

HLL Life care Limited Trivandrum - R&D CENTRE

Class 10000 Clean Room for PILOT PLANT

Bill of Quantities

DESIGN, SUPPLY, INSTALLATION, TESTING, VALIDATION & COMMISSIONING

OF THE FOLLOWING:-

SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
	PART 1						
	CIVIL WORKS, CHANGE ROOM INTERIOR & PLUMBING						
1	Providing plain cement concrete 1:4:8 one cement ,four m - sand and eight 40mm nominal size hard granite broken stone) including mixing , laying compacting, etc all complete with.	Cu.M	2				
2	Providing and constructing 10cm thick Brick work in Cement Mortar 1:6 using best quality wire cut bricks including soaking the bricks in water , scaffolding, racking joints, watering ,curing, etc all complete with.	Sq.M	30				
3	Providing and constructing 22cm thick Brick work in Cement Mortar 1:6 using best quality wire cut bricks including soaking the bricks in water , scaffolding, racking joints, watering ,curing, etc all complete with.	Sq.M	100				
4	12mm thick Plastering of brick walls with Cement Mortar 1:4. One coat floated hard and toweled smooth including chicken mesh plastering on all joints of masonry to rcc and all chasing made in the walls for electrical and plumbing lines etc all complete with.	Sq.M	220				
5	Providing mechanically vibrated Reinforced cement concrete for Lintels & Beams M20 grade with minimum cement content-360 kg /m3 using 20mm nominal size hard granite broken stone including reinforcement ,form work, watering, mixing , laying, compacting , curing etc all complete with.	Cu.M	4				

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SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
6	Providing and laying double charged stain free Mat finish Vitrified floor tiles 600x600 mm of standard make in colours such as Ivory, Grey, laid on 20 mm thick Cement Mortar 1:4 (1 Cement : 4 Coarse sand) including pointing the joints with white cement and matching pigment etc., all complete with.	Sq.M	15				
7	Providing and fixing Ceramic tiles standard make in all colours, shades of any size over 12 mm thick bed of Cement Mortar 1:3 (1 Cement : 3 Coarse sand) and including pointing in white cement mixed with pigment of matching shade all complete with. - Hand & leg wash area walls up to 3m height etc., all complete with	Sq.M	50				
8	Internal partitions made out of 4mm thick interior grade Aluminum Composite panel DOUBLE SIDE of approved shade using anodized aluminum extruded built up standard tubular sections of 3x25x25 mm etc. all complete with. To be used as change room partitions.	Sq.Mt	50				
9	False ceiling with 4mm thick interior grade Aluminum Composite panel , consisting of frame work made with extruded aluminum perimeter channels and 3mm thick 1"x1" square tube extruded aluminum runners ,suspended with 6mm dia G.I Rods from existing rcc slab. To be used as change room false ceiling	Sq.Mt	15				
10	Providing and fixing anodized aluminum doors, with extruded built up standard tubular and other sections for frames and 12 mm thick prelaminited particle board with decorative lamination on both sides for door shutters, SS hinges, SS locking bolts, suitable heavy duty automatic door closer with speed adjuster of DORMA make etc all complete with.	Sq.Mt	20				

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11	0.23x0.23x 0.3 M Cubicle type Dressing cabinet made out of 4mm thick interior grade DOUBLE SIDE Aluminum Composite panel of approved shade using anodized aluminum extruded built up standard tubular sections of 2x20x20 mm good quality lock & key for each cubicle etc. all complete with.	Sq.Mt	20				
12	Outdoor Vestibule made out of 4mm thick outdoor grade Aluminum Composite panel SINGLE SIDE of approved shade and in required profile using anodized aluminum extruded built up standard tubular sections of 3x25x25 mm etc. all complete with. To be used as a covering for outdoor overhead ducting.	Sq.Mt	0				
13	Stainless Steel Chapel rack made with stainless steel 304 2B square sections with welding buffing etc all complete with.	Kgs	30				
14	Vitreous Chinaware Pedestal type 560 x 430mm wash basin complete with compatible full height pedestal, suitable size PVC waste water line upto floor trap, flexible PVC pipe for connecting water tap etc. all complete with. Colour shall be Starwhite / White / Ivory. This shall be Hindware Constellation 10032 or equivalent	Nos	2				
15	Satin finish Stainless steel sink made out of SS 304 of size 560 x 430 x 150mm. This shall be Suitably installed to the granite/SS counter covered separately. All complete with.	Nos	2				
16	CP brass pillar type infrared control tap for wash basins all complete with similar to SCHELL PURIS E	Nos	2				
17	CP brass Long body bib cock with wall flange and sensor all complete with. Jaquar or equivalent make	Nos	2				
18	CP brass Pillar Cock for wash basins all complete with. Hindware type F150001	Nos	2				

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				SUPPLY	INSTLN.	SUPPLY	INSTLN.
19	CP brass Long body bib cock with wall flange all complete with. Hindware type F150002	Nos	2				
20	50mm Gun metal ball valve	Nos	4				
21	PVC Multi Floor trap 100 mm	Nos	4				
22	PVC pipe for waste water to be laid on floor after making necessary floor chasing etc.and finishing with rough PCC/cement plaster.						
1	100mm 6Kgf / Sq.cm PVC pipe with all accessories.	Mtr	50				
2	50mm 6Kgf / Sq.cm PVC pipe with all accessories.	Mtr	50				
23	ASTM schedule 40 pipe for supply water to be laid on floor / wall after making necessary chasing etc.and finishing with rough PCC/cement plaster. Rate shall include hydraulic pressure testing.						
1	50mm 12Kgf / Sq.cm ASTM pipe with all accessories.	Mtr	100				
2	20mm 12Kgf / Sq.cm ASTM pipe with all accessories.	Mtr	50				
24	Fabricated and painted supporting steel made out of ISMB / ISMC / ISA / Sheet / Plate etc Painting shall be with 2coats of red oxide / zinc chromate primer and 2 coats of poly urethane paint of approved shade all complete with. This shall be used as supporting structure for Outdoor over head HVAC ducts, AHU s (Steel Mezzanine floor), Switchboard support, Cable trays etc	Kgs	500				
25	20mm Flamed granite slab laid on 20 mm thick Cement Mortar 1:4. Rate shall include required edge bevelling / chamfering and cut out for floor trap etc. all complete with. To be used as leg wash flooring	Sq.Mt	3				
26	20mm Polished granite slab laid on 20 mm thick Cement Mortar 1:4. Rate shall include required edge bevelling / chamfering and cut out for sink etc. all complete with. To be used as wash counter & wall cladding at leg wash area.	Sq.Mt	3				

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SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
27	Wall painting of cement plastered brick wall and RCC ceiling slab after applying necessary wall putty and 2 coats of wall primer and 2 coats of synthetic enamel paint of approved make and shade to get a satisfactory finish all complete with.	Sq.Mt	40				
	PART 1 TOTAL Rs						
1.0	PART 2 CLEAN ROOM INTERIOR CEILING PANELS						
	Suspended Walkable False Ceiling with 75 mm thick structural insulated sandwiched panels made with PUF insulation having density 40kg per cu.mtr as core ,sandwiched between stainless steel sheet of thickness 0.6 mm and grade SS 304 -2B having 1200mm or suitable width with required length, consisting ' T ' bar suspension type of frame work made with extruded aluminum perimeter channels and 3mm thick 1"x1" square tube extruded aluminum runners ,suspended with 6mm dia G.I Rods from existing rcc slab. Rate shall include necessary cutouts for air supply & luminaires complete with edge finishing. Silicon sealant shall be used at the joints. Ceiling system shall be suitable for loading upto 150kgf/Sq.M	Sq.Mt	150				

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SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
2.0	WALL PANELS						
1	<p>250mm Single Skin extract panel</p> <p>Free standing single skin extract Wall panel made out of 250mm thick structural insulated sandwiched extract panels made with structural insulated sandwiched panels with PUF insulation having density 40kg per cu.mtr as core, sandwiched between stainless steel sheet of thickness 0.6mm and grade SS304 -2B and 80 micron aluminum foil on other side .This shall complete with 22G aluminum sheet Return air duct of size 900 mm x 200 mm. Panel shall be in 1200mm width and of required length. Rate shall include necessary cutouts/penetrations for various services complete with edge finishing. Silicon sealant shall be used at the joints.</p>	Sq.Mt	0				
2	<p>250mm Double Skin extract panel</p> <p>Free standing double skin extract Wall panel made out of 250mm thick structural insulated sandwiched extract panels made with structural insulated sandwiched panels with PUF insulation having density 40kg per cu.mtr as core, sandwiched between stainless steel sheet of thickness 0.6mm and grade SS304 -2B on both sides .This shall complete with 22G aluminum sheet Return air duct of size 900 mm x 200 mm. Panel shall be in 1200mm width and of required length. Rate shall include necessary cutouts/penetrations for various services complete with edge finishing. Silicon sealant shall be used at the joints.</p>	Sq.Mt	130				

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				SUPPLY	INSTLN.	SUPPLY	INSTLN.
3	<p>250mm Single Skin panel</p> <p>Free standing single skin Wall panel made out of 250mm thick structural insulated sandwiched panels made with structural insulated sandwiched panels made with PUF insulation having density 40kg per cu.mtr as core, sandwiched between stainless steel sheet of thickness 0.6 mm and grade SS304 -2B and 80 micron aluminum foil on other side . Panel shall be in 1200mm width and of required length. Rate shall include necessary cutouts/penetrations for various services complete with edge finishing. Silicon sealant shall be used at the joints.</p>	Sq.Mt	0				
4	<p>250mm Double Skin panel</p> <p>Free standing double skin Wall panel made out of 250mm thick structural insulated sandwiched panels made with PUF insulation having density 40kg per cu.mtr as core, sandwiched between stainless steel sheet of thickness 0.6 mm and grade SS304 -2B on both sides . Panel shall be in 1200mm width and of required length. Rate shall include necessary cutouts/penetrations for various services complete with edge finishing. Silicon sealant shall be used at the joints.</p>	Sq.Mt	10				
5	<p>100mm Single Skin panel</p> <p>Single skin Wall panel made out of 100mm thick structural insulated sandwiched panels made with structural insulated sandwiched panels made with PUF insulation having density 40kg per cu.mtr as core, sandwiched between stainless steel sheet of thickness 0.6 mm and grade SS304 -2B and 80 micron aluminum foil on other side . Panel shall be in 1200mm width and of required length. Rate shall include necessary cutouts/penetrations for various services complete with edge finishing. Silicon sealant shall be used at the joints.</p>	Sq.Mt	0				

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				SUPPLY	INSTLN.	SUPPLY	INSTLN.
6	100mm double Skin panel Double skin wall panel made out of 100mm thick structural insulated sandwiched panels made with structural insulated sandwiched panels made with PUF insulation having density 40kg per cu.mtr as core, sandwiched between stainless steel sheet of thickness 0.6 mm and grade SS304 -2B on both sides . Panel shall be in 1200mm width and of required length. Rate shall include necessary cutouts/penetrations for various services complete with edge finishing. Silicon sealant shall be used at the joints.	Sq.Mt	50				
7	50mm Double Skin panel Double skin wall panel made out of 50mm thick structural insulated sandwiched panels made with structural insulated sandwiched panels made with PUF insulation having density 40kg per cu.mtr as core, sandwiched between stainless steel sheet of thickness 0.6 mm and grade SS304 -2B on both sides . Panel shall be in 1200mm width and of required length. Rate shall include necessary cutouts/penetrations for various services complete with edge finishing. Silicon sealant shall be used at the joints.	Sq.Mt	30				
3.0	WINDOW PANELS						
1	Free standing double skin window panel with 800mm wide 925mm high 5mm thick double float toughened safety glass Flush at both sides fixed on wall panel as specified in item 2.0 above.	Sq.Mt	0				
2	Emergency Exit panel with 1.2 mm stainless steel frame and 5mm thick single float toughened safety glass of above grade.	Sq.Mt	6				
3	Machine access panel with with 1.2 mm stainless steel frame and 5mm thick double float toughened safety glass of above grade.	Sq.Mt	0				

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SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
4.0	SINGLE LEAF DOOR 0.8 mm thickness SS304 -2B Stainless steel single leaf hinged door having opening of size 1300mm wide x 2100mm height complete with 5mm thick double float toughened safety glass flush at both sides of size 200mm wide and 600mm high on each door leaf and automatic door closer with speed adjuster. Door shall be with 1.2 mm stainless steel frame of size not less than 100x100mm section all round.	Sq.Mt	3				
	0.8 mm thickness SS304 -2B Stainless steel single leaf hinged door having opening of size 900mm wide x 2100mm height complete with 5mm double float toughened safety glass flush at both sides view glass of size 200mm wide and 600mm high on each door leaf and automatic door closer with speed adjuster. Door shall be with 1.2 mm stainless steel frame of size not less than 100x100mm section all round.	Sq.Mt	3				
5.0	MATERIAL PASS BOX Free standing self supported Pass box with electrical interlock and made out of 100mm thick structural insulated sandwiched panels made with PUF insulation having density 40kg per cu.mtr as core,sandwiched between 0.6 mm stainless steel sheet SS 304 -2B. panels all round. This shall include a pair of single leaf hinged door made with 25mm thick structural insulated sandwiched panels and 1.2mm frame work of above specification with 100 x 150 mm double float toughened safety glass flush at both sides view glass, automatic door closer with speed adjuster and magnetic door lock with electrical interlock associated control wiring, push button etc all complete with. Size (CLEAR) :- Length - 1000mm, Width - 700mm, Door opening size clear 600x600 mm.	Nos	1				

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				SUPPLY	INSTLN.	SUPPLY	INSTLN.
6.0	STAINLESS STEEL COVING Coving of the sharp corners using 100 mm wide 0.6 mm stainless steel sheet SS 304-2B .	Mt	130				
7.0	EPOXY FLOORING 3mm thick epoxy self leveling flooring systems with BASF Construction Chemicals make Mastertop 1230 Plus or equivalent as approved, over after cleaning the surface free from all loose particles, laitance, patching of small patches, nicks etc., with Epoxy putty, applying primer, Mastertop 1200 PLUS and spreading 4 component self leveling epoxy compound, tooling and finishing to gloss/matt finish.	Sq.Mt	120				
2	Coving of horizontal / vertical corners of average 75mm radius with Epoxy mortar, after priming the surface with Mastertop 1200 Plus Primer, and epoxy mortar, with Mastertop 1200 PLUS primer and Silica sand applying to the corners finishing true to line and level and applying final sealer coat with Mastertop 1200 Plus and Silica flour	Mt	110				
9.0	AIR SHOWER 1285 mm (W) x 915 mm (D) x 2285 mm (Ht.) Fully automatic, continuous duty Air shower made out of 100mm SS 304 2B sandwiched panels as specified elsewhere with interlocking of doors with view glass as specified elsewhere, 90% efficiency 10micron pre filter , duly tested, 1 Nos. HEPA filter of size – 1220 x 610 x 75 mm, 14nos Nozzles each made out of SS fixed on side walls and ceiling to provide a velocity of 25 to 30 m / sec connected to a suitable capacity Dynamically and statically balanced motors and blower. including all control svstem All complete with.	Nos.	1				
PART 2 TOTAL Rs							

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SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
1.0	PART 3 AIR CONDITIONING CHILLER & AHU						
1	30TR, 415 V , 3ph, 50Hz, Outdoor Air cooled scroll type Chilling Plant with R 410A refrigerant complete with Compressor, Condenser, Evaporator, in built chilled water pump, microprocessor control unit, starter etc all complete with. System shall be suitable to achieve inside conditions specified elsewhere and suitable for connecting to the AHU as specified. This unit shall be type Carrier Model 30RB100S.	Nos	1				
2	Floor mounted Air Handling Unit :- 13000 CFM @ 150mm SP, 30 TR, 8/12 ROW, Aluminum construction complete with a Double inlet double width centrifugal fan coupled with adequate capacity high efficiency TEFC 415V, 3ph Induction Motor using belt drive, Copper tube Cooling Coils with minimum 10 nos/inch Aluminum fins , 10micron pre filters, 5micron Microvee fine filters & 0.3micron HEPA filters.. Overall filter efficiency shall not be less than 99.98% for 0.3 micron particles. Suitable capacity dehumidification system shall be incorporated to get 55% RH (with no positive tolerance) for the conditioned air (outside RH will be around 98%) A detailed AHU selection sheet t shall be submitted by the supplier to meet the design parameters. AHU shall be double skin type with mixing box, insulated drain pan, cooling thermostat with interconnected cabling & complete with suitable flexible connection to the associated duct work. Insulation shall be with 45mm thick 40kg/cum PUF injected insulation.	Nos	1				

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SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
3	Ceiling suspended AHU UNIT:- 1200 CFM @ 50mm SP, 3 TR Aluminum construction Air Handling Unit. The unit shall be complete with centrifugal fan coupled with adequate capacity high efficiency TEFC 415V, 3ph Induction Motor using belt drive, Copper tube Cooling Coils 10micron pre filters, 5micron Microvee fine filters & 0.3micron HEPA filters. Overall filter efficiency shall not be less than 99.97% for 0.3 micron particles. AHU shall be double skin type with mixing box, insulated drain pan, cooling thermostat with interconnected cabling & complete with suitable flexible connection to the associated duct work. Insulation shall be with 45mm thick 40kg/cum PUF injected insulation. Fan shall be with double ball bearing and	Nos	1				
2.0	VARIABLE SPEED DRIVE						
1	Factory built 415Volts, 3phase Variable Speed Drive suitable for speed control of 3phase Induction motor with Modbus interface, software, Control Panel, local remote function selector. This shall be suitable for controlling of AHU as per item #1.1 Price shall include static pressure sensor / regulator, all control wiring between sensors / control circuit etc. Unit shall be wall mounting type complete with suitable enclosure.	Nos.	1				
2	Factory built 415Volts, 3phase Variable Speed Drive suitable for speed control of 3phase Induction motor with Modbus interface, software, Control Panel, local remote function selector. This shall be suitable for controlling of AHU as per item #1.2 Price shall include static pressure sensor / regulator, all control wiring between sensors / control circuit etc. Unit shall be wall mounting type complete with suitable enclosure	Nos.	1				

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SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
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2.0	CHILLED WATER PIPING Class C GI Piping complete with all Accessories, Flanges, Fittings, Elbows, Tees and Reducers, Flanges, Gaskets, Hi Tech supports etc. All joints shall be electric arc welded. Pipes shall be insulated with 50mm thick expanded polystyrene slabs insulation finished with Sand Cement Plaster. Cost of Valves not to be included. Piping will be an extension from the existing piping. Rate shall include hydraulic pressure testing.						
1	100mm Dia Chilled water Piping	Mts	30				
2	50mm Dia Chilled water Piping	Mts	100				
3	40mm Dia Chilled water Piping	Mts	50				
3.0	CONDENSATE WATER PIPING PVC Piping for condensate drain water from FCUs & AHUs complete with all Accessories, Fittings, like Elbows, Tees and Reducers, Flanges, Gaskets, Hi Tech supports etc.						
1	50mm Dia PVC Piping	Mts	100				
4.0	VALVES Valves suitable for above Chilled water piping to be used with AHUs complete with all Accessories, Fittings, like Flanges, Gaskets Bolts.						
1	100mm Butterfly Valve.	Nos.	4				
2	50mm Butterfly Valve.	Nos.	2				
3	40mm Butterfly Valve.	Nos.	2				
4	MOTORIZED VALVE:- 50mm dia, 3way motorized valve with modulating proportional thermostat & necessary control wiring.	Nos.	1				
5	MOTORIZED VALVE:- 40mm dia, 3way motorized valve with modulating proportional thermostat & necessary control wiring.	Nos.	1				

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5.0	DUCTING						
	Aluminum Sheet metal duct work complete with flanges, rivets, gaskets, Hi - Tech supports Duct Insulation Lining for Thermal & Acoustic proofing using Nitrile Rubber. Thermal insulation shall be warped with polythene faced jute and aluminum foil complete with all consumables.						
1	22 Gauge Aluminum Ducting with 12mm Thick Nitrile Rubber Insulation.	Sq.M	300				
2	20 Gauge Aluminum Ducting with 25mm Thick Nitrile Rubber Insulation.	Sq.M	350				
3	18 Gauge Aluminum Ducting with 25mm Thick Nitrile Rubber Insulation.	Sq.M	150				
	OUT DOOR PRE-INSULATED Ducting suitable for pharmaceutical clean room application with POLYISOCYANARATE Rigid foam having density 48Kg/m density, 30mm thickness, Thermal Conductivity 0.022W/m.K, CFC Free fire retardant and protected on both sides with 30mm aluminum facing. The embossed aluminum foils lacquered with 3gm/m2 of corrosion resistant and ultraviolet rays protection, all complete with stiffeners, installation & Accessories. This shall be used as a main transfer duct suitable for handling 20000 cfm.						
4		Sq.M	100				
6.0	AIR GRILLES						
	Aluminum Continuous / Perforated Powder coated supply & return air grill with / without Aluminum damper.						
1	Supply / Return Air grill with Aluminum Damper.	Sq.M	8				
2	Supply / Return Air grill with out Aluminum Damper.	Sq.M	5				

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7.0	DUCT DAMPERS						
1	Extruded Aluminum louver type supply air duct damper complete with brass bushings linkage, lever, fixing arrangement etc.	Sq.M	18				
2	1 HR rated Automatic fusible link (165 Deg F) damper suitable for installing supply air plenum of TFA / AHU covered as per item 1. This shall be close by gravity in the direction of air movement and to remain tightly closed on operation of a fusible link. The dampers shall operate automatically and shall simultaneously switch off the air handling fans. Manual operation facilities shall also be provided. Item shall have test certificate from CBRI Rourkee	Set	4				
8.0	FILTERS						
1	Terminal Filters box with 0.3 MICRON, 99.99% efficiency suitable for fixing with branch Ducts complete with all AL fixing frame work, Clamps & all arrangements including fixing of pressure gauge.						
1	600mm x 600mm SIZE, 0.3MICRON,300 CFM, 99.99% HEPA Terminal filter box with complete assembly	Nos.	55				
2	FAN FILTER UNIT UL listed 90FPM, 0.45 inch SP, 2x4 Feet Fan filter unit with aluminum lid and body, forward inclined centrifugal type fan with permanently lubricated bearings and 99.99% efficiency HEPA filters. This shall be ENVIRCO MAC 10 RSR or equivalent. Unit shall be complete with solid state variable speed control unit to be installed in FFU MCC covered in PART 4 (Electrical items.)	Nos.	0				
3	600mm x 600mm SIZE, 0.12 MICRON,300 CFM, 99.999% ULPA Terminal filter box with complete assembly	Nos.	0				

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9.0	MISCELLANEOUS						
1	GI EXHAUST LOUVER	Sq.M	4				
2	PRESSURE GAUGE	Nos.	8				
3	THERMOMETER	Nos.	6				
4	MAGNAHELIC Differential pressure gauge 0 - 5mm WC.	Nos.	6				
5	Electronic Indication panel showing Pressure, Temperature & Humidity complete with all required sensors & wiring.	Nos.	1				
	PART 3 TOTAL Rs						
	PART 4						
	ELECTRICAL, COMMUNICATION & SECURITY SYSTEM						
1.0	LT SWITCHBOARD						
1	415V, 3Ph, 4Wire, Compartmentalized IP 54 Switchboards made out of 2mm thick sheet steel duly painted. 1no.200A FP load break Switch, 1 set of phase indicating lamps 1No. Multifunction meter displaying basic electrical parameters. Bus Interconnections / wiring, terminals etc. Bus Bar:- 200A, 35kA, TP & N, Aluminum with heat shrinkable PVC sleeves on SMC supports. Outgoing type1 :- > Qty- 1No. Each outgoing feeder with following:- 1No.100A, 35ka TP MCCB with shunt trip user adjustable thermal magnetic overload setting, neutral link, wiring, O/G terminals, Cable chamber and all complete with. Outgoing type2 :- > Qty- 2Nos. Each outgoing feeder with following:- 1No.63A, 35ka TP MCCB with shunt trip user adjustable thermal magnetic overload setting, neutral link, wiring, O/G terminals, Cable chamber and all complete with. Outgoing type3 :- > Qty- 1No. Each outgoing feeder with following:-						

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	<p>1No.40A, 35ka TP MCCB with shunt trip user adjustable thermal magnetic overload setting, neutral link, wiring, O/G terminals, Cable chamber and all complete with. Outgoing type4 :- > Qty- 2Nos. Each outgoing feeder with following:- 1no. 40A, FP, MCBs and suitable size Copper wiring interconnections, earthing and cable entry.</p>	Nos.	1				
2.0	MCBDBs, MCBs, RCCBs						
	415V, 3Ph,Metal clad factory assembled DOUBLE DOOR MCB DB10ka MCBs & 30mA RCCBs.Rate shall include all GI hardware, minor civil works, wiring and dressing inside the DB,interconection,ferruling and termination of l/c & O/a circuits						
1	1wayFP MCB enclosure.	Nos.	1				
2	8 way SPN MCBDB.Legrand type # 607711	Nos.	1				
3	6 way TPN Fully Phase segregated MCB DB.Legrand type # 607716	Nos.	1				
4	8 way TPN Vertical MCBDB Legrand type # 607751	Nos.	1				
5	6-32A SP MCBs	Nos.	26				
6	6-32A TP MCBs	Nos.	8				
7	32 - 63A FP MCB type ISOLATOR	Nos.	4				
8	63A 30mA DP RCCB.Legrand type# 008608	Nos.	3				
9	63A 30mA FP RCCB.Legrand type# 602128	Nos.	1				
	1.1kV XLPE insulated armored under ground cables with aluminum / copper conductor. TTo be laid through cable trays etc. using suitable GI spacer saddle MS clamps brackets.						
1	3.5C x 240 Sq.mm	Mts	50				
2	3.5C x 70 Sq.mm	Mts	20				
3	4C x 35 Sq.mm	Mts	50				
4	4C x 16 Sq.mm	Mts	50				
5	4C x 10 Sq.mm	Mts	50				
6	4C x 4 Sq.mm (Copper Conductor)	Mts	50				

DESIGN, SUPPLY, INSTALLATION, TESTING, VALIDATION & COMMISSIONING

OF THE FOLLOWING:-

SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
7	4C x 2.5 Sq.mm (Copper Conductor)	Mts	50				
8	3C x 2.5 Sq.mm (Copper Conductor)	Mts	200				
3.0	LT CABLE TERMINATION Cable termination using single/double compression brass cable Glands Crimping type tinned Cu Lugs and GI hardware. Rate to include cost of Gland, gland earthing, Lugs etc						
1	3.5C x 240 Sq.mm	Nos.	2				
2	3.5C x 70 Sq.mm	Nos.	2				
3	4C x 35 Sq.mm	Nos.	4				
4	4C x 16 Sq.mm	Nos.	4				
5	4C x 10 Sq.mm	Nos.	8				
6	4C x 4 Sq.mm (Copper Conductor)	Nos.	10				
7	4C x 2.5 Sq.mm (Copper Conductor)	Nos.	6				
8	3C x 2.5 Sq.mm (Copper Conductor)	Nos.	22				
4.0	EARTHING The Earthing conductor Joints shall be BRAZED & to be laid in already sleeves / along wall cable tray etc. Rate for copper wire shall include end termination using CU lugs at both ends.						
1	8SWG bare Copper wire .	Mts	50				
2	10SWG bare Copper wire .	Mts	50				
3	12SWG bare Copper wire .	Mts	50				
4	14SWG bare Copper wire .	Mts	100				
5	Earth Bus fabricated out of 25x6 mm CU Conductor with suitable number & size of drilled holes. ALL TINNED.	Nos.	2				
5.0	CABLE TRAYS Over head supporting system for Cables other services fabricated out of MS channels, angles, MS strip duly painted.						
		Kgs	500				
6.0	PLUG&SOCKET OUTLETS Factory assembled IP 55 Interlocked switched sockets complete with compatible plug top & concealed mounting type metal box.						
1	240V, 16A, 1Ph 2P & earth Industrial plug&socket. Legrand type # 057221	Nos.	5				
2	240V, 32A, 1Ph, 2P & earth Industrial plug&socket. Legrand type # 057229	Nos.	6				
3	415V, 32A, 3Ph, 4P & earth Industrial plug&socket. Legrand type # 057234	Nos.	4				

DESIGN, SUPPLY, INSTALLATION, TESTING, VALIDATION & COMMISSIONING

OF THE FOLLOWING:-

SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
4	1x16A, 5Pin socket controlled by 6A SP switch.	Nos.	5				
5	1x16A, 6Pin socket controlled 16A DP switch	Nos.	5				
7.0	CONDUITS 16G MS conduit with all threaded accessories to be laid surface / concealed in slabs, steel sections / brick masonry walls using suitable spacer saddle /MS clamps,brackets.Rate shall include wall chasing and rough finishing using cement mortar wherever req.MS conduiting shall be threaded type only.						
1	20mm Dia MS Conduiting	Mts.	500				
2	25mm Dia MS Conduiting	Mts.	300				
3	2.5 mtr long, 20mm dia steel reinforced flexible conduit with suitable glanding at both ends - to be used for the drops above false ceiling.	Nos	50				
8.0	WIRING 660V grade PVC insulated multistrand flexible copper conductor wire to be drawn through already laid conduit.						
1	1 Run of 1.5 Sq.mm PVC Cu.wire.	Mts.	500				
2	1 Run of 2.5 Sq.mm PVC Cu.wire.	Mts.	300				
3	1 Run of 4 Sq.mm PVC Cu.wire.	Mts.	200				
9.0	MISCELLANEOUS ITEMS						
1	SHEET STEEL ENCLOSURE Fabricated & painted enclosure made out of 2mm thick sheet steel to be used as draw boxes,junction boxes,terminal boxes as per specific site requirement.	Kgs.	500				
2	Decorative Modular CAT 6 Data outlet RJ 45 with plate & metal Box and accessories all complete with.	Nos.	2				
3	Automatic hand dryer NOVA make	Nos.	2				

DESIGN, SUPPLY, INSTALLATION, TESTING, VALIDATION & COMMISSIONING

OF THE FOLLOWING:-

SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
10.0	LUMINARIES Following fluorescent /compact fluorescent luminaries with high efficiency lamps. Rate to include HF Ballast, all GI hardware, suitable Fixing arrangement termination and interconnection.						
1	4x14w, T5 recess mounted bottom opening Clean room Luminaries.Philips FBS 651	Nos.	24				
2	1x 13w CFL Down lighter with frosted front glass Luminaries. Philips FBH 145/113	Nos.	12				
3	1x 28w T5 Rail type surface mounted Fluorescent Luminaries. Philips TMS 122 / 128 HF	Nos.	0				
11.0	POINT WIRING WITH MS CONDUIT Point wiring using concealed / surface 16G Black enameled MS conduit and threaded accessories like bend, Junction boxes, Blank plates, 1.5 sq.mm PVC CU wire for switch control & Neutral,16Swg bare CU wire for earth, decorative modular switches, passivated steel boxes etc all complete with.						
1	1No. Light point controlled by 1No. 6A SP switch.	Nos.	12				
2	2Nos. Light point controlled by 1No. 6A SP switch.	Nos.	8				
3	4Nos. Light point controlled by 1No. 6A SP switch.	Nos.	2				
12.0	TELEPHONE WIRING Telephone wiring in already laid concealed/surface conduit system.Rate shall only include laying of telephone wire.						
1	0.5 Sq.mm PVC insulated 2pair telephone wire	Mts.	100				
2	RJ 11 Telephone outlet Legrand Make with Metal Box, Plate etc.	Nos.	2				

DESIGN, SUPPLY, INSTALLATION, TESTING, VALIDATION & COMMISSIONING

OF THE FOLLOWING:-

SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
13.0	FDA ZONE CONTROL PANEL						
1	Conventional type Solid state 2 zone fire detection and alarm control panel compatible with 2/4 wire Ionization / Photo electric / Heat detectors. Number of detectors to be controlled is as specified elsewhere. Control panel shall be complete with at least 2nos. potential free relay contacts, audio - visual annunciation, 24/12 V DC power supply, battery back up. This shall be suitable for interconnecting existing conventional FDA panel at site.	No	1				
14.0	FIRE DETECTION DEVICES						
	Following conventional type devices compatible to use with the control panel as per item 1. This shall be 2 / 4 wire type complete with snap fixing type base unit.						
1	Photo electric type smoke detectors.	Nos.	8				
2	Duct sensors with air sampling tube.	Nos.	10				
3	Fault Isolation module.	Nos.	6				
4	Response Indicators	Nos.	10				
5	Manual call points with break glass.	Nos.	4				
15.0	CCTV CAMERA						
	1/3", Colour, Dome type CCD PCB Camera complete with power supply and all accessories.	Nos.	2				
16.0	CCTV CAMERA CONTROLLER						
	8 Channel, 120fps, MJPEG coded DVR Card suitable for installing in 'Pentium' Desktop PC. Desktop PC of suitable configuration will be supplied as free issue item.	Nos.	1				

DESIGN, SUPPLY, INSTALLATION, TESTING, VALIDATION & COMMISSIONING

OF THE FOLLOWING:-

SL.No.	ITEM DESCRIPTION	UNIT	QTY	RATE (Rs.)		TOTAL (Rs.)	
				SUPPLY	INSTLN.	SUPPLY	INSTLN.
17.0	SPEAKER FOR PA SYSTEM 6W Recessed/surface mounting type Ceiling Speaker complete with 100V Line matching Transformer.	Nos.	4				
18.0	LOW VOLTAGE SYSTEM CABLES Following Armoured / Un armoured PVC insulated copper conductor cables. Armoured cables shall be laid using spacer clamps and unarmoured cables shall be laid through MS/ conduits covered separately.						
1	2C x 1.0 Sq.mm twisted multistrand Cable with copper conductor.	Mts	100				
2	2C x 1.5 Sq.mm twisted multistrand shielded FRLS Cable with cu conductor.	Mts	50				
3	RT - 2 type camera cable with co axial & 2 core copper conductor cable.	Mts	100				
4	2C x 1.5 Sq.mm FRLS armoured Cable with copper conductor.	Mts	100				
5	CAT 6 UTP cable	Mts	100				
	PART 4 TOTAL Rs						