 17: INVERTER AS MENTIONED ABOVE</b>					
	<b>SUB HEAD 18: LIFTS</b>					
18.00	<b>LIFTS</b>					
18.01	Design, manufacture, supply, installation, testing and commissioning of following <b>20 passenger cum hospital (1360 kg) lift</b> , serving different floors in the lift shaft including machine room at the top. The lift should be as per detailed specification/ drawing enclosed as required and as under:					
	- Speed : 1 MPS					
	- Travel: As per architectural drawing					
	- 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, Telescopic opening, horizontal sliding stainless steel scratch proof. (b) Landing doors: Stainless steel scratch proof. Lift landing doors shall have a fire resistance of one hour.					
	- All push buttons will have Brail also.					
	- Car Enclosure : Scratch proof stainless steel finish.					
	- A hand rail guide not less than 600 mm long at 900 mm above floor level .					
	- 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.					
	- Telephone with minimum two connections one at operator's room and other at guard/ security room and the emergency signal with re-chargeable batteries as source of supply be made in the lift car.					
	- Toe guard, IR curtain on full height, two phase fireman's drive control/ switch and potential free contacts etc to be provided.					
	- Floors : -3a-2 + 1+G+7, ( 11stops & 11 openings)					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	Floors :-3+2 +1+G+6, ( 10 stops & 10 openings)	Each	2			
	<b>Passenger cum hospital Lift as mentioned above</b>	Each	2			
18.02	Supply, Fixing, Testing and Commissioning of <b>Dumb Waiter of Capacity 100kgs</b> , Complete as required. Fabrication in M.S finish					
	Speed : 0.5 MPS					
	Floors : G+6, ( 2 stops & 2 openings ,At Ground & Sixth floor)					
	<b>Dumb Waiter as mentioned above</b>	Each	1			
18.03	Design, manufacture, supply, installation, testing and commissioning of following 13 <b>passenger</b> (884 kg) lift, serving different floors in the lift shaft including machine room at top. Lift should be Gear less with speed of 1 MPS The lift should be as per detailed specification/ drawing enclosed as required and as under:					
	Travel: As per architectural drawing.					
	Speed : 1 MPS					
	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 finish (b) Landing doors: Stainless steel scratch proof finish. Lift landing doors shall have a fire resistance of one hour.					
	Car Enclosure: Scratch proof finish stainless steel					
	All push buttons will have Brail also.					
	A hand rail guide not less than 600 mm long at 900 mm above floor level.					
	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.					
	Telephone with minimum two connections one at operator's room and other at guard/ security room and the emergency signal with re-chargeable batteries as source of supply be made in the lift car.					
	IR curtain on full height, two phase fireman's drive control/ switch and potential free contacts etc to be provided.					
i	Floors :-1,2 G+3, ( 6 stops & 6 openings)	Each	2			
ii	Floors : G+9, ( 10 stops & 10 openings)	Each	2			
18.04	Design, manufacture, supply, installation, testing and commissioning of goods lift of 1500 Kg , serving different floors in the existing lift shaft including lift well pressurization. The lift should be as per detailed specification/ drawing enclosed as required and as under:					
	Speed : 0.5 MPS					
	Travel: As per architectural drawing.					
	Controller: A.C. variable voltage & variable frequency.					
	Automatic rescue device complete with dry maintenance free batteries as required.					
	All push buttons will have Brail also.					
	Operation: Microprocessor based single automatic push button/ simplex selective collective/with / without attendant.					
	415 V, 3 phase, 50 Hz, 4 wire system					
	Type of doors: a) Car : Power operated, central opening horizontal sliding M.S finish (b) Landing doors: M.S finish.					
	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.					
	IR curtain on full height, fireman's switch and potential free contacts etc to be provided in the lift.					
	Floors : G+5, ( 5 stops & 5 openings)	Each	2			
	Floors :-3+2 +1+G+6, ( 10 stops & 10 openings)	Each	1			
18.05	Design, manufacture, supply, installation, testing and commissioning of following 8 <b>passenger</b> (544 kg) lift, serving different floors in the lift shaft including machine room at top. Lift should be Gear less with speed of 1 MPS The lift should be as per detailed specification/ drawing enclosed as required and as under:					
	Travel: As per architectural drawing.					
	Speed : 1MPS					
	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					

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
	- Type of doors: a) Car : Power operated, Centre opening, horizontal sliding stainless steel scratch proof finish (b) Landing doors: Stainless steel scratch proof finish. Lift landing doors shall have a fire resistance of one hour.					
	- Car Enclosure : Scratch proof stainless steel finish					
	- All push buttons will have Brail also.					
	- A hand rail guide not less than 600 mm long at 900 mm above floor level.					
	- 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.					
	- Telephone with minimum two connections one at operator's room and other at guard/ security room and the emergency signal with re-chargeable batteries as source of supply be made in the lift car.					
	- IR curtain on full height, two phase fireman's drive control/ switch and potential free contacts etc to be provided.					
1	Floors : G+S (6 steps & 6 openings)	Each	2			
	<b>TOTAL SUB HEAD 18: LIFTS AS MENTIONED ABOVE</b>					
	<b>SUB HEAD 19: LT CABLES</b>					
19.00	<b>LT CABLES</b>					
19.01	Supply of following sizes of 1.1 kV grade multicore aluminium conductor PVC sheathed armoured XLPE cable as per IS 7098.					
i	3.5 Core 25 Sqmm.	Metre	800			
ii	3.5 Core 35 Sqmm.	Metre	1000			
iii	3.5 Core 50 Sqmm.	Metre	100			
iv	3.5 Core 70 Sqmm.	Metre	600			
v	3.5 Core 95 Sqmm.	Metre	450			
vi	3.5 Core 120 Sqmm.	Metre	650			
vii	3.5 Core 150 Sqmm.	Metre	200			
viii	3.5 Core 185Sqmm.	Metre	100			
ix	3.5 Core 240 Sqmm.	Metre	700			
x	3.5 Core 300 Sqmm.	Metre	2900			
xi	3.5 Core 400 Sqmm.	Metre	400			
xii	4 Core 16 Sq mm	Metre	800			
xiii	4 Core 10Sq mm	Metre	100			
xiv	4 Core 6 Sq mm	Metre	100			
xv	3 Core 6 Sqmm.	Metre	100			
xvi	3 Core 4 Sqmm.	Metre	100			
xvii	2 Core 10 Sq mm	Metre	500			
xviii	2 Core 16 Sq mm	Metre	500			
19.02	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	Up to 35 sq mm	Metre	2100			
ii	Above 35 Sq mm and upto 95 Sq mm	Metre	1190			
iii	Above 95 Sq mm and up to 185 Sq mm	Metre	910			
iv	Above 185 Sq mm and up to 400 Sq mm	Metre	2870			
19.03	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	Up to 35 sq mm	Metre	450			
ii	Above 35 Sq mm and upto 95 Sq mm	Metre	255			
iii	Above 95 Sq mm and up to 185 Sq mm	Metre	196			
iv	Above 185 Sq mm and up to 400 Sq mm	Metre	617			
19.04	Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade on surface or on existing cable tray complete as required.					
i	Up to 35 sq mm	Metre	450			
ii	Above 35 Sq mm and upto 95 Sq mm	Metre	255			
iii	Above 95 Sq mm and up to 185 Sq mm	Metre	197			
iv	Above 185 Sq mm and up to 400 Sq mm	Metre	617			
19.05	Supplying and making end termination with suitable size Aluminium lugs including 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.	Each	94			
ii	3.5 Core 35 Sqmm.	Each	20			
iii	3.5 Core 50 Sqmm.	Each	80			
iv	3.5 Core 70 Sqmm.	Each	40			
v	3.5 Core 95 Sqmm.	Each	30			
vi	3.5 Core 120 Sqmm.	Each	10			
vii	3.5 Core 150 Sqmm.	Each	20			
viii	3.5 Core 185Sqmm.	Each	20			

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
ix	3.5 Core 240 Sqmm.	Each	30			
x	3.5 Core 300 Sqmm.	Each	170			
xi	3.5 Core 400 Sqmm.	Each	20			
xii	4 Core 16 Sq mm	Each	70			
xiii	4 Core 10Sq mm	Each	30			
xiv	4 Core 6 Sq mm	Each	40			
xv	3 Core 6 Sqmm.	Each	40			
xvi	3 Core 4 Sqmm.	Each	40			
xvii	2 Core 10 Sq mm	Each	80			
xviii	2 Core 16 Sq mm	Each	80			
19.06	Supply and laying of Flexible Industrial cable, Copper Conductor , FR PVC insulated 1100 volts conforming to IS 694/1990 or amended upto date in fexiabel MS conduit / Pipe ,Complete with termination and testing as per requirement.					
i	4 Sqmm	Metre	100			
ii	6 Sqmm	Metre	100			
iii	10 Sqmm	Metre	100			
iv	16 Sqmm	Metre	50			
v	25 Sqmm	Metre	50			
vi	50 Sqmm	Metre	50			
	<b>TOTAL SUBHEAD 19: LT CABLES AS MENTIONED ABOVE</b>					
	<b>SUBHEAD 20: EARTHING</b>					
20.00	<b>EARTHING</b>					
20.01	Supply and installation of one number earth pit with advance maintenance free Earthing System consisting of one Number, CPRI tested copper bonded steel electrode of minimum <b>25 mm dia.</b> (as per IE C62561-2 ) With a minimum coating thickness of 250 microns and length of 3 meters, 25 kg/Electrode of earth enhancing compound (tested as per IEC-62561-7) fill the 100mm augered hole surrounding to the electrode , SS Universal Clamp of Size 175X50X3 mm for terminal Connection including Poly Propylene Heavy duty Pit cover including all accessories , excavation of earth, filling with back fill compound, and earth pit marking. The Complete installation shall be as per the drawing, technical specifications and as required	Set	16			
20.02	Supply and installation of one number earth pit with advance maintenance free Earthing System consisting of one Number, CPRI tested copper bonded steel electrode of minimum <b>19 mm dia.</b> (as per IE C62561-2 ) With a minimum coating thickness of 250 microns and length of 3 meters, 25 kg/Electrode of earth enhancing compound (tested as per IEC-62561-7) fill the 100mm augered hole surrounding to the electrode , SS Universal Clamp of Size 175X50X3 mm for terminal Connection including Poly Propylene Heavy duty Pit cover including all accessories , excavation of earth, filling with back fill compound, and earth pit marking. The Complete installation shall be as per the drawing, technical specifications and as required	Set	14			
20.03	Supply and installation of one number earth pit with of advance maintenance free Earthing System consisting of one Number UL Listed CPRI tested copper bonded steel electrode of minimum <b>13 mm dia.</b> (as per IE C62561-2 ) With a minimum coating thickness of 250 microns and length of 3 meters, 25 kg/Electrode of earth enhancing compound (tested as per IEC-62561-7) fill the 100mm augered hole surrounding to the electrode , SS Universal Clamp of Size 175X50X3 mm for terminal Connection including Poly Propylene Heavy duty Pit cover including all accessories , excavation of earth, filling with back fill compound, and earth pit marking. The Complete installation shall be as per the drawing, technical specifications and as required	Set	52			
20.04	Supply and installation of one number earth pit with of maintenance free earthing system consisting of 1250 mm long copper bonded steel electrode of minimum <b>13 mm dia.</b> tested as per IEC 62561-2.Minimum copper coating thickness on Rod is 100 microns, 5 kg/Electrode of earth enhancing compound tested as per IEC 62561-7 fill the 75-100mm augered hole surrounding to the electrode.It consist the following Item opper Alloy clamp suitable Poly Propylene Heavy duty Pit cover including all accessories , excavation of earth, filling with back fill compound, and earth pit marking. The Complete installation shall be as per the drawing, technical specifications and as required	Set	4			
20.05	Supplying and laying 25mmX5mm GI strip at 0.5m below ground level as strip earth electrode, including soldering etc. as required.	Metre	400			
20.06	Providing and fixing 25mmX5mm GI strip on surface/on existing cable trench/RCC pipe/GI pipe or in recess for earth electrode as required.	Metre	1200			
20.07	Supplying and laying 50mmX6mm GI strip at 0.5m below ground level as strip earth electrode, including soldering etc. as required.	Metre	50			
20.08	Providing and fixing 50mmX6mm GI strip on surface/on existing cable trench/RCC pipe/GI pipe or in recess for earth electrode as required.	Metre	300			
20.09	Providing and fixing 25mmX5mm Copper strip on surface/on existing cable trench/RCC pipe/GI pipe or in recess for earth electrode as required.	Metre	200			

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
20.10	Supplying and laying 25mmX5mm Copper strip at 0.5m below ground level as strip earth electrode, including soldering etc. as required.	Metre	100			
20.11	Supplying and laying 50mmX6mm Copper strip at 0.5m below ground level as strip earth electrode, including soldering etc. as required.	Metre	50			
20.12	Providing and fixing 50mmX6mm Copper strip on surface/on existing cable trench/RCC pipe/GI pipe or in recess for earth electrode as required.	Metre	100			
20.13	Providing and fixing 25 mm X 5 mm copper strip in 40 mm dia G.I.pipe from earth electrode including connection with brass nut, bolt, spring, washer excavation and re-filling etc. as required	Metre	200			
20.14	Providing and fixing 25 mm X 5 mm G.I. strip in 40 mm dia G.I. pipe from earth electrode including connection with G.I. nut, bolt, spring, washer excavation and re-filling etc. as required.	Metre	500			
20.15	Providing and fixing 6 SWG dia G.I. wire on surface or in recess for loop earthing as required.	Metre	500			
20.16	Providing, laying and fixing following dia RCC pipe NP2 class (light duty) in ground complete with RCC collars, joining with cement mortar 1:2 (1 cement : 2 fine sand) including trenching (75 cm deep) and refilling etc as required.					
B	150 mm dia	Metre	100			
<b>TOTAL SUBHEAD 20: EARTHING AS MENTIONED ABOVE</b>						
<b>SUBHEAD 21: OUT DOOR LIGHTING</b>						
21.00	<b>OUT DOOR LIGHTING</b>					
21.01	Supply, erection, testing and commissioning of external swaged steel tubular pole with following specifications & items :					
i	9.0 Mtrs. high swaged steel tubular pole with arm length around 1.5 Metre, the construction of the pole shall be as per IS:2713 - 1980 410 SP-30 with base plate 450 x 450 x 6 mm complete as per requirement with two coats of spray paints of approved shade.					
ii	90 watts LED street light fixture in die cast aluminum body with 90 watts LED lamp complete with control gear, cover etc. similar to Compton Greaves LST045-90/CDL or approved equivalent including its wiring with 2X2.5 sq.mm. PVC insulated, FRLS copper conductor and 1.5 sqmm PVC insulated, FRLS copper earth wire from control box complete as required.					
iii	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					
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 foundation including excavation, shuttering, alignment of poles, casting etc. including lean concrete at the bottom as per CPWD/BIS specifications.					
vi	The above installations shall be completed as CPWD specifications and as required					
a.	Steel Tubular Poles (9M) Single Arm as mentioned above	Set	20			
b.	Steel Tubular Poles (9M) same as above but for Double Arm as mentioned above	Set	5			
21.02	Supply, installation, testing and commissioning of external post top lantern with following accessories and complete as required :					
i	4m high (3.3m above ground) 80mm dia GI pole as approved, adopting socket at top for fixture mentioned below, base plate 300 x 300 x 6 mm and provision for mounting junction box etc. - 1 set.					
ii	1 x 40 LED Post top lantern with 40W LED lamp (Crompton Greaves LPTO-40-CDL 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.					
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 400 x 400 x 1000 mm 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	Set	15			
21.03	Supply, Installation, testing and commissioning of Post top lantern 1 x 40 Watts LED Post top lantern with 40 Watt LED lamp (Crompton Greaves LPTO-40-CDL 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.	set	14			
21.04	Supply, installation, testing and commissioning of bollard lamps 1 x 10 Watts LED Light Fixture (Crompton Greaves LBL51-10-CDI (LIARA) or equivalent) with control box - 1 set.	Each	10			
<b>ROAD LIGHTING PANEL</b>						

S.No.	Description.	Unit.	Qty.	Rate in Figures (in Rs.)	Rate in words (Rs.)	Amount in Figures (Rs.)
21.05	Supply, installation, testing and commissioning of following outdoor type with canopy, IP-54 protected MV cubicle type totally enclosed, free standing type, dust, damp and vermin proof, MV Panel, busbars, MV 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.					
A	<b>INCOMER:</b> 100 Amps,415 volts, TP+NL, 35 KA 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. ON, OFF, TRIP indication (LED Type) Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility, MCCB should have spreader links & phase barriers. 1 Set of timer switch & 100A TP contactor with neutral link (for street lights control)					
B	<b>BUSBARS:</b> 300 Amp TPN Aluminium busbars					
C	<b>OUTGOING:</b> 1 30 Nos. 16 Amp 415 volts, DP MCB					
	<b>ROAD LIGHTING PANEL AS MENTIONED ABOVE</b>	Set	4			
21.06	Spiral earthing made out of 6 SWG GI wire , 50mm Dia, 115 turns closely wound ,1.5 mt below ground, earth pit of 350 Dia., 1.5 mt depth including providing charcoal and salt for earthing at alternate layers of 300 mm depth (total 3 layers),connections etc. complete as required.	Set	34			
	<b>TOTAL SUB HEAD 21: OUTDOOR LIGHTING AS MENTIONED ABOVE</b>					
22.00	<b>SUBHEAD 22: LIGHTNING PROTECTION</b> <b>LIGHTNING PROTECTION</b>					
22.01	Supply and installation of one number earth pit with advance maintenance free Earthing System consisting of one Number UL Listed CPRI tested copper bonded steel electrode of minimum 13 mm dia. (as per IEC62561-2 ) With a minimum coating thickness of 250 microns and length of 3 meters, 25 kg/Electrode of earth enhancing compound (tested as per IEC-62561-7) fill the 100mm augered hole surrounding to the electrode , SS Universal Clamp of Size 175X50X3 mm for terminal Connection including Poly Propylene Heavy duty Pit cover including all accessories , excavation of earth, filling with back fill compound, and earth pit marking. The Complete installation shall be as per the drawing, technical specifications and as required	Set	30			
22.02	Providing and fixing of lightning 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.	Each	26			
22.04	Providing and fixing GI tape 20mm X 3 mm thick on parapet or surface of wall for lightning conductor as required. (For horizontal runs).	Metre	1000			
22.05	Providing and fixing GI tape 20mm X 3 mm thick on parapet or surface of wall for lightning conductor as required. (For vertical runs).	Metre	800			
22.06	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.	Each	30			
22.06	Providing and laying GI tape, 32 mm X 6 mm thick, from test joint upto earth electrode directly in ground as required.	Metre	600			
	<b>TOTAL SUBHEAD 22: LIGHTNING PROTECTION AS MENTIONED ABOVE</b>					

**SUMMARY OF COST ESTIMATE OF ELECTRICAL WORKS FOR CONSTRUCTION CONSTRUCTION OF HOSPITAL ,MEDICAL COLLEGE & RESIDENTIAL BLOCK AT NAHAN, HIMACHAL PRADESH HIMACHAL PRADESH**

S.No.	Description	Amount	In Figure (In Rs.)
1	SUB HEAD 1: HT SUB STATION		
2	SUB HEAD 2: MAIN LT PANEL		
3	SUBHEAD 3: DG SET & ACCESSORIES		
4	SUBHEAD 4: RISING MAINS		
5	SUB HEAD 5: MV PANELS		
6	SUB HEAD 6: MCB DISTRIBUTION BOARDS.		
7	SUBHEAD 7: UPS SYSTEM		
8	SUB HEAD 8: WIRING		
9	SUB HEAD 9: LIGHT FIXTURE AND FANS		
10	SUB HEAD 10: TELEPHONE SYSTEM		
11	SUBHEAD 11: CONDUITING FOR COMPUTER SYSTEM .		
12	SUB HEAD 12: CONDUITING FOR TV OUTLETS		
13	SUBHEAD 13: ADDRESSABLE & CONVENTIONAL FIRE ALARM		
14	SUB HEAD 14: PUBLIC ADDRESS SYSTEM		
15	SUB HEAD 15: CCTV SURVEILLANCE SYSTEM		
16	SUB HEAD 16: NURSE CALL SYSTEM		
17	SUBHEAD 17: INVERTER		
18	SUB HEAD 18: LIFTS		

19	<b>SUB HEAD 19: LT CABLES</b>	
20	<b>SUBHEAD 20: EARTHING</b>	
21	<b>SUBHEAD 21: OUT DOOR LIGHTING</b>	
22	<b>SUBHEAD 22: LIGHTNING PROTECTION</b>	
	<b>GRAND TOTAL FOR ALL ELECTRICAL WORKS</b>	



BILL OF QUANTITIES (BOQ) OF HVAC WORKS FOR TEACHING & HOSPITAL BLOCK at NAHAN MEDICAL COLLEGE, NAHAN-SIRMOUR (H.P.)							
Item No.	DSR/ NDSR	Description	Qty	Unit	Rate in Rs. (in Figure)	Rate in Rs. (in words)	Amount (Rs.)
1	2	3	4	5	6	7	8
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 6&7 and extend amount to column 8							
<b>A)</b>		<b>EQUIPMENTS</b>					
1.0		<b>WATER CHILLING UNITS.</b>					
1.1		Supply, installation, testing & commissioning of 80 TR (actual) capacity air cooled water chilling units as specified and shown in equipment schedule complete as per specifications with- a. Scroll Compressors with motors. b. Drive package. c. Mounting frames for all components d. Air 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. Bellows in suction and discharge line for vibration isolation of suitable capacity. k. Automatic capacity control arrangement. l. Lot Safety controls, flow switches, pressure gauge, thermometer etc. as per specifications. m. Suitable capacity motor with necessary insulation / suitable starter panel complete with all necessary switchgears and control complete as required. n. Necessary water drain & air purge valves wherever required. o. Necessary lubrication device as per specifications complete. p. Microprocessor based control panel complete with accessories as per specifications and BMS compatible BACNET / Modbus Protocol. q. Chiller shall be as per ECBC and ASHRAE 90.1 compliant.  Chilled Water Leaving temp. 44 deg. F Chilled Water Entering temp. 54 deg. F Chiller fouling factor = 0.0005 (FPS units) Ambient temperature = 38 deg. C					
		<b>Complete water chilling machine as above. (2W+1S)</b>	3	Nos			
2.0		<b>WATER CIRCULATION PUMPS</b>					
2.1		<b>Primary Chilled Water Pumps</b> Supply, installation, testing and commissioning of 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, EFF-1. b. Channel base with vibration isolators, coupling, coupling guard etc. c. Cladded insulation and anti corrosive coating inside and outside casing etc. of chilled water pump. 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. Bellows in suction and discharge line for vibration isolation of suitable capacity. The pump characteristic shall be as follows:					
2.1.1		Water flow rate= 192 USGPM Head = 20 Metre WC <b>Primary chilled water pumps as described above. (2W+1S)</b>	3	Nos			
3.0		<b>Hot Water Generator</b> Supply, installation, testing & commissioning of Electric Hot Water Generator for winter heating/monsoon reheating system. Hot water generator shall be with IP 55 protection and complete with controls, sensors, control cabling, piping and fittings, thermal insulation, base frame etc. as per specifications. HWG shall be BMS compatible with RS 485 communication port.					
3.1		Capacity : 100 KW Status : (1W+1S) Temp IN/OUT : 110/125 DegF	2	Nos.			
4.0		<b>AIR HANDLING UNITS</b>					
4.1		Supply, installation, testing and commissioning of sectional construction draw through type Air Handling Units (double skin type) of horizontal /2-tier as specified & shown in schedule of equipment complete with the following :-					

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
		a. Fan Section and canvas connection, Mixing Box, Thermal break profile. (double skin type) b. Centrifugal blower c. Coil section with cooling coil, heating coils as per specifications. d. Pre filters with filter section 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. 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, Insulation class 'F', Duty SI, EFF-1 drive motor, drive arrangement, guard etc. 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 3-way mixing cum diverting 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. l. Pre Filter : 90% down to 10 micron, Fine filter : 99% down to 3 micron (MERV-14), HEPA filter 99.97% down to 0.3 micron (MERV-17).					
4.1.1		AH-GF-01, 6F-01, 6F-02, 6F-03, 6F-04 - 3500cfm/ 6RD Cooling Coil/135 mm static (with pre & fine filter)	5	Nos.			
4.1.2		AH-GF-02 - 8000cfm/ 6RD Cooling Coil/80 mm static (with pre & fine filter)	1	Nos.			
4.1.3		AH-6F-05 - 12000cfm/ 6RD Cooling Coil/80 mm static (with pre & fine filter)	1	Nos.			
4.1.4		AH-6F-06 - 14000cfm/ 6RD Cooling Coil/80 mm static (with pre & fine filter)	1	Nos.			
4.2		<b>CEILING SUSPENDED UNITS</b> 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 :-					
		a. Fan Section and canvas connection, 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 drive motor IP 55, TEFC, Insulation class 'F', duty SI, EFF-1 drive arrangement, guard etc. 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 liner type motorised valve of required size fitted with modulating actuators having manual override facility alongwith proportional thermostat & wiring for interconnection with 1.5 sq. mm Cu Conductor multicore armoured complete as required. k. Pre Filter : 90% down to 10 micron, Fine filter : 99% down to 3 micron (MERV-14), HEPA filter 99.97% down to 0.3 micron (MERV-17).					
4.2.1		CS - (2F)-01 - 3000cfm/ 4RD Cooling Coil/70 mm static with pre & fine filters.	1	Nos.			
4.2.2		CS -GF-01 - 4800cfm/ 6RD Cooling Coil/70 mm static with pre & fine filters.	1	Nos.			
5.0		<b>VRV/VRF System for Teaching Block</b> <b>Variable Refrigerant Volume System</b> Supply, installation, testing and commissioning of Air cooled & inverter based modular type variable refrigerant volume type airconditioning system with R410a refrigerant suitable for 415 ± 10% , 50 Hz. The system shall have both heating and cooling modes. The system shall be BMS Compatible with BACnet / MODbus protocol. The unit shall consist of indoor units and external condensing units and other accessories as listed below complete in all respects as under:					
5.1		Outdoor Unit Supply, Lifting, shifting, positioning, installation, testing & Commissioning of outdoor units including topping R410a gas as per site requirements for qtls mentioned below complete as per specification and drawings.					

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
5.1.1		20 HP Heat Pump type including indoor outdoor connection kit.	6	No.			
5.1.2		32 HP Heat Pump type including indoor outdoor connection kit.	1	No.			
5.2		Supply, Lifting, shifting, positioning, installation, testing & Commissioning of 4-way cassette type indoor units for qty's mentioned below complete as per specification and drawings.					
5.2.1		1.5 TR	3	Nos.			
5.2.2		2.0 TR	5	Nos.			
5.2.3		2.5 TR	21	Nos.			
5.2.4		3.0 TR	8	Nos.			
5.2.5		4.0 TR	6	Nos.			
5.3		Supply, Installation, Testing & Commissioning of Imported Remote controllers (Corded) for operation of indoor units	43	Nos.			
5.4		Supply installation testing and commissioning of central controller suitable for complete installation. Which shall be BMS Compatible with BACnet / MODbus protocol.	1	Nos.			
5.5		Supply, Installation, commissioning of Interconnecting refrigerant pipe work (including refrigerant joints) with (19mm/13 mm thick) closed cell elastomeric nitrile rubber tubular insulation between each set of indoor & outdoor units as per specifications, all piping inside the room shall be properly supported with MS hanger & clamps.					
5.5.1		41.3 mm duly insulated with 19/13mm nitrile rubber	40	Rmt			
5.5.2		34.9 mm duly insulated with 19/13mm nitrile rubber	110	Rmt			
5.5.3		28.6 mm duly insulated with 19/13mm nitrile rubber	25	Rmt			
5.5.4		22.2 mm duly insulated with 19/13mm nitrile rubber	40	Rmt			
5.5.5		19.1 mm duly insulated with 19/13mm nitrile rubber	300	Rmt			
5.5.6		15.9 mm duly insulated with 19/13mm nitrile rubber	250	Rmt			
5.5.7		12.7 mm duly insulated with 19/13mm nitrile rubber	70	Rmt			
5.5.8		9.5 mm duly insulated with 19/13mm nitrile rubber	250	Rmt			
5.5.9		6.4 mm duly insulated with 19/13mm nitrile rubber	30	Rmt			
5.6		Drain Piping					
		Supply, installation, testing and commissioning of rigid PVC piping conforming to IS 4985 with solvent cement joints complete with fittings, supports as per specifications and duly insulated with 6 mm thick closed cell nitrile rubber.					
5.6.1		50 mm dia	20	Rmt			
5.6.2		40 mm dia	60	Rmt			
5.6.3		32 mm dia	40	Rmt			
5.6.4		25 mm dia	150	Rmt			
5.7		Supply Installation of powder coated MS Tray type support covered with GI sheet 300 mm wide for all exposed copper pipes running on terrace	150	Rmt			
5.8		Isolators					
		Weather proof box with MCCBs of suitable ratings near the outdoor units for isolation with RCCB 300 mA.	7	Nos.			
5.9		Control & Transmission Wiring					
		Supply, installation, testing and commissioning of control cum transmission wiring of 2 core x 1.5 sqmm copper in suitable PVC conduits between indoor and out door unit & between indoor unit and their corded remotes.	600	Rmt			
6.0		Air Washer Unit					
		Supply, installation, testing and commissioning of 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 fan, TFC 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.					
		Duty: Kitchen ventilation					
6.1		6000 CFM with 50mm static pressure	1	No.			

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
7.0		<b>Factory Fabricated Double Skin Scrubber</b> Supply, installation, testing and commissioning of factory fabricated Double Skinned Scrubber unit floor mounted type fabricated out of extruded aluminium section with 0.8mm pre-plasticized /pre-coated galvanised steel sheet outside & 0.6 mm plain Galvanised steel sheet inside with blower, blower section and blower motor TEFC type suitable for operation on 415 volts ± 10%, 50 Hz ± 5% AC supply, belt drive package, wet section & tank shall be made of 18 G tainless steel. The Scrubber shall be complete with spray arrangement with metallic viscous filter & face velocity across the section shall be limited to 152 MPM.					
		The scrubber shall have an efficiency of 90% & shall be complete with water circulation pump, GI B Class interconnecting piping & valves, viscous filters. The scrubber panels shall be insulated with 23 mm thick & 36 Kg/m <sup>3</sup> density PU foam. The scrubber shall conform to specification given in the tender & shall be of following capacity.					
		Duty: Kitchen Ventilation					
7.1		Scrubber - 6000 CFM, 50 mm St. Pr.	1	No.			
8.0		<b>Inline Fans/ Propeller Fans/ Ventilation fans</b>					
8.1		Supply, installation, testing and commissioning of <b>Inline Fans</b> 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.					
		<b>Inline Fans</b>					
		Duty: Toilet Exhaust					
8.1.1		Air Quantity :650 CFM Static Pressure :20 mm wg	28	Nos.			
		Duty: Toilet Exhaust					
8.1.2		Air Quantity :700 CFM Static Pressure :20 mm wg	8	Nos.			
		Duty: Toilet Exhaust					
8.1.3		Air Quantity :1000 CFM Static Pressure :20 mm wg	33	Nos.			
8.2		Supplying, installing, testing and commissioning of direct driven <b>Propeller fan</b> 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: <b>Propeller Fans</b>					
8.2.1		150 mm dia 1400 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	13	Nos			
8.2.2		300 mm dia 1400 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	7	Nos			
8.2.3		225 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	4	Nos			
		<b>Ventilation Fans</b>					
8.3		<b>Tube Axial Flow Fans</b> Supply, installation, testing and commissioning 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					
		Duty: Lift well pressurisation					
		Air Quantity : 8000 CFM Static Pressure : 25 mm wg	4	No.			
		Duty: Lift well pressurisation					
		Air Quantity : 8500 CFM Static Pressure : 25 mm wg	2	No.			
		Duty: Lift well pressurisation					
		Air Quantity : 9000 CFM Static Pressure : 25 mm wg	3	No.			
		Duty: Lift lobby pressurisation					
		Air Quantity : 12500 CFM Static Pressure : 25 mm wg	2	No.			
		Duty: Upper floor ventilation					
8.3.5		Air Quantity : 3000 CFM, 25 mm st. pr.	7	No.			
8.3.6		Air Quantity : 3500 CFM, 25 mm st. pr.	5	No.			

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
8.3.7		Air Quantity : 4000 CFM, 25 mm st. pr.	16	No.			
8.3.8		Air Quantity : 4500 CFM, 25 mm st. pr.	1	No.			
8.3.9		Air Quantity : 5500 CFM, 25 mm st. pr.	2	No.			
8.4		<b>Tube Axial Fans (Fire rated)</b> Supply, installation, testing and commissioning 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 with IP 55 protection, class H insulation and EFF-2 class. Fan shall be complete with vibration isolators, gravity louvers. Fan shall be 250 deg C, 2hrs fire rated.					
8.4.1		Duty: Upper floor ventilation Air Quantity : 3000 CFM, 25 mm st. pr.	7	No.			
8.4.2		Air Quantity : 3500 CFM, 25 mm st. pr.	5	No.			
8.4.3		Air Quantity : 4000 CFM, 25 mm st. pr.	2	No.			
8.4.4		Air Quantity : 4500 CFM, 25 mm st. pr.	1	No.			
8.4.5		Air Quantity : 5500 CFM, 25 mm st. pr.	2	No.			
8.4.6		Air Quantity : 8000 CFM, 25 mm st. pr.	7	No.			
9.0		<b>EXPANSION TANK</b>					
		Supply, installation, testing and commissioning of 1000 litres capacity expansion tank fabricated from 3mm MS sheet and having 19 mm thick aluminium foil faced nitrile rubber foam insulation covered with 28 Ga Aluminium sheet with man hole cover, drain, overflow, quick fill, water supply connections, valves and complete in all respects as per drawings and specification.					
9.1		1000 ltrs.	1	No.			
						SUB TOTAL	
<b>B)</b>		<b>PIPING</b>					
10.0	DSR	<b>INSULATED CHILLED WATER PIPING (Nitrile Rubber Insulation)</b>					
10.1	16.1	Supplying, laying/ fixing, testing and commissioning of following nominal sizes of chilled water piping inside the building (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges etc.) duly insulated with following closed cell elastometric nitrile rubber of class 'O' insulation applied by adhesive conforming to standard specifications and finally applying 0.63mm aluminium sheet cladding complete with type 3, grade 1 roofing felt strip (as per IS1322 as amended up to date ) at joints and repairing of damage to building etc. as per specifications and as required complete in all respect. Note:-The Pipes of sizes 150mm & below shall be M.S. 'C' class as per IS : 1239 and pipes size above 150mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35mm thick M.S. Sheet for pipes upto 350 mm dia. and from minimum 7mm thick MS sheet for pipes of 400 mm dia and above.					
10.1.1	16.2.7	125mm dia. (32 mm thick insulation)	80	RM			
10.1.2	16.2.8	100mm dia. (32 mm thick insulation)	80	RM			
10.1.3	16.2.9	80mm dia. (32 mm thick insulation)	180	RM			
10.1.4	16.2.10	65mm dia. (32 mm thick insulation)	50	RM			
10.1.5	16.2.11	50mm dia. (32 mm thick insulation)	70	RM			
10.1.6	16.2.12	40mm dia. (32 mm thick insulation)	120	RM			
10.1.7	16.2.13	32mm dia. (19 mm thick insulation)	10	RM			
10.1.8	16.2.14	25mm dia. (19 mm thick insulation)	10	RM			
11.0	DSR	<b>INSULATED VALVES &amp; STRAINERS</b>					
		Supplying, fixing, testing and commissioning of following valves, strainers, gauges in the chilled water plumbing, duly insulated to the same specifications as the connected piping and adequately supported as per specifications.					

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
11.1	16.7.1	<b>Butterfly valves (Manual) :</b> with C I body SS Disc, Nitrile Rubber Seal & O- Ring PN 16 pressure rating for chilled water/ hot water circulation as specified					
11.1.1	16.7.1.3	125 mm dia.	1	Nos			
11.1.2	16.7.1.4	100 mm dia.	16	Nos			
11.1.3	16.7.1.5	80 mm dia.	7	Nos			
11.1.4	16.7.1.6	65 mm dia.	3	Nos			
11.1.5	16.7.1.7	50 mm dia.	3	Nos			
11.1.6	16.7.1.8	40 mm dia.	18	Nos			
11.1.7	NDSR	32 mm dia.	1	Nos			
11.2	16.7.2	<b>Balancing valves :</b> with C I body flanged construction with EPDM coated disc with long pitch with protected out pipe insulation & PN 16 pressure rating for chilled / hot water circulation as specified.					
11.2.1	16.7.2.3	125 mm dia.	1	Nos			
11.2.2	16.7.2.4	100 mm dia.	5	Nos			
11.2.3	16.7.2.5	80 mm dia.	3	Nos			
11.2.4	16.7.2.6	65 mm dia.	1	Nos			
11.2.5	16.7.2.7	50 mm dia.	1	Nos			
11.2.6	16.7.2.8	40 mm dia.	6	Nos			
11.2.7	NDSR	32 mm dia.	1	Nos			
11.3	16.7.3	<b>Non return/Check valves :</b> with dual plate of C I body SS plates vulcanized NBR seal flanged end & PN 16 pressure rating for chilled / hot water circulation including insulation as specified.					
11.3.1	16.7.3.4	100 mm dia.	3	Nos			
11.4	16.7.4	<b>Y- strainers</b> of Ductile CI Body flanged ends with stainless steel strainer for chilled / hot water circulation including insulation as specified.					
11.4.1	16.7.4.4	100 mm dia.	3	Nos			
11.4.2	16.7.4.5	80 mm dia.	2	Nos			
11.4.3	16.7.4.6	65 mm dia.	1	Nos			
11.4.4	16.7.4.7	50 mm dia.	1	Nos			
11.4.5	16.7.4.8	40 mm dia.	6	Nos			
11.5	NDSR	Providing and fixing in position the following <b>Gate Valves</b> duly insulated as per specifications:					
11.5.1		50 mm dia Valves	2	Nos.			
11.5.2		40 mm dia Valves	2	Nos.			
11.5.3		32 mm dia Valves	2	Nos.			
11.6	NDSR	<b>Auto Air Vent Valves</b>					
11.6.1		15 mm dia	5	Nos.			
11.6.2		20 mm dia	5	Nos.			
11.6.3		25 mm dia	5	Nos.			
11.7	NDSR	<b>Ball Valve with strainer</b>					
11.7.1		25 mm	2	Nos.			
11.7.2		20 mm	2	Nos.			
11.8	NDSR	<b>Ball valve without strainer</b>					
11.8.1		25 mm	5	Nos.			
11.8.2		20 mm	5	Nos.			
12.0	NDSR	<b>DRAIN PIPING</b>					
12.1		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 with nitrile rubber insulation and finally applying 0.63 mm aluminium cladding as per specifications for condensate drain from air handling units and chillers etc.					

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
12.1.1		50 mm dia	50	RM			
12.1.2		40 mm dia	50	RM			
12.1.3		32 mm dia	50	RM			
12.1.4		25 mm dia	50	RM			
						SUB TOTAL	
<b>C)</b>		<b>AIR DISTRIBUTION</b>					
<b>13.0</b>	DSR	<b>GSS DUCTING</b>					
	16.12.1	Supply, installation, balancing and commissioning of factory fabricated GSS sheet metal rectangular ducting complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per approved drawings and specifications of following sheet thickness complete as required.					
13.1	16.12.1.4	Thickness 1.25 mm sheet	800	Sqm.			
13.2	16.12.1.3	Thickness 1.00 mm sheet	100	Sqm.			
13.3	16.12.1.2	Thickness 0.80 mm sheet	1200	Sqm.			
13.4	16.12.1.1	Thickness 0.63 mm sheet	1700	Sqm.			
<b>14.0</b>	NDSR	<b>ALUMINIUM DUCTING</b>					
14.1		Supply, fabrication, installation and testing of aluminium ducts in accordance with the approved shop floor drawing and specifications. Material should conform to IS 737 latest edition.					
14.1.1		22 gauge	600	Sqm.			
14.1.2		20 gauge	250	Sqm.			
<b>15.0</b>	DSR	<b>FIRE DAMPERS</b>					
	16.20	Supplying, fixing,testing and commissioning of fire dampers in supply air duct/main branch and return air path as and where required of required sizes i/c control wiring,the damper shall be motorized and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored. The spring return action shall be inbuilt mechanism and not externally mounted. The damper shall also be closed in the event of fire signal complete as required and as per specifications.					
15.1	16.20.1	Fire/smoke Damper	15	Sqm			
15.2	16.20.2	Actuator	20	sets			
<b>16.0</b>	DSR	<b>VOLUME CONTROL DAMPERS</b>					
	16.13	Supply, installation, testing and commissioning of GI volume control duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc, as per specifications.	15	Sqm.			
<b>17.0</b>	DSR	<b>CEILING DIFFUSERS</b>					
17.1	16.17	Supplying, fixing testing commissioning of supply air diffusers of powder coated aluminium with aluminium volume control dampers with anti smudge ring & removable core.	20	Sqm.			
17.2	16.18	Supplying, fixing testing commissioning of Return air diffusers of powder coated aluminium without volume control dampers with anti smudge ring & removable core.	20	Sqm.			
<b>18.0</b>	DSR	<b>GRILLES</b>					
		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.					
18.1	16.15	Supplying & fixing of powder coated extruded aluminium Supply Air Grilles with aluminium volume control dampers as per specifications.	8	Sqm.			
18.2	16.16	Supplying & fixing of powder coated extruded aluminium Return Air Grilles with louvers but without volume control dampers complete as required.	5	Sqm.			
<b>19.0</b>	NDSR	<b>LINEAR GRILLES</b>					
		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.	5	Sqm.			
<b>20.0</b>	NDSR	<b>GRILLE DAMPERS</b>					
		Supply, installation and balancing of aluminium construction volume control dampers for linear grills.	5	Sqm.			
<b>21.0</b>	NDSR	<b>LAMINAR FLOW DIFFUSERS</b>					

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
		Providing & fixing of 18swg aluminium powder coated non-respiratory 100% air tight laminar flow diffusers. LFDs shall have 50% perforation. The perforated front face is operable hinge type complete with key operated opposed blade dampers from front.					
21.1		Size: 1200 x 600	25	Nos.			
<b>22.0</b>	<b>NDSR</b>	<b>FRESH AIR GRILLES WITH BIRD SCREEN</b>					
		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.	15	Sqm.			
<b>23.0</b>	<b>NDSR</b>	<b>Pan type Humidifier</b>					
		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.					
23.1		6 KW	8	Sets			
<b>24.0</b>	<b>NDSR</b>	<b>MONSOON REHEAT ARRANGEMENT FOR OTs AND ICUs</b>					
		Supply, installation, testing & commissioning of monsoon reheating arrangements fixed in ducts/ plenums complete with strip heaters, fixing frame work, insulators, fire protection insulation in duct, controls such as heating thermostats, humidistats etc. The heaters banks shall be controlled by independent thermostats/ humidistats through electro magnetic type contactors and safety thermostats/ geyserstats as specified complete with wiring for interconnections with 1.5 sq.mm copper conductor multi core armoured cable. The heater capacity shall be as per schedule of equipment and specifications, drawing etc.					
24.1		3KW(1.5 KW x 2 banks)	5	Sets			
24.2		6 KW(3 KW x 2 banks)	3	Sets			
<b>25.0</b>		<b>DUCT INSULATION</b>					
		Supplying and fixing of following thickness duly laminated aluminum foil of mat finish closed cell Nitrile rubber (class'O') insulation on existing duct after applying two coats of cold setting adhesive (CPR X compound). The joints shall sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required.					
25.1.1	16.23.1	19 mm	1200	Sqm.			
25.1.2	16.23.2	25 mm	200	Sqm.			
<b>26.0</b>		<b>ACOUSTIC</b>					
		<b>DUCT ACOUSTIC LINING</b>					
		Supply and fixing of acoustic lining of supply air duct and plenum with 25 mm thick resin bonded glass wool having density of 32 kg/m <sup>3</sup> , with 25 mm X 25 mm GI section of 1.25 mm thick, at 600 mm centre to centre covered with Reinforced Plastic tissue paper and 0.5 mm thick perforated aluminum sheet fixed to inside surface of ducts with cadmium plated nuts, bolts, stick pins, CPRX compound etc. complete as required and as per specifications.	100	Sqm.			
		<b>Note:-</b> No lining inside supply / return duct or plenum shall be done if the airside system is equipped with fine, hepa filters.					
						SUB TOTAL	
<b>D)</b>		<b>ELECTRICAL</b>					
<b>27.0</b>	<b>NDSR</b>	<b>MAIN HVAC PANEL</b>					
		Supply, installation, testing and commissioning of A/C Panel, Type Tested Assembly (TTA), as per IEC 61439-1&2 cubicle type, totally enclosed, free standing type, dust, damp and vermin proof panel, powder coated, made up of CRCA sheet, complete with aluminum busbars, danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, necessary interlocking, and having incoming and outgoing switchgears as mentioned below. Complete as per technical specifications and as required.					
		<b>Note :</b>					
i		All ACBs shall have spare contacts					
ii		All ACBs should have Ics =Icu=50 KA for 1 sec					
iii		All MCCBs shall have Ics=Icu=100%					



Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
iv		Separate fault indication for O/L, S/C, & E/F to be provided on Panel Door for all outgoing having microprocessor based MCCB					
v		All indication Lamps will be LED Type.					
vi		All starters of this panel shall be provided with digital ampere meter with suitable CTs, thermal overload relay, inbuilt/separate single phase preventer, contactors, timers, spare NO-NC contacts, push buttons, ON, OFF, TRIP indication (LED Type) and potential free contacts and relay for interlocking to FDA etc. complete as required.					
vii		100 VA transformer 220v/24v AC for control wiring with 10 nos. 6A SP MCCB 10 KA in all AHU panel is also in the scope of supply					
<b>27.1</b>		<b>Main/Emergency Air-conditioning MCC in plant room</b>					
A		<b>INCOMER</b>					
i		<b>2 No. MCCB Panels each having following:</b> 630 Amp 415 volts, 50 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release. R, Y & B Phase indicating lamps (LED type) with 6A control SP MCCBs. Separate fault indication for O/L, S/C, & E/F to be provided on Panel Door. Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers. Digital ammeter with selector switch with one set Suitable C.Ts.					
B		<b>BUSBARS</b> 800 Amps TPN busbars of aluminium with temperature rise of 40 degree celsius over and above ambient temperature of 45 degree celsius.					
C		<b>Bus Coupler</b> <b>1 No. MCCB Panels each having following:</b> 630 Amp 415 volts, 50 KA FP MCCB with microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection release. R, Y & B Phase indicating lamps (LED type) with 6A control SP MCCBs. 1 Set of Digital Ammeter with ASS and CTs.					
D		<b>OUTGOING</b>					
i		<b>4 Nos. MCCB feeder as per following details/ specifications: For Water Chilling Machines and AHU floor panel</b> 320 Amp, 415 volts, 50 KA, Four Pole, MCCB with Microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCCBs to indicate ON, OFF, TRIP. Digital ammeter with selector switch with one set Suitable C.Ts.					
ii		<b>3 Nos. MCCB feeder as per following details/ specifications: for Hot water Generator</b> 250 Amp, 415 volts, 50 KA, Four Pole, MCCB with Microprocessor based release having variable current settings of O/L, S/C & inbuilt E/F protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCCBs to indicate ON, OFF, TRIP. Digital ammeter with selector switch with one set of suitable C.Ts.					
iii		<b>2 Nos. MCCB feeder as per following details/ specifications: For AHU floor panels</b> 125 Amp 415 volts, 50 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection. Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps (LED Type) with 6A protection MCCBs to indicate ON, OFF, TRIP. Digital ammeter with selector switch with one set Suitable C.Ts.					
iv		<b>2 Nos. MCCB feeder as per following details/ specifications: For AHU floor panels</b>					

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
		63 Amp 415 volts, 50 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection.					
		Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP.					
		Digital ammeter with selector switch with one set Suitable C.Ts.					
v		<b>4 Nos. MCCB feeder as per following details/specifications:</b>					
		32 Amp 415 volts, 50 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection.					
		Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP.					
		Digital ammeter with selector switch with one set Suitable C.Ts.					
		3 Phase, fully automatic DOL starter for 5 HP chilled water pumps.					
vi		<b>3 Nos. MCCB feeder as per following details/specifications:</b>					
		32 Amp 415 volts, 50 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection.					
		Extended rotary operating mechanism with door interlock, defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps (LED Type) with 6A protection MCBs to indicate ON, OFF, TRIP.					
		Digital ammeter with selector switch with one set Suitable C.Ts.					
		<b>Main HVAC panel Complete as above</b>	1	Panel			
27.2	NDSR	<b>AHU Distribution Panels</b> Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, wall mounted/Free standing type, powder coated, 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, and having following incoming and outgoing switchgears complete as per technical specification and as required.					
		<b>NOTE</b>					
i		All MCCBs shall have Ics=Icu=100%					
ii		100 VA transformer 220v/24v AC for control wiring with 10 nos.					
		6A SP MCB 10 KA in all AHU panel is also in the scope of supply.					
iii		All starters shall be provided with digital ampere meter with suitable C.Ts, thermal overload relay, inbuilt/separate single phase preventer, contactors, Timers, spare NO-NC contacts, Push Buttons ON, OFF, TRIP indication (LED Type) and potential free Contact & relays for interlocking to FDA etc. complete as required.					
iv		All indication Lamps will be LED Type.					
27.2.1		<b>AHP- (2F)-01</b>					
		<b>INCOMER :</b>					
		1 nos. 63 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection.					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		R/Y/G phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		Digital ammeter with selector switch with one set Suitable C.Ts.					
		<b>Bus Bar</b>					
		300 A TPN Aluminium bus bar 415V, 50 Hz.					
		<b>OUTGOINGS :</b>					
i		3 set - 32 A, 415 volts, 10 KA C-Curve, Four Pole, Miniature Circuit Breaker.					
		3 Phase, fully automatic DOL Starter for 5 HP Scrubber and Air washer fan motor as required.					
ii		1 set - 16 A, 415 volts, 10 KA C-Curve, Four Pole, Miniature Circuit Breaker.					
		3 Phase, fully automatic DOL Starter for 3 HP CSU motor as required.					

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
		<b>Complete panel as above</b>	1	Panel			
27.2.2		<b>AHP- GF-01</b> <b>INCOMER :</b> 1 nos. 100 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection.  Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication. 1 No. 0 to 500 V Digital voltmeter with selector switch. Digital ammeter with selector switch with one set Suitable C.Ts.					
		<b>Bus Bar</b> 300 A TPN Aluminium bus bar 415V, 50 Hz.					
		<b>OUTGOINGS :</b> 3 set - 32 A, 415 volts, 10 KA C- Curve, Four Pole, Miniature Circuit Breaker.					
i		3 Phase, fully automatic DOL Starter for 7.5 HP AHU motor as required.					
ii		4 set - 32 A, 415 volts, 10 KA C- Curve, Four Pole, Miniature Circuit Breaker for Humidifier/ Monsoon Reheater as required.					
iii		2 set - 16 A, 415 volts, 10 KA C-Curve, Four Pole, Miniature Circuit Breaker.					
		3 Phase, fully automatic DOL Starter for 1.5 HP Ventilation Fan motor as required.					
		<b>Complete panel as above</b>	1	Panel			
27.2.3		<b>AHP-GF-02</b> <b>INCOMER :</b> 1 nos. 63 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection.  Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication. 1 No. 0 to 500 V Digital voltmeter with selector switch. Digital ammeter with selector switch with one set Suitable C.Ts.					
		<b>Bus Bar</b> 300 A TPN Aluminium bus bar 415V, 50 Hz.					
		<b>OUTGOINGS :</b> 2 set - 32 A, 415 volts, 10 KA C-Curve, Four Pole, Miniature Circuit Breaker.					
i		3 Phase, fully automatic DOL Starter for 5 HP CSU motor as required.					
ii		1 set - 16 A, 415 volts, 10 KA C-Curve, Four Pole, Miniature Circuit Breaker. 3 Phase, fully automatic DOL Starter for 3 HP Ventilation fan motor as required.					
		<b>Complete panel as above</b>	1	Panel			
27.2.4		<b>AHP-1F-01, 2F-01, 3F-01, 4F-01, 5F-01</b> <b>INCOMER :</b> 1 nos. 63 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection.  Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication. 1 No. 0 to 500 V Digital voltmeter with selector switch. Digital ammeter with selector switch with one set Suitable C.Ts.					
		<b>Bus Bar</b> 300 A TPN Aluminium bus bar 415V, 50 Hz.					
		<b>OUTGOINGS :</b> 4 set - 16 A, 415 volts, 10 KA C-Curve, Four Pole, Miniature Circuit Breaker.					
i		3 Phase, fully automatic DOL Starter for 1.5/3 HP Ventilation fan motor as required.					
		<b>Complete panel as above</b>	5	Panel			

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
27.2.5		<b>AHP- 6F-01</b> <b>INCOMER :</b> 1 no 320 Amp, 415 volts, 35 KA, Four Pole MCCB Microprocessor based release with variable current settings of O/L, S/C, E/F.  Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication. 1 No. 0 to 500 V Digital voltmeter with selector switch. Digital ammeter with selector switch with one set Suitable C.Ts.					
		<b>Bus Bar</b> 500 A TPN Aluminium bus bar 415V , 50 Hz.					
		<b>OUTGOINGS :</b> 2 Set- 63 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection.					
	i	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers. 3 Phase, fully automatic Star Delta Starter for 10 HP AHU motor as required.					
	ii	5 set - 32 A, 415 volts, 10 KA C- Curve, Four Pole, Miniature Circuit Breaker. 3 Phase, fully automatic DOL starter for 5/7.5 HP AHU/Pressurisation Fan motor as required.					
	iii	10 set - 32 A, 415 volts, 10 KA C- Curve, Four Pole, Miniature Circuit Breaker for Humidifier/Monsoon Reheater as required.					
	iv	4 set - 16 A, 415 volts, 10 KA C- Curve, Four Pole, Miniature Circuit Breaker. 3 Phase, fully automatic DOL starter for 1.5/3 HP Ventilation/Pressurisation Fan motor as required.					
		<b>Complete panel as above</b>	1	Panel			
27.2.6		<b>AHP- 6F-02</b> <b>INCOMER :</b> 1 nos. 125 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection.  Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers. R,Y&B phase indicating lamp (LED type) with 6A control SP MCB & ON, OFF, TRIP Indication. 1 No. 0 to 500 V Digital voltmeter with selector switch. Digital ammeter with selector switch with one set Suitable C.Ts.					
		<b>Bus Bar</b> 300 A TPN Aluminium bus bar 415V , 50 Hz.					
		<b>OUTGOINGS :</b> 2 Set- 63 Amp 415 volts, 35 KA FP MCCB with thermal magnetic release having variable current settings of O/L, S/C protection.					
	i	Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers. 3 Phase, fully automatic Star Delta Starter for 12.5 HP AHU motor as required.					
	ii	1 set - 32 A, 415 volts, 10 KA C- Curve, Four Pole, Miniature Circuit Breaker. 3 Phase, fully automatic DOL starter for 5 HP Pressurisation Fan motor as required.					
	iii	2 set - 32 A, 415 volts, 10 KA C- Curve, Four Pole, Miniature Circuit Breaker for Humidifier/Monsoon Reheater as required.					
	iv	6 set - 16 A, 415 volts, 10 KA C-Curve, Four Pole, Miniature Circuit Breaker. 3 Phase, fully automatic DOL Starter for 1.5/3 HP Ventilation fan motor as required.					
		<b>Complete panel as above</b>	1	Panel			
28.0		<b>CABLING</b>					
28.1	<b>NDSR</b>	<b>LT CABLES</b>					
		Supply of following sizes of 1.1 kV grade multicore aluminium conductor PVC sheathed armoured XLPE cable as per IS 7098.					
28.1.1		3.5 Core 25 Sqmm.	50	Metre			

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
28.1.2		3.5 Core 35 Sqmm.	200	Metre			
28.1.3		3.5 Core 50 Sqmm.	50	Metre			
28.1.4		3.5 Core 95 Sqmm.	100	Metre			
28.1.5		3.5 Core 150 Sqmm.	100	Metre			
28.1.6		3.5 Core 185Sqmm.	180	Metre			
28.1.7		3.5 Core 240 Sqmm.	100	Metre			
28.1.8		3.5 Core 300 Sqmm.	50	Metre			
28.1.9		4 Core 16 Sq mm	50	Metre			
28.1.10		4 Core 10 Sq mm	100	Metre			
28.1.11		4 Core 6 Sq mm	100	Metre			
28.1.12		4 Core 4 Sqmm.	100	Metre			
28.1.13		3 Core 6 Sqmm.	50	Metre			
28.1.14		3 Core 4 Sqmm.	250	Metre			
28.2	7.8	Laying and fixing of one number PVC insulated and PVC sheathed/ XLPE poxe cable of 1.1 KV grade of following size on cable tray as required.					
28.2.1	7.8.1	Up to 35 sq.mm (clamped with 1mm thick saddle)	900	Metre			
28.2.2	7.8.2	Above 35 Sq mm and upto 95 Sq mm (clamped with 25 X 3mm MS flat clamp).	150	Metre			
28.2.3	7.8.3	Above 95 Sq mm and up to 185 Sq mm ( clamped with 25/40x3mm MS flat clamp ) .	280	Metre			
28.2.4	7.8.4	Above 185 Sq mm and up to 400 Sq mm ( clamped with 40x3mm MS flat clamp ) .	150	Metre			
28.3	9.1	Supplying and making end termination with brass compression gland and Aluminium lugs for following sizes of PVC insulated and PVC sheathed / XLPE aluminium conductor cable of 1.1 KV grade as required.					
28.3.1	9.1.20	3.5 Core 25 Sqmm.	10	Each			
28.3.2	9.1.21	3.5 Core 35 Sqmm.	40	Each			
28.3.3	9.1.22	3.5 Core 50 Sqmm.	10	Each			
28.3.4	9.1.24	3.5 Core 95 Sqmm.	20	Each			
28.3.5	9.1.26	3.5 Core 150 Sqmm.	10	Each			
28.3.6	9.1.27	3.5 Core 185 Sqmm.	15	Each			
28.3.7	9.1.29	3.5 Core 240 Sqmm.	10	Each			
28.3.8	9.1.30	3.5 Core 300 Sqmm.	6	Each			
28.3.9	9.1.33	4 Core 16 Sq mm	20	Each			
28.3.10	9.1.32	4 Core 10Sq mm	20	Each			
28.3.11	NDSR	4 Core 6 Sq mm	25	Each			
28.3.12	NDSR	4 Core 4 Sqmm.	50	Each			
28.3.13	NDSR	3 Core 6 Sqmm.	25	Each			
28.3.14	NDSR	3 Core 4 Sqmm.	50	Each			
29.0	NDSR	CABLE TRAYS					
		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					
29.1		300 mm widthx50 mm deep x1.6 mmthickness	100	Mtr			
29.2		200 mm widthx50 mm deep x1.6 mmthickness	100	Mtr			
29.3		150 mm widthx50 mm deep x1.6 mmthickness	150	Mtr			
29.4		100 mm widthx50 mm deep x1.6 mmthickness	50	Mtr			
30.0		Fabrication and Installing following size of Ladder type M.S Cable tray including Horizontal and vertical bends, reducers, tee, crossmember and other accessories as required and duly Suspended from the ceiling with M.S 12 mm rod suspenders and including painting etc. as required.					
30.1		450 mm width x 62.5 mm depth x 2.0 mm thickness	100	Mtr			
30.2		600 mm width x 62.5 mm depth x 2.0 mm thickness	100	Mtr			
31.0		EARTHING					

Item No. 1	DSR/ NDSR 2	Description 3	Qty 4	Unit 5	Rate in Rs. (in Figure) 6	Rate in Rs. (in words) 7	Amount (Rs.) 8
31.1	5.4	Earthing with GI plate 600mmX600mmX6mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe of 2.7 meter long etc. with charcoal/coke and salt as required.	2	Set			
31.2	5.15	Providing and fixing 25mmX5mm GI strip on surface or in recess for connections etc. as required.	100	Mtr			
31.3	NDSR	Providing and fixing GI earth strip on walls/ trenches complete as per specifications and as required.					
31.3.1		38mmx 6mm	80	Mtr			
31.3.2		25mm x 3mm	80	Mtr			
31.4		Providing and fixing earth wire of complete as per specifications as required.					
31.4.1	5.18	6 SWG wire	100	Mtr			
31.4.2	NDSR	8 SWG wire	300	Mtr			
<b>32.0</b>	<b>NDSR</b>	<b>CONTROL CABLING</b>					
		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					
32.1		10 core cable	500	Mtr			
32.2		8 core cable	2000	Mtr			
32.3		6 core cable	100	Mtr			
32.4		3 core cable	100	Mtr			
32.5		2 core cable	200	Mtr			
<b>33.0</b>	<b>NDSR</b>	<b>CONTROL CONSOLE/DESK</b>					
		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/ water pumps, Ex. blower, Fans etc., Hot water generator 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.					
		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, Ex blower, Fans etc.					
		Hoister 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 (excluding 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.					
		<b>Complete Panel As above for Following blocks</b>					
		<b>For Plant room</b>	1	Panel			
						SUB TOTAL	

	<b><u>Teaching &amp; Hospital Block at Nahan (H.P.)</u></b>		
	<b><u>SUMMARY SHEET FOR HVAC WORKS</u></b>		
<b>SECTION</b>	<b>DESCRIPTION OF WORK</b>		<b>AMOUNT(Rs.)</b>
<b>A</b>	<b>EQUIPMENTS</b>		
<b>B</b>	<b>PIPING</b>		
<b>C</b>	<b>AIR DISTRIBUTION</b>		
<b>D</b>	<b>ELECTRICAL</b>		
	<b>GRAND TOTAL</b>		

Construction of Dr. Y. S. Parmar Government Medical College at Nahan, District Sirmour, Himachal Pradesh & Pt. Jawaharlal Nehru Govt. Medical College at Chamba, District Chamba, Himachal Pradesh

Name of Contractor/Firm					
SR.NO	Name of Head	Total Quoted Amount (In Indian Rupees)	Discount if any(%)	Discounted Value	Amount after discount(Rs.)
1	CIVIL-NAHAN				
3	PHE-NAHAN				
5	FIRE-NAHAN				
7	ELECTRICAL-NAHAN				
9	HVAC-NAHAN				
	Total in Figures (in Rs.)				