

Project Name:Construction of Animal House, IIM Jammu.

BOQ for Civil Work

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
1.00	EARTH WORK					
1.01	Earth work in excavation by mechanical means (Hydraulic excavator)/manual means over areas (exceeding 30cm in depth, 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead up to 50m and lift up to 1.5m, disposed earth to be levelled and neatly dressed.					
a)	All kinds of soil	780.00	cum			
b)	Ordinary rock	265.00	cum			
c)	Hard rock (blasting prohibited)	265.00	cum			
1.02	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift up to 1.5 m, including getting out the excavated soil and disposal of surplus excavated soil as directed, within a lead of 50 m.					
a)	All kinds of soil.	487.00	cum			

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1	2	3	4	5	6	7
1.03	Filling available excavated earth (excluding rock) in trenches, plinth, sides of foundations etc. in layers not exceeding 20cm in depth, consolidating each deposited layer by ramming and watering, lead up to 50 m and lift up to 1.5 m.	2297.00	cum			
1.04	Extra for every additional lift of 1.5 m or part there of in.					
a)	All kinds of soil.					
i)	1.5 to 3.0m	131.40				
ii)	3.0 to 4.5m	48.36				
1.05	Supplying and filling in plinth with river sand under floors including, watering. ramming consolidating and dressing complete.	149.00	cum			
1.06	Extra for disposal of excavated earth for additional lead beyond 50m or part thereof upto 9 such additional leads					
a)	All kinds of soil	1776.00	cum			
1.07	Supplying and stacking of good earth at site including royalty and carriage up to 1 km (earth measured in stacks will be reduced by 20% for payment).	600.00	Cum			
	Total					

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2.00	Concrete Work					
2.01	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level:					
a)	1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	5.00	cum			
b)	1:4:8 (1 Cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).	91.00	cum			
c)	1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size)	154.00	cum			
2.02	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets etc. up to floor five level, excluding the cost of centering, shuttering and finishing:					
a)	1:2:4 (1 Cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)	4.00	cum			
2.03	Providing and laying damp-proof course 40mm thick with cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 12.5mm nominal size).	100.00	sqm			

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3.00	REINFORCED CEMENT CONCRETE					
3.01	Providing and laying in position machine batched, machine mixed and machine vibrated design mix cement concrete of specified grade for reinforced cement concrete work including pumping of concrete to site of laying but excluding the cost of centering, shuttering, finishing and reinforcement. including Admixtures in recommended proportions as per IS 9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in-charge. M-25 grade reinforced cement concrete by using 380 kg. of cement per cum of concrete. All work up to floor V level.	1861.00	cum			
3.02	Add or deduct for providing richer or leaner mixes respectively at all floor levels.					
i)	Providing M-30 grade concrete by using 400kg of cement per cum of concrete instead of M-25 grade B.M.C/ R.M.C..	398.00	cum			
3.03	Centering and shuttering including strutting, propping etc. and removal of form for:					
a)	Foundations, footings, bases of columns, etc. for mass concrete.	470.00	sqm			

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b)	Walls (any thickness) including attached pilasters, buttersesses, plinth and string courses etc.	660.00	sqm			
c)	Suspended floors, roofs, landings, balconies and access platform.	3112.00	sqm			
d)	Shelves (Cast in situ)	28.00	sqm			
e)	lintels, beams, plinth beams. girders. bressumers and cantilevers.	4014.00	sqm			
f)	Columns, Pillars, Piers, Abutments, Posts and Struts.	1863.00	sqm			
g)	Stairs, (excluding landings) except spiral-staircases	285.00	sqm			
h)	Small lintels not exceeding 1.5m clear span, moulding as in cornices, window sills, string courses, bands, copings, bed plates, anchor blocks and the like.	38.00	sqm			
i)	Edges of slabs and breaks in floors and walls.					
i)	Under 20 cm wide	50.00	metre			
ii)	Above 20 cm wide	10.00	sqm			
3.04	Extra for additional height in centering, shuttering wherever 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)					

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a)	Suspended floors, <i>roofs</i> , landings, beams and balconies (Plan area to be measured).	3047.00	sqm			
3.05	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	278565.00	Kg			
3.06	Deduct for using less cement than the quantity as provided in the item of batch mix concrete/RMC as arrived as per mix design.	10.00	Qtl			
	Total					

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4.00	BRICK WORK					
4.01	Brick work with F.P.S. bricks of class designation 75 in foundation and plinth in:					
a)	Cement mortar 1:6 (1 cement: 6 coarse sand)	144.00	cum			
4.02	Brick work with F.P.S. bricks of class designation 75 in superstructure above plinth level up to floor V level in all shapes and sizes in :					
a)	Cement mortar 1:6 (1 cement: 6 coarse sand)	688.00	cum			
4.03	Half brick masonry with F.P.S. brick of class designation 75 in foundations and plinth in.					
a)	cement mortar 1:4 (1 cement: 4 coarse sand)	10.00	sqm			
4.04	Half brick masonry with F.P.S. bricks of class designation 75 in superstructure above plinth level up to floor V level.					
a)	Cement mortar 1:4 (1 cement :4 coarse sand)	5629.00	sqm			
4.05	Extra for providing and placing in position 2 Nos. 6mm dia. M.S. bars at every third course of half brick masonry (with F.P.S. bricks).	5639.00	sqm			

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1	2	3	4	5	6	7
4.06	Brick edging 7cm wide 11.4cm. deep to plinth protection with bricks of class designation 75 including grouting with cement mortar 1:4 (1 cement : 4 fine sand)	288.00	Metre			
	Total					

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1	2	3	4	5	6	7
5.00	DOORS, WINDOWS AND FITTINGS					
5.01	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS : 1285, fixed with rawl plugs and screws or with fixing clips, or with expansion hold fasteners including necessary filling up of gaps at junctions, at top, bottom and sides with required EPDM rubber/neoprene felt etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing and paneling to be paid for separately) :					
5.01.1	For fixed portion					
a)	Powder coated aluminium (minimum thickness of powder coating 50 micron)	2378.00	kg			

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1	2	3	4	5	6	7
5.01.2	For shutters of doors, windows & ventilators including providing and fixing hinges/pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately).					
a)	Powder coated aluminium (minimum thickness of powder coating 50 micron)	2296.00	kg			
5.02	Providing and fixing anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868. Minimum anodic coating of grade AC 15) sub frame work for windows and ventilators a with extruded built up standard tubular sections of approved make conforming to IS: 733 and IS : 1285 fixed with rawl plugs and stainless steel screws etc.	777.00	kg			

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1	2	3	4	5	6	7
5.03	Providing and fixing pressed steel door frames conforming to IS: 4351 manufactured from commercial mild steel sheet of 1.25 mm thickness including hinges jamb, lock jamb, bead and if required angle threshold of mild steel angle of section 50x25mm, or base ties of 1.25mm pressed mild steel welded or rigidly fixed together by mechanical means, adjustable lugs with split end tail to each jamb including steel butt hinges 2.5mm thick with mortar guards, lock strike-plate and shock absorbers as specified and applying a coat of approved steel primer after pre-treatment of the surface as directed by Engineer-in-charge:					
a)	Profile C	10.00	metre			
5.04	Providing and fixing 12mm thick prelaminated particle board flat pressed three layer or graded wood particle board conforming to IS: 12823 Grade I Type II, in panelling fixed in aluminum doors, windows shutters and partition frames with C.P. brass / stainless steel screws etc. complete as per architectural drawings and directions of engineer-in-charge.					
a)	Pre-laminated particle board with decorative lamination on both sides.	10.00	Sqm			

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1	2	3	4	5	6	7
5.05	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge. (Cost of aluminium snap beading shall be paid in basic item) :					
a)	With float glass panes of 5.50 mm thickness	56.00	sqm			
5.06	Providing and fixing double action hydraulic floor spring of approved brand and manufacture IS : 6315 marked, for doors including cost of cutting floors as required, embedding in floors and cover plates with brass pivot and single piece M.S. sheet outer box with slide plate etc. complete as per the direction of Engineer-in-charge.					
a)	With brass cover plate	2.00	each			
5.07	Filling the gap in between aluminium frame & adjacent RCC/ Brick/ Stone work by providing weather silicon sealant over backer rod of approved quality as per architectural drawings and direction of Engineer-in-charge complete.					
a)	Upto 5mm depth and 5 mm width	741.00	Metre			

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1	2	3	4	5	6	7
5.08	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.	383.00	Sqm			
5.09	Providing and fixing powder coated aluminium grills (minimum thickness of powder coating 50 micron) of required size and approved pattern and quality made out with special extruded sections conforming to relevant IS Codes, fixed with rawl plugs and screws or with expansion hold fasteners fixed with suitable means as approved and as directed by Engineer in Charge including C.P. brass / stainless steel screws, all complete as per architectural drawings/ directions of Engineer-in-charge.	1294.00	kg			

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1	2	3	4	5	6	7
5.10	Providing and fixing ISI marked flush door shutters conforming to IS: 2202 (Part I) non-decorative type, core of block board construction with frame of 1st class hard wood and well matched commercial 3 ply veneering with vertical grains or cross bands and face veneers on both faces of shutters :					
a)	35 mm thick including ISI marked Stainless Steel butt hinges with necessary screws.	129.00	sqm			
5.11	Extra for providing lipping with 2nd class teak wood battens 25 mm minimum depth on all edges of shutters (over all area of door shutter to be measured) over item no. 5.09 above.	129.00	sqm			
5.12	Extra for providing vision panel not exceeding 0.1 sqm in all type of flush doors (cost of glass excluded) (overall area of door shutter to be measured) :					
a)	Rectangular or square.	65.00	sqm			
5.13	Extra for providing frosted glass panes 4 mm thick instead of ordinary float glass panes 4 mm thick in doors, windows and clerestory window shutters. (Area of opening for glass panes excluding portion inside rebate shall be measured).	5.00	sqm			

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1	2	3	4	5	6	7
5.14	Providing glass panes, with wooden fillets wherever necessary.					
a)	Float glass panes of thickness 4 mm	5.00	Sqm			
5.15	Extra for Providing etching on glass panes in doors, windows shutters, partition etc in desired pattern complete as per drawing and as directed.(Area of etching shall be measured for payment)	5.00	sqm			
5.16	Providing & Fixing decorative high pressure laminated sheet of plain / wood grain in gloss / matt / suede finish with high density protective surface layer and reverse side of adhesive bonding quality conforming to IS : 2046 Type S including cost of adhesive of approved quality					
a)	1.0 mm thick.	258.00	sqm			

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

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	The shutter is suitable for mounted on the door frame, as per the item given below.. Both frame and shutter shall be fitted with fire & smoke intumescent seal of Viper or equivalent make of size 20 x 4mm on all the three sides except bottom. The pasting of the ply/veneer/laminate should be done using automatic machine and should be free from any nails or perforations. The board shall be Resistant to vermin, mould growth, minor impact, abrasion and short term water attack. The shutter shall be fixed with the frame with the help of SS 304 grade ball bearing hinges of size 100x76x2mm with necessary screws and making cut out for vision panel. Provisions/reinforcement for fixing all fixtures shall be built in on the door prior to the supply.					
a)	Single/Double Shutter	20.00	sqm			

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1	2	3	4	5	6	7
5.18	Providing and fixing door frames as per BS: 476 part 22, IS:3614 Part II as per the prototype certified by CBRI Roorkee made out of 2nd class Teak Wood (Ivory Coast)frame of section 140x65mm for fire resistant doors of 120 minutes fire rating, with heat activated intumescent fire seal strips of size 20 x 4 mm(for smoke sealing) provided in grooves on all three sides of the frame with one coat of approved brand of fire retardant primer including two coats of fire retardant paint FR 881or equivalent un thinned on cleared hard wood surface of door frames (@3.5 sq.m. per litre per coat) including preperation of base surface as per recommendations of manufacturer to make the surface fire retardant, including fixing the frame with 8 nos. 100 mm long, 10 mm dia metal dash fastners complete as per directions of the Engineer in charge NOTE:- cost of fire seal strips, dash fastners are included in the item. Nothing extra shall be paid if size of any component of material exceeds the limit mentioned in the item.	36.00	Metre			

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1	2	3	4	5	6	7
5.19	Providing and fixing UL listed door Co-ordinator (of Becker Fire Solutions or approved equivalent Make) for coordination of double leaf doors, of approved brand and manufacture with minimum one year warrantee.	6.00	Each			
5.20	Providing & fixing of Fire-stop Fire sealing System mortar type of approved make for sealing of floors, wall openings for the purpose of compartmentation. The FPSS consists of 225mm thick slab casted with vermuclite based cementitious compound as per manufacturer specifications including the cost of centering and shuttering required . The FPSS system must provide min. two hour fire rating as per IS 12458-1989 having CERTIFICATION from CBRI, Roorkee or any other approved equivalent Govt. laboratory, for 2 hr. Fire rating.	1.00	sqm			
5.21	Providing and fixing 6 mm thick pyroswiss extra or equivalent fire rated clear toughened glass of approved make, of 120 minutes fire rating to be fixed in vision panel including cost of fire ceramic tape and moulding/beading etc all complete	1.00	sqm			

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1	2	3	4	5	6	7
5.22	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 27.5cm long wire springs grade No.2 and M.S. top cover of required thickness for rolling shutters.					
	80x1.25mm M.S. laths with 1.25 mm thick top cover.	22.00	sqm			
5.23	Providing and fixing ball bearing for rolling shutters.	4.00	No.			
5.24	Extra for providing grided rolling shutters manufactured out of 8 mm dia. M.S. bar instead of laths as per design approved by Engineer-in-charge.(area of grill to be measured).	4.00	sqm			
	ALUMINIUM FITTINGS					
5.25	Providing and fixing IS : 3564 marked aluminium extruded section body tubular type universal hydraulic door closer with double speed adjustment with necessary accessories and screws etc. complete.	142.00	each			

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1	2	3	4	5	6	7
5.26	Providing and fixing IS : 3564 marked Aluminium die cast body tubular type universal hydraulic door closer with necessary accessories and screws etc. complete.	12.00	each			
5.27	Providing and fixing aluminium sliding door bolts ISI marked anodised (anodic coating not less than grade AC 10 as per IS: 1868) transparent or dyed to required colour or shade with nuts and screws etc. complete:					
a)	300x16 mm	2.00	each			
b)	250x16 mm	2.00	each			
5.28	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	150.00	each			
b)	150x10 mm	436.00	each			
5.29	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	297.00	each			
b)	100 mm	5.00	each			

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1	2	3	4	5	6	7
5.30	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	149.00	each			
5.31	Providing and fixing bright finished brass 100 mm mortice latch and lock ISI marked with six levers and a pair of anodised (anodic coating not less than grade AC 10 as per IS : 1868) aluminium lever handles with necessary screws etc. complete (Best make of approved quality).	147.00	each			
5.32	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	268.29	each			
5.33	Providing and fixing aluminium tubular handle bar 32 mm outer dia, 3.0 mm thick & 2100 mm long with SS screws etc .complete as per direction of Engineer-in-Charge.					
a)	Powder coated minimum thickness 50 micron aluminium tubular handle bar.	4.00	each			

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5.34	Providing and fixing 100mm brass locks (best make of approved quality) for aluminium doors including necessary cutting and making good etc. complete.	2.00	each			
5.35	Providing and fixing aluminium casement windows fastener of required length for aluminium windows with necessary screws etc. complete.					
a)	Powder coated minimum thickness 50 micron aluminium.	296.00	each			
5.36	Providing and fixing aluminium round shape handle of outer dia 100mm with SS screws etc. complete as per direction of Engineer-in-charge					
a)	Powder coated minimum thickness 50 micron aluminium	4.00	each			
5.37	Providing and fixing of UL listed fire rated single/double leaf panic exit devices tested in accordance with BS EN 1125: 1997 & BS EN 179: 1997, EN 1670 (Corrosion Resistant), & BS 476 Part 22 (for fire rating) with min. one year warrantee.					
a)	Double Leaf	6.00	each			

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5.38	Providing and fixing of fire rated heavy duty door closer tested in accordance with BS:476 Part 22 for fire rating) and BS EN 1154 with minimum one year warranty.	6.00	each			
5.39	Providing and fixing fire rated mortice lock with lever handle tested in accordance with European Standard EN12209 / DIN18251 and 80mm Long cylinder to EN1303 of SCHLAGE (IR) EL2020 or approved equivalent manufacturer having 1 year manufacturers warranty.	6.00	each			
5.40	Providing and fixing 300 mm long stainless steel grade 304 D type back to back pull handle (of Dorset or approved equivalent make) with necessary bolts with alen key arrangement etc complete.	12.00	each			
5.41	Providing and fixing stainless steel metal doors consisting of 0.8mm (22 gauge) stainless steel sheets of 304 grade, press formed to 46mm thick double skin hollow door with lock steam joints at edges suitable for mounting on the door frame described below.					

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	Shutters shall be provided with honeycomb kraft paper core which shall be bounded to the inner faces of shutter. The frame shall be factory manufactured from 1.20 mm Stainless steel sheets (304 grade), single rebated with dimensions 100mm x57mm (+/-0.3) with bending radius of 1.2mm.					
	The rate shall also include the cost of providing and fixing handles sepcified , hold fasts 40mm long as per the details including all accessories like bolts,nuts, wooden plugs and embedding in cement concrete complete .	10.00	Sqm			
5.42	Providing and fixing of Hollow metal door at all levels from ISO 9001-2000 certified Manufacturer. All hollow metal general doors with or without vision panel, Pressed Galvanised steel Single /Double leaf to required sizes of approved make which consists of frame, shutter, infill and finish as detailed below and conforming to IS 277.					

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	Door frame shall be Single rebate profile of size 100 x 57 mm made out of 1.25mm thick galvanised steel sheet (18 gauge). Frames should be Mitered and field assembled with self tabs. All doors should be factory prepared for receiving appropriate hardware and provided with necessary reinforcement for hinges, locks and door closers. Frames should be provided with back plate brackets and anchor fasteners for installation on required nos of masonry wall opening. Once frame installed should be grouted with cement slurry if recommended on the clear masonry opening.					

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1	2	3	4	5	6	7
	<p>Door leaf should be 46mm thick fully flush double skin door with or without vision lite. Door leaf shall be manufactured from 0.8mm (22 guage) thick galvanised steel sheet. The internal construction of the door should be rigid with steel stiffeners/ pads and reinforcement. The infill material shall be resin bonded honeycomb core. All doors should be factory prepared for receiving appropriate hardware and provided with necessary reinforcement for hinges, locks, and door closers. The edges should be interlocked with a bending radius of 1.4mm. For pair of doors astragals has to be provided on the meeting stile for both active and inactive leaf. Vision lite wherever applicable should be asper joinery details with screws on glass bedding on the inside. The glass should be 5mm clear toughned glass. Doors shall be fixed to frame with required numbers of SS Ball Bearing Butt hinges 101 X 89 X 3 mm of approved brand and manufacture.closers. The edges should be interlocked with a bending radius of 1.4mm. For pair of doors astragals has to be provided on the meeting stile for both active and inactive leaf.</p>					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
	Vision lite wherever applicable should be asper joinery details with a screw on glass beeding on the inside. The glass should be 5mm clear toughned glass. Louvers when recommended should be site proof and shall be flush fixed on the external surface. All doors and frames shall be finished with etched primer coating, stove zinc phosphate primer and thermosetting polyurethane aliphatic grade paint of approved colour. The door leaf and frame shall have passed minimum 250 hours of salt spreya test.					
	Rate should include supply and installation of door/Shutter, Frame and hardware as mentioned above. Payment shall be made per sqm of door opening.	233.00	Sqm			
Total						

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
6.00 Steel Works						
6.01	Providing and fixing M.S. grills of required pattern in frames of windows etc. with M.S. flats, square or round bars etc. all complete.					
a)	Fixed to steel windows by welding.	50.00	kg			
6.02	Steel work welded in built up sections/ framed work including cutting ,hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required.					
a)	In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works.	2738.00	Kg			
6.03	Providing and fixing hand rail of approved size by welding etc. to steel ladder railing, balcony railing and staircase railing including applying a priming coat of approved steel primer.					
a)	M.S. tube.	50.00	Kg			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
6.04	Staircase Railing:- Fabrication, supply and installation of SS 304 grade 900mm high railing made of SS 304 grade handrail pipe of 50 mm OD and 1.6 mm thickness polished with automatic round polishing machine to get a uniform hairline finish mounted with the hel of adjustable solid neck support on balustrade of approved design at 1200mm c/c and at every turn, supporting 3 mid rails of 12mm OD and 1.6 mm thickness with the help of solid connectors of 23 mm dia holding the mid rails by M6 grub screws inserted in baluster and screwed through the baluster with M6 counter sunk screws overall mounted on SS 304 grade base plate with the help of dash fasteners to be treated with K2 solution at all welding joints and passivated.					
		127.00	Mtr			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
6.05	Parapit Railing:- Fabrication, supply and installation of SS 304 grade 1500 mm high railing made of SS 304 grade pipes of 50 mm OD and 1.6 mm thickness polished with Automatic round polishing machine to get a uniform hairline finish, welded and match finished into the pattern as submitted in the drawing, the design of railing shall be as per the enclosed drawing showing diamond pattern overall mounted on SS 304 grade base plate with the help of dash fasteners, railing to be treated with K2 solution at all welding joints and passivated.	50.00	Mtr			
6.06	Providing & fixing stainless steel (304 grade) angles of required size at corners of RCC columns including nessesary fastners, screws etc all complete.	1080.00	Kg			
Total						

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
7.00	Flooring					
7.01	Cement concrete flooring 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate) finished with a floating coat of neat cement including cement slurry, but excluding the cost of nosing of steps etc. complete.					
a)	40mm thick with 20mm nominal size stone aggregate.	33.00	sqm			
7.02	Cement plaster skirting (up to 30 cm height) with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement.					
a)	18 mm thick.	4.00	sqm			
7.03	Providing and fixing glass strips in joints of <i>terrazo</i> / cement concrete floors.					
a)	40 mm wide and 4 mm thick.	80.00	Metre			
7.04	Marble stone flooring/skirting with 18mm thick marble stone (sample of marble shall be approved by Engineer-in-charge) over 20 mm (average) thick base of cement mortar 1:4 (1 cement: 4 coarse sand) laid and jointed with grey cement slurry including rubbing and polishing complete with:					
a)	Raj Nagar Plain	129.00	sqm			
b)	Udaipur green marble	400.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
c)	Jaisalmer Stone	31.00	sqm			
7.05	18mm thick Prepolished Granite (Base Rate 200/- Sqft) in Risers, skirting and dado/wall cladding over 12mm thick bed of cement mortar 1:3 (1 cement : 3 coarse sand) and jointed with grey cement including pointing with white cement mixed with pigment matching the shade of granite stone all complete and as directed.	118.00	sqm			
7.06	Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) :					
a)	25 mm thick.	1201.00	sqm			
7.07	Kota stone slabs 25 mm thick in risers of steps, skirting, dado and pillars laid on 12 mm (average) thick cement mortar 1:3 (1 cement 3 coarse sand) and jointed with grey cement slurry mixed with pigment to match the shade of the slabs, including rubbing and polishing complete.	136.09	sqm			

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1	2	3	4	5	6	7
7.08	Providing and fixing 1st quality ceramic glazed wall tiles conforming to IS : 15622 (thickness to be specified by the manufacturer) of approved make in all colours, shades except burgundy, bottle green, black of any size as approved by Engineer-in-Charge in skirting, risers of steps and dados over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 coarse sand) and jointing with grey cement slurry @ 3.3kg per sqm including pointing in white cement mixed with pigment of matching shade complete.	493.00	sqm			
7.09	Providing and laying rectified Glazed Ceramic floor tiles 300x300 mm or more (thickness to be specified by the manufacturer) of 1st quality conforming to IS : 15622 of approved make in all colours, shades, except White, Ivory, Grey, Fume Red Brown, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigments etc., complete.	57.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
7.10	Providing and laying vitrified floor and skirting, tiles in different sizes (thickness to be specified by the manufacturer) with water absorption's less than 0.08% and conforming to IS : 15622 of approved make in all colours and shades, laid on 20mm thick cement mortar 1:4 (1 cement: 4 coarse sand) including grouting the joints with white cement and matching pigments etc., complete					
a)	Size of Tile 60x60 cm	396.00	sqm			
b)	Size of Tile 80x80 cm	238.00	sqm			
c)	Size of Tile 100x100 cm	951.00	sqm			
7.11	Providing and fixing 18mm thick gang saw cut mirror polished premoulded and prepolished) machine cut for kitchen platforms, vanity counters, window sills. facias and similar locations of required size of approved shade, colour and texture laid over 20mm thick base cement mortar 1:4 (1 cement : 4 coarse sand) with joints treated with white cement, mixed with matching pigment, epoxy touch ups, induding rubbing, curing, moulding and polishing to edge to give high gloss finish etc. complete at all levels					
a)	Granite of any colour and shade					
i	Area of slab upto 0.50 sqm	5.00	sqm			
ii	Area of slab over 0.50 sqm.	26.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
7.12	Extra for providing edge moulding to 18mm thick Granite stone counters, Vanities etc. including machine polishing to edge to give high gloss finish etc. complete as per design approved by Engineer-in-Charge.					
a)	Granite work.	42.00	metre			
7.13	Extra for fixing marble /granite stone over and above corresponding basic item, in facia and drops of width upto 150 mm with epoxy resin based adhesive including cleaning etc. complete.	42.00	metre			
7.14	Extra for providing opening of required size & shape for wash basins/ kitchen sink in kitchen platform, vanity counters and similar location in marble/Granite/stone work including necessary holes for pillar taps etc. including rubbing and polishing of cut edges etc. complete.	10.00	Nos			
7.15	Providing & fixing 2 mm thick homogeneous jointless, scratch resistant, chemical resistant, anti fungal and anti bacterial PVC Vinyl flooring and skirting/ coving good for laboratories of approved quality including the cost of suitable adhesive and coving material of approved quality and manufacture.	50.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
7.16	Chequered terrazo tiles 22 mm thick with graded marble chips of size up to 6 mm in floors jointed with neat cement slurry mixed with pigment to match the shade of the tiles including rubbing and polishing complete on 20 mm thick bed of cement mortar 1:4 (1 cement :4 coarse sand) :					
	Medium shade using 50%white cement 50% ordinary cement	20.00	sqm			
7.17	P/L 8mm thick (EN13329) laminated Flooring including skirting (class use of 23/31 AC 3 with 0.2mm thick direct pressure laminated on top) plank size 1290 X 194 mm & groove construction with edge impregnate with seal to secure long lasting joints ,secured together with the help of suitable glue, conforming to EN 13329.					
		33.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
7.18	Providing and laying 3mm thick chemical resistant monolithic resinous (epoxy) flooring and coving/ skirting of required colour into two or more coats by non slippery, anti-fungal, anti bacteria, scratch proof protective finish over concrete substrate including preparing surface by mechanical means captive shot blasting/ grinding etc as required complete to the satisfaction of engineer. The concrete floor must be checked for moisture content using thermo Hygrometer and should have moisture content less than 5% and no rising dampness in floor, for which nothing extra is payable.	75.00	Sqm			
7.19	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling/grouting and finishing complete as per direction of Engineer-in-charge.					
i)	Size of Tile 800x800 mm	238.00	Sqm			
ii)	Size of Tile 1000x1000 mm	951.00	Sqm			
	Total					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
8.00	CEILING & ROOFING					
8.01	Providing and fixing at all height false ceiling including providing and fixing of frame work made of special sections power pressed from M.S. sheet and galvanised in accordance with zinc coating of grade 350 as per IS : 277 and consisting of angle cleats of size 25mm wide x 1.6mm thick with flanges of 22mm and 37mm at 1200mm centre to centre one flange fixed to the ceiling with dash fastener 12.5mm dia x 40mm long with 6mm dia bolts to the angle hangers of 25x25x0.55mm of required length, and other end of angle hanger being fixed with nut and bolts to G.I. channels 45x15x0.9mm running at the rate of 1200mm centre to centre to which the ceiling section 0.5mm thick button wedge of 80mm with tapered flanges of 26mm each having clips of 10.5mm at 450mm centre to centre shall be fixed in a direction perpendicular to G.I. channel with connecting clips made out of 2.64mm dia x 230mm long G.I. wire at every junction including fixing the gypsum board with ceiling section and perimeter channels 0.5mm thick 27mm high having flanges of 20mm and					

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1	2	3	4	5	6	7
	30mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450mm centre to centre with 25mm long drive-all screws @ 230mm interval including jointing and fixing to a flush finish of tapered and square edges of the board with recommended filler, jointing tapes, finisher and two coats of primer suitable for board as per manufactures specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed all complete as per drawing and specification and direction of the Engineer in Charge but excluding the cost of painting with :					
a)	12.5 mm thick tapered edge gypsum board conforming to IS: 2095- Part I.	796.00	sqm			

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1	2	3	4	5	6	7
8.02	Providing & Fixing of clip-in plain finish metal ceiling System of approved brand and manufacture consisting of 600x600 mm clip in tiles of pre coated Aluminium in 0.7mm thickness with bevel edge in white colour (RAL 9010) with Light Reflectance > 86% and suitable for Green Building application. Installation: To comprise 'C' channels spaced at 1200mm centres securely fixed to the structural soffit by support clamp & approved hangers. The last hanger at the end of each C channel should not be greater than 600mm from the adjacent wall. Use a C-channel connector for splicing two pieces of C-channels. Main carriers (spring tee bars) shall be spaced at 600mm centres in a direction perpendicular to the C-channels and shall be secured at every intersection with C channel using suitable hanger. Use connector to splice two pieces of main carriers. Tiles should be clipped in between two carriers (spring tee bars) from below. Perimeter trims to be wall					
	angles of white colour secured to walls at 450mm maximum centres. Cut tiles to be secured to the wall angles using a spring clamp.	1269.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
8.03	Providing and laying water proofing treatment to vertical and horizontal surfaces of depressed portions of W.C., kitchen and the like consisting of :					
i)	v) 1st course of applying cement slurry @ 4.4 Kg/sqm mixed with water proofing compound conforming to IS 2645 in recommended proportions including rounding off junction of vertical and horizontal surface.					
ii)	vi) 1st course of 20mm cement plaster 1:3 (1 cement : 3 coarse sand) mixed with water proofing compound in recommended proportion including rounding off junction of vertical and horizontal surface.					
iii)	vii) 2nd course of applying blown or residual bitumen applied hot at 1.7 Kg. per sqm of area.					
iv)	viii) 3rd course of 400 micron thick PVC sheet. (Overlaps at joints of PVC sheet should be 100 mm wide and pasted to each other with bitumen @ 1.7 Kg/sqm.)	111.00	sqm			

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1	2	3	4	5	6	7
8.04	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: a) Applying a slurry coat of neat cement using 2.75 kg/sqm. of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300mm height including cleaning the surface before treatment. b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115mm size with 50% of cement mortar 1:5 (1 cement: 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound to IS : 2645 and approved by Engineer - in - charge to required slope and treating similarly the					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
	adjoining walls upto 300 mm height including rounding of junctions of walls and slabs c) After two days of proper curing applying a second coat of cement slurry using 2.75kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge. d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement: 4 coarse sand) admixed with water proofing compound conforming to IS: 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3mm deep. e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by the Engineer-in-Charge :					
a)	With average thickness of 120mm and minimum thickness at khurra as 65 mm.	1626.00	sqm			
	Total					

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1	2	3	4	5	6	7
9.00	Finishing					
9.01	12 mm cement plaster of mix:					
a)	1:6 (1 cement: 6 fine sand)	5176.00	sqm			
9.02	15 mm cement plaster on the rough side of single or half brick wall of mix:					
a)	1:6 (1 cement: 6 fine sand)	6295.00	sqm			
9.03	18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement: 5 coarse sand) finished with a top layer 6mm thick cement plaster 1:6 (1 cement: 6 fine sand).	3076.00	sqm			
9.04	6 mm cement plaster of mix:					
a)	1:3 (1 cement: 3 fine sand)	1442.00	sqm			
9.05	Extra for making coving at junctions of walls and ceiling & wall with cement mortar 1:3 (1 cement:3 Fine sand) or with plaster of paris	1500.00	Mtr			
9.06	Extra for plastering exterior walls of height more than 10 m from ground level for every additional height of 3 m or part thereof.	1967.00	sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
9.07	Providing and applying white cement based putty of average thickness 1mm, of approved brand and manufacture, over the plastered wall surface to prepare the surface even and smooth complete.	10834.00	Sqm			
9.08	White washing with lime to give an even shade:					
a)	New work (three or more coats)	100.00	sqm			
9.09	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade					
a)	New work (two or more coats) over and including priming coat with cement primer.	2874.00	sqm			
9.10	Finishing walls with Acrylic Smooth exterior paint of required shade:					
a)	New work (Two or more coat applied @ 1.67 ltr/10 sqm over and including base coat of water proofing cement paint applied @ 2.20 kgl10 sqm).	788.00	sqm			
9.11	Applying one coat of cement primer of approved brand and manufacture on wall surface:					
a)	Cement primer.	5858.00	sqm			
9.12	Finishing walls with textured exterior paint of required shade:					

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1	2	3	4	5	6	7
a)	New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including base coat of water proofing cement paint applied @ 2.20kg/1 0 sqm.	2722.00	sqm			
9.13	Wall painting with plastic emulsion paint of approved brand and manufacture to give an even shade:					
a)	Two or more coats on new work	5858.00	sqm			
9.14	Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade:					
a)	Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture.	522.00	sqm			
9.15	Providing and fixing 24 gauge and 18mm mesh size chicken wiremesh at junction of concrete and brick work and other locations at all heights including cutting to required size and side laps of minimum 75mm and fixing in positions with nails/screws etc. as directed and as required at site.	200.00	sqm			
9.16	Painting with PU paint of approved brand and manufacture.					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
a)	New work (two or more coats) over and including priming coat with suitable primer and putty.	7322.00	sqm			
9.17	Forming groove of uniform size from 12x12mm and upto 25x15mm in plastered surface as per approved pattern using wooden battens, nailed to the under layer including removal of wooden battens, repairs to the edges of plaster panel and finishing the groove complete as per specifications and direction of the Engineer-in-Charge.	1000.00	Mtr			
Total						

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
10.00 Miscellaneous						
10.01	Stone work (machine cut edges) for wall lining etc. (veneer work) backing filled with a grout of 12mm thick cement mortar 1:3 (1 cement : 3 coarse sand) including pointing in white cement mortar 1:2 (1 white cement : 2 stone dust) with an admixture of pigment matching the stone shade : (To be secured to the backing by means of cramps which shall be paid for separately) :					
a)	Granite Stone of approved quality (Base Rate Rs 200/- per Sqft, Base rate is inclusive of polishing and/or flaming or sand blasting as required)	26.00	sqm			
10.02	Providing and fixing stainless steel cramps of required size and shape for anchoring stone wall lining to the backing or securing adjacent stones in stone wall lining in cement mortar 1:2 (1 cement : 2 coarse sand) including making the necessary chases in stone and holes in walls wherever required.	10.00	Kg			

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1	2	3	4	5	6	7
10.03	Making plinth protection 50mm thick of cement concrete 1:3:6 (1 cement :3 coarse sand : 6graded stone aggregate 20mm nominal size) over 75mm bed by dry brick ballast 40mm nominal size well rammed and consolidated and grouted with fine sand including finishing the top smooth	236.00	sqm			
10.04	Designing, supplying, fabrication and installation of semi unitised Structural glazing system in the form of fixed panels, using specially designed aluminium extruded sections, mullions and transoms having 25 micron Anodising of approved colour and shade and make with mullions fixed on the RCC beams/columns through adequately designed brackets including providing masking tape on the profiles for safety against external scratches on site complete with approved silicon sealant EPDM gasket etc. to make the structural glazing air tight and water tight as per standards and as per Architect's drawings and specifications. The design to be as per BIS code for required wind pressure IS: 875 part III and use of aluminium section alloy as per IS:8147.					

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
a)	System design to strictly consider for thermal movements, air infiltration, water penetration, seismic movement and structural movement. Contractor to furnish shop drawings along with sequence of work for approval of Engineer-in-charge.The minimum section shall be 131x66x2mm and per sqmt weight shall be 10kg approx., the item shall be measured and paid for actual surface area of structural glazing/aluminium composite panel supported on the frame. The work shall be carried out by the specialised agency approved by Engineer in Charge.	138.00	SqM			

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1	2	3	4	5	6	7
10.05	Extra for providing & fixing 24mm made up thickness insulated glass over above corresponding item hermetically sealed with 6mm heat strengthend toughened solar control off line coated high performance temperable glass of approved colour having reflective soft coating and 6mm clear toughned float glass inside with 12mm dry air cavity between two glass panes separated by a hollow aluminium spacer bar with twin lines of micro holes as approved filled with molecular desiccant of approved make and using primary hot meld duly and secondary polysulphide or silicon sealant of approved make all complete over above item. (U value less than 2.85w/sqm k, shading cofficent less than 0.55, solar factor less than 0.25, light transmission minimum 25%)	138.00	Sqm			

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1	2	3	4	5	6	7
10.06	Providing and laying integral cement based treatment for water proofing on horizontal surface at all depth below ground level for under ground structures as directed by Engineer-in-Charge and consisting of : i) 1st layer of 22mm to 25mm thick approved and specified rough stone slab over a 25mm thick base of cement mortar 1:3 (1 cement : 3 coarse sand) mixed with water proofing compound conforming to IS:2645 in the recommended proportion over the leveling course (leveling course to be paid separately). Joints sealed and grouted with cement slurry mixed with water proofing compound. ii) 2nd layer of 25mm thick cement mortar 1:3 (1 cement: 3 coarse sand) mixed with water proofing compound in recommended proportions. iii) Finishing top with stone aggregate of 10mm to 12mm nominal size spreading @ 8 cudm/sqm thoroughly embedded in the 2nd layer.					
	Using rough kota stone.	68.00	Sqm			

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Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
10.07	Providing and laying integral cement based treatment for water proofing on 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	105.00	Sqm			
	Total					

Project Name: Construction of Animal House, IIM Jammu.

BOQ for Civil Work

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
11.00	ROAD WORK, DEVELOPEMENT AND SIGNAGE					
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.	700.00	SQM			
11.02	Supplying and stacking at site.					
a)	90 mm to 45 mm	30.00	CuM			
b)	63 mm to 45 mm	26.60	CuM			
11.03	Laying spreading and compacting stone aggregate of specified sizes to WBM specifications including spreading in uniform thickness, hand picking, rolling with 3 wheeled road/ vibratory roller 8-10 tonne in stages to proper grade and camber, applying and brooming requisite type of screening/ binding material to fill up interstices of coarse aggregate watering and compacting to the required density.	40.00	Cum			

Project Name: Construction of Animal House, IIM Jammu.

BOQ for Civil Work

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
11.04	Providing and laying C.C. pavement of mix M25 with ready mixed concrete from batching plant. The ready mixed concrete shall be laid and finished with screed board vibrator, vacuum dewatering process and finally finished by floating, brooming with wire brush etc. complete as per specifications and directions of Engineer-in-charge. (The panel shuttering work shall be paid for separately).	30.00	Cum			
11.05	Providing and laying in position bitumen hot sealing compound for expansion joints etc					
a)	Using grade 'A' sealing compound.	1333.33	Per cm depth per cm width per m length			
11.06	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.	100.00	sqm			

Project Name: Construction of Animal House, IIM Jammu.

BOQ for Civil Work

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
11.07	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).	20.25	Cum			
11.08	Trenching in ordinary soil upto a depth of 60cm including removal and stacking of serviceable materials and then disposing of 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).	120.00	Cum			
11.09	Supplying and stacking sludge at site including royalty and carriage up to 1 km (sludge measured in stacks will be reduced by 8% for payment).	10.00	Cum			

Project Name: Construction of Animal House, IIM Jammu.

BOQ for Civil Work

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
11.10	Spreading of sludge, dump manure or/and good earth in required thickness (Cost of sludge, dump manure or/ and good earth to be paid separately).	10.00	Cum			
11.11	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.	200.00	Sqm			
11.12	Supply & sprinkling of Neem cake (at the rate of 6 kg per 100 sq. metres) and fine dressing the ground.	200.00	Sqm.			
11.13	Supply & grassing with "Calcutta Doob" grass in rows 7.5cms, apart in either direction including fine dressing the ground to be levelled, supply and filling with good earth if needs, watering & maintenance of the lawn for 30 days or more till the grass forms a thick lawn free from weeds & fit for mowing. Anti-termite shall be applied with CHLOROPYRIPHOS (DURSBAN make or equivalent) at the rate of 2ml per litter in the first watering.	200.00	Sqm.			

Project Name: Construction of Animal House, IIM Jammu.

BOQ for Civil Work

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
11.14	Digging holes in ordinary soil and refilling the same with the exca-vated 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.	10.00	Each			
b)	Holes 60 cm dia, and 60 cm deep.	10.00	Each			
11.15	Providing fabricating and fixing of signages of varying sizes and shapes using three mm thick PVC sheet at base with self adhesive coloured vinyl with graphicson top of glow tape complete including fixing on wall with screws and washers or hanging on ceiling with GI chain/GI Bar complete as per technical specifications and directions of Engineer.	600.00	sq inch			
11.16	Providing and fixing of sinages of varying sizes and shapes using stainless steel sheet of minimum 16G thickness brush finish including engraving/etching of letters of required size filled with colour as desired by engineer,fixing with ss screws on walls	1280.00	sqinch			

Project Name: Construction of Animal House, IIM Jammu.

BOQ for Civil Work

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
11.17	Providing and fixing of sinages of varying sizes made of hollow aluminum sections of 150 mm width.with both hollow ends caped with suitable PVC/aluminium cover plates of required including hanging from ceiling by two adjustable suspenders of appropriate dia made of MS/GI bars ,lettering on vinyl sheet and pasting on it with pictogram complete as per technical specifications and directions of Engineer.	150.00	r/ft			
11.18	Providing and fixing of external sinages of varying sizes and shapes using GI sheet of atleast 22 G / aluminium sheet of suitable gauge complete as per technical specifications and directions of Engineer.	60.00	sqft			
11.19	Providing and fixing MS support frame for external signages made of structural steel including welding, primering, painting foundation with 1:1.5:3 cement concrete complete as per drawing, technical specifications and directions of engineer.	120.00	Kg			

Project Name: Construction of Animal House, IIM Jammu.

BOQ for Civil Work

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
11.20	Providing,fabricating and fixing neon glow signages of approved make with 100% handcraft glass tubes in letter shape of required colour of dia 9-12 mm including making the electrical wiring for illumination,transformer,connection complete as per technical specifications and directions of engineer.	10.00	sqft			
11.21	Providing,fabricating and fixing digitally printed translites(Technova) with multicolour design on roland /HP printers mounted on acrylic sheet 3mm further mounted on 22 gauge powder coated GI box with phylips /surya tubes inside including installtion on wall electric fittings etc on walls or otherwise complete .	16.00	sq ft			
11.22	Providing fabricating installation and fixing of backlit flex signages on Hanwa/star 18 ounce flex signages printed on high resolution printer mounted on MS sheet on framed MS structure further fixed on 24 gauge MS /GI box with phylips/surya fittings inside including tranformers etc, electri wiring etc complete.	20.00	sqft			

Project Name: Construction of Animal House, IIM Jammu.

BOQ for Civil Work

Item No	Description Of Item	Total Qty	Unit	Rate in Figures(Rs)	Rate in Words(in Rs)	Amount in Figures (in Rs)
1	2	3	4	5	6	7
11.23	Providing, fabricating installation and fixing of glass finish SS letters made of 20 gauge SS 304 sheet of required size and shape with neatly fabricated joints properly welded and grinded with all corners rubbed and polished with arrangement of screws in the letter itself for mounting on the walls including cost of screws and fixing complete as per directions of Engineer.	500.00	sqinch of each letter			
11.24	Providing fabricating and fixing of retroreflective vinyle sinages of varying sizes and shapes pasted on aluminium/GI sheet of 18 gauge with provision of fixing on MS structure complete as per technical specifications and directions of Engineer.	600.00	sqinch			
Sub Total						

Project Name:Construction of Animal House, IIM Jammu.

SUMMARY (Civil Work)

S.No	DESCRIPTION OF WORK	AMOUNT (In Rs.)
1	EARTHWORK	
2	CONCRTE WORK	
3	RCC WORK	
4	BRICK WORK	
5	DOORS & WINDOWS	
6	STEEL WORK	
7	FLOORING	
8	CEILING & ROOFING	
9	FINISHING	
10	MISCELLANEOUS	
11	Road Work and Development	
	TOTAL	

	Design & Engineering Department					
	Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu					
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
	Note: Based on the tender drawing the agency has to prepare the internal & external plumbing shop drawing and obtain the approval of the same before execution					
1.00	SANITARY FIXTURES					
1.01	Providing & fixing water closet squatting pan(Indian W.C.Pan)with 100 mm sand cast iron P or S strap,10 Litre low level white P.V.C flushing cistern with manually controled device(handle lever) conforming to IS:7231 with all fittings&fixture complete including cutting and making good the walls & floors wherever required.					
a)	White vitreous china orissa pattern W.C. pan of size 580 x 440 mm with integral type foot rests.	Each	1.0			
1.02	Providing and fixing white vitreous china pedestal type water closet (European type) with seat and lid, 10 litre low level white vitreous flushing cistern and C.P. flush bend with fittings & C.I. brackets, 40mm flush bend, overflow arrangement with specials of standard make and mosquito proof coupling of approved municipal design complete including painting of fittings and brackets, cutting and making good the walls and floors wherever required:					
a)	W.C. pan with ISI black solid plastic seat & lid.	Each	10.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
1.03	Providing and fixing white vitreous China flat back or wall corner type lipped front urinal basin of 430x260x350 mm and 340x410x265 mm sizes respectively with automatic flushing cistern with standard flush pipe and C.P. brass spreaders with brass unions and G.I. clamps complete, including painting or fittings and brackets, cutting and making good the walls and floors wherever required.					
b)	Range of two urinal basin with 5 litre white PVC automatic flushing cistern.	Each	1.0			
c)	Range of three urinal basin with 10 litre white PVC automatic flushing cistern.	Each	1.0			
1.04	Providing and fixing wash basin with C.I. brackets, 15mm C.P. brass pillar taps, 32mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required:					
a)	White vitreous china wash basin size 550x 400 mm with a pair of 15mm C.P. brass pillar tap.	Each	12.0			
1.05	Providing and fixing Stainless Steel A ISI 304 (18/8) kitchen sink as per IS 13983 with C.I. brackets and stainless steel plug 40 mm including painting of fittings and brackets, cutting and making good the walls wherever required:					
a)	Kitchen sink without drain board					
a)i)	610x510 mm bowl depth 200 mm.	Each	2.0			
1.06	Extra for using coloured W.C. pan instead of white W.C pan					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
a)	Orissa pattern W.C. pan 580x440 mm	Each	1.0			
1.07	Extra for using coloured pedestal type W.C. pan (European type) with low level cistern of same colour instead of white vitreous china W.C. pan and cistern	Each	10.0			
1.08	Providing and fixing superior glass (of approved quality) and of required shape and size with plastic moulded frame of approved make and shape with 6 mm thick hard board backing.					
a)	Rectangular shape 453x357 mm	Each	12.0			
1.09	Providing and fixing 600x120x5 mm glass shelf with edges round of supported and anodised aluminium angle frame with C.P. brass brackets and guard rail complete fixed with 40 mm long screws, rawl plugs etc., complete.	Each	12.0			
1.10	Providing and fixing toilet paper holder .					
a)	Vitreous china	Each	10.0			
1.11	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour weighing not less than 105 gms.	Each	12.0			
1.12	Providing and fixing water Jet Nozzle with hose pipe and half turn CP brass angle valve to be fitted with seat cover of european water closet complete in all respect of approved quality	Each	10.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
1.13	Providing and fixing soap tray with CP brass lid and brackets fixed to wooden cleats with CP brass screws.(Jaquar model no.1131 or equivalent model of other approved make).	Each	1.0			
1.14	Providing and fixing CP brass towel rail size of 600x20 mm of approved make complete with CP brackets fixed to wooden cleats with CP brass screws(Jaquar model no.1111 or equivalent model of other approved make)	Each	4.0			
1.15	Providing and fixing brass coat hook of approved quality and make complete with material of fixing	Each	10.0			
1.16	Extra for providing and fixing white vitreous china oval shape wash basin in place of normal wash basin with CI/MS brackets painted white, 15 mm CP brass pillar taps, 32 mm CP brass waste of standard pattern, including painting of fittings and brackets cutting and making good the walls wherever required					
a)	Counter top oval shape wash basin size 550x470 mm with centre tap hole, single 15 mm CP brass swan neck type pillar tap	Each	15.0			
1.17	Providing and fixing stainless steel grab bar 20mm dia of required length minimum 600 mm with PVC cleats, C.P. brass screws etc. complete.	Each	2.0			
1.18	Providing and fixing vitreous china division plate of size 960x165x325 mm of approved make and design including brass cleats, C.P. brass screws all fittings etc. complete in all respect	Each	10.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
1.19	Automatic animal watering system fixture to be fixed in all the rooms of animal house as per approved model and make used in the latest animal house.	Each	5.0			
1.20	Providing and fixing SS laboratory sink counter type with 80 mm trap,waste,vent hot and cold water connections,faucets,drain and tail pieces complete in all respect.	Each	8.0			
1.21	Providing and fixing SS under counter laboratory sink with working platform of 1 metre long, 80 mm trap, waste,vent hot and cold water connections, faucets, drain and tail pieces.	Each	2.0			
SUB TOTAL(SANITARY FIXTURES)						

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
2.00	SOIL, WASTE AND VENT PIPES					
2.01	Providing and fixing soil, waste and vent pipes.					
a)	100 mm dia.					
a i)	Centrifugally cast (spun) iron socketed pipe as per IS:3989	Metre	300.0			
2.02	Providing and fixing M.S holder-bat clamps of approved design to Sand Cast iron/ cast iron (spun) pipe embedded in and including cement concrete blocks 10x10x10 cm of 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) including cost of cutting holes and making good the walls etc.					
a)	for 100 mm dia. pipe	Each	18.0			
2.03	Providing and fixing bend of required degree with access door, insertion rubber washer 3 mm thick, bolts and nuts complete.					
a)	100 mm					
a ii)	Sand cast iron S&S as per IS-3989	Each	35.0			
2.04	Providing and fixing plain bend of required degree.					
a)	100 mm					
a ii)	Sand cast iron S&S as per IS:3989	Each	45.0			
2.05	Providing and fixing heel rest sanitary bend.					
a)	100 mm dia					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
a.ii)	sand cast iron S&S as per IS-3989	Each	6.0			
2.06	Providing and fixing single equal plain junction of required degree with access door, insertion rubber washer 3mm thick, bolts and nuts complete.					
a)	100x100x100mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	6.0			
2.07	Providing and fixing single equal plain junction of required degree					
a)	100x100x100mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	22.0			
2.08	Providing and fixing door piece, insertion rubber washer 3mm thick, bolts and nuts complete					
a)	100 mm					
a.ii)	sand cast iron S&S as per IS-3989	Each	5.0			
2.09	Providing and fixing terminal guard.					
a)	100 mm	Each	6.0			
a.ii)	sand cast iron S&S as per IS-3989					
2.10	Providing and fixing collar					
a)	100 mm					

Name of Work:BOQ of Plumbing work of Animal House at IIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
a.ii)	Sand cast iron S&S as per IS-3989	Each	12.0			
2.11	Providing lead caulked joints to sand cast iron /centrifugally cast (spun) iron pipes and fittings of diameter:					
a)	100 mm	Each	345.0			
2.12	Providing Drip seal joint of approved make for the sand cast iron/centrifugally cast iron pipes where the workability of lead joint can be effected due to space constraints.					
a)	100 mm	Each	145.0			
2.13	Providing and fixing M.S. stays and clamps for sand cast iron / centrifugally cast (spun) iron pipes of diameter :					
a)	100 mm	Each	6.0			
2.14	Providing and fixing trap of self cleansing with screwed down or hinged grating with or without vent arm complete, including cost of cutting and making good the walls and floors:					
a)	100 mm inlet and 100 mm outlet					
a i)	Sand cast iron S&S as per IS-3989	Each	45.0			
2.15	Cutting chases in brick masonry walls for following diameter sand cast iron/centrifugally cast (spun) iron pipes and making good the same with cement concrete 1:3:6 (1 cement:3 coarse sand:6 graded stone aggregate 12.5 mm nominal size) including necessary plaster and pointing in cement mortar 1:4 (1 cement: 4 coarse sand):					
a)	100 mm diameter pipe	Metre	10.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
2.16	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	100.0			
2.17	Providing and fixing floor drain points formed out of 65 mm dia GI elbow, including with 75mm dia Stainless Steel grating with frame, embedded in floor, all complete as directed.	Each	5.0			
2.18	Providing and fixing C.P. brass bottle trap for wash basin including CP waste fittings complete 32 mm dia complete in all respect of approved quality.	Each	12.0			
2.19	Providing and fixing C.P. brass bottle trap for sinks & urinal basin including CP waste fittings complete 40 mm dia complete in all respect of approved quality.	Each	18.0			
2.20	Providing and laying cement concrete 1:2:4 (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) 80 mm thick all-round the SCI/centrifugally S&S pipe diameter.					
a)	100 mm dia	Metre	225.0			
2.21	Providing and fixing dash fastner made of rust proof plated steel for holding the soil/waste supply pipes complete in all respect					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
a)	Dash fastner for pipe more than 25 mm dia to 150 mm dia pipe of required size but not less than size 8 mm dia and 40 mm long minimum & shall be capable of taking 6 tonnes load and also include the supporting angles 35x35x5 mm/approved steel structures support as per drawing/as approved by Engineer-incharge.	Each	100.0			
2.22	Providing and fixing floor clean out plug consist of CI bend & GI socket heavy class with Brass cap & key for opening male threaded cap etc. including lead caulked to CI pipescomplete in all respects as per drawing/ sample approved by Engineer -in - ChargeFCO (floor clean out plug shall be flushed with floor finish					
	100 mm dia/150 mm dia	Each	2.0			
2.23	Providing and fixing clean out plug consist of GI socket/nipple heavy class with threaded pludge for opening male threaded cap etc. including lead caulked to CI pipescomplete in all respects as per drawing/ sample approved by Engineer -in -Charge					
	100 mm dia/150 mm dia	Each	4.0			
2.24	Providing and fixing G.I EXTENSION PIECE for 100 mm dia floor trap formed out of main pipe(Type A) with multiple side inlets, suitable for various dia pipes, side connections, including all fixtures and fittings as per site conditions and as per standard details and water tight sealing of joints and area surrounding the grating and as directed.	Each	45.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
2.25	Providing and fixing cPVC. pipes complete with cPVC fittings including painting,jointing,testing the cost of cutting the chases and making good the same for waste water disposal complete as per direction of engineer incharge.					
a)	32 mm dia nominal bore (Wash basin to floor trap/floor drain)	Metre	15.0			
b)	40 mm dia nominal bore (Sink,Urinal to floor trap)	Metre	25.0			
c)	50 mm dia nominal bore (Floor Drain to Floor Trap)	Metre	10.0			
2.26	Providing and fixing WC connector socket(for vitreous china & CI pipe) of EDPM good quality with polypropelene body 100x150/100x250 of approved quality and make complete in all respect.	Each	10.0			
2.27	Providing & fixing SS floor trap grating 143x143x5mm thick screwablewith SS fixed frame of 150x150 mm size as per approved make & model	Metre	10.0			
2.28	Providing and laying Laboratory/hospital effluent waste pipe and fitting of high density polyethelene (HDPE),CLASS -PE 100 ,pressure rating PN-10,conforming to IS :4984, electric fusion joints/flanged joints , fittings which includes bends,,junctions,cowls,offsets,access pieces.etc. complete including jointing.					
	50 mm dia	Metre	25.0			
	80 mm dia	Metre	50.0			
	100 mm dia	Metre	70.0			
	150 mm dia	Metre	120.0			
SUB TOTAL(SOIL, WASTE AND VENT PIPES)						

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
3.00	WATER SUPPLY					
3.01	Providing and fixing Chlorinated Polyvenyl Chloride(CPVC)pipes having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.0 m spacing.This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in charge.					
	Internal work – Exposed on wall					
a)	15 mm nominal outer dia pipes (SDR-11)	Metre	25.0			
b)	20 mm nominal outer dia pipes (SDR-11)	Metre	60.0			
c)	25 mm nominal outer dia pipes (SDR-11)	Metre	125.0			
d)	32 mm nominal outer dia pipes (SDR-11)	Metre	100.0			
e)	40 mm nominal outer dia pipes (SDR-11)	Metre	25.0			
f)	50 mm nominal outer dia pipes (SDR-11)	Metre	60.0			
3.02	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
	Concealed work including cutting chases and making good the walls etc.					
a)	15 mm nominal outer dia pipes (SDR-11)	Metre	135.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
b)	20 mm nominal outer dia pipes (SDR-11)	Metre	80.0			
c)	25 mm nominal outer dia pipes (SDR-11)	Metre	15.0			
d)	32 mm nominal outer dia pipes (SDR-11)	Metre	10.0			
e)	40 mm nominal outer dia pipes (SDR-11)	Metre	20.0			
3.03	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
	External Work					
a)	25 mm nominal outer dia pipes	Metre	10.0			
b)	50 mm nominal outer dia pipes	Metre	20.0			
c)	62.5 mm nominal inner dia pipes	Metre	10.0			
3.05	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including, cutting and threading the pipe etc. complete including obtaining approval for connection scheme from DJB/Municipal corporation :					
a)	50 to 80 mm nominal bore	Each	2.0			
3.06	providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end)					

Name of Work:BOQ of Plumbing work of Animal House at IIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
a)	25 mm nominal bore	Each	12.0			
b)	32 mm nominal bore	Each	8.0			
c)	40 mm nominal bore	Each	2.0			
d)	50 mm nominal bore	Each	2.0			
3.07	Providing and fixing ball valve (brass) of approved quality, High or low pressure with plastic floats complete					
a)	20mm	Each	5.0			
3.08	Providing and fixing brass ferrule with C.I. mouth cover including boring and tapping the main					
a)	40 mm nominal bore	Each	2.0			
3.09	Providing and fixing unplasticised PVC connection pipe with brass unions:					
a)	45 cm length					
a i)	15 mm nominal bore	Each	40.0			
3.11	Constructing masonry chamber 30x30x50 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for stop cock, with C.I. surface box 100x100x75 mm (inside) with hinged cover fixed in cement concrete slab 1:2:4 mix (1 cement: 2 coarse sand:4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
a)	With F.P.s bricks	Each	2.0			
3.12	Constructing masonry chamber 60x60x75 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 coarse sand) for sluice valve, with C.I. surface box 100mm top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement: 2 coarse sand:4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement:5 fine sand: 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement :3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design					
a)	With F.P.s bricks	each	2.0			
3.13	Painting CPVC/G.I. pipes and fittings with synthetic enamel white paint over a ready mixed priming coat, both of approved quality for new work					
a)	15 mm nominal outer dia pipes	Metre	25.0			
b)	20 mm nominal outer dia pipes	Metre	60.0			
c)	25 mm nominal outer dia pipes	Metre	125.0			
d)	32 mm nominal outer dia pipes	Metre	100.0			
e)	40 mm nominal outer dia pipes	Metre	25.0			
f)	50 mm nominal outer dia pipes	Metre	60.0			
3.14	Painting G.I. /CPVC pipes and fittings with two coats of anti-corrosive bitumastic paint of approved quality.					
a)	25 mm diameter pipe	Metre	10.0			
b)	50 mm diameter pipe	Metre	20.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
c)	65 mm diameter pipe	Metre	10.0			
3.15	Providing and filling sand of grading zone V or coarser grade all-round the G.I./CPVC pipes in external work					
a)	25 mm diameter pipe	Metre	10.0			
b)	50 mm diameter pipe	Metre	20.0			
c)	65 mm diameter pipe	Metre	10.0			
3.16	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI:12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for tank					
	Treated water Tank and Untreated water tank	per litre	12500.0			
3.17	Providing and fixing C.P brass bib cock of approved quality.					
a)	15 mm nominal bore	Each	10.0			
3.18	Providing and fixing C.P. brass long nose bib cock of approved quality conforming to IS standards and weighing not less than 810 gms.					
a)	15 mm nominal bore	Each	5.0			
3.19	Providing and fixing C.P. brass angle valve for basin mixer and geyser/cisterns points of approved quality conforming to IS:8931.					
a)	15 mm nominal bore	Each	40.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
3.20	Providing and fixing C.P. brass stop cock (conceaed) of standard design and of approved make conforming to 18:8931.					
a)	15mm nominal bore.	Each	8.0			
3.20	Providing and fixing enclosed type water meter (bulk type) conforming to IS : 2373 and tested by muncipal board complete with bolts,nuts rubber, insersions etc. (the tail plases if required will be paid seperatly)					
a)	80mm dia nominal bore	Each	1.0			
3.21	Providing and fixing PTMT ball cock of approved quality, colour and make complete with Epoxy coated aluminium rod with L.P./H.P.H.D. plastic ball.					
a)	40 mm nominal bore, 206 mm long weighin not less than 690 gms	Each	2.0			
b)	50 mm nominal bore, 242 mm long weighin not less than 1240 gms	Each	2.0			
3.22	Cutting holes upto 30x30 cm in walls including making good the same					
	with F.P.S bricks	Each	10.0			
3.23	Cutting holes up to 15x15 cm in R.C.C. floors and roofs for passing drain pipe etc. and repairing the hole after insertion of drain pipe etc. with cement concrete 1:2:4 (1 cement:2 coarse sand: 4 graded stone aggregate 20 mm nominal size) including finishing complete so as to make it leak proof	Each	10.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
3.24	Extra for providing wash basin mixer pillar tap in place of normal pillar tap	Each	15.0			
3.25	Extra for providing and fixing CP brass push type pillar tap of approved make and model in place of normal pillar tap.	Each	15.0			
3.26	Providing & fixing full way lever operated forged brass ball valve of brass body with forged brass hard chrome plated steel ball tested to a pressure not less than 10 Kg / sqcm with threaded / flanged joints complete with nuts, bolts, gaskets, washers etc.					
a)	15 mm diameter	Each	5.0			
b)	20 mm diameter	Each	10.0			
3.27	Providing and fixing mosquito proof coupling of approved Municipal design for scour and vent pipes for RCC overhead tanks complete in all respects					
a)	20 mm diameter	Each	2.0			
c)	40 mm diameter	Each	2.0			
d)	50 mm diameter	Each	2.0			
3.28	Providing & fixing 9 mm thick thermal insulation tubing of elastomeric flexible material on hot water supply/return pipes having hermetic blistered closed cell structure of expanded synthetic rubber over pipes/ fitting as per manufacturer's specifications etc.complete.					
a	15 mm to 25 mm diameter	Meter	10.0			
b)	32 mm to 50 mm diameter	Meter	5.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
3.29	Providing and fixing C.P. brass Overhead (Rain Fall) shower (100mm) with arm and wall flange complete including cutting and making good the walls wherever required.	Each	4.0			
3.30	Extra for providing and installing INFRA-RED controlled electrically operated (220V, AC mains) automatic flushing system of approved make instead of urinals with flushing cistern. The automatic flushing system shall comprising of :					
	Light sensing device fixed in recessed metallic box with tamper resistant stainless steel outercase Solenoid valve housed in a recessed metallic box with openable cover mounted at high level (at desired height from finished floor level) complete with interconnecting control wiring in recessed PVC conduit between solenoid valve and sensing unit, including cutting and making good the walls & floor complete and all necessary fittings to make it operational as directed	Each	5.0			
3.31	Providing & fixing solid state fully hygienic no touch hand drier of approved make rated for continuous repeat usage with solid state time delay LSF protection, with independent ambient light level & seasonal control temperatures including providing necessary C.I./M.S. brackets painted with two or three coats of enamel paint of approved shade over a coat of primer, wiring cables from drier to plug, plug tops etc. complete including cutting and making good the walls wherever required.	Each	4.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
3.32	Supplying, fixing, testing and commissioning of storage type water heater (Geyser) etc. with Stainless steel body , copper container , automatic thermostatic control electric element, pressure release valve, M.S. nuts and bolts etc. conforming to IS: 2082					
a)	35 Litre Capacity	Each	4.0			
b)	25 Litre Capacity	Each	1.0			
3.33	Providing & fixing water storage cooler of approved make and brand with SS body having minimum flow rate of 40 ltrs. Per hour and storage capacity 80 ltrs. Complete in respects.(VOLTAS/ BLUE-STAR/ USHA SHRIRAM)	Each	1.0			
3.34	Providing and fixing approved make & suitable model of R.O. plant (fully automatic operation) 400ltrs. Per hour flow rate having capacity to treat the raw water and average recovery not less than 35% . The operating voltage to 230 volt AC +/- 10% alongwith required capacity pump of approved make (3HP minimum) and solenoid valves, dry run protection of pump, automatic tank level control, inbuilt auto flush timer for periodic flushing of membranes, storage tank (3.0 mm (minimum) thick S.S. 304 sheet) 1500 lts of suitable size and its supporting structure, over voltage and over current protection with switch mode power supply system complete in all respects including installation and fittings with the following provisions: (IONIEXCHANGE/ KENT/AQUAPROCESS,Pantair,INDWA,Fontus)					
a)	10 micron polypropylene sediment pre filter					
b)	10 micron bacteriostatic activated carbon block on line micron filter with 5 micron rating					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
c)	Required Nos. and size of reverse osmosis memberane with 0.0001 micron pore size energy saving poly amide type					
d)	UV lamp of minimum capacity 400LPM and minimum lamp wattage 15W					
e)	MS powder coated frame efficient of TDS removal more than 90%. Antiscalant dosing and acid dosing system for self flushing/cleaning.Pressure switches and gauges, pH correction dosing system, Digital TDS meter, Digital pH meter, electric panel and necessary instrumentation included Rotameter.MS structure and fibre glass sheet weather protection cover as per site condition.	Each	1.0			
3.35	Providing and fixing Stainless Steel pipes confirming to EN 10312 complete with Press Type fittings with SC-Contur in accordance with DVGW regulation W534) for Hot and Cold water supply capable to withstand temprature up to 110 degree centigrade, such as sockets, bends, elbows, tees, reducers, unions.Flanges,clamps with hanger at a spacing of 2 m centre to centre min or as required etc. necessary adapters for GI/copper and CP fittings, jointing, sundries,cutting holes in walls/floors/slabs & making good complete.including exposed & Concealed work including cutting chases and making good the walls etc. This includes testing of joints complete as per direction of the Engineer incharge of approved make Krystal,Viega,Jindal for central RO & domestic water supply system.					
	15x1.0 mm outer dia pipe	Metre	70.0			
	18x1.0 mm outer dia pipe	Metre	65.0			
	22x1.2 mm outer dia pipe	Metre	15.0			
	28x1.2 mm outer dia pipe	Metre	10.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
	35x1.5 mm outer dia pipe	Metre	10.0			
	42x1.5 mm outer dia pipe	Metre	20.0			
3.36	Providing and fixing stainless steel wet shower room of customised shape and size made up with frame work of GI angles and sections of suitable design, clad with 20SWG SS 304 grade on either side of frame including filling 50 mm thick glass wool of density 32 kg/cu.m(approx. size of wet shower room 1500x2000.Size of the room may vary according to drawing/actual layout at site.	sq.m.	70.0			
3.37	Providing and fixing entire SS hardware and hinges, towel rod of brass with chrome plating and door seal of food grade plastic,with overhead rainfall shower 100mm with all fitting with shower mixer of suitable design with thermostat control valve, complete system of a approved make and model for wet shower room.	Each	4.0			
3.38	Providing and fixing deluge Emergency shower ,push paddle operated controls,shower head and finish ceiling collar,face and body spray unit, valve,squeeze handle ,trap,waste,vent and service water connections					
	Emergency Shower	Each	1.0			
3.39	Providing and fixing Eye Washer ,push paddle operated controls,shower head and finish ceiling collar,face and body spray unit, valve,squeeze handle ,trap,waste,vent and service water connections					
	Eye Wash	Each	1.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
3.40	Supplying, installing, testing and commissioning vertical online/horizontal centrifugal pumping set with mechanical seal, C.I. Housing, C.I. volute and SS impeller & SS shaft connected to a TEFC induction motor of suitable HP for 415 volts, 3 phase, 50 cycles A.C. supply with 150 mm dia pressure gauge with gunmetal isolation cock, vibration eliminating pads, base plate wiring upto panel and equipment for water level controller to start and stop the pump automatically at predecided levels of the water in the tank with provision of protection for dry run etc. complete in all respect (The shop drawing or the pumps along with its characteristics curves, model and technical data etc. are to be submitted for approval before purchase of pump).					
	Domestic water pumps (Treated water transfer&Raw water Transfer pump to terrace tank)					
	Treated water transfer pump to terrace tank					
	Capacity 30 lpm					
	Head 25M	Each	2.00			
	Raw water transfer pump					
	capacity 30 lpm & Head 25m	Each	2.00			
	SUB TOTAL(Water Supply)					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
4.00	SEWARAGE & DRAINAGE					
4.01	Providing laying and jointing glazed stoneware pipes grade 'A' with stiff mixture of cement mortar in the pro-portion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete.					
a)	100 mm diameter	Metre	25.0			
4.02	Providing and laying cement concrete 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40 mm nominal size) all-round S.W. pipes including bed concrete as per standard design:					
a)	100 mm diameter S.W. pipe/RCC NP2	Metre	25.0			
b)	150 mm diameter S.W. pipe/RCC NP2	Metre	100.0			
4.03	Providing and fixing square-mouth S.W. gully trap grade 'A' complete with C.I. grating, brick masonry chamber with water tight C.I. cover with frame of 300x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design:.					
a)	150x100mm size P type					
a.i)	F.P.S. Bricks class designation 75	Each	12.0			
4.04	Providing and laying non-pressure NP2 class (light duty) R.C.C. pipes with collars jointed with stiff mixture of cement mortar in the proportion of 1:2 (1 cement:2 fine sand) including testing of joints etc. complete					
a)	150 mm dia R.C.c. pipe	Metre	100.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
4.05	Constructing brick masonry manhole in cement mortar 1:4 (1 cement : 4 coarse sand), R.C.C. top slab with 1:2:4 mix (1cement : 2 coarse sand : 4graded stone aggregate 20 mm nominal size), foundation concrete 1:4:8 (1cement : 4 coarse sand : 8graded stone aggregate 40 mm nominal size), inside plastering 12mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, and making necessary channels in cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design.					
a)	Inside size 90x80 cm and 45 cm deep including C.I. cover with frame (light duty) 455x610 mm internal dimensions total weight of cover and frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg):					
a i)	With F.P.S. bricks with class designation 75	Each	10.0			
4.06	Extra depth for manholes					
a)	Size 90 x 80 cm					
a i)	With F.P.S. bricks class designation 75	Metre	1.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
4.07	Constructing brick masonry circular type manhole 0.91m internal dia at bottom and 0.56m dia at top in cement mortar 1:4 (1 cement :4 coarse sand), in side cement plaster 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand) finished with a floating coat of neat cement, foundation concrete 1:3:6 mix (1 cement: 3 coarse sand: 6 graded stone aggregate 40mm nominal size), and making necessary channel in cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20mm nominal size) finished with a floating coat of neat cement all complete as per standard design:					
a)	0.91 m deep with S.F.R.C. cover and frame (heavy duty, HD-20 grade designation) 560mm internal diameter conforming to I.S. 12592, total weight of cover and frame to be not less than 182kg., fixed in cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 20 mm nominal size) including centering shuttering all complete. (Excavation, foot rests and 12mm thick cement plaster at the external surface shall be paid for separately) :					
a i)	With F.P.S. bricks class designation 75	Each	2.0			
4.08	Extra depth for circular type manhole 0.91m dia (at bottom) with beyond 0.91m to 1.67 m					
a)	With F.P.S. bricks class designation 75	Metre	0.5			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
4.09	Providing and fixing orange colour safety foot rest of minimum 6 mm thick plastic encapsulated as per IS: 10910 on 12 mm dia steel bar conforming to IS: 1786 having minimum cross section as 23 mm x 25 mm and over all minimum length 263 mm and width as 165 mm with minimum 112 mm space between protruded legs having 2 mm tread on top surface by ribbing or chequering besides necessary and adequate anchoring projections on tail length on 138 mm as per standard drawing and suitable to with stand the bend test and chemical resistance test as per specification mark to be visible even after fixing, including fixing in manholes with 30x20x15 cm cement concrete block 1:3:6 (1 cement : 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) complete as per design.	Each	20.0			
4.10	Making connection of drain or sewer line with existing manhole including breking into and making good the walls, floors with cement concrete 1:2:4 mix (1 cement:2 coarse sand:4 graded stone aggregate 20 mm nominal size) cement plastered on both sides with cemnet mortar 1:3 (1 cement:3 coarse sand) finished with a floating coat of neat cement and making necessary channels for the drain etc. complete (including obtaining approval from DJB/Municipal corporation					
a)	For pipes 100 to 230 mm dia	Each	1.0			
4.11	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	20.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
4.12	Making soak pit 2.5 m diameter 3.0 metre deep with 45x45 cm dry brick honey comb shaft with bricks of class designation 75 and S.W. drain pipe 100 mm diameter, 1.8 long complete as per standard design.					
a)	With F.P.S. bricks	Each	2.0			
4.13	Constructing septic tank, of size 6.0mx2.0mx1.2m (3.0 m approx. of total height) (Height to be fixed as per site requirement i.e. below invert level of last manhole (1.2 m water depth) , in RCC M20, 200 mm thick (minimum) walls and 400 mm (minimum) base slab all as per detail design including all excavation, 15 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, top slab in RCC M20, including centring, shuttering and steel work, also providing and fixing two nos.D.I. manhole cover & frame of size 560mm dia.(medium duty, lockable type) and cost of 75mm dia C.I. vent pipe upto 3 m height with C.I. Ventilating Cowl and providing & fixing 150 mm dia SW tees for inlet and outlet, C.I Rungs@300 mm c/c all complete in every respect as per drawing and as directed. The agency has to provide the shop drawings (structure and PHE) as per IS requirements and obtain the approval from HSCC.	Each	1.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
4.14	Providing, fixing, testing & commissioning of Labroom Drain with Sealing flange,with removable trap (Storage water height-Seal-50mm) with height adjustable and Rotatable top 100 X 100mm(Suitable for 94x94 Grate),with protection plug, with plastic frame and Stainless Steel Grate.Loading capacity class K=300kg, with rotatable supply DN40, with horizontal drain socket, adjustable due to ball joint with outlet 50 mm.Body made of environmentally friendly PP (poly propylene). Quality controlled in accordance withDIN EN 1253,	Each	8.0			
4.15	Providing, Fixing,of P- Trap For sinks (Make-Viega model no.- 7985) , with horizontal outlet, quality controlled in accordance with DIN EN 274,(1 1/2" X 40mm)Body Made of PP (Poly Propylene) White in Colour.	Each	8.0			
4.16	Supplying of stainless steel 304 grade, box channels 200 of 2mm thickness, Pickle passivated for superior anti-corrosive property,having Vshape on bottom of channel debth ranging from 50mm-125mm , with/without built in slope, Standard edge to seat grating, with spigot outlet of dia 110mm, provision of flange for connection to another channel along with gasket in between to ensure leak proof, with built in groove to accommodate SS silt basket to trap kitchen debris for application in commercial kitchen along with anti slip mesh grate of sizes 375/500/1000mm matching the channels along with all required accessories (i.e. End cap & Sieve Basket) complete in all respect of approved make ACO,VIEGA or equivalent approved .	Metre	2.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
	Supply of SS 304 Kitchen/laundry Channel with inbuilt slope towards the outlet, pickle passivated for longer life, with anchors and leveling screws with Centre outlet of Dia 110mm with mesh Grating with FAT & Slit Basket					
	Trough 1000x300 Grating 999x298 Sieve Plate DN 110	Set	2.0			
4.17	Supplying of SS 304 grade pipe of DN110 length of ranging from 0.15m to 6m Confirming to EN1124-1 & EN 1124-2 having push fit system with EPDM rubber seal to ensure leak proof along with all fitting / accessories required for gravity water drainage or equivalent including suitable connection as per site requirement.	Metre	30.0			
SUB TOTAL(SEWERAGE AND DRAINAGE)						

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
5.00	EARTH WORK					
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	30.0			
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	125.0			
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	10.0			
	SUB TOTAL(EARTH WORK)					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
6.00	RAIN WATER PIPING					
6.01	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	20.0			
6.02	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	170.0			
6.03	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	60.0			
6.04	Providing and fixing plain bend of required degree.					
a)	100 mm					
a ii)	Sand cast iron S&S as per IS:3989	Each	20.0			
6.05	Providing and fixing heel rest sanitary bend.					
a)	100 mm dia					
a.ii)	sand cast iron S&S as per IS-3989	Each	20.0			
6.06	Providing and fixing collar					
a)	100 mm					
a.ii)	Sand cast iron S&S as per IS-3989	Each	20.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
6.07	Providing lead caulked joints to sand cast iron /centrifugally cast (spun) iron pipes and fittings of diameter:					
a)	100 mm	Each	120.0			
6.08	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	160.0			
SUB TOTAL(Rain Water pipe & fitting)						

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
7.00	RAIN WATER HARVESTING(1 NOS.)					
7.01	Designing and Constructing of percolation pit cum perforated well 3000mm. dia upto 4000mm deep, 230 mm thick brick masonry work around upto 1.5 m deep with 75 class brick in cement mortar 1:4, 200 mm foundation concrete in 1:4:8 mix below brick work only, 150 mm thick precast removable RCC top slab with required steel reinforcement in cement concrete 1:2:4 mix, filled with coarse aggregate, SFRC covers, river pebbles of requisite size stone as shown in the drawing including centering and shuttering, as shown complete as per detailed drawings complete.	Each	1.0			
7.02	Drilling as per IS : 2800-1964 (with percussion or combination rig) from ground level in all kind of soils including boulders (excluding rock) diameter of bore 450mm.					
a)	0-50m	Metre	40.0			
7.03	Extra for drilling in Ordinary Rock	Metre	5.0			
7.04	Extra for drilling in Hard Rock	Metre	5.0			
7.05	Providing and lowering of 200 mm dia uPVC blank/ slotted pipe with ribs, special fittings, jointing conforming to IS 12818 - 1992.	Metre	30.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
7.06	Constructing bar screen / settling tank, of sizes 4500x2500 with suitable depth up to 2.0 m in 1: 4 Cement Mortar (one cement : 4 coarse sand) height as per site requirement, in brick masonry 350mm thick walls upto water level and 230mm thick walls above water level & upto ground level, including all excavation, 20 cm thick bed concrete in 1:4:8 (one cement 4 fine sand 8 stone aggregate 40 mm), cement plaster 1:3 (one cement :3 coarse sand) with a floating coat of neat cement as inside finish , top slab in RCC 1:2:4, including centring, shuttering and steel work, also providing and fixing D.I. manhole cover & frame of size 605mm x 450mm of weight not less than 38 kg (frame + cover) and cost of 100mm dia C.I. vent pipe with C.I. Ventilating Cowl and suitable wire mesh provision for inlet, 115mm baffle walls extending 2/3 the width spaced@500mm c/c including finishing with 1:3 cement plaster 15mm thick with floating coat of neat cement slurry , all complete in every respect as per drawing and as directed to suit site condition.	Each	1.0			
SUBTOTAL (RAIN WATER HARVESTING)						

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
8.00	SOLAR WATER HEATING SYSTEM & RECIRCULATION OF HOT WATER SYSTEM (1 Nos)					
8.01	Supply, installation, testing and commissioning of solar water heating system, Thermosyphon type, all complete based on Flat plat collector system (Cu-Cu Type only) comprising of but not limited to the following:					
a)	Requisite number of Flat plate collectors of 2 sq. mtr. collector area. Collector absorber plate to be made of copper tubes & copper fins only					
b)	Hot water storage tank made of stainless steel 304- food grade quality with 100 mm Glass wool insulation and cladding with 24 SWG Aluminum sheet. One temperature measuring device and suitable inlet, outlet and drain connections on the storage tank to be provided.					
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 shall be provided					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
f)	The solar collector shall be arranged on roof of building in such a way that shadow can be avoided and requisite number of MS support for collector/tanks of minimum 35x35x5 MS angle adequate for 150 Km/Hr wind speed.					
g)	Solar water heating system based on Flat plat collector system technology with output capacity of as mentioned below with hot water at 60 degree centigrade having required Nos. solar collectors . As per complete item as per technical specification of make BHEL/TATA/EMMVEE. The system has to be installed by Manufacturers authorised distributors/approved specialised firms of Solar water heating of approved 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. The solar hot water will supply the hot water to all the geyser,in view of this provision the backup electrical heating system at terrace hot water tank will not be provided for non solar days.					
i)	Solar System of Capcity 1500 Litre/day (With minimum 12 nos of Collect) of 2.0 Sqm area	each	1.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
8.02	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
Internal work- Exposed on wall						
a)	15 mm nominal outer dia pipes (SDR-11)	metre	5.0			
b)	20 mm nominal outer dia pipes (SDR-11)	metre	5.0			
c)	25 mm nominal outer dia pipes (SDR-11)	metre	10.0			
d)	32 mm nominal outer dia pipes (SDR-11)	metre	20.0			
8.03	Providing and fixing Chlorinated Polyvinyl Chloride (CPVC) pipes, having thermal stability for hot & cold water supply including all CPVC plain & brass threaded fittings i/c fixing the pipe with clamps at 1.00 m spacing. This includes jointing of pipes & fittings with one step CPVC solvent cement and the cost of cutting chases and making good the same including testing of joints complete as per direction of Engineer in Charge.					
Concealed work including cutting chases and making good the walls etc.						
a)	15 mm nominal outer dia pipes (SDR-11)	metre	50.0			
b)	20 mm nominal outer dia pipes (SDR-11)	metre	15.0			
c)	25 mm nominal outer dia pipes (SDR-11)	metre	10.0			
8.04	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end):					
a)	25 mm nominal bore	each	4.0			
b)	32 mm nominal bore	each	4.0			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
8.05	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	95.0			
b)	32 mm dia to 50 mm dia	each	20.0			
8.06	Providing and fixing gun metal ball valve of approved quality					
a)	15 mm nominal bore	each	4.0			
b)	20 mm nominal bore	each	4.0			
SUBTOTAL(SOLAR WATER HEATING SYSTEM & RECIRCULATING SYSTEM)						

Name of Work:BOQ of Plumbing work of Animal House at IIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
9.00	WATER TREATMENT PLANT (for Domestic use)					
	Suplying, Installing, testing & commissioning of indoor package type water treatment plant of capacity 1.5 cum per hr. with 12 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.					
	FILTER					
	Supply, installation & testing and commissioning of MULTI GRADE Filter vertical floor mounted fabricated with Fibre reinforced Plastic (FRP) with frontal piping & valves, back wash system & filter media etc. with single lever operated multiport valve system with standard fittings like manhole cover, pressure gauge at inlet & outlet, sampling cock, rinse drain valve, air vent valve with piping, bolts, nuts & rubber gaskets.					
	Flow rate = 1.5 cub. m/hour					
	Working pressure = 3.5 kg/Sq. cm.					
	UV WATER STERILISERS					
	High performance on line UV water sterilisers of capacity 1500lph designed on at least 50 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 25lpm, minimum lamp rating :120 watts - 1Nos.					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
	Supplying, installing, testing and commissioning vertical online/horizontal centrifugal pumping set with mechanical seal, C.I. Housing, C.I. volute and SS impeller & SS shaft connected to a TEFC induction motor of suitable HP for 415 volts, 3 phase, 50 cycles A.C. supply with 150 mm dia pressure gauge with gunmetal isolation cock, vibration eliminating pads, base plate wiring upto panel and equipment for water level controller to start and stop the pump automatically at predecided levels of the water in the tank with provision of protection for dry run etc. complete in all respect (The shop drawing or the pumps along with its characteristics curves, model and technical data etc. are to be submitted for approval before purchase of pump).					
	Filter feed pump(1 no.)					
	Capacity 30 lpm					
	Head 30M	Set	1.00			
9.01	WATER TREATMENT PLANT (for A/C use))					
	Supplying, Installing, testing & commissioning of indoor package type soft water treatment plant of capacity 2 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)	FILTER					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
	Supply, installation & testing and commissioning of MULTI GRADE Filter vertical floor mounted fabricated with Fibre reinforced Plastic (FRP) with frontal piping & valves, back wash system & filter media etc. with single lever operated multiport valve system with standard fittings like manhole cover, pressure gauge at inlet & outlet, sampling cock, rinse drain valve, air vent valve with piping, bolts, nuts & rubber gaskets.					
	Flow rate = 2.0 cub. m/hour					
	Working pressure = 3.5 kg/Sq. cm.					
b)	Softener					
	Supply, installation & testing and commissioning of upflow cation Ion exchange resin water Softener fabricated with Fibre reinforced Plastic (FRP) 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 = 2.0 cub. m/hour- 0.3 cub.m/hour					
	Working pressure = 3.5 kg/Sq. cm.					
	Raw Hardness-700-1500 mg/l					
	Soft water quality-Commercial zero hardness(less than 5ppm)					
	Output per Regeneration-10 cum.(min.)	Each	1.00			

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
9.02	Providing and fixing of OxiLyte (Mixed Oxidant) Generation System , based on ECA Technology, producing non toxic mixed Oxidant Slution at 1000 ppm of Oxidant Concentration or any other approved disinfection method excepted by HSCC. The solution should be at a pH 3+-0.5 suitable for 24x7 operations should produce 25L per hour. The system should be supplied complete with appropriate dosing pumps , valves, piping, fittings, chemical dosing tank etc. shope drawing complete in all respect.	set	1.00			
Subtotal (Water treatment Plant,Pump and Equipment)						

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
10.00	EFFLUENT TREATMENT PLANT(ETP)					
	Providing and fixing packaged type Effluent treatment plant including design/shop drawing and obtain the approval from HSCC,erection,commissioning,construction of ETP including civil,mechanical,electrical,piping work complete in all respect on turnkey basis.The system should be fully automatic with level control,compact,odor free and shall consume low power. ETP will be place in the basement of building of suitable size for 10 KLD required to treat the effluent of lab,laundry facilities by using suitable technology complete in all respect including screen/equilization/flocculation/mixer/settler/neutralisation chamber,holding tank,including multigrade filter stand by motor pump,blower etc. pumps and piping,filter,sludge holding tank,filter press,testing kit,electrical panel,air blower,equlisation tank/holding tank.Treated water transfer pump and sump of suitable capacity.Agency has to monitor the lab waste effluent for various parameter and quantity obtaining desired no. of test reports of raw/treated lab effluent.					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
	All the unit of ETP shall be MS sheet min. 4 mm thickness with suitable structure support complete in all respect including min.3 layers approved epoxy or other approved corrosion resistant coating/protection of all parts (internal and external surface).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 State Pollution Control Board norms and also obtain NOC from SPCC. 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.					
	The collection/equilization tank and treated effluent tank/sludge drying bed foundation will be made in RCC civil work and this will be paid in addition as per item rate basis based on civil item but the planning and design, piping/plumbing work will be covered in this item	Each	1.0			
Subtotal (Effluent Treatment Plant)						

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
11.00	WATER SUPPLY PUMP PANEL					
	Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, powder coated, wall mounted/ 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 required.					
	INCOMER :					
	125 Amp 415 volts, 35 KA (Isc), FP MCCB with e/f protectionthermal magnetic release having variable current settings.					
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
	"ON" and "OFF" LED indicating lamp and 2A control SP MCBs					
	Push button for CLOSE and TRIP					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 no. 0 to 500 V Digital voltmeter with selector switch					
	1 to 0 to 125 Amps Digital ammeter with selector switch with one set of 125/5A C.T. s					
	BUSBARS :					
	160 Amp TPN busbars of aluminium					
	OUTGOINGS :					
i	6 Sets of following (For Domestic Pump)					

Name of Work:BOQ of Plumbing work of Animal House at IIIM,Jammu						
Sl. No.	Description of Item	Unit	Total Qty.	Rate in figures(in Rs.)	Rate in words(in Rupees)	Amount in figures(in Rs.)
1	3	4	5			
	1 No. 16 Amp. 415/500 volts,25 KA, three pole, Moulded Case Circuit Breaker with variable current setting .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 3 Phase, DOL starter type - II of 1 HP with thermal overload relay, contactor, Push Buttons, Single Phase Preventer and Switches etc complete as required.					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
	WATER SUPPLY PUMP Panel as mentioned above	Set	1.00			
	Subtotal (Watersupply Pump Panel)					

ABSTRACT

Name of Work:BOQ of Plumbing work of Animal House,IIM,Jammu

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

PROJECT NAME: Animal House , IIIM Jammu

Name of Works: 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
1.00	FIRE FIGHTING SYSTEM					
1.01	Providing, fixing jointing and testing of Heavy (class - C) G.I. pipes as per relevant IS :1239/4736 with special accessories like tees, elbow, gasket, flanges, flanged joints, rubber insertion nuts and bolts including earth work excavating and trenching, wrapping pipe with 4mm thick 500mm width tar based polymeric corrosion protection tape or equivalent suitable to GI/ MS pipe line including applying uniform coat of cold pipe primer complete 1 m below the ground level, refilling in layers not exceeding 20 cm in depth consolidated each deposited layer by ramming & watering complete in all respect as per IS : 1022 (Under ground)					
a)	150 mm dia G.I. Pipe with flange joints (5.4 mm wall thickness)	Metre	30.0			
b)	80 mm dia G.I. Pipe with flange joints	Metre	10.0			
1.02	Heavy class G.I. pipes conforming to IS with accessories like tees, elbows, flanged joints, rubber insertion, nuts, bolts or welded joints including fixing the pipe with suitable flat iron strip clamps/brackets, structural members, dash fastener , cutting hole and chases in walls, floor, R.C.C. slab etc. and making good the same, including painting pipes and fittings with a primer coat of steel primer and two coats of postal red enamel paint etc. complete as required. (All the fitting i.e. tee /elbow, Valve shall be 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
b)	150 mm dia (with Flanged joints)	Metre	60.0			
d)	80 mm dia	Metre	20.0			
1.03	Providing and fixing Single headed hydrants flanged inlet with 63 mm female instantaneous outlet of gunmetal complete with male blank caps, chains conforming to IS:5290 type A with stainless steel orifice plate (if required) to keep the pressure not more than 3.5 kg/sq.cm at any point.	Each	8.0			
1.04	Providing 63mm dia 15 m long reinforced rubber lined hose pipe conforming to IS: 636-1992 Part-II with gunmetal male & female coupling wire wound with pipe as required.	Each	12.0			
1.05	Providing and fixing 63mm dia 15 m long canvas hose pipe complete with gunmetal male & female coupling wire wound with the pipe The pipe shall confirm to IS: 4927.	Each	4.0			
1.06	Providing and fixing Gunmetal branch pipe with 20mm dia nozzle conforming to IS:903. suitable for installation connections to hose coupling etc. as required.	Each	8.0			

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
1.07	Providing and fixing Four way fire brigade connection housed in steel cabinet of size 900mm x 750mm x 400mm fabricated from 1.5mm thick M.S. sheet having lockable arrangement, openable glazed door with 4mm thick glass, including painting a coat of steel primer and two coats of postal red enamel paint, with necessary supports for the cabinet etc. with 150 mm dia. non return and butterfly valves complete in all respects.					
a)	4 Way - 150mm dia	Each	1.0			
1.08	Providing and fixing Set of "Siamese" quadruplet instantaneous fire brigade connections comprising of two gunmetal instantaneous male inlet coupling 63mm dia with plug and cap, chain bends, tees etc for inlet to the static tank.	Each	1.0			
1.09	Providing & Fixing 150 mm dia, 4 way suction coupling for firebrigade withdrawal of water from the fire tank	Each	1.0			
1.10	Providing and fixing glazed door shutter and frame for Fire hose cabinet with hold fasts (frame fabricated from 40 x 40 x 5mm and shutter from angle) 2100 mm high x 1200 mm wide x 600mm deep with locking arrangement, 4mm thick glass with M.S. flats including all accessories, painting with one coat of steel primer and two coats of postal red enamel paint complete as per drawing and as directed. The words " hose cabinet" to be painted on the box complete in all respects.	Each	6.0			

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
1.11	Providing and fixing Weather proof standard stand post type hose cabinet (900mm x 750 mm x 400 mm) out door type made of 1.5mm thick M.S. sheet having central opening glazed door with 4mm thick glass suitable for accommodating hydrants, 2 Nos. canvas hose pipe and branch pipe including necessary locking arrangements, painting one coat of primer and two coats of postal red enamel paint.. The shutters are to be lockable type. The words "hose cabinet" to be painted on the box.	Each	2.0			
1.12	Providing and fixing cast iron body IS: 210 FG 220 and double flange gear simple operation type butterfly valve conforming to IS: 13095 with SS304 disc and shaft NITNLE rubber replaceable seat of the following size complete with bolts, nuts, washers and rubber insertions as per specification.					
a)	150 mm dia	Each	6.0			
b)	80 mm dia	Each	2.0			
1.13	Supplying, testing, installation & commissioning of pressure switches for pumps including necessary wiring upto the control panel.	Each	2.0			

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
1.14	Constructing masonry chamber 90x90x100 cm, inside with 75 class designation brick work in cement mortar 1:4 (1 cement: 4 fine sand) for sluice valve, with C.I. surface box 100mm top diameter, 160mm bottom diameter and 180mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1 cement : 3 coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design.					
	with F.P.S. bricks	Each	2.0			
1.15	Supplying and Fixing First Aid Hose Reel , wall mounting swinging type complete with drum & bracket of MS construction, spray painted in Post office Red, confirming to IS 884/1995 with upto date amendments, complete with the following as required.					
	36 Meter long 20 mm dia water hose Thermoplastic (Textile reinforced) Type - 2 as per IS : 12585					
	20 mm dia gun metal ball valve & nozzle.					
	Drum and brackets for fixing the equipments on wall.					
	Connection from riser with stop valve (gun metal) & M.S. Pipe	Each	6.0			

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
1.16	Providing and fixing C.I. sluice valves (With cap) of approved quality complete with bolts, nuts, rubber insertions etc. (the tail pieces if required will be paid separately) Class II					
a)	150 mm dia	Each	2.0			
1.17	Supply, Installation, Testing and Commissioning of 100 mm dia Bourden type, Stainless Steel dial type Pressure Gauge including brass isolation valve and siphon pipe having caliberation of 0 - 16 Kg / cm ² .	Each	8.0			
1.18	Supplying and Fixing of Fire Man's axe with heavy insulated rubber as per standard conforming to IS 926	Each	6.0			
1.19	Supplying and Fixing vane type waterflow switch with contacts suitable for installation on 50 mm to 150 mm dia pipeline for a service pressure upto 20 Kg/sq.cm.	Each	2.0			
1.20	Fabricating, Supplying, Installation, Testing and Commissioning Air Vessel of continuous welded construction with flanged discharge header on the top of each riser fabricated out of 10 mm thick dished ends and 8 mm thick MS sheet, Air Release Valve complete with suitable drain arrangement with 25 mm dia gun metal wheel valve complete with all accessories etc. as required of the following sizes					
a)	1.2 Metre high and 250 mm dia	Each	2.0			

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 External Yard Hydrant Stand Post comprising of GI pipe 80 mm dia (heavy duty C class) from existing ringmain to about 1 meter above ground level and Single Headed Yard Hydrant Valve with 80 mm dia flanged inlet, intantaneous 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	2.0			
1.22	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	5000.0			
1.23	Supply, erection, testing & commissioning of exit glow sign board of size 200mm x 350 mm wall mounting signage consisting of photo luminescent coating on acrylic cover	Each	6.0			
1.24	Providing and fixing fire extinguisher of carbon dioxide type consisting of brand new high pressure steel cylinder bearing IS: 7285 mark and having the approval of controller of explosives Nagpur, wheel type valve bearing IS:3224 mark internal discharge tube, 1 meter long high pressure discharge hose, non conducting horn, suspension bracket, fully charged bearing IS: making fixed to wall as directed.					
a)	4.5kg capacity cylinder	Each	5.0			

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
1.25	Providing and fixing 9 liters capacity fire extinguisher water type gas pressure conforming to IS marking, fixed to wall.	Each	5.0			
1.26	Providing and fixing ABC type fire extinguishers complete in all respects.					
a)	Capacity 5.0 Kg.	Each	5.0			
1.27	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	1.0			
1.28	Fabricating, Supplying, Installation, Testing and Commissioning Air Vessel of continuous welded construction with flanged discharge header in pump house fabricated out of 10 mm thick dished ends and 8 mm thick MS sheet, Air Release Valve, complete with drain arrangement with 25 mm dia gun metal wheel valve complete with all accessories etc. as required of the following sizes					
a)	2 Metre high and 450 mm dia suitable to operate Jockey Pump, Main Fire Pump & Diesel Engine Driven Fire Pump	Each	1.0			
1.29	Providing and fixing C.I. non-return valve complete with gunmetal seat, bolts, nuts washer & rubber insertions as required conforming to IS:5312.					
a)	150 mm dia	Each	4.0			
b)	80 mm dia	Each	4.0			

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
1.30	Supplying, installing, testing and commissioning of electric driven fire pump suitable for automatic operation consisting of the following (as per CPWD specification Part V-1985 for Fire Fighting and its amendments) (For Hydrant system & Sprinkler system).					
a)	Fire pump with stainless steel impeller, CI casing, SS shaft & mechanical seal shall be horizontal split casing centrifugal suction type multistage having following capacity and head so as to ensure a minimum pressure of 3.0 kg per square cm. at the highest and farthest out let at the specified flow complete with necessary strainer / foot valve suction side and pressure gauge on the delivery side including by pass arrangement for periodical testing of the working of the pumping set as required. The pump shall be provided with mechanical seals.					
b)	Squirrel cage type TEFC motor suitable for operation on 415V, 10%, 3 phases 50 Hz. system of suitable HP for the above pump with synchronous speed of 1500 RPM and flexible coupling. The pump motor should conform to IS: 325-1978.					
c)	Common bed plate fabricated from mild steel channel or cast iron type.					
d)	Suitable cement concrete pump foundation & vibration damping arrangement with cushy foot mounting as required.					
l)	Capacity 2280 LPM and Head 50 Metres	Each	1.0			

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
1.31	Supplying, installing, testing and commissioning of diesel engine driven fire pump suitable for automatic operation consisting of the following (as per CPWD specifications PartV 1985.) (For Hydrant system & Sprinkler system).					
a)	Horizontal centrifugal type multi-stage, fire pump with stainless steel impeller CI casing, SS shaft & mechanical seal complete of following capacity and Head so as to ensure a minimum pressure of 3.0 kg per sq.cm. at the highest & farthest outlet at the specified flow, complete with necessary strainer pressure gauge on the delivery side etc. including by pass arrangement for periodical testing of the working of the pump set as required. The pump shall be provided with mechanical seals.					
b)	Water cooled cold starting type multi cylinder 4 stroke diesel engine, developing suitable BHP at 1500 RPM for the above pump set with automatic starting mechanism, cooling system shall be with radial cool engine, maintenance free batteries, battery charge unit, flexible coupling with the pump, common bed plate for mounting diesel engine fuel day tank fuel piping and pump and vibration damping arrangement by cushy foot mounting as required complete in all respects.					
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.					

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
d)	Common bed plate fabricated from mild steel channel or cast iron type.					
e)	Isolation Valve					
f)	Suitable cement concrete pump foundation & vibration damping arrangement with cushy foot mounting as required.					
l)	Capacity 2280 LPM and Head 50 Metres	Each	1.0			
1.32	Supplying, installation, testing and periodic commissioning of electric motor driven automatic pressurization pump set consisting of the following (as per specification) (For Hydrant system & Sprinkler system).					
a)	Centrifugal pump of 180 LPM capacity capable of building up pressure lost in any leakage in the system against atotal head (mentioned as under) complete with C.I. casing stainless steel impellor ; mechanical seal & S.S. shaft necessary strainer, pressure gauge on delivery side etc. including by-pass arrangement for testing of the working of the pumping set as required .					
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.					

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
c)	Common bed plate fabricated from mild steel channel or cast iron type.					
d)	Suitable cement concrete pump foundation with vibration damping arrangement with cushy foot or similar mounting as per required.					
l)	Head - 50 Metres	Each	1.0			
1.33	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	4.0			
b)	for 150 mm dia pipe	Each	6.0			
c)	for 200 mm dia pipe	Each	2.0			
1.34	Supplying, installing, testing and commissioning of electric motor driven type automatic pressurisation, pump set suitable for automatic operation of terrace down comer and consisting of the following (as per CPWD specifications Part V-1985) for fire fighting and its amendmendts).					

Item No	Description Of Item	Unit	Total Qty.	Rate 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 shall be horizontal end suction centrifugally type having a capacity of 450 LPM against a total head of 25m so as to ensure a minimum pressure of 3.0 kg/sqm at the highest and farthest out at the specified flow complete with necessary strainer with foot valve in suction side and pressure gauge on the delivery side including bypass arrangement for periodic testing of the working of the pumping set as required. The pump shall be provided with mechanical seals.(Including taking necessary approval of complete fire fighting scheme from local fire authority before and after start of work) {Agency also has to submit characteristic curve of the pumps, model & other technical data for approval before placing the order}					
b	Squirrel cage AC induction motor suitable for operation of 415 V ,+/-10%, 3 phase 50 HZ, AC supply and of minimum 7.5 HP,1500 RPM for the above pump with flexible coupling as per specification and conforming to IS 325-1978 and shall be TEFC type only					
c	Common base plate fabricated from mild steel channel or cast iron type					
d	Star delta suitable starter complete in all respect for automatic/manual operation of pump, start and stop push button contactor with required overload protection and single phase preventor					
e	Suitable cement concrete pump foundation with vibration damping arrangement with cushy foot mounting as required and having provision of suitable weather protection cover.	set	2.0			

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	Fire Fighting PANEL(Electrical)					
2.00	FIRE PANEL					
	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 required.					
	INCOMER :					
	160 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings.					
	R,Y&B phase indicating lamp (LED type) with 2A control SP MCB					
	"ON" and "OFF" LED indicating lamp and 2A control SP MCBs					
	Push button for CLOSE and TRIP					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 no. 0 to 500 V Digital voltmeter with selector switch					
	1 to 0 to 160 Amps Digital ammeter with selector switch with one set of 160/5A C.T. s					
	BUSBARS :					
	250 Amp TPN busbars of aluminium					

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
	OUTGOINGS :					
	1 Sets of following					
	1 No. 125 Amp. 415/500 volts,35 KA, three Pole, Moulded Case Circuit Breaker with variable current setting .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	1 No. 3 Phase, fully automatic star-delta starter, type - II of 45 HP with thermal overload relay, contactor, Timer, Push Buttons and Auto-manual selector switch etc complete as required.					
	Single Phase preventer					
	1 to 0 to 120 Amps Digital ammeter with selector switch with one set of 120/5A CT,s.					
	1 Set of phase indicating lamp with 2A SP control MCBs					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
	4 Sets of following					
	1 No. 32 Amp. 415/500 volts,25 KA, three Pole, Moulded Case Circuit Breaker with variable current setting .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					

Item No	Description Of Item	Unit	Total Qty.	Rate in figures (in Rs.)	Rate in words (in Rupees)	Amount in figures (in Rs.)
1	2	3	4	5	6	7
	1 No. 3 Phase, DOL starter type - II of 5 HP with thermal overload relay, contactor, Push Buttons and Switches etc complete as required.					
	Single Phase preventer					
	1 Set of phase indicating lamp with 2A SP control MCBs					
	Neon indicating Lamps for "ON" , "OFF" & "TRIP" indication with 2A SP control MCBs.					
	1 Set of following (in a separate cubicle)					
	One no. Diesel engine auto starting kit with all necessary relay, controls, wiring etc to start 45 HP diesel engine when electrical driven fire pump fail to start including one no rectifier circuit, battery charger, batteries, DC Voltmeter, DC Ammeter etc. complete as required.					
	Fire Panel as mentioned above	Set	1.00			
	Sub Total					

PROJECT NAME: Animal House , IIM Jammu

ABSTRACT OF COST

S.No	DESCRIPTION OF WORK		Amount in figures(in Rs.)
1	FIRE FIGHTING		
	Sub Total(Fire Fighting work)		

Total

BOQ FOR ELECTRICAL WORKS OF ANIMAL HOUSE AT IIIM, JAMMU.

S.No.	Description.	Unit.	Qty	Rate in Figures (in Rs.)	Rate in words (in Rs.)	Amount in Rs.
1	2	3	5	6	7	8
	SUBHEAD 1: H.T. SUB STATION					
1.00	SUBSTATION EQUIPMENTS					
1.01	HT Panel.					
	Supply, delivery, erection, testing and commissioning of one (1) panel, 630A, 11KV, 3 Phase, 50 Hz., metal clad, dead front, 350MVA rupturing capacity Vacuum Circuit Breaker including power pack as per the detailed specifications and drawings including connections etc. complete with following incomers and outgoings and as approved by the Engineer In charge and as required.					
	A. INCOMER/ OUT GOING					
	i) 1 No. VCB Panel having following					
	1 No. 630A, 11kV, 3 Phase, 50Hz., metal clad, dead front, 350 MVA rupturing capacity, Fully Drawout type, Vacuum Circuit Breaker (VCB)					
	1 Set of Phase indicating lamps with HRC fuses					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP, SPRING CHARGED, TRIP CIRCUIT HEALTHY					
	Push button for ON, OFF,TRIP & TRIP circuit healthy					
	1 set of 11kV/110-110 V Potential Transformers with HRC fuses					
	1 set of 30/5-5A Current Transformer for metering and protection					
	1 No. Digital voltmeter .					
	1 No. digital Amps ammeter .					
	Digital frequency meter, Digital Tri vector meter.					
	1 No. Digital Power factor meter					
	1 No. Frequency meter					
	1 Set of CDG 61 (2 No. O/C, 1 No. E/F) relay					
	1 Set of undervoltage relay and Overvoltage relay					

	Trip circuit supervision relay,Auxiliary relays with shunt trip coil					
	1 No. Master Trip relay					
	HT Panel as mentioned above	Set	1			
	TRANSFORMER :					
1.02	Supply, erection, testing and commissioning of 630 KVA , 11/0.433 kV, 3 Phase, 4 wire, 50 Hz., ON-AN Transformer for outdoor duty with on load tap changer (OLTC) range -20%, +7.5% with RTCC panel , cable box at primary (HT side) and secondary end (LT side) shall be connected through cable, the transformer shall be complete with first filling of oil, with double float buchholz relay protection, high winding temperature/oil temp. sensors, complete with all fittings and accessories, interconnection of control cables and accessories as per detailed technical specifications confirming to IS 2026 & as per CPWD soecifications and as required.	Each	1			
1.03	H.T. CABLE					
	Supply of following sizes of 11 kV grade multicore aluminium conductor XLPE armoured power cable as per IS : 7098.					
	i) 3 Core, 185 sq mm	Mtrs.	300			
1.04	Laying of one number 3 core XLPE power cable of grade exceeding 1.1 KV but not exceeding 11KV of size exceeding 120 sqmm but not exceeding 240 Sqmm direct into ground including excavation, sand cushioning, protective covering and refilling the trench, supply of route marker complete as required.	Mtrs.	300			

1.05	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) 185 sqmm	Each	4			
	TOTAL FOR SUB HEAD 1: H.T. SUB STATION					
	SUB HEAD 2: MAIN LT PANEL.					
2.01	MAIN L.T. PANEL:					
	Supply, installation, testing and commissioning of LT Panel, cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of powder coated CRCA sheet, complete with aluminium busbars, danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, necessary interlocking, and having incoming and outgoing switchgears with cable alley in front as mentioned below and complete as per technical specifications and as required. The size of cable alley shall be sufficient enough to accomodate the cable sizes as mentioned in the SLD/ specifications/ drawings etc.					
	Note :					
	1. All ACBs shall have 5 NO + 5 NC contacts					
	2. All relays to operate at 240Volts, Single phase, 50Hz., AC supply through UPS. UPS is also in the scope of supply.					
	3.Digital Multifunction metre should be suitable for true RMS metering.Metre should measure line and phase voltage , current of all three phases and neutral, HZ, PF, KW, KWH, KVAR, KVARH, KVA, KVAH ,voltage and current including one set of CT. Metre should be EMI/ EMC compliant.					
	One set of dual core dual ratio CT of 1000/400/5/5A for capacitor panel.					
A.	INCOMER:					

	i)	2No. ACB Panels each having following:					
		1 No. 1000A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have $I_{cw}=I_{cs} = 50 \text{ KA}$ for 1 sec.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
		Push button to CLOSE the ACB.					
		R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs					
		Restricted earth faulty protection with one set of CT.					
		Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs					
		1000/5A CTs with CT shorting links for power factor improvement panel suitable for giving signal to APFCR at less than 10% of secondary ratio current					
B.		BUSBARS :					
		1250 Amps Phase TPN busbars of aluminium.					
C.		OUTGOING.					
	i)	1 No. ACB Panels each having following:					
		800 A, 415/500V, Fully Motorised, Fully Drawout type (EDO), TPN, 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 $I_{cw}=I_{cs} = 50 \text{ KA}$ for 1 sec.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					
		Push button to CLOSE the ACB					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for ACB					

	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
ii)	3 Nos.MCCB as per following details/ specifications:					
	400 Amp 415 volts, 50 KA (Ics), TPN microprocessor based MCCB with variable current settings and having microprocessor based O/L, S/C & 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.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
iii)	2 Nos. MCCB as per following details/ specifications:					
	160 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
iv)	2 Nos. MCCB as per following details/ specifications:					
	125 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					

	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
v)	5 Nos. 63 Amp MCCB as per following specifications:					
	63 Amp 415 volts, 50 KA (Isc), TPN MCCB with thermal magnetic release having variable current settings .					
	Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
	Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB					
	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital energy metre with CT					
	Main LT Panel as mentioned above.	Set	1			
2.02	CAPACITOR PANEL					
	Supply, installation, testing and commissioning of M.V. cubicle type totally enclosed free standing type, powder coated, dust, damp and vermin proof Capacitor Panel complete with busbars, M.V. danger notice plate, ammeter, ammeter selector switch, indicating lamps, CT's, Extra heavy duty, APP type Capacitors suitable for non linear loads upto 20%, operating losses not more than 0.5 W / KVAR, contactors suitable for capacitor switching (current limiting contactor circuit to suppress switching inrush current) interconnections with suitable capacity aluminium leads/solid aluminium strips, rods, connection of incoming and outgoing cables with thimbles, and having following incoming and outgoing switchgears complete as required					

A.	INCOMER :						
		1 No. 400A, 415/500V, 35 KA (Ics) FP MCCB with thermal magnetic release having variable current settings .					
		Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.					
		Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP.					
		R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs					
		Day & Night mode selector switch					
		10 steps Intelligent microprocessor based Automatic Power factor Correction relay having measurment sensitivity of 1 %.					
		Extension of incoming busbars for connection of multicore armoured aluminium cables.					
B.	METERING :						
		1 set of digital Amp. Meter, digital Poper factor meter and Digital voltmeter					
C.	BUSBARS :						
		630 Amp FP busbars of aluminum					
D.	OUTGOINGS :						
i	1 Nos . MCCB as per following details/ specification:						
		100 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to supress switching inrush current					
		ON/ OFF delay timers for switching capacitor circuit.					
		"ON" and "OFF" LED indicating lamp and 2A control SP MCB					
		Push button for CLOSE and TRIP					
		Extended rotary operating mechanism					
		50 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					

	ii	5 Nos . MCCB as per following details/ specification:					
		63 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current					
		ON/ OFF delay timers for switching capacitor circuit.					
		"ON" and "OFF" LED indicating lamp and 2A control SP					
		Push button for CLOSE and TRIP					
		Extended rotary operating mechanism					
		25 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					
	iii	1 Nos . MCCB as per following details/ specification:					
		32 Amps, 415 volts, TP, Power Contactor suitable for capacitive switching including current limiting contactor circuit to suppress switching inrush current					
		ON/ OFF delay timers for switching capacitor circuit.					
		"ON" and "OFF" LED indicating lamp and 2A control SP					
		MCPs					
		Push button for CLOSE and TRIP					
		Extended rotary operating mechanism					
		10 kVAR super heavy duty mix dielectric low loss Capacitors suitable for non linear loads upto 20% (L&T model MD-XL ultra or equivalent)					
		Capacitor panel as mentioned above.	Set	2			
		TOTAL SUBHEAD 2: MAIN LT PANEL.					
3.00		SUB HEAD 3 : DG SET & ACCESSORIES					
		SOUND PROOF DG SETS OF 500 KVA :					

3.01		Supply, installation, testing and commissioning of sound proof (silent type) Diesel Generating set having 500 KVA Prime Power Rating , 415 volt at 1500 RPM, 0.8 power factor suitable for 50 Hz, 3 phase system ,0.85 load factor, suitable bhp, water cooled type, radiator type, diesel engine-alternator set mounted on common base frame, return fuel cooler, battery & battery charger, Anti Vibration mounting pads, Engine alternator safeties, electronic governor including all accessories & their wiring as per technical specification. This includes the following:					
	-	Supplying and fixing of suitable sizes High class MS pipe for DG exhaust complete with bends, elbow, flanges etc including silencer and catalytic convertor exhaust pipe for exhaust of DG sets including pollution control board norms and as required.					
	-	Supply and fixing of 50mm thick compressed mineral wool insulation (Rock wool) for D.G. exhaust pipe with 22 gauge aluminium sheet cladding etc. as required for the under mentioned dia pipe.					
	-	Supply, installation, testing and commissioning of suitable size fuel pipe for connecting diesel engine to individual day service tank including supply and fixing of required valves & filters etc. as required.					
	-	Fabrication of supports for exhaust pipe, fuel pipe or for any other purpose out of suitable M.S. structural steel including supplying and applying of enamel paint of approved shade after one coat of steel primer of reputed company.					
	-	Supplying and fixing of suitable capacity cable adapter box for alternator.					
	-	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, light fixtures for illumination with switch, wiring for light fixtures and power sockets, etc.					
	-	Any other item required for completion of system above (D.G. set)					
		DG AMF PANEL					
	A.	DG AMF PANEL					
		Supply, installation, testing and commissioning of DG , cubicle type, totally enclosed, free standing type, dust, damp and vermin proof Panel made up of powder coated 14/16SWG CRCA sheet, (load bearing members 14 SWG and doors 16 SWG) ,complete with aluminium busbars, M.V. danger notice plate, interconnections with suitable capacity aluminum leads/solid aluminum strips/rods, and having incoming and outgoing switchgears as mentioned below and complete as required.					
		Note :					
		1. Panel shall be suitable for manual and automatic operation (AMF) and shall be complete as required.					
		Auto change over arrangement consisting of the following including interlocking etc :					
	B.	1 No ACB as per following details/ specification:					
		1000 A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit & earth Fault trip including under voltage release and lockable trip push button. ACB should have Icw=Ics = 50 KA for 1 sec.					
		"ON" LED indicating lamp and 2A control SP MCB					
		Digital energy meter with one set of suitable CTs, CT shorting links.					

	Digital Ampere Metre of suitable range with suitable set of CT's and ASS.					
	Digital Volt meter with VSS & HRC fuse					
	Digital multifunction meter to show, KWH, KVAH, P.F.and frequency meter one set of suitable CTs, CT shorting links.					
C.	PROTECTION AND AMF COMPONENTS for above mentioned DG set.					
	- 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 - I 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.					
	- Supply failure timer					
	- 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 :					
	a) High stator temperature.					
	b) Low lubricating oil pressure					
	c) Engine over speed					
	d) Engine fails to start					
	e) Full load/ maximum load warning.					
D.	ENCLOSURE :					

		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.					
		DG SET WITH AMF PANEL(500 KVA) as mentioned above	Set	1			
		TOTAL SUBHEAD 3: DG SETS					
		SUB HEAD 4 : UPS SYSTEM					
4.00		UPS OF 10 KVA.					
4.01	i)	Supply of 10 KVA True Online double conversion and fully Microprocessor Controlled UPS system with IGBT based Rectifier with minimum input pf 0.95 with minimum 92% overall efficiency at 50% load condition and THDI less than 5% on non linear loads with accessories and suitable Power Management software in each UPS including IGBT/PWM technology based inverter, automatic bi - directional static switch, manual bypass switch, input phase reversal protection, provision for separate input for rectifier and for bypass .UPS should be three phase input and single phase output complete in ready to use condition and as required.					
	ii)	Rack mounted external battery bank of 12 V Sealed Maintenance Free batteries for 30 mins backup.					
	iii)	Installation & commisioning of 10 KVA UPS with battery and accessories.					
		Supply, installation , testing and commissioning of 10 KVA UPS as mentioned above.	1	Set			
		TOTAL SUBHEAD 4 : UPS SYSTEM					
5.00		SUB HEAD 5 :MV PANELS					

		Supply, installation, testing and commissioning of following M.V. cubicle type totally enclosed, powder coated, wall mounted type, dust, damp and vermin proof, indoor type Distribution Board/Panel complete with busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, and having following incoming and outgoing switchgears complete as required.					
5.01		MV PANEL GROUND FLOOR :					
	a)	INCOMER:					
		320 Amp 415 volts, 35 KA (Ics) 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 2A control SP MCB					
		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
		1 No. 0 to 500 V Digital voltmeter with selector switch.					
		1 No. 0 to 160 Amp Digital ammeter with selector switch with one set of 160/5A C.Ts.					
	b)	BUSBARS:					
		500Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	6 Nos. MCCB as per following details / specifications:					
		63Amps, 415 volts, TPN, 25 KA Moulded Case Circuit Breaker with thermal magnetic release having variable current settings					
		"ON" LED indicating lamp and 2A control SP MCB					

		Extended rotary operating mechanism with door interlocking with defeat feature and padlock facility. MCCB should have spreader links & phase barriers.					
	i)	6 no. 40 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	ii)	2 no. 63 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	iii)	4 no. 100 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
		MV PANEL GROUND FLOOR as mentioned above	Set	1			
5.02		UPS MV PANEL :					
	a)	INCOMER: 63Amps,415 volts, TPN, 25 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					
		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 60 Amp Digital ammeter with selector switch with one set of 60/5A C.Ts.					
	b)	BUSBARS: 100 Amp TPN Aluminium busbars					
	c)	OUTGOING:					
	i)	2 no. 40 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
	ii)	3 no. 25 Amps , 415 volts, 9 KA ,Four Pole, Miniature Circuit Breaker, with ON/ OFF indication.					
		UPS MV PANEL as mentioned above	Set	1			

		TOTAL SUB HEAD 5 : MV PANEL					
		SUB HEAD- 6: MCB DISTRIBUTION BOARDS.					
6.00		MCB DISTRIBUTION BOARD					
6.01		Supplying & fixing following way, three pole and neutral, prewired, sheet steel, MCB distribution board, 415 volts, on recess/surface complete with loose wire box, terminal blocks, tinned copper busbar, neutral link, earth bar, din bar, detachable gland plate, interconnections, phosphatized and powder painted including earthing etc. 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	4 way (8+12), Double door	Each	3			
	ii	6 way (8+18), Double door	Each	1			
	iii	8 way (8+24), Double door	Each	4			
	iv	12 way (8+36), Double door	Each	4			
6.02		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	221			
	ii	Triple pole & neutral (FP)	Each	2			
6.03		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	40 Amps	Each	6			
	ii	63 Amps	Each	1			

	iii	100 A mps	Each	3			
6.04		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	2			
	ii	40 Amps	Each	6			
	iii	63 Amps	Each	1			
	iv	100 A mps	Each	3			
6.05		Supplying and fixing Single pole Blanking plate in the existing MCB DB complete as required.	Each	74			
		TOTAL SUB HEAD-6: MCB DISTRIBUTION BOARDS.					
		SUB HEAD 7: WIRING					
7.00		WIRING					
7.01	i	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.					
	ii	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.					
	iii	Supplying and fixing Hexagonal fan Boxes with 3 mm thick hylem sheet covers in case of Fan Points					
	iv	Supplying & Fixing Ceiling Rose in case of Exhaust Fan Points etc.					

		Note :					
		i) Unless otherwise specified all the conduiting work to be done in recess					
		Point wiring as mentioned above	Point	448			
7.02	i	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.					
	ii	Supplying and Fixing Modular type two numbers 2 Way switches in suitable size modular metal boxes, base plate & modular cover plates etc.					
		Note :					
		i) Unless otherwise specified all the conduiting work to be done in recess					
		Wiring for twin control light points as mentioned above	Point	40			
7.03		Wiring for 5A light plugs with 1.5 sq.mm. PVC insulated, FRLS copper conductor cable including one number 1.5 sq.mm. PVC insulated, copper conductor cable for earthing in surface/recessed ISI marked MS conduit (including supply and recess laying of ISI marked MS conduit) as per technical specifications and as required.	Point	14			
		5 A light plug wiring same as above but plug point is in the switch board itself.	Point	15			
7.04		Wiring for computer points (Three sockets & one switch) with 2.5 sq.mm. PVC insulated, FRLS copper conductor cable including one number 2.5 sq.mm. PVC insulated, copper conductor cable for earthing in surface/recessed MS conduit (including supply and recess laying of conduit) as per technical specifications and as required.	Point	40			

7.05	Wiring for 16 amp power plug with 2X4 sqmm PVC insulated, FRLS copper conductor, single core/multi strand cable in surface/recessed MS conduit (including supply and recess laying of MS conduit with all accessories) along with 4 sqmm PVC insulated, copper conductor, single core/multi strand cable for loop earthing etc per technical specifications & as required.					
	Directly from MCB-Distribution Board to the Socket Outlets	Point	153			
7.06	Wiring for 32 amp power plug with 2X6 sq.mm. PVC insulated, copper conductor, single core cable in surface/recessed ISI marked MS conduit (including supply and recess laying of ISI marked MS conduit with all accessories) along with 1X6 sqmm PVC insulated, copper conductor, single core cable for loop earthing, as per technical specifications & as required.	Point	2			
7.07	Wiring for submain/ circuit wiring with following sizes of PVC insulated, copper conductor single core/multi strand cable in recessed steel conduit (including supply & laying of recessed conduit) as required.					
	i) 2X2.5 Sqmm with 1 No. 2.5 sqmm PVC insulated, copper conductor for earthing.	Metre	1092			
	ii) 4X4 Sqmm with 2 No. 4 sqmm PVC insulated, copper conductor for earthing	Metre	54			
	iii) 4X10 Sqmm with 2 No. 10 sqmm PVC insulated, copper conductor for earthing	Metre	144			
	iv) 4X16 Sqmm with 2 nos 16 sq mm PVC insulated, copper conductor for earthing.	Metre	36			
	v) 4X25 Sqmm with 2 nos 25 sq mm PVC insulated, copper conductor for earthing.	Metre	72			

7.08	Supplying and fixing suitable Module metal 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, base plate, modular cover plate, connections etc. and all civil works 'complete as required.	Each	29			
7.09	Supplying and fixing suitable module modular metal 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, base plate, modular cover plate, connections, etc. and all civil works complete as required.	Each	33			
7.10	Supply, installation, testing and commissioning of 16 Amp. IP 66/56 power switch and socket in suitable enclosure consisting of the following as per technical specifications and as required.					
	Switch:					
	Single pole, 250 V, 16 amp without enclosure similar to Schneider Electric-Clipsal model no. 56SW116LE-GY or approved equivalent.					
	Socket					
	16 amp, 3 round pin socket out let, Indian standard, without enclosure similar to Schneider Electric-Clipsal model no. 56SO116RP-LE-GY-EX or approved equivalent.					
	Angle Plug					
	16 amp, 3 pin, 250 V, Indian Standard similar to Schneider Electric-Clipsal model no. 56PA316RP-GY-EX or approved equivalent.					
	Mounting Enclosure					
	Mounting enclosure for the above mentioned switch and sockets as supplied by Schneider Electric- Clipsal model no. 56E2 GY or approved equivalent					
	Supply , installation, testing and commissioning of above mentioed power switch and socket.	Nos.	120			

		Light Control Box					
7.11		Supply, installation, testing and commissioning of light control box for animal room's light and dark cycle in suitable enclosure consisting of the following as per technical specifications and as required.					
		Incomer:					
		6-32 A, DP, 10 KA C curve MCB					
		Power Contactor					
		3 pole , 9 amp AC3 duty , wide band 220 V coil					
		Time Switch					
		Digital time switch suitable for daily and weekly application, having minimum 8 ON/OFF function and 4 mode manual over ride and LED indication for relay status with a battery backup of 1500 hours and shortest switching time 1 minute. Similar to L&T-GIC Crono 62DDT0 or approved equivalent.					
		Mounting Enclosure					
		Mounting enclosure in powder coated MS for the above mentioned items					
		Supply , installation, testing and commissioning of above light control box.	Nos.	30			
7.12		Supply, Installation, Testing & Commissioning 63 Amps, TPN MCCB in a sheet steel enclosure, extended rotary operating mechanism complete with all accessories as required.	Each	5			
7.13		Supplying and fixing suitable Module 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	40			

7.14	Supplying, providing & fixing cordless musical bell, batteries etc of approved make complete as required.	Each	5			
7.15	Supply and fixing following 32 Amps, 240 volts, SP, Industrial Socket Outlet (with plugs) in a metal box with 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	2			
7.16	Standalone type single channel dual lens presence / occupancy detector with time delay range of 30 sec to one hr catering to minimum one thousand watt load	Each	10			
TOTAL SUBHEAD: 7- WIRING						
SUB HEAD: 8 - LIGHT FIXTURE AND FANS						
8.00	LIGHT FIXTURES AND FANS					
8.01	Supply of following light fixture with high efficiency electronic ballast, starter, capacitor, tubes/lamps, reflector, diffuser, MS body/housing holder etc. complete with all fixing accessories as required.					
i	1X28 watt box type fluorescent light fixture (Philips TMS 122M 1XTL5 28 W EBT or approved equivalent) (136b/136bw)	Each	10			
ii	2X28 watt box type fluorescent light fixture with reflector (Philips TMS 122M2XTL528 W EBT or approved equivalent) (236b)	Each	57			
iii	1X36 watt surface mounted type fluorescent light fixture with clear acrylic (GE TC 1X36 AC S HF or approved equivalent) (136ac)	Each	6.00			

	iv	1X36watt recess mounted flourescent light fixture (Philips TBS 0501XTLD36 W EBE MI or approved equivalent) 136RMO1/136RMO2	Each	38			
	v	2X TL5 28 watt recess mounted mirror optics flourscent CAT-2 light fixture (Philips TBS 669 M 2XTL5-28 W EB M2 or approved equivalent). (236 rmo1/236rmo2)	Each	49			
	vi	4X 14 watt recess mounted mirror optics flourscent light fixture with opal acrylic diffuser (Philips TBS 570 4XTL5-14W HF ODF-WH or approved equivalent). (414RMSQ1)	Each	50			
	vii	3X 36 watt recess mounted mirror optics flourscent light fixture (Philips FBS 300M 3XPLL36W EBP P5 or approved equivalent). (336 RMSQ1)	Each	35			
	viii	2X 36 watt recess mounted clean room flourscent light fixture with bottom opening and toughened glass (Philips TBS 670 2X36W TL-D FOP GT or approved equivalent). (236CRF)	Each	150.00			
8.02		Supply of following compact flourescent light fixture with electronic ballast, starter, capacitor, yellow light lamps, reflector, diffuser, MS body/housing holder etc. complete with all fixing accessories as required.					
	i	1x9 watt Bulk Head light fixture (Philips FXC 101 1XPL-S/2P11 W ACO or approved equivalent) BH	Each	8			
	ii	2 X 11 watt surface mounted mirror optics (Philips FCS 518 2XPLS/2P 11 W I 240 V OR EQUIVALENT) (211CFLRECT)	Each	32			

	iii	2X18 watt Mirror top light fixture with frosted glass (Decon 05 CA 01 or approved equivalent) (w toilet)	Each	10			
	iv	Surface mounted Batten holder (Plastic) with 13 watt CFL	Each	10			
	v	2X18 W recessed mounted down light fixture with low depth recessed low glare inclusive of enclosed control gear box, matt finish reflector & ZZG 145 attachment of recessed glass circleline (Philips FBH 145M2XPLC/4P 18W HF 240V LH or approved equivalent) DL1	Each	140			
8.03		Supply of following ceiling fans (Crompton Greaves High Breeze or approved equivalent) complete with double ball bearing, motor, blades, downrod, canopies, capacitor, modular type electronic fan regulator, suitable for operation on 230 volts, 50 Hz., 1 phase, AC supply complete as required					
	i	900 mm sweep	Each	5			
	ii	1200 mm sweep	Each	35			
8.04		Supply of 900 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	8			
8.05		Supply of 450 mm sweep, crompton greaves model high flow 18" wall mounted fan complete with double ball bearing, motor, blades, capacitor etc suitable for single phase 230 volts, 50 Hz., AC supply, complete as required.	Each	10			

8.06	Installation, testing and commissioning of prewired, flourescent fittings of all types, complete with all accessories and tube etc. directly on ceiling/wall, including connections with 1.5 sq.mm. PVC insulated, FRLS copper conductor, single core/ multi strand cable etc. as required.	Each	395			
8.07	Installation, testing and commissioning of prewired, compact flourescent lamp fixture (CFL fxtures)of all types, complete with all accessories and lamp etc. directly on ceiling/wall, including connections with 1.5 sq.mm. PVC insulated, FRLS copper conductor, single core/ multi strand cable etc. as required.	Each	200			
8.08	Installation, testing and commissioning of ceiling fan and modular type electronic fan regulator(Electronic regulator to be fixed in switch board) including wiring the down rod and connection with 1.5 sqmm 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	40			
8.09	Installation, testing and commossioning of exhaust fan up to 450 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	8			
8.10	Installation, testing and commissioning of wall mounted fan up to 450 mm sweep including supply and fixing wall bracket arrangement complete as required.	Each	10			
	TOTAL SUBHEAD 8 : LIGHT FIXTURE & FANS					
	SUB HEAD 9 : TELEPHONE SYSTEM					

9.00		TELEPHONE SYSTEM				
9.01		Wiring for telephone point with Supply & laying two pair 0.5 Sq. mm solid, annealed copper conductor insulated with high density polythlene. The insulated cores twisted to form pairs, helically wrapped with polyster tape, over all insulation of FR PVC, unarmoured telephone cable in MS conduit (including supply & recessed laying of M.S. conduit), including providing & fixing of two module modular metal box on recess with following pair cord outlet, connections etc. complete as required. This also includes conduiting, wiring from floor Tag blocks to individual telephone outlets.				
	i	1 pair cord outlet (Jack Type)	Point	18		
	ii	2 pair cord outlet (Jack Type)	point	4		
9.02		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	50 Pair	Each	1		
9.03		Supplying and drawing of following pairs .5 mm dia annealed bare copper conductor Polythene insulated, core twisted into pairs armoured telephone cable on surface/tray with saddels etc. complete as required.				
	i	50 Pair	Metre	15		
9.04		Supplying and drawing of following pairs .5 mm dia annealed bare copper conductor Polythene insulated, core twisted into pairs armoured jelly filled telephone cable in the existing trench/ hume pipe/ GI pipe etc with saddels etc. complete as required.				
	i	50 Pair	Metre	200		

		TOTAL : SUB HEAD 9:TELEPHONE SYSTEM					
		SUB HEAD 10: LAN SYSTEM					
10.00		LAN SYSTEM :					
10.01		Supply and fixing of following sizes of rigid PVC conduit alongwith the accessories in recess including painting in case of surface conduit, or cutting the wall and making good the same in case of recessed conduit as required					
	i	20 mm dia	Metre	800			
	ii	25 mm dia	Metre	400			
10.02		Supplying and fixing two module modular plate (suitable for RJ-45 computer socket) with GI box complete as required.	Each	40			
10.03		Active Device:					
	i	Supply, installation, testing and commissioning of 24 Ports 10/100/1000 Base-T L2 stackable management switch with 4 combo ports (D-Link/HP/Cisco make) as per requirement and as directed to the satisfaction of engineer	No	2			
	ii	Supply, installation, testing and commissioning of 1 KVA UPS (make - APC/Emerson or equivalent approved by engineer) as per requirement and as directed to the satisfaction of engineer	No	1			
10.04		Passive Device:					
	i	Supply, installation, testing and commissioning of 24 Ports Patch Panel as per requirement and as directed to the satisfaction of engineer	No	2			
	ii	Supply, installation, testing and commissioning of Wall Mounting Rack (Size 17U) with Cable Manager and Power DB as per requirement and as directed to the satisfaction of engineer	No	1			

	iii	Supply, laying, testing and commissioning of Cat 6 Cables - 305 meter per box as per requirement and as directed to the satisfaction of engineer	Meter	2135			
	iv	Supply, installation, testing and commissioning of Patch Cord 1 meter size as per requirement and as directed to the satisfaction of engineer	No	40			
	v	Supply, installation, testing and commissioning of Patch Cord 2 meter size as per requirement and as directed to the satisfaction of engineer	No	40			
	vi	Supply, installation, testing and commissioning of Single I/O device with face plate as per requirement and as directed to the satisfaction of engineer	No	40			
	vii	Supply, installation, testing and commissioning of Surface Mount Box as per requirement and as directed to the satisfaction of engineer	No	40			
		TOTAL SUB HEAD: 10 LAN SYSTEM					
11.00		SUBHEAD 11 :SECURITY SYSTEM :(CCTV)					
11.01		Supply and fixing of following size of ISI marked MS conduit along with the accessories in surface/ recess including painting in case of surface conduit or cutting the wall and making good the same in case of recessed conduit as required.					
	i)	20 mm dia	Metre	200			
	ii)	25 mm dia	Metre	100			
11.02		Cabling with 2x1.5 sq. mm PVC insulated copper conductor cable in the existing MS conduit for power supply to the camera.	Metre	400			

11.03		Supply and drawing coaxial TV cable RG-6 grade, 0.7 mm solid copper conductor PE insulated, shielded with fine tinned copper braid and protected with PVC sheath in the existing surface / recessed steel conduit as required.	Metre	480			
11.04	A	CAMERAS :					
	i)	Supply, installation, testing and commissioning of indoor 520 TVL high resolution or better, day/night, weatherproof dome type, 1/3-inch CCD imager colour Day Night camera with varifocal lens, 3.6-8mm or better including Connectors, Lens, camera Mounts. Power Supply and all ancillary equipment required for the proper functioning of the camera complete as per technical specifications and as required of approved makes.	Each	2			
		Supply, installation, testing and commissioning of indoor 520 TVL high resolution or better , dome type, 1/3-inch CCD imager colour with varifocal lens, 3.6-8mm or better including Connectors, Lens, camera Mounts. Power Supply and all ancillary equipment required for the proper functioning of the camera. complete as per technical specifications and as required of approved makes.	Each	30			
	B.	DVR					

		Supply, installation, testing and commissioning of 16 channel real time, 400 fps, embedded Digital Video Recorder (DVR) with 2 video outputs and facility to record multiple camera signles while simultaneously providing live multi-screen viewing, recording, play back, remote viewing and archiving of recorded data. DVR having capacity of 2 TB HDD storage capacity. DVR will do real time recording at CIF resolution & H.264 compresssion. DVR will be embedded IP based web enabled DVRs. DVR racks and any other item required in the commissiiong is in the scope of supply complete as per					
	i)	technical specifications and as required of approved makes.	Each	2			
	C.	Monitor					
		Supply, installation, testing and commissioning of 32" CCTV colour LED flat screen monitor including all accessoriess of approved makes.	Each	2			
		TOTAL SUBHEAD 11 : CCTV					
		SUB HEAD 12 : FIRE DETECTION AND ALARM					
12.00		FIRE DETECTION AND ALARM SYSTEM					
12.01		Supply and drawing of following sizes of PVC insulated FRLS copper conductor single core cable in surface/recessed MS conduit (including Supplying and fixing of MS Conduit) complete as required.					
	i	2X1.5 sqmm	Metre	3292			
12.02		Supply, installation, testing and commissioning of the following addressable type fire detection and alarm accessories as per technical specification & complete with connections etc. as required.					
	i	Optical type Smoke Detector	Each	125			
	ii	Heat Detector	Each	2			
	iii	Manual Break call point.	Each	6			

	iv	Fire Alarm Hooter cum speaker of suitable range to cover the complete floor, in enclosure.	Each	6			
	v	Response indicator	Each	55			
12.03		Supply, Installation, testing and commissioning of 2 loop microprocessor based addressable type networkable Fire Detection & Alarm Panel complete with inbuilt power supply, battery charger with SMF batteries for minimum 24 hours back-up. The panel shall have a communication module and HI 485 network card. The panel should have rectifier, loop card, minimum 80 character LCD unit to indicate fire/ fault signals with address including external/ internal printer to print the details complete as per technical specifications and requirement of Local Fire Authority and as required.	Set	1			
12.04		Supply testing and commissioning of isolator module as per specifications.	Set	7			
12.05		Supply, Installation, testing and commissioning of addressable control modules.	Each	9			
12.06		Supply, Installation, testing and commissioning of addressable monitor modules.	Each	2			
12.07		Supplying, drawing, connecting, testing & commissioning of 4 core, 1.5 sq. mm ,1100 volts FRLS copper conductor with PVC armoured cable with steel brading for mechanical protection and over all shielded with aluminium myler tape complete as required.	Metre	200			
		TOTAL SUB HEAD 12 : FIRE DETECTION AND ALARM					
		SUB HEAD 13 : LIFTS					

13.01	Design, manufacture, supply, installation, testing and commissioning of following 8 passenger (544 kg) lift , serving different floors in the lift shaft including lift well pressurization. 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, centre opening for passenger lift horizontal sliding stainless steel scratch proof. (b) Landing doors: Stainless steel scratch proof. Lift car door and landing doors shall have a fire resistance of one hour.					
	- A hand rail guide not less than 600 mm long at 900 mm above floor level .					
	- 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, PA speaker, IR curtain on full height, two phase fireman's drive control/ switch and potential free contacts etc to be provided in the lift.					
	i Floors : G+1 (Total two floors) , 2 stops & 2 openings	Each	1.00			

13.02	Design, manufacture, supply, installation, testing and commissioning of goods cum passenger lift of 1000 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					
	Floors: G+1					
	- Travel: As per architectural drawing.					
	Stops & Opening: 2 stops & 2 opening					
	- 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/with / without attendant.					
	- 415 V, 3 phase, 50 Hz, 4 wire system					
	- Type of doors: a) Car : Power operated, central opening horizontal sliding stainless steel scratch proof moon rock finish (b) Landing doors: Stainless steel scratch proof moon rock 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.					
	Goods cum passenger lift as mentioned above	2	Nos			
	TOTAL SUB HEAD 13: LIFTS					
	SUB HEAD 14: LT CABLES					
14.00	LT CABLES					
14.01	Supply of following sizes of 1.1 kV grade multicore aluminium conductor PVC sheathed armoured AYYF cable as per IS 1554.					
	i 3.5 Core 25 Sqmm.	Metre	800			

	ii	3.5 Core 95 Sqmm.	Metre	120		
	iii	3.5 Core 300 Sqmm.	Metre	1600		
	iv	3 Core 4 Sq mm	Metre	100		
	v	4 Core 10 Sq mm	Metre	100		
	vi	2 Core 10 Sq mm	Metre	100		
14.02		Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade direct in ground including excavation, sand cushioning, protective covering and refilling the trench etc. as required				
	i	Size not exceeding 25 sq.mm	Metre	160		
	ii	Size exceeding 25 sq.mm but not exceeding 120 sq.mm	Metre	36		
	iii	Size exceeding 120 sq.mm but not exceeding 300 sq.mm	Metre	480		
14.03		Laying of one number PVC insulated and PVC sheathed power cable 1.1kV grade direct in the existing RCC/Hume/Stoneware/Metal pipe as required				
	i	Size not exceeding 25 sq.mm	Metre	10		
	ii	Size exceeding 25 sq.mm but not exceeding 120 sq.mm	Metre	15		
	iii	Size exceeding 120 sq.mm but not exceeding 300 sq.mm	Metre	18		
14.04		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	Size not exceeding 25 sq.mm	Metre	10		
	ii	Size exceeding 25 sq.mm but not exceeding 120 sq.mm	Metre	10		
	iii	Size exceeding 120 sq.mm but not exceeding 300 sq.mm	Metre	10		
14.05		Supplying and making end termination with suitable size Copper 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	18		
	ii	3.5 Core 95 Sqmm.	Each	2		
	iii	3.5 Core 300 Sqmm.	Each	24		

	iv	3 Core 4 Sq mm	Each	10			
	v	4 Core 10 Sq mm	Each	6			
	vi	2 Core 10 Sq mm	Each	10			
14.06		Fabricating and installing following size of perforated M.S. cable trays including horizontal and vertical bends, reducers, tees, cross members and other accessories as required and duly suspended from the ceiling with M.S. suspenders and including painting etc. as required :-					
	i	150 mm. width x 50 mm. depth x 1.6 mm. thickness	Metre	30			
	ii	300 mm. width x 62.5 mm. depth x 2.0 mm. thickness	Metre	30			
	iii	450 mm. width x 62.6 mm. depth x 2.0 mm. thickness	Metre	20			
	iv	600 mm. width x 62.6 mm. depth x 2.0 mm. thickness	Metre	15			
		TOTAL SUB HEAD 14 : LT CABLES					
		SUB HEAD 15: EARTHING SAFETY EQUIPMENT AND MISC. ITEMS					
15.00		EARTHING, SAFETY EQUIPMENTS AND MISC. ITEMS					
15.01		Earthing with copper plate 600mmX600mmX3mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as required	Set	8			
15.02		Earthing with GI plate 600mmX600mmX6mm thick including accessories, and providing masonry enclosure with cover plate having locking arrangement and watering pipe etc. (but without charcoal or coke and salt) complete as required	Set	10			
15.03		Extra for using charcoal and salt for GI or copper plate earth electrode as required.	Set	18			

15.04		Supplying and laying 25mmX5mm GI strip at 0.5m below ground level as strip earth electrode, including soldering etc. as required.	Metre	20			
15.05		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	30			
15.06		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	50			
15.07		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	20			
15.08		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	30			
15.09		Supplying and laying 25mmX5mm Copper strip at 0.5m below ground level as strip earth electrode, including soldering etc. as required.	Metre	30			
15.10		Providing and laying of following sizes non pressure NP2 class (light duty) RCC pipe with collar joint with stiff mixture of cement (1 cement : 2 fine sand) including testing the joints etc. as required.					
	i	150mm dia	Metre	20			
	ii	300mm dia	Metre	10			
15.11		Providing and fixing M.V. danger notice plate of 200mmX150mm made of mild steel, atleast 2mm thick and vitreous enamelled white on both sides and with inscription in signal red colour on front side as required.	Each	2			

15.12	Providing and fixing H.T. (11kV) danger notice plate of 250mmX150mm made of mild steel, atleast 2mm thick and vitreous enameled white on both sides and with inscription in signal red colour on front side as required.	Each	2			
15.13	Supplying and laying of 12kV grade 1 metre wide anti skid chequered type rubber mat.	Metre	20			
15.14	Supplying and laying of 1.1kV grade 1 metre wide anti skid chequered type rubber mat.	Metre	15			
15.15	Design, manufacture, supply and installation of Fire Buckets 13 litre capacity 4 Nos. duly filled with sand and GI pipe support stand for these buckets including painting etc. complete as required.	Set	2			
15.16	Supply and fixing shock treatment chart in English, Hindi and local language mounted on 5mm thick Plywood and 3mm thick plain glass front complete as required.	Set	2			
15.17	Supplying and fixing Foam type 9 ltrs capacity fire extinguishers as approved by ISI complete as required.	Set	2			
15.18	Supplying and fixing CO2 type 9 Kg capacity fire extinguishers as approved by ISI complete as required.	Set	5			
15.19	Supplying and fixing CO2 type 4.5 Kg capacity fire extinguishers as approved by ISI complete as required.	Set	3			
15.20	Supplying, storing, handling and fixing in position First Aid Medical Box complete as per technical specifications as required.	Each	1			
15.21	Supply and testing of 11kV ISI marked hand gloves	Each	1			

15.22	Providing & fixing rigid PVC pipe complete with fittings, clamps including trenching & refilling/ wall cutting & plastering, etc. (for cable entry) with all minor civil & mech. Works complete as required. 50 mm dia nominal bore	Metre	10				
TOTAL SUB HEAD 15: EARTHING, SAFETY EQUIPMENT AND MISC. ITEMS							
SUB HEAD 16: OUT DOOR LIGHTING							
16.00	OUT DOOR LIGHTING						
16.01	Supply, erection, testing and commissioning of external swaged steel tubular pole with following specifications & items :						
i	9.0 Mtrs. high swaged steel tubular pole (Single arm of suitable length each around 1.5 Metre), the construction of the pole shall be as per IS 410 SP-33 with base plate 450mmX450mmX6mm complete as per requirement with two coats of spray paints (shade as approved)						
ii	1X150 watts street light fixture with 150watts HPSV lamp complete with control gear, acrylic cover cover etc. and its wiring with 2X4 sq.mm. PVC insulated, FRLS copper conductor and 1,5 sqmm PVC insulated, FRLS copper earth wire from control box complete as required - 1 No. (Phillips SPX 086/150 or approved equivalent)						
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.	Steet Tubular Poles(9M) Single Arm as mention above	Set	5			
16.02		Supply, installation, testing and commissioning of external post top lantern with following accessories and complete as required :					
	i)	4m high (3.3m above ground) 50mm dia GI pole as approved, adopting socket at top for fixture mentioned below, base plate 300 x 300 x 6mm and provision for mounting junction box etc. 1 set.					
	ii)	Supply, installation, testing and commissioning of Post top lantern with 70W HPSV lamp (Philips SPC 106/70(I) HPF or equivalent) and its wiring with 2 x 2.5 sq.mm PVC insulated copper wire and 1.5 sqmm PVC insulated copper earth wire from control box - 1 set.					
	iii)	Suitable size 20A DP MS Control box with 2 no. incoming and outgoings terminals and 2 nos. tap-out terminal with 1 nos. 5A HRC fuses complete 1 set.					
	iv)	Suitable number(s) 40mm dia Class-B GI Pipe(s) from above control box to upto 0.5 metre below ground level for power cable entry					
	v)	Providing 400x400x1000mm deep 1:3:6 ratio cement concrete including excavation shuttering alignment of poles casting etc. including 100mm thick lean concrete shall be provided at the bottom					
		Supply, installation, testing and commissioning of external post top lantern as mentioned above	Set	4			
16.03		Supply, installation, testing and commissioning of bollard lamps 1X18 watts CFL (Philips HCS360 1XPL-C/2P 18W GR Sonara bollard in gree color or equivalent) control box - 1 set.	Each	2			

16.04	Supply, installation, testing and commissioning of bollard lamps 1X18 watts CFL (Philips HCS 370 1XPL-L 18W GR Lumos bollard in green color or equivalent) control box - 1 set.	Each	2			
16.05	Road Lighting Panel Supply, installation, testing and commissioning of following outdoor type with canopy, IP-54 protected M.V. cubicle type totally enclosed, free standing type, dust, damp and vermin proof, MV Panel, busbars, M.V. danger notice plate, interconnections with suitable capacity aluminium leads/solid aluminium strips/rods, connection of incoming and outgoing cables with thimbles, stove enamelled painted and having following incoming and outgoing switchgears complete as required. INCOMER: 1 No. 63 Amp 415 volts, TPN Switch Disconnecter Fuse Unit with HRC Fuses <i>1 Set of phase indicating lamp with HRC fuses</i> 1 Set of photo sensor & 100A TP contactor with neutral link (for street lights control) . BUSBARS: 100 Amp TPN Aluminium busbars OUTGOING: 10 Nos. 32 Amp 415 volts, DP MCB Feeder Pillar as mention above	Set	1			
16.06	Spiral earthing made out of 6 SWG GI wire , 50mm Dia, 115 turns closely wound ,1.5 mtr below ground, earth pit of 350 Dia., 1.5 mtr depth including providing charcoal and salt for earthing at alternate layers of 300 mm depth (total 3 layers),connections etc. complete as required.	Set	15			
TOTAL SUB HEAD 16: OUTDOOR LIGHTING						

17.00	SUB HEAD 17: ACCESS CONTROL SYSTEM.					
17.01	ACCESS CONTROL SYSTEM					
	Supply , installation, testing and commissioning of Access Control System complete with biometric reders, proximity cards, proximity card readers, access logic controllers, electromagnetic locks, PC communicator, access control software and other items required for the proper working of the access control system complete as per technical specifications and as required.					
	i Biometric + smart card Reader	Each	2			
	ii Smart cards	Each	50			
	iii Electromagnetic lock for single door	Each	2			
	iv Electromagnetic lock for double door	Each	2			
	v PC Communicator / Interface	Set	1			
	vi Access Control Software for complete system	Set	1			
	vii Single door controller	Set	2			
	viii Double door controller	Set	2			
	ix Supply & laying of 8 core 0.8 Sq. mm shielded copper cable in recess 25mm dia MS conduit with all accessories.	Metre	100			
	x Supply & laying of 4 core 1 sq. mm power cable in recess MS conduit with all accessories	Metre	50			
	xi Work station for ACS software (PC, MONITOR, KEYBOARD, MOUSE, PRINTER)	Set	1			
	TOTAL SUBHEAD 17 :ACCESS CONTROL SYSTEM,					
18.00	SUB HEAD 18: VIDEO CONFERENCING					
18.01	VIDEO CONFERENCING SYSTEM:					
	Main Site					
	i High Definition Video Conferencing Equipment - 1080p with codec, camera and mic, Content / presentation sharing + 4 party embedded MCU with standard accessories : 1 Nos.					

		Other End					
	ii	HD End Points - 1080p with codec, camera and mic, Content / presentation sharing with standard accessories : 1nos					
	iii	Display Units - 42" LCD Monitors : 02 Nos					
	iv	Installation & Commissioning of system including any other item necessary for the proper functioning of the system.					
		<i>Note: All VC Equipments (except display) must be from the same OEM</i>					
		Video Conferencing system as mentioned above :	Lot	1			
		TOTAL SUBHEAD 18 :VIDEO CONFERENCING					
		GRAND TOTAL FOR ALL ELECTRICAL WORKS					

SUMMARY OF COST ESTIMATE FOR ELECTRICAL WORKS .

S.No.	DESCRIPTION	Amount In Figure (In Rs.)	Amount in Words (Rs.)
1	SUBHEAD 1: H.T. SUB STATION		
2	SUB HEAD 2: MAIN LT PANEL.		
3	SUB HEAD 3 : DG SET & ACCESSORIES		
4	SUB HEAD 4 : UPS SYSTEM		
5	SUB HEAD 5 :MV PANELS		
6	SUB HEAD- 6: MCB DISTRIBUTION BOARDS.		
7	SUB HEAD 7: WIRING		
8	SUB HEAD: 8 - LIGHT FIXTURE AND FANS		
9	SUB HEAD 9 : TELEPHONE SYSTEM		
10	SUB HEAD 10: LAN SYSTEM		
11	SUBHEAD 11 :SECURITY SYSTEM :(CCTV)		
12	SUB HEAD 12 : FIRE DETECTION AND ALARM		
13	SUB HEAD 13 : LIFTS		
14	SUB HEAD 14: LT CABLES		
15	SUB HEAD 15: EARTHING SAFETY EQUIPMENT AND MISC. ITEMS		
16	SUB HEAD 16: OUT DOOR LIGHTING		
17	SUB HEAD 17: ACCESS CONTROL SYSTEM.		
18	SUB HEAD 18: VIDEO CONFERENCING		
	GRAND TOTAL FOR ALL ELECTRICAL WORKS		

BOQ OF HVAC WORKS FOR ANIMAL HOUSE AT IIIM - JAMMU.						
Item No.	Description	Qty	Unit	Rate In Rs (in Figure)	Rate in Rs (in Words)	Amount (Rs.)
1	2	3	4	5	6	7
The prices are to be quoted in the below mentioned form and shall include the supply, installation, testing & commissioning at site of all the equipments, ancillary materials as specified and all such items what so ever which may be required to fulfill the intent and purpose as laid down in the specifications and or the drawings.						
The tenderer shall quote rates in figures and in words under column 5&6 and extend amount to column 7						
A)	<u>EQUIPMENTS</u>					
1.0	WATER CHILLING UNITS.					
1.1	Supply, installation, testing & commissioning of 125 TR (actual) capacity Air cooled water chilling units as specified and shown in equipment schedule complete as per specifications with.					
	a. Screw Compressor with motor.					
	b. Drive package.					
	c. Mounting frames for all components					
	d. 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. Automatic capacity control arrangement.					
	k. Lot Safety controls, flow switches, pressure gauge, thermometer etc. as per specifications.					
	l. Suitable capacity motor with necessary insulation , soft starter panel complete with all necessary switchgears and control complete as required					
	m. Necessary water drain & air purge valves wherever required					
	n. Necessary lubrication device as per specifications complete.					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	o. Microprocessor based control panel complete with accessories as per specifications and BMS compatible BACNET Protocol					
	Chilled Water Leaving temp. 44 deg. F					
	Chilled Water Entering temp. 54 deg. F					
	Chiller fouling factor = 0.0005 (FPS units)					
	Complete water chilling machine as above(2W+1S)	3	Nos			
2.0	WATER CIRCULATION PUMPS					
2.1	Primary Chilled Water Pumps					
	Supply, installation, testing and commissioning of vertical split casing end suction type centrifugal chilled water pump sets factory assembled and tested for rated efficiency mounted on a common base frame etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.					
	a. Pump with IP 55 TEFC induction motor with class F insulation					
	b. Channel base with vibration isolators, coupling, coupling guard etc.					
	c. Cladded insulation and anti corrosive coating inside and outside casing of chilled water pump, etc.					
	d. 2 Nos.- 150 mm dia dial type pressure gauge					
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/ AC power supply.					
	The pump characteristic shall be as follows:					
	Water flow rate=300 USGPM					
	Head = 14 Metre WC					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Primary chilled water pumps as described above. (2W+1S)	3	Nos			
2.2	Secondary Pumps & Variable Speed Pumping System					
	Supply, installation, testing and commissioning of vertical split casing type centrifugal chilled water recirculation pumps mounted on a common base frame etc each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.					
	a. Pump with IP 55 TEFC induction motor with class F insulation					
	b. Channel base with vibration isolators, coupling, coupling guard etc.					
	c. Cladded insulation and anti corrosive coating inside and outside casing of chilled water pump, etc.					
	d. 2 Nos.- 150 mm dia dial type pressure gauge					
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.					
	f. The price will include control software and networking hardware and software for integration and compatibility with BMS (BACNET Protocol).					
	g. All pumps to be provided with seperate VFD's (variable frequency drives). Control panel should also consist of cooling fan.					
	h. Electronic Differential Pressure Transmitters and PLC as required.					
	i. The cost will include making necessary flanged suction and delivery headers in C-Class MS piping.					
	j. Complete set system to be mounted on a common MS base frame and shall follow following duty.					
	The pump characteristic shall be as follows:					
	Water flow rate=680 USGPM					
	Head = 24 Metre WC					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Secondary chilled water pumps as described above. (1W+1S)	2	Nos			
2.3	Hot water Pumps					
	Supply, installation, testing and commissioning of vertical split casing type centrifugal hot water recirculation pump sets factory assembled and tested for rated efficiency mounted on a common base frame each capable of delivering specified flow rate complete with following as per specifications & schedule of equipments.					
	a. Pump with IP 55 TEFC induction motor with class F insulation					
	b. Channel base with vibration isolators, coupling, coupling guard etc.					
	c. Cladded insulation and anti corrosive coating inside and outside casing of hot water pump, etc.					
	d. 2 Nos.- 150 mm dia dial type pressure gauge					
	e. Pumps shall be suitable for operation on 415+/- 10% Volts/ 3ph / 50 Hz/AC power supply.					
	The pump characteristic shall be as follows:					
	Water flow rate=98USGPM					
	Head = 24 Metre WC					
	Hot water pumps as described above. (2W+1S)	3	Nos			
3.0	Hot Water Generator					
	Supply, installation, testing & commissioning of Electric Hot Water Generator for winter heating/monsoon reheating system.Hot water shall be with IP 55 protection and compatible with controls, sensors,controll cabling,piping and fittings,thermal insulation,base frame etc. as per specifications.					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
3.1	Capacity : 140KW Status : (2w+1s) USGPM: 98 Temp IN/OUT : 110/125 DegF	3	Nos.			
4.0	AIR HANDLING UNITS					
	Supply, installation, testing and commissioning of draw through type Air Handling Units (double skin type) of horizontal /vertical type as specified & shown in schedule of equipment complete with the following :-					
	a. Fan Section and canvas connection. (double skin type)					
	b. Centrifugal blower					
	c. Coil sections with cooling and heating coil/s as per specifications.					
	d. Pre filters with filter section as required in all AHUs.					
	e. Fine and hepa filters with filter section wherever specifically specified as per AHU schedule .Wherever fine/hepa filters are specified, item shall include factory fabricated double skin plenum of same specifications as AHU panels and complete with filter frameworks.Fine/hepa filter section along with discharge plenum shall be part of AHU in upper tier.					
	f. Drain pan, drain connection.					
	g. Squirrel cage induction IP 55 TEFC drive motor, drive arrangement, guard etc. All AHU motors shall be compatible for working with VFD.					
	h. Necessary vibration isolators & supporting arrangement.					
	i. Fresh air intake arrangement, necessary water drain & air purge valves wherever required etc.					
	j. Canvass connections,necessary foundations, 2 nos pressure gauge, 2 nos thermometer etc					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	k Controls for AHUs comprising of a set of 2 way modulating valve of required size having manual override facility alongwith proportional thermostat, humidistat & wiring for interconnection with 1.5 sq. mm Cu Conductor multicore armoured complete as required.					
4.1	AH-GF-01 - 4000cfm/ 4+4 RD Cooling Coil/3 RD Heating coil /125 mm static (with fine & hepa filters)	2	Nos.			
4.2	AH-GF-02 - 2500cfm/ 4+4 RD Cooling Coil/3 RD Heating coil /50 mm static	1	Nos.			
4.3	AH-FF-01 -14000cfm/ 4+4 RD Cooling Coil/3 RD Heating Coil/125 mm static (with fine & hepa filters)	2	Nos.			
4.4	AH-FF- 02 - 8000cfm/ 4+4 RD Cooling Coil/3 RD Heating Coil/125 mm static (with fine & hepa filters)	2	Nos.			
5.0	DUCTABLE SPLIT AIR CONDITIONERS					
	Supply , installation , testing and commisioning of air cooled Ductable split air conditioner suitable for 3 Phase 50 Hz AC supply comprising of the following.					
	a) Outdoor condensing Units					
	b) Indoor Evaporative Units with fine filters.					
	c) Interconnecting Refrigerant and drain piping with insulation wherever required, refrigerant and oil. The unit shall include refrigerant piping, power cabling and drain piping as required.					
	d) Safety and operational controls					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	<p>e) The unit shall have advanced microcomputer controller with run time equalization, auto restart after power failure, fuzzy logic, self fault diagnostics .</p> <p>The controller shall have 2 digit 7 segment LED display, LED indicators and touch key pad. The controller shall have faults and alarm display and it shall be mounted in fire retardant box.</p> <p>The equipment shall be equipped with humidity control.</p>					
5.1	Capacity :7.5 TR	2	Nos.			
6.0	SPLIT AIR CONDITIONERS					
	Supply , installation , testing and commissioning of HI wall split air conditioner comprising of the following.					
	a) Outdoor condensing Units					
	b) Indoor Evaporative Units					
	c) Interconnecting Refrigerant and drain piping with insulation wherever required, refrigerant and oil. The unit shall include refrigerant piping, power cabling and drain piping.					
	c) Safety and operational controls					
	e) Hiwall splits shall be suitable for single phase power supply and complete with voltage stabilizer.					
	f) Mounting arrangement and structural supports for outdoor unit are included.					
	g) The units should have 5 star rating from BEE.					
6.1	Capacity : 1.5 TR	1	Nos.			
6.2	Capacity : 2.0 TR	4	Nos.			
6.3	Capacity : 2.5 TR	7	Nos.			
7.0	WINDOW AIR CONDITIONER					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply , installation , testing and commisioning of Window Acs complete with transformer, electrical cabling as required along with mounting arrangement,Voltage stablizer.Complete in all respect as per specifications. The units should have 5 star rating from BEE.					
	Capacity :					
7.1	1.5 TR	2	Nos.			
7.2	2.0 TR	5	Nos.			
8.0	Inline Fans/ Propeller Fans/Tube Axial Fan					
8.1	Supplying, installing, testing and commissioning of direct driven Propeller fan for exhaust air as shown in drawings. Each fan shall be complete with permanent split capacitor or shaded pole motor, mounting plate, accessories like wire guard, bird screen and fixed louvers for weather protection as required. Fan selection arrangement and Electrical characteristics shall be as follows:					
8.1.1	150 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	2	Nos			
8.1.2	225 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	3	Nos			
8.1.3	300 mm dia 900 RPM fan suitable for 220 +/- 10% volts, 50 Cycles, 1 Phase AC Supply	1	Nos			
8.2	Tube Axial Flow					
	Supply, installation,testing and commisioning of tube axial flow fans as shown in drawings, Each fan shall be direct driven. Fan motor shall be suitable for 3 Phase, 415+/- 10% V, 50Hz AC supply .					
8.2.1	Duty: Lift lobby pressurisation					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Air Quantity : 2500 CFM					
	Static Pressure : 20 mm wg	3	No.			
8.2.2	Duty: Lift Well pressurisation					
	Air Quantity : 2500 CFM					
	Static Pressure : 20 mm wg	3	No.			
9.0	Exhaust / ventilation Fans					
9.1	Exhaust Module: Supply, Installation, and Testing and Commissioning of Double Skin Air Handling unit with internal coving, having static pressure of 125 mm. The unit shall comprise of Blower section with backward curve centrifugal fan with drive, plug type connection with TEFC high efficiency motor, level 1, 3Ø Induction motor with top terminal box assembly. All AHU Dampers to be of Extruded Aluminum Low Leakage Aerofoil design with polycasted wheels volume control dampers suitable for manual & motorized operation. Air handling Units Includes pre, fine and HEPA filters.					
9.1.1	Exhaust unit 5000 CFM with Magnehelic gauges with SS box and PVC Tubing for GF	2	No.			
9.1.2	Exhaust unit 13500 CFM with Magnehelic gauges with SS box and PVC Tubing	2	No.			
9.1.3	Exhaust unit 8000 CFM with Magnehelic gauges with SS box and PVC Tubing	2	No.			
9.1.4	Exhaust unit 2100 CFM suitable for wet exhaust with Magnehelic gauges with SS box and PVC Tubing for trolley wash.	2	No.			
9.2	Ventilation Fan Sections					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of single skin construction fan sections suitable for outdoor duty. The unit shall be complete with belt driven double inlet double width, backward curved centrifugal fan, squirrel cage induction motor, vibration isolators, canvass connections, belt drive, pulley mounted on motor and fan shaft, belt guard mounted within the housing, The item shall have pre and fine filters as per specifications. The motor shall be suitable for operation on 3 Phase, 415 +/- 10% V, 50 Hz AC supply.					
	a. Casing (single skin type in 18 G GSS)					
	b. Centrifugal blower					
	c. Fine filters as per specifications.					
	d. Pre filters as required					
	e. Necessary foundations etc					
	f. Drive motor, drive arrangement, guard etc.					
	g Wiring for interconnection with AHU starter with 1.5 sq. mm Cu Conductor multicore armoured complete as required.					
9.2.1	For Supply					
	Space served :Sterile clean Area					
	Air Quantity : 3500 CFM	1	No.			
	Static Pressure : 50 mm wg					
9.2.2	For Exhaust					
	Space served :Sterile clean Area					
	Air Quantity : 3000 CFM	1	No.			
	Static Pressure :50 mm wg					
10.0	Terminal Reheat Arrangement					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing & 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.					
10.1	1KW x 2 banks	15	sets			
10.2	1KW x 1 bank	15	sets			
11.0	EXPANSION TANK					
	Supply, installation, testing and commissioning of pressurised PVC., expansion tank of following capacities made of PVC 2 layer sheet complete with 50 mm thick fire retardant type 32 kg/mt cu density TF quality expanded polystyrene insulation finished with two layers of sand cement plaster and painted complete with vent, drain connections , float valve, quick fill connection, manhole cover etc as specified. (Of double layered Sintex or equivalent make).					
11.1	1000 ltrs. (for chilled water circuit)	1	No.			
11.2	1000 ltrs. (for hot water circuit)	1	No.			
B)	<u>PIPING</u>					
12.0	CHILLED WATER PIPING					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, laying/fixing, testing and commissioning of M.S. heavy class ERW piping confirming to IS : 3589/IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly insulated and painted as per specifications :					
12.1	150 mm dia	110	RM			
12.2	125 mm dia	40	RM			
12.3	100 mm dia	110	RM			
12.4	80 mm dia	100	RM			
12.5	65 mm dia	60	RM			
12.6	50 mm dia	40	RM			
12.7	40 mm dia	65	RM			
12.8	32 mm dia	80	RM			
13.0	PIPING (Burried)					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
13.1	Supply, Installation, Testing and Commissioning of following nominal sizes of Chilled water piping Outside the building burried in ground (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges) adequately supported on rigid supports and duly insulated with fire retardant quality expanded polysterene molded pipe sections of specified density after a thick coat of cold setting adhesive (CPRX compound) wrapping with 500 gm polythene faced hessain and secured with 0.5mmx20mm G.I wire mesh and two coats of cement plaster (each layer not less than 10mm) as per specifications including digging and refilling the trenches and providing suitable thickness 1:2:4 cement concrete pads at 3 m intervals complete as per specifications and as required.					
13.1.1	150 mm dia	70	RM			
13.2	Supply, Installation, Testing and Commissioning of following nominal sizes of Hot water piping Outside the building burried in ground (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges) adequately supported on rigid supports and duly insulated with fire retardant quality expanded rock wool insulated pipe sections of density not less than 36 kg/cu.m after and secured with 0.5mmx20mm G.I wire mesh and two coats of cement plaster (each layer not less than 10mm) as per specifications including digging and refilling the trenches and providing suitable thickness 1:2:4 cement concrete pads at 3 m intervals complete as per specifications and as required.					
13.2.1	100 mm dia	70	RM			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
14.0	VALVES & STRAINERS					
	Supply, fixing and testing of following valves, strainers, in the chilled water piping complete with companion flanges, nut bolts, gaskets, supports etc. duly insulated and painted as per specifications:					
14.1	Butterfly valves :					
14.1.1	150 mm dia.	7	Nos			
14.1.2	125 mm dia	14	Nos			
14.1.3	100 mm dia.	11	Nos			
14.1.4	80 mm dia.	36	Nos			
14.1.5	65 mm dia	12	Nos			
14.1.6	50 mm dia.	2	Nos			
14.1.7	40 mm dia.	4	Nos			
14.1.8	32 mm dia.	2	Nos			
14.2	Balancing valves :					
14.2.1	150 mm dia	1	Nos			
14.2.2	125 mm dia	5	Nos			
14.2.3	100 mm dia	5	Nos			
14.2.4	80 mm dia.	3	Nos			
14.2.5	65 mm dia	6	Nos			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
14.2.6	50 mm dia.	5	Nos			
14.2.7	40 mm dia.	2	Nos			
14.2.8	32 mm dia.	1	Nos			
14.3	Non return/Check valves :					
14.3.1	150 mm dia.	2	Nos			
14.3.2	125 mm dia	3	Nos			
14.3.3	80 mm dia.	3	Nos			
14.4	Y- strainers with drain valve					
14.4.1	150 mm dia.	2	Nos			
14.4.2	125 mm dia	5	Nos			
14.4.3	100 mm dia.	4	Nos			
14.4.4	80 mm dia.	3	Nos			
14.4.5	65 mm dia	6	Nos			
14.4.6	50 mm dia.	1	Nos			
14.4.7	40 mm dia	2	Nos			
14.4.8	32 mm dia.	1	Nos			
14.5	Providing and fixing in position the following Gate Valves duly insulated as per specifications:					
14.5.1	50 mm dia Valves	2	Nos.			
14.5.2	40 mm dia Valves	2	Nos.			
14.5.3	32 mm dia Valves	2	Nos.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
14.6	Supply, installation, testing and commissioning of cooling thermostats :-					
14.6.1	For AHUs	7	Nos.			
15.0	DRAIN PIPING					
	Supply, laying/fixing, testing and commissioning of G.I. medium class ERW piping confirming to IS:1239 with necessary clamps, supports, anti vibration mountings, hangers and fittings such as bends, tees, reducers etc. duly insulated and painted as per specifications for condensate drain from air handling units and chillers etc.					
15.1	50 mm dia	30	RM			
15.2	40 mm dia	40	RM			
15.3	32 mm dia	120	RM			
15.4	25 mm dia	90	RM			
15.5	20 mm dia	80	RM			
C)	<u>AIR DISTRIBUTION</u>					
16.0	DUCTING					
16.1	GSS DUCTING					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing, commissioning and balancing of G.S.S ducting of following thickness including necessary supports, hangers, nut bolts, gaskets, splitter dampers, vanes canvass connections etc. complete. Firerated ducts shall be fabricated from 1.25 mm thk GI sheets of 275 GSM irrespective of duct size.(All accessories shall be suitably fire rated for 250 deg C for 2 hrs)completeete as per specifications & drawings:					
16.1.1	1.25 mm (18 G) GSS	100	Sqm.			
16.1.2	1.0 mm (20 G) GSS	400	Sqm.			
16.1.3	0.80 mm (22 G) GSS	650	Sqm.			
16.1.4	0.63 mm (24 G) GSS	1000	Sqm.			
17.0	FIRE DAMPERS					
	Supply, installation, testing and commissioning of motorized combined smoke & fire dampers made out of GI sheet of at least 120 minutes fire rating complete with GI damper of required size, smoke sensor, etc as per specifications and shop drawings.					
17.1	Fire/smoke Damper	10	Sqm			
17.2	Actuator & control panel	7	sets			
18.0	VOLUME CONTROL DAMPERS					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of zero leak proof volume control dampers of GI sheet, box type to be provided in ducts complete with suitable links, levers and quadrants for manual control of air volume and air balancing as per specifications and drawings.	15	Sqm.			
19.0	CEILING DIFFUSERS					
19.1	Supply, Installation, testing and balancing of square/circular supply air diffusers of powder coated aluminium construction with attached zero leak proof volume control dampers as per specs. and drawings.	20	Sqm.			
19.2	Supply, installation, testing and balancing of square/circular return air diffusers of powder coated aluminium construction without volume control dampers as per specifications and drawings	5	Sqm.			
20.0	GRILLES					
20.1	Supply, installation, testing and balancing of supply/return air grilles with/without zero leak proof volume control dampers of powder coated aluminium construction suitable for installation in walls, false ceiling boxing etc as per specifications and drawings.					
20.1.1	Supply air grilles in single louvers with zero leak proof volume control dampers.	2	Sqm.			
20.1.2	Return air grilles in single louvers without volume control dampers.	3	Sqm.			
20.1.3	Exhaust air grilles for animal room made of 1 mm thick GSS sheet with exhaust air filter arrangement (10 micron with 90% eff) with volume control damper and its complete fixing arrangement with S S perforated sheet.	18	Sqm.			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
21.0	Fresh Air Louvers with bird screen					
	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.	2	Sqm.			
22.0	DUCT INSULATION					
	Supply and fixing resin bonded fibre glass insulation on supply/return air ducts covered with polythene and finished as specified.					
22.1	50 mm thick insulation (For duct in Non AC area)	80	Sqm.			
22.2	25 mm thick insulation (For duct in AC area)	200	Sqm.			
22.3	Supply and fixing of 19 mm thick foil faced FR Closed Cell Chemically Crossed Linked PolyEthylene Foam insulation for supply air ducting as per the specifications and approved shop drawings.	1000	Sqm.			
23.0	DUCT ACOUSTIC LINING					
23.1	Supply,application and fixing of resin bonded fibre glass hard board acoustic insulation in supply air ducting/plenum covered with tissue paper and perforated aluminium sheet as specified.	20	Sqm.			
24.0	PLANT ROOMS ACOUSTIC INSULATION					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
24.1	Supply and fixing of acoustic insulation on walls and ceiling of Air handling units rooms with 50mm thick resin bonded fibre glass slabs fixed in frame work and finished with vapour barrier and perforated aluminium sheet complete as per specifications and drawings.	320	Sqm.			
25.0	Pan type Humidifier					
	Supply, installation, testing and commissioning of electric pan type humidifiers in each Air Handling Rooms to provide humidification during winter months heating operation. The humidifier shall evaporate 12 liters water per hour and complete with all required water valves incoming MCB, humidistat and ,electrical & control wiring and earthing as required.					
25.1	9 KW	4	Sets			
25.2	6 KW	2	Sets			
D)	<u>ELECTRICAL</u>					
26.0	AIR- CONDITIONING PANELS					
	All bill of items are to be read in conjunction with specifications and drawings.					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	Supply, installation, testing and commissioning of A/C panels suitable for 415 V, 3 phase, 4 wires, 50 Hz power distribution system. The panel shall be cubicle non draw out type free standing floor mounting sheet metal enclosed flush front with aluminium busbars, separate earth bus bars to be provided throughout the length of the panel. The incoming & outgoing feeder breakers, fuses, indicating lamps etc. shall be accommodated in a modular multitier arrangement. The painting shall be done as per relevant IS codes as specified in the specifications. Adequate size cable alley shall be provided all round the panel and in the back for each cable bending and termination. The outgoing feeders inside the panel shall be connected through solid bus bar. Flexible cable links are not acceptable. Bus bars shall be provided with sleeves or heat resistant insulated paint. The panel shall be suitable for cable entry from top. The panel shall be fabricated after the approval of fabrication drawings. All the panels shall have minimum 20% spare capacity.					
	i) All doors to have pad locking and shrouding arrangement.					
	ii) All switches to be heavy duty type base mounted having operating handle.					
	iii) BMS compatible with BACnet protocol					
26.1	Main/ Emergency Air-conditioning MCC in plant room in basement					
	INCOMER					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	2 No. 800A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous & earth Fault trip including under voltage release and lockable trip push button. The ACB should have I _{cw} = I _{cs} = 50KA for 1 sec. R, Y & B Phase indicating lamps (LED type) with 2A control SP MCBs. Digital multi function meter with one set of suitable CTs, CT shorting links, R/Y/B LED indicating lamps and 2A control SP MCBs.					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.					
	Push button to CLOSE the ACB.					
	1 Set of A meter with ASS and CTs.					
	All ACBs should be computer compatible.					
	BUSBARS :1000 TPN					
	Bus Coupler					
	1 No. 800A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, Instantaneous & earth Fault trip including under voltage release and lockable trip push button. The ACB should have I _{cw} = I _{cs} = 35KA for 1 sec.					
	1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.					
	Push button to CLOSE the ACB.					
	1 Set of A meter with ASS and CTs.					
	OUTGOING					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	3 No. 400A, 415/500V, Motorised, Fully Drawout type (EDO), Four Pole, Air Circuit Breaker with microprocessor based overload, short circuit, instantanoious & earth Fault trip including under voltage release and lockable trip push button. The ACB should have Icw=Ics=35 KA for 1 sec.1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.1 set of indicating lamps to indicate OPEN, CLOSE, TRIP.Push button to CLOSE the ACB. 1 Set of A meter with ASS and CTs. For Water chilling machines(3W).					
	3 nos 400 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS.For hot water genetators.(2W+1S)					
	4 Nos. 63 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 7.5 hp Primary chilled water pumps.(3W+1S)					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	3 Nos. 63 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 25 hp Secondary chilled water pumps.(2W+1S)					
	2 Nos. 250 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS for AHP1 Panel. (1W+1S)					
	3 Nos. 32 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In.Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers.Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB.Ampere Metre of suitable range with suitable set of CT's and ASS with fully automatic star delta starter suitable for 5 hp Hot water pumps.(2W+1S)					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	3 Nos. 32 Amp 415 volts, 35 KA (Isc), FP MCCB with thermal magnetic release having variable current settings of 0.8 to 1.0 In. Extended rotary operating mechanism with door interlock with defeat feature and padlock facility. MCCB should be with spreader link and phase barriers. Indicating lamps with 2A protection MCBs to indicate OPEN, CLOSE, TRIP for MCCB. Ampere Metre of suitable range with suitable set of CT's and ASS .					
	Complete panel as above	1	Panel			
26.2	AHU DISTRIBUTION PANEL (AHP-1)					
	Supply, installation, testing and commissioning of cubicle type totally enclosed wall/floor mounted free standing type, dust, damp and vermin proof for AHU made of 2mm thick CRCA sheet steel in compartmentalized design as per specification and drawings. These distribution boards shall be mounted on 50x50x6 MS angle frame work grouted to floor/walls of recessed. The rate includes the angle iron frame, support, painting, numbering, earthing etc. as required					
	INCOMER :					
	1 No. 250 Amps FP MCCB 36 KA, 1 no of 0-250 amp ammeter with selector switch & CT's , 1 no. 0-500 volt voltmeter with selector switch & fuses , 1set of indicating lights (RYB).					
	Bus Bar					
	300 A TPN Aluminium bus bar 415V , 50 Hz.					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	OUTGOINGS :					
	20 set - 63 A, 415 V MCCB 36 KA, ON-OFF indication lamps for starter panel.					
	8 set - 16 A, 415 V MCCB 15 KA, single phase preventor, 2 HP suitable starters for motor and spare NO-NC contacts for interlocking, ON-OFF indication lamps with push button for heat recovery wheel / Fan.					
	3 set - 32 A, 415 MCCB 15 KA with HRC fuses of suitable rating , as spares.					
	1 set - 16 A, 415 MCCB 15 KA with HRC fuses of suitable rating , as spares.					
	Complete panel as above	1	Panel			
26.3	AHU/FAN STARTER PANEL					
	OUTGOING :					
	1 No. 63 Amps MCCB 10 KA for 25 HP Motor with suitable Starters for motor with thermal overload protection, single phase preventor, spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button, ammeter with ASS and CTs for Air Washer motor as required.	6	Nos.			
26.4	AHU/FAN STARTER PANEL					
	OUTGOING :					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	1 No. 63 Amps MCCB 10 KA for 15 HP Motor with suitable Starters for motor with thermal overload protection, single phase preventor, spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button, ammeter with ASS and CTs for AHU/Fan motor as required.	2	Nos.			
26.5	AHU/FAN STARTER PANEL					
	OUTGOING :					
	1 No. 63 Amps MCCB 10 KA for 12.5 HP Motor with suitable Starters for motor with thermal overload protection, single phase preventor, spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button, ammeter with ASS and CTs for AHU/Fan motor as required.	2	Nos.			
26.6	AHU/FAN STARTER PANEL					
	OUTGOING :					
	1 No. 63 Amps MCCB 10 KA for 5 HP Motor with suitable Starters for motor with thermal overload protection, single phase preventor, spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button, ammeter with ASS and CTs for AHU/Fan motor as required.	3	Nos.			
26.7	AHU/FAN STARTER PANEL					
	OUTGOING :					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	1 No. 16 Amps MCCB 10 KA for 2 HP Motor with suitable Starters for motor with thermal overload protection, single phase preventor, spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button, ammeter with ASS and CTs for AHU/Fan motor as required.	1	Nos.			
26.8	AHU/FAN STARTER PANEL					
	OUTGOING :					
	1 No. 16 Amps MCCB 10 KA for 1/1.5HP Motor with suitable Starters for motor with thermal overload protection, single phase preventor, spare NO_NC contacts for interlocking, ON-OFF indication lamps with push button, ammeter with ASS and CTs for AHU/Fan motor as required.	6	Nos.			
27.0	CABLING					
	Supplying, laying, effecting proper connections, testing & commissioning of following size of 1.1 kv PVC insulated aluminium conducting armoured cables as per IS 1554 Part-1 laid underground/cable tray/on surface of wall/hume pipe etc. & termination with brass compression glands as required.					
27.1	3.5C x 185 sq.mm cable	80	Mtr			
27.2	4Cx 25 sq.mm Cable	20	Mtr			
27.3	4 C X 16 sq. mm. Cable	30	Mtr			
27.4	4 C X10 sq. mm. Cable	80	Mtr			
27.5	4 C X 6 sq. mm. Cable	80	Mtr			

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
27.6	4 C X 4 sq. mm. Cable	120	Mtr			
27.7	3C X6 sq. mm. Cable	100	Mtr			
28.0	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					
28.1	200 mm widthx50 mm deep x1.6 mmthickness	100	Mtr			
28.2	150 mm widthx50 mm deep x1.6 mmthickness	80	Mtr			
28.3	100 mm widthx50 mm deep x1.6 mmthickness	100	Mtr			
29.0	EARTHING					
29.1	Earth pits with GI earth plate of size 600mmx600mmx6mm thick including all accessories , down watering GI pipes 40mm dia and providing masonry enclosure with cover plate having interlocking arrangement and watering pipe etc. with charcoal of or coke and salt) complete as required	2	Set			
29.2	Providing & fixing GI earth strip 40mm x 6mm on surface or in recess for earth connections etc. as required	30	Mtr			
29.3	Providing and fixing GI earth strip on walls/ trenches complete as per specifications and as required.					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
29.3.1	38mmx 6mm	30	Mtr			
29.3.2	25mm x 3mm	30	Mtr			
29.4	Providing and fixing earth wire of complete as per specifications as required.					
29.4.1	4 SWG wire	30	Mtr			
29.4.2	6 SWG wire	50	Mtr			
29.4.3	8 SWG wire	40	Mtr			
30.0	CONTROL CABLING					
	Supply, laying, effecting proper connections, testing & commissioning of 1.5 sq.mm. PVC insulated copper multicore cables from AHU's and AC equipments to central control console					
30.1	14 core cable	250				
30.2	10 core cable	250				
30.3	8 core cable	100				
30.4	6 core cable	100				
30.5	5 core cable	100				
30.6	3 core cable	50				
30.7	2 core cable	150				
31.0	CONTROL CONSOLE /DESK					

Item No. 1	Description 2	Qty 3	Unit 4	Rate In Rs (in Figure) 5	Rate in Rs (in Words) 6	Amount (Rs.) 7
	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, and AHUs/ 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 generator etc.					
	Push buttons and indicating lamps for remote start & stop and status indication for every nos of the water circulating pumps, Air Handling Units, Ex blower, Fans etc.					
	Push buttons and indication lamps for remote start & stop and status indication (On, Off & Fault) for every nos. condenser motors indication for every no fans.					
	Hooter and flashing lamp to indicate operation of any safety/ shut down with necessary contactors, accept, reset and test push buttons.					
	Complete wiring with copper conductor PVC insulated multicore 2.5 sq.mm stranded cable (including supply of cable, tray, clamps etc) from various equipments in the A.C. plant room, AHU's Terrace plant room and etc to the control console panel as required.					
	COMPLETE PANEL AS ABOVE	1	Panel			
	TOTAL FOR HVACWORKS					

	<u>ANIMAL HOUSE at IIIM - JAMMU</u>		
	<u>SUMMARY SHEET FOR HVAC WORKS</u>		
SECTION	DESCRIPTION OF WORK	AMOUNT(Rs.)	AMOUNT(Rs.) IN FIGURES
A	EQUIPMENTS		
B	PIPING		
C	AIR DISTRIBUTION		
D	ELECTRICAL		
	GRAND TOTAL		