

Duct Work and Outlets**1. General**

- 1.1 The work under this part shall consist of furnishing labour materials, equipment and appliances as specified necessary and required to install all sheet metal and other allied work to make the air conditioning supply, ventilating, and exhaust system ready for operation as per drawings.
- 1.2 Except as otherwise specified all duct work and related items shall be in accordance with these specifications.
- 1.3 Duct work shall mean all ducts, casings, dampers, access doors, joints, stiffeners and hangers.

2. Duct Materials

- 2.1 The ducts shall be fabricated from galvanized steel sheets class VIII conforming to ISS:277-1962 (revised) or aluminum sheets conforming to ISS:737-1955 (wherever aluminum ducts are specified).
- 2.2 All duct work, sheet metal thickness and fabrication unless otherwise directed, shall strictly meet requirements, as described in IS: 655-1963 with amendment-I (1971 edition)

The thickness of the sheet shall be as follows: -

	Size of Duct	Sheet Thickness	Type of Joints	Bracing if any
1	Up to 750 mm	0.63 mm	G.I. Flange	
2	751 mm to 1000 mm	0.80 mm	25x25x3 mm	25x25x3 mm at the rate of 1 M from joints
3	1001 mm to 1500 mm	0.80 mm	40x40x5 mm	40x40x5 mm at the rate of 1 M from joints
4	1501 mm to 2250 mm	1.00 mm	Angle iron frame with 8 mm dia nuts & bolts	Angle iron frame with 10 mm dia nuts & bolts at 125 mm centre.
5	2251 mm and	1.25 mm	50x50x6 mm	40x40x3 mm at the rate of 1.2 M to be Braced Diagonally

Above

Angle iron frame the rate of 1.6 M
 with 10 mm dia from joints
 nuts & bolts at
 125 mm centre.

- 2.3 The gauges, joints and bracings for sheet metal ductwork shall further conform to the provisions as shown on the drawings.
- 2.4 Ducts larger than 600 MM shall be cross broken, duct sections up to 1200 MM length may be used with bracing angles omitted.
- 2.5 Changes in section of ductwork shall be affected by tapering the ducts with as long a taper as possible. All branches shall be taken off at not more than 45 DEG. Angle from the axis of the main duct unless otherwise approved by the Engineer-In-Charge.
- 2.6 All ducts shall be supported from the ceiling/slab by means of M.S. Rods of 9 MM (3/8") DIA with M.S. Angle at the bottom. The rods shall be anchored to R.C. Slab using metallic expansion fasteners.

3. Installations

- 3.1 During the construction, the contractor shall temporarily close duct openings with sheet metal covers to prevent debris-entering ducts and to maintain opening straight and square, as per direction of Engineer-In-Charge.
- 3.2 Great care should be taken to ensure that the ductwork does not extend outside and beyond height limits as noted on the drawings.
- 3.3 All ductwork shall be of high quality approved galvanized sheet steel guaranteed not to crack or peel on bending or fabrication of ducts. All joints shall be airtight and shall be made in the direction of airflow.
 The ducts shall be re-in forced with structured members where necessary, and must be secured in place so as to avoid vibration of the duct on its support.
- 3.4 All air turns of 45 degrees or more shall include curved metal blades or vanes arranged so as to permit the air to make the abrupt turns without an appreciable turbulence. Turning vanes shall be securely fastened to prevent noise or vibration.
- 3.5 The ductwork shall be varied in shape and position to fit actual conditions at building site. All changes shall be subjected to the approval of the Engineer-In-Charge. The contractor shall verify all measurements at site and shall notify the Engineer-In-Charge of any difficulty in carrying out his work before fabrication.
- 3.6 Sponge rubber or approved equal gaskets of 6 MM maximum thickness shall be installed between duct flanges as well as between all connections of sheet metal ducts to walls, floor columns, heater casings and filter casings. Sheet metal connections shall be made to walls and floors by means of wooden member anchored to the building structure with anchor bolts and with the sheet screwed to them.
- 3.7 Flanges bracings and supports are to be black, mild steel and are to be painted with rust proof primer on all surfaces before erection. Accessories such as damper blades and access panels are to be of materials of appropriate thickness and the finish similar to the adjacent ducting, as specified.

- 3.8 Joints, seams, sleeves, splitters, branches, takeoffs and supports are to be as per duct details as specified, or as decided by Engineer-In-Charge.
- 3.9 Joints requiring bolting or riveting may be fixed by Hexagon nuts and bolts; stove bolts or buck bolts, rivets or closed centre top rivets or spot welding. Self-tapping screws must not be used. All jointing material must have a finish such as cadmium plating or Galvanized as appropriate.
- 3.10 Fire retarding flexible joints is to be fitted to the suction and delivery of all fans. The material is to be normally double heavy canvass or as directed by Engineer-In-Charge. On all circular spigots the flexible materials are to be screwed or clip band with adjustable screws or toggle fitting. For rectangular ducts the material is to be flanged and bolted with a backing flat or bolted to mating flange with backing flat.
- 3.11 The flexible joints are to be not less than 75 MM and not more than 250 MM between faces.
- 3.12 The ductwork should be carried out in a manner and at such time as not to hinder or delay the work of the other agencies especially the boxing or false ceiling contractors.

Duct passing through brick or masonry, wooden framework shall be provided within the opening. Crossing duct shall have heavy flanges, collars on each side wooden frame to make the duct leak proof.

4. **Dampers**

- 4.1 At the junction of each branch duct with main duct and split of main duct, volume dampers must be provided. Dampers shall be two gauges heavier than the gauge of the large duct and shall be rigid in construction.
- 4.2 The volume dampers shall be of an approved type, lever operated and completed with locking devices which will permit the dampers to be adjusted and locked in any positions and clearly indicating the damper position.
- 4.3 The dampers shall be of splitter, butterfly or louver type. The damper blade shall not be less than 1.25 MM (18) Gauge; reinforced with 25 MM angles 3 MM thick along any unsupported side longer than 250 MM. Angles shall not interfere with the operation of dampers, nor cause any turbulence.
- 4.4 Automatic and manual volume opposed blade dampers shall be completed with frames and bronze bearings as per drawings. Dampers and frames shall be constructed of 1.6 MM steel sheets and blades shall not be over 225 MM wide. The dampers for fresh air inlet shall additionally be provided with fly mesh screen, on the outside, of 0.8 MM thickness with fine mesh.
- 4.5 Wherever require for system balancing, a volume balancing opposed blade damper with quadrant and thumb screw lock shall be provided.
- 4.6 After completion of the ductwork, dampers are to be adjusted and set to deliver airflow as specified on the drawings.
- 4.7 Automatic fire dampers shall be provided wherever shown on the drawings. The damper shall be multi blade louver type. The blades should remain in the air stream in open position and shall be constructed with minimum 1.8 MM thick galvanized sheets. The frame shall be of 1.6 MM thickness. Other materials shall include locking device, motorized actuator, control panel

to trip AHU motor etc.

The fire dampers shall be capable of operating automatically on receiving signal from a fire alarm panel. All control wiring shall be provided between fire damper and electric panel.

5. Access panel

- 5.1 A hinged and gasketed access panel measuring at least 450 MM x 450 MM shall be provided on duct work before each reheat coil and at each control device that may be located inside the duct work.

6. Miscellaneous

- 6.1 All ductwork joints are to be true right angle and with all sharp edges removed.
- 6.2 Sponge rubber gaskets also to be provided behind the flange of all grilles.
- 6.3 Each chute from the duct, leading to a grille, shall be provided with an air deflector to divert the air into the grille through the shoot.
- 6.4 Diverting vanes must be provided at the bends exceeding 600 MM and at branches connected into the main duct without a neck.
- 6.5 Proper hangers and supports should be provided to hold the duct rigidly, to keep them straight and to avoid vibrations. Additional supports are to be provided where required for rigidity or as directed by Engineer-In-Charge.
- 6.6 The ducts should be routed directly with a minimum of directional change.
- 6.7 The ductwork shall be provided with additional supports/hangers, wherever required or as directed by the Engineer-In-Charge, at no extra cost.
- 6.8 All angle iron flanges to be welded electrically and holes to be drilled.
- 6.9 All the angle iron flanges to be connected to the GSS ducts by rivets at 100 MM centers.
- 6.10 All the flanged joints, to have a sponge rubber packing stuck to the flanges with suitable adhesive.
- 6.11 The G.S.S. Ducts should be lapped 6 MM across the flanges.
- 6.12 The ducts should be supported by approved type supports at a distance not exceeding 2.0 Meters.

7. Standard Grilles

- 7.1 The supply and return air grilles shall be fabricated from extruded aluminum sections. The supply air grilles shall have single/double louvers. The front horizontal louvers shall be of extruded section, fixed/adjustable type. The rear vertical louvers where required shall be of aluminum extruded sections and adjustable type. The return air grille shall have single horizontal extruded section fixed louvers. The grilles may or may not be with an outer frame.
- 7.2 The damper blades shall also be of extruded aluminum sections. The grill flange shall be fabricated out of aluminum-extruded section. Grilles longer than 450 MM shall have intermediate supports for the horizontal louvers.

8. Diffusers

- 8.1 The ceiling type square diffusers shall be of aluminium extruded sections with flush or step down face, as specified with fixed pattern and neck.
- 8.2 All supply diffusers shall be provided with extruded aluminium dampers, with arrangement for adjustment from the bottom.
- 8.3 The slot diffusers shall be of aluminium extruded sections with diffusion plate and sliding damper.

9. Linear Diffusers/Grilles

- 9.1 The linear diffusers/grilles shall be fabricated from Aluminium extruded sections.
- 9.2 The diffusion blades shall be extruded, flush mounted type with single or double direction airflow.
- 9.3 The frame shall be of aluminium-extruded section and shall hold the louvers tightly in fixed position.
- 9.4 The dampers as described under grilles shall be provided wherever specified.

10. Exhaust Grilles

- 10.1 The exhaust grilles shall be fabricated from aluminium extruded sections.
- 10.2 The exhaust grilles shall be horizontal fixed bar grilles with 15° blade inclination.

11. Painting and Vision Barrier

- 11.1 All grilles, and diffusers shall be powder coated, before installation, in approved colour.
- 11.2 All ducts immediately behind the grilles/diffusers etc. are to be given two coats of black paint in matt finish.
- 11.3 The return air and dummy portion of all linear grilles shall be provided with a vision barrier made of 24 gauge-galvanised sheets. The vision barrier shall be fixed to the false ceiling frame with self-tapping screws and shall be given two coats of black paint in matt finish. Care shall be taken to ensure that the return air path is not obstructed.

12. Testing

- 12.1 After completion, all duct system shall be tested for air leakage.
- 12.2 The entire air distribution system shall be balanced to supply the air quantity as required in various areas and the final tabulation of air quantity through each outlet shall be submitted to the Engineer-In-Charge for approval.

Split System Air Conditioners**1. General**

1.1 The contractor shall supply and install split system air conditioner wherever indicated. The system shall be complete in all respects and comply with the specifications as given.

2. Condensing Units

2.1 Each condensing unit shall be complete unit with hermetic compressor/s, air cooled condenser, condenser fans with motors, internal piping, switches and internal wiring and shall be enclosed in a weather proof outdoor type housing.

2.2 The compressor shall be hermetic, with enclosed gas cooled motor. The compressors shall be suitable for R-22.

2.3 The condenser coil shall be air-cooled type with aluminium fins and copper tubes and necessary refrigerant connections. The copper tubes shall not be less than 1/2" O.D.

2.4 The condenser air fans shall be propeller type direct driven, each complete with motor. The air quantity and area of the condenser shall be adequate for working in the specified outdoor conditions.

2.5 The casing shall be fabricated from galvanised steel, zinc phosphated and finished with baked enamel paint. The casing shall make the whole unit fully weather proof, suitable for outdoor installation.

2.6 The unit shall include a remote control assembly with thermostat at and starting and speed switches.

2.7 The necessary charge of refrigerant gas and lubricated oil shall be provided to run the system.

3. Fan Coil Unit

3.1 The fan coil unit shall be high mounted type and shall be matched to the repetitive-condensing unit. Each unit shall consist of cooling coil, fan, filters, outer casing, drain pan, accessories etc.

3.2 The cooling coil shall have copper tubes of not less than 3/8" O.D. and continuous aluminium plate fins with integral collars. The tubes shall be staggered in the direction of the airflow.

3.3 The fan section shall consist of (2) two light weight aluminium impellors, statically and dynamically balanced, mounted directly on to a double shaft single phase, multiple winding motor capable of running at 3 speeds.

3.4 The unit casing shall be made of high quality moulded plastic and shall be insulated to lower the noise level and eliminate condensation. The supply and return air grilles shall be high quality moulded plastic.

4. Refrigerant Piping

4.1 The condensing unit and evaporator unit shall be interconnected by Type -I seamless copper

refrigerant liquid and suction lines using flared or brazed fittings. Necessary accessories shall be incorporated in the circuit.

- 4.2 The suction line shall be insulated with 6 mm rubber foam insulation sections.

5. Miscellaneous

- 5.1 The cooling unit shall have control panel, housing the starting switches, contactor, relays etc.
- 5.2 Isolation pads shall be provided under the units.
- 5.3 Drain line shall be provided from fan coil unit upto drain trap. (To be priced separately).
- 5.4 Suitable M.S. angle iron supporting frame shall be provided for the condensing unit and supporting arrangement for the indoor units.
- 5.5 Interconnecting power and control cabling shall be provided between condensing unit and evaporator unit.

Insulation

1. General

The Insulation of water piping, air handling units, ducting, chillers etc., shall be carried out as per specifications given below:

2. Materials

The materials to be used for insulation shall be as follows, unless some other material is specifically mentioned elsewhere.

3. Duct Insulation

3.1 Material

- 3.1.1 Insulating material shall be resin bonded glass wool, faced with aluminium foil on one side reinforced with Kraft paper and fused to the insulation material. The thermal conductivity of the insulation material shall not exceed 0.034 kcal per hr-sqm- °C /mtr at 32°C mean temperature and density shall not be less than 24 kg./Cum.

- 3.1.2 Duct Insulation thickness shall be as follows:

Duct in conditioned space	-	25 mm thick
Duct in unconditioned space	-	50 mm thick
Duct treated with fresh air	-	50 mm thick

3.2 Application

- 3.2.1 Application on ducts not wider than 900 mm.

- 3.2.1.1 Apply CPRX compound on the surface after cleaning the ducts Fix blankets of insulation material of specified thickness tightly to the surface with joints well butted and secured.

3.2.1.2 All joints shall be sealed with 50mm wide alUminium adhesive based tape as specified.

3.2.1.3 The insulation material on the ducts shall be finally secured with 19mm x 24 Ga G.I. wire mesh.

3.2.2 Application on ducts wider than 900 mm.

3.2.2.1 Apply CPRX compound on the surface after cleaning the ducts

3.2.2.2 Blanket type glass fibre covering the ducts pulled snug but not so tight so as to compress corners more than 25%. Use insulation having 50mm overlap or cut insulation long enough to allow for "peel off" of insulation from jacket to effect a minimum overlap of 50mm Staple lap with flare type staples on 25mm centres. The standing seams, stiffeners, and braces shall be insulated with same insulation blanket. Cover and seal all staples with reinforced glass cloth.

3.2.2.3 For ducts upto 450mm deep, mechanically fasten insulation to duct using one row of pins, plates or discs located on not over 300mm centres longitudinally equidistant laterally between duct top and bottom. For ducts over 600mm deep, apply fasteners as before only using a minimum of two rows.

3.2.2.4 Cover all joints with 50mm wide adhesive aluminium tape and finally cover with 19mmx24 Ga GI wire mesh.

4 Duct Acoustic Lining

4.1 Material

Resin bonded glass wool of density 24 Kg/ Cum. and K-Value of 0.034 kcal/hr - Sqm - °C - Mt. Of 25 mm thickness.

4.2 Application

4.2.1 The duct surface shall first be cleaned from inside.

4.2.2 Then frame of 25 mm square section made of 18 Ga (1.2 mm) thick G.I. sheet should be fixed on both ends of the duct piece.

4.2.3 The insulation slabs should be fixed between these sections of ducts using adhesive compound and self adhesive **stick pins**.

4.2.4 The insulation shall be covered with RP tissue, sealing all joint so that no fibre is visible.

4.2.5 The insulation shall then be covered with 0.5 mm perforated aluminium sheets.

4.2.6 The sheet of insulation shall be secured to the duct by means of stick pins as mentioned above.

BILL OF QUANTITY

SUMMARY

Rs.

Ps.

TOTAL AMOUNT OF INTERIOR WORK _____**TOTAL AMOUNT OF FURNISHING WORK** _____**TOTAL AMOUNT OF ELECTRICAL WORK** _____**TOTAL AMOUNT OF AC WORK** _____**SUB TOTAL** _____**Discount (if any)** _____**Net Quoted Amount** _____**Rs.** _____**GST Paid Extra.****Contractor's Signature With Seal**

DRAWINGS

BOOK FOR INTERIOR AND FURNISHING WORKS OF INDIAN BANK, BRANCH & ATM AT AMBALA CITY, HARYANA.

BOQ FOR INTERIOR AND FURNISHING WORKS OF INDIAN BANK, BRANCH & ATM AT AMBALA CITY , HARYANA.					
S. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
1	INTERIOR PART - 1				
1	PARTITION				
	NOTE:- Measurement and payment shall be done as per following.				
a)	Visible surface below false ceiling,				
b)	Measurement for one face of Partition,				
c)	In case of height difference of partition below false ceiling				
	average ht. of both surfaces and sides shall be taken,				
d)	1mm laminate as per approved shade and make.				
	Purchase Bills for Patch Fitting, Handles,Lock,Aluminium,Gypsum,India Gypsum Frame,Ply,Laminate, & All accessories to be submitted along with Final Bills.of Contractor				
1.1	FULL HT. PARTITION				
	Providing and fixing in position Full Height Partition consisting of Aluminium hollow section of 65mm x 37mm size,1.5mm thick, of JINDAL / INDAL as internal frame structure at required spacing but not exceeding 600mm centre to centre in either direction fixed to floor & ceiling by means of rawl plugs/dash fasteners on both ways,The complete partition should go above the false ceiling except that partition above false ceiling shall not have laminate on both side. finished with 6mm comm. ply on both sides & finished with laminate 1mm thick on both side & edges of door/window openings inclusive of proving & making grooves as per approved shade and make complete as per architectural drawing inclusive of providing & making openings for 12mm th.Toughened glass panels & door, (etching with Birla 3M film digital lazer cut) on Glass as per approved design in all partitions etc.inclusive of polishing of grooves complete to the satisfaction of Architect/ Bank's Engineer.	23	Sqm		
1.2	GYPUM PARTITION				
	P/F 75mm the Full height Gypsum Partition fabricated out of G.I.frame work complete with P/F 12mm th.gypsum sheet on one side over the frame work & 1mm th. Laminate on other side over 6mm comm. ply over G.I frame work I/C P/F 1mm skirting laminate as per appvd. Shade over the 6mm comm. ply over G.I.frame work complete with P/A 2-3 coats of OBD as per appvd.sample.	15	Sqm		
1.3	P/F 75mm the Full height Gypsum Partition fabricated out of G.I.frame work complete with P/F 12mm th.gypsum sheet on both side over the G.I frame work complete with P/A 2-3 coats of OBD as per appvd.sample.	5	Sqm		

1.4 LOW HT. PARTITION	Providing and fixing in position Low Height Partition Public Counter(4'-0" & Cash Counter(7'-0") consisting of Aluminium hollow section of 65mm x 37mm size,1.5mm thick of JINDAL / INDAL as internal frame structure at required spacing but not exceeding 600mm centre to centre in either direction fixed to floor by means of rawl plugs/dash fasteners finished with 6mm comm. ply on both sides with screws & hits finished with laminate 1mm thick on both side as per approved shade & make complete as per architectural drawing inclusive of providing & fixing 10mm th. Glass free standing etching with Birla 3M film digital lazer cut Jon Glass as per approved design in all partitions etc.maching cut with edge polish P/F SBW 65x31mm moulding on free end of low ht. partition. complete with P/A melamine spray finish on wooden surface to the satisfaction of Architect/Bank's Engineer.	11	Sqm				
2 DOORS							
2.1 Glazed Door with fixed glazing	P/F 12 mm thk,toughened glass,door and 18" long s.s handles on both sideswith Digital Lazer cut Birla 3M Film,as per arch.drg and appvd Design. inclusive of P/f 12mm thk.Toughened ,Fixed, Side Glazing panels (etching same asDoor)with frameless fittings, of Dorma /Hettich,with following parts, viz: PT1040 forover/side panel,PT 1041 connector for Side/Upper Panel,PT1020 Upper patch,PT1010 Bottom Patch,PT1049 E floor Lock ,PT1052 Strike Plate Floor Spring BTS 84inclusive of P/F digital Lazer Cut Birla 3mm Film as per appvd. Drg. Certificate for toughening to be attached.	7	Sqmt				
a) Toughened Door		2.5	Sqmt				
b) Toughened Fixed Glazing							
2.2	extra for P/F 12mm th.clear toughened etched glass in front of cash counter partition else,held together with s.s steel clamps & P/A melamine spray finish on SBW Surfaces as per arch.drg.	2	Sqmt.				
2.3 Flush Door	Providing and fixing non decorative type 38mm thick Flush Door Shutters having core of having core of block board construction with frame of first class hardwood & well matched commercial 3ply veneering with vertical grains or cross bands & face veneers on both faces of shutters inclusive of providing and fixing tipping with second class SB wood battens having 25mm minimum depth on all edges of shutter,finished with 1.0mm thick laminate on both sides & 40x100 mm SB wood frame,SBW 12x12mm bearings item includes providing and fixing 4 nos 100mm S.S hinges & handles and all necessary hardware & providing and fixing 150 mm S.S tower bolt, door closer of ISI make(without cover plate) and S.S door stopper.All wooden surface shall be polished with melamine spray finish as per architectural drg.including providing and fixing 37x3mm M.S flat iron 38mm long hold fast (6 nos minimum) screwed to frames embedded in cement concrete 1:3:6 mix (1cement 3 coarse sand: 6 hard stone aggregate in wall as per requirement. complete to the satisfaction of Architect/Bank's Engineer,inclusive of P/F 7 lever godrej, Mortise locks with pair of S.S handles.	6	Sqmt				

PART IV GLAZED FLUSH DOOR					
2.4	Providing and fixing 38mm thick Partly Glazed door having core of block board construction with frame of first class hard wood & well matched commercial 3ply veneering with vertical grains or cross bands and face veneers on both faces of shutters inclusive of lipping with second class SB wood battens having 75mm as minimum depth & 38mm wide on all edges of shutter,finished with 1.0mm thick laminate as per approved shade & make on both sides complete with providing and fixing S.S hinges of 100 mm (4nos.) & 5mm thick etched glass with Digital lazer cut Birla 3M Film over the glass as per arch. Drg & 40x100mm SB wood frame work complete with 12x12mm SB wood beadings. Item includes providing and fixing S.S (150mm) tower bolt, S.S door stopper & handles etc complete with concealed door closer of ISI mark (door king) with all wood/veneer surface to be polished with melamine finish and as per architectural drg.including providing and fixing 2 lever mortise Lock of Godrej make and godrej night latch for cash cabin door inclusive of locks & latch and a pair of S.S. handles etc. complete to the satisfaction of Architect / Bank's Engineer.	6	Sqmt.		
3	STORAGE 3.1 P/F in position 450mm deep storage full ht./low ht.cabinets having sides partitions shelves & shutters,fabricated out of 19mm comm.ply & 6 mm th.comm Plywood back,with all exposed surfaces to be finished with 1mm thk. Laminate as per approved shade and inside of shutters/internal as per apprvd. Shade to be finished with 0.75mm thk laminate of & P/F Laminate 1mm thk. skirting(100mm)as/arch.drg.and as per appvd.Sample i/c 31x31mm rounded steem beech wood moulding & 6x19 mm steem beech wood edging on edges of comm.board as/arch.drg.complete with with P/F shelves,shutter,drawers etc,i/c P/F necessary hardware telescopic channels of hettich for drawers of S.piano hinges as/appvd.sample, 8" Long SS Hettich handles(as /appvd sample) in all drawers & shutters ,locking arrangement, 75mm S.S tower bolts,Hettich/godrej locks in all shutters & drawers,magnet catcher, painting the exposed internal surfaces of block board with 2-3coats of synthetic enamel paint with melamine finish on wood surface with as per arch drg. inclusive of P/placing 12mm th.etched plate glass over storage (Purchase bills of handles/locks to be submitted with final bills)	5	Sqmt.		
3.1.1	Overhead storage in hall Providing and fixing in position 300mm deep storage Overhead Cabinets having sides partitions,shelves shutters, fabricated out of 19mm commercial lboard & 6mm thick comm plywood back,with all exposed surfaces to be finished with 1mm thk. Laminate of appvd. shade & inside of shutters finished with 0.75mm thick laminate of as per architectural drawing item include providing & fixing 31x31mm rounded S B wood moulding 6x19mm SB wood edging on edges of commercial board as per architect drawing complete with shelves,shuttes drawers etc.include providing and fixing necessary hardware,stainless Steel piano hinges as per approved sample,Hettich make handles as per approved sample locking arrangement, S.S. tower bolts,Hettich make locks,magnet catcher,Item shall include painting the exposed internal surfaces of block board with 2-3 coats of synthetic enamel paint melamine finish on wood surface with 6mm comm.ply at rear as per architect drawing & as per site requirements (ABM & CASH CABIN)	0	Sqmt.		

3.2	Overhead Cabinet in Pantry	<p><u>inside of shutters to be finished with 0.75mm thick laminate</u> as per appvd. Sample as per arch.drg. i/c 31x31mm rounded steem beech wood moulding & 6x19mm steembeech wood edging on edges of comm.board as per arch.drg complete with shelves,shutter drawers etc,i/c P/F/necessary hardware .Steel piano hinges as per appvd.sample , 8" Long SS Hettich handles (as per appvd.sample) locking arrangement, 75mm S.S.tower bolts, Hettich/Godrej locks,in all shutter, magnet catcher,painting the all other exposed internal surfaces of block board with 2-3 coats of synthetic enamel paint & melamine finish on wood surface with 6mm comm.ply at rear as per arch.drg. & as per site requirements the rate should be inclusive of P/F 19mm th.pre-polished granite stone <u>BELLOW THE CABINET</u> of rate not less than Rs.175/- per sqft with polished side & half round edge facing towards counter.as per arch.drg.</p>	1	Sqmt.	
3.3	600MM Deep Storage (below Pantry Counter)	<p>P/F in position 600mm deep storage cabinets (below pantry counter) having sides partitions,shelves, set of cutlery drawers & shutters, fabricated out of 19mm comm. ply & 6mm th.comm Plywood back,with all exposed surfaces & to be finished with 1mm thk. Laminate and <u>inside of shutters to be finished with 0.75mm th laminate of shade</u> as per approved Sample and make as per arch drg i/c P/F 31x31mm rounded steem beech wood moulding & 6x19 mm steem beech wood edging on edges of comm.board as per arch drg complete with shelves,shutter etc,i/c P/F necessary hardware,S.Steel piano hinges as/appvd.sample, 8" LONG SS Hettich handles (as per appvd.sample) locking arrangement, 75mm S.S. tower bolts,Hettich/Godrej locks,magnet catcher Hettich telescopic channels painting the exposed all other internal surfaces of block board with 2-3 coats of synthetic enamel paint & melamine finish on wood surface with 6mm comm.ply at rear as per arch.drg. & as per site requirements</p>	1.5	Sqmt.	
3.4	LOUVERED SHUTTER CABINET FOR ELECTRICAL MAIN PANEL.	<p>Providing and fixing cabinet for housing main electrical panel board, fabricated out of 19mmthick commercial ply finished with 1mm thick Laminate of as per appvd.Sheet on exposed side surfaces. Front shutters to have <u>304 grade perforated SS Panels</u>, 6 Nos., three on each shutters as per arch.drg,fabricated out of SB wood inside of shutters,vertical & horizontal and surfaces shall be covered.with <u>12mm thick gypsum board item</u> shall include providing applying 2-3coats of melamine spray finish on wood surface & synthetic enamel paint in internal surface with all other specifications as per item no.4.1 above complete to the satisfaction of Architect /Bank's Engineer.</p>	3.5	Sqmt.	
3.5	Extra for with P/F 6mm lacquered glass coloured as per appvd. Sample over item no.4 fixed and pressed with silicon (near sofas in waiting area)	<p>0</p>	Sqmt		
3.6	Extra for with P/F 6mm patterned lacquered glass as per appvd. Sample over item no.4 fixed and pressed with silicon (near sofas in waiting area)	<p>0</p>	Sqmt		

Work @ Counter with laminate					
5.2	P/F 600mm deep & 750mm high Work Counter for Server & Cash Counter fabricated out of 19mm th.comm.ply finished with 1mm th.laminate on top side front /rear and all exposed external surfaces including finishing all exposed internal surface front and exposed Leg & CPU space to be finished with 0.75mm th.laminate complete with set of drawers 4 No's, key board drawer, shelves & shutter as per arch.drg. & P/F complete with necessary hardware,telescopic sliding channels of Hettich, Locks of SS Hettich/Godrej Handles(150mm) & magnet catcher SBW Moulding 31x31 mm & SBW edging (31x6mm)& painting the exposed all other internal surfaces with 2 or 3 coats of synthetic enamel paint & melamine finish on wooden surface inclusive of P/f Stainless Steel cable Manager and making good the surface.	1.5	Rmt		
5.3	Writing Counter P/F 525mm wide Writing Counter fabricated out of 12mm th.etched plate glass [2 nos] 150mm apart with machine polished edge fixed with stainless steel studs, 4 No's, of appropriate size, over 19mm th.Comm.ply top finished with 1 mm th.laminate as per appvd.sample as per arch. drg. both 150mm apart over frame work fabricated out of 19mm comm. Ply finished with1.0mm th.laminate on all exposed external &internal surface,side & rear partitions, as per arch,drg.	0	Rmt		
5.4	Public Counter P/S 750mm deep Public Counter inclusive of 250mm deep Transaction Counter fixed at 900mm ht as per arch drg,fabricated out of 19mm.comm.ply finished with 1 mm th.laminate on all exposed surfaces front, top,rear ,sides And exposed leg & CPU space,keyboard Drawer area to be finished with 0.75 mm thick laminate complete & 250 mm deep transaction counter fixed at 900mm ht. from floor finish fabricated out of 19mm th.comm.ply finished with 19mm th.prepolished Granite stone of Rate Rs.175 per sq.ft with half round edge and edge polish on both side, complete with P/f shelves,shutter,set of drawer 4, no's, The first drawer to have partitions fabricated out of 12mm commercial ply finished with 0.75mm thick laminate on both side & SB wood edging on top for keeping currency of different denominations. All necessary hardware,telescopic sliding channel of Hettich/Godrej Locks,S.S.(8") handle,100mm Hettich hinges, polishing of SBW surface with melamine spray finish complete with P/f S.S cable manager on table /counter top complete with making good the surface inclusive of painting of all internal surfaces of drawers,shelves,shutters with Synthetic Enamel Paint.& p/f 100mm wide skirting of 1.0mm th.laminate on frontal fascia and rear side of counter as per appvd.sample.and shade i/c P/F 12mm th.clear toughened glass in front of public counter & else,held together with S.S clamps & S.S Studs as/appvd.sample & Steem Beech headings(18x18mm)steem beech moulding(62x31mm)complete with polish & melamine spray finish as per Arch.drg. (CPU Shelf Size (1'-6" x 2'-0" x 4")	7.5	Rmt		

6. FALSE CEILING					
Note:-Only Horizontal Base area shall be measured for false ceiling.					
6.1 GYPSUM	P/F of 12.5mm th.Gypsum ceiling board false ceiling in horizontal & vertical surfaces & moulded corners & offset as per arch.drg.which include P/F roll formed G.I.Perimeter channels of sizes 27x.5mm th.having one flange of 30mm along the perimeter of the ceiling fixed to the brick wall or partition with help of rawl plug or screw i/c ending of G.I.intermediate channels of size 45x9mm th.with two flanges of 15mm th.each from the soffit @ 1200 c/c with steel/G.I.hanger of with 25mm &0.5mm th.fixed soffit with G.I.cleat & steel expansion fasteners of 0.5mm thickness having knurle dwedge of 51.5mm & two flanges of 26mm each with tips of 10.5mm fixe to the intermediate channel with the help of converting clips in a direction perpendicular to the intermediate channel of 350mm c/c12.5mm tapered gypsum plaster board(confirming to I.S.2095.1982)Screwed 230mm c/c screw fixing to be done mechanically with suitable attachment The tapered & squared edges of the boards(as recommended by the manufacturer)finish with P/A two or more coats of OBD paint over a coat of primer,extra frame work for necessary hatch doors/opening as per requirement with 19mm th.comm. ply wherever required i/c necessary S.S hinges,screws finish smooth as directed.The rate shall include the cost of extra frames for A.c.openings, trap door & light fixtures & speakers etc.making coves as per arch.drg.inclusive of providing and fixing Strip light of Havells make(15 watts) I/C of transformer in cove fixed end to end complete with making,P/F all electrical connections & wiring & conduits in cove (bill of strip light to be provided with final bill.)	50	Sqmt		
6.2 ARMSTRONG	P/F false ceiling with mineral fibre acoustic ceiling tiles of Armstrong with Microlook Edges & having noise reduction properties laid on exposed grid system with 15mm side Silhouette type T'section flanges colour white,main runners are spaced at1200mm centers securely fixed to the structure soffit with appvd.hangers at 1200mm max centers,flush fitting 1200mm crossed tees to be interlocked between main runners at 600mm centers to from 1200x600 modules,1200mm cross tees shall be crimped 600x600 mm module to be formed by fixing 600 mm long flush fitting cross tees centrally between the 1200cross tees,ceiling tiles of prime dune plus tiles in size 600x600x15 mm to be placed in the grid rate to i/c making necessary cut outs or openings for light fixtures etc.complete in all respects.	43	Sqmt		
7 Blinds	P/F Roller Blinds of VISTA make of Rate not less than Rs.1900/- per sqm.i/cP/f 150mm wide VALENCE with Powder coated channel on top complete with bearer chain mechanism for Rolling up complete with all accessories P/F pelmet fabricated out of19mm comm. board finished with 1mm th. laminate.(Purchase bill to be submitted with final bill.)	1.5	Sqmt		

BEND TOW PAINTING & WALL FINISH

8. PAINTING & WALL FINISH					
8.1	Providing and applying Texture Paint of Acro Paints/Berger make of approved shade & texture on walls & partitions of base rate not less than Rs.45/-per sqft.(Pearlskin Series /Sorrento Series / Mediterrano Series of Acro Paint) in staircase,coves,entrance,of cash safe,wall & else over P/A 6mm thick POP with a coat of primer.as per manufacturers satisfaction and instructions of Architect / Bank's Engineer.	0	0	Sqmt.	
8.2	P/Applying two or more coats of Oil bound distemper over Walls & ceiling after preparing the surface with a coat of primer.& 6 mm th. POP.finish.	80	80	Sqmt	
8.3	P/F Wall Paper of basic rate Rs.55/- per sqft.with adhesive over P/A 6mm thick POP base.	0	0	Sqmt	
9	P/F 18"X16" box for covering of Rolling Shutter fabricated out of 19 mm th.comm.board finished with 4mm th. ACP as per appvd.sample and as per manufacture's specification.	12	12	Sqmt	
8.3	BOXING P/F Box 6" deep fabricated out of 19mm th. Comm. Board finished with 1mm th.laminate on all exposed surfaces inclusive of P/F 100mm decorative metallic Laminate.skirting as per arch. Drg.	0	0	Sqmt	
TOTAL OF PART-I					

S. NO.	DESCRIPTION	QTY	UNIT	RATE	AMOUNT
1	TABLES				
1.1	P/F in position Table with all exposed top,side,front & rear internal surfaces to be fabricated out of 19mm th.comm.ply & all exposed surfaces to be finished with 1mm th. laminate as per approved sample, and all internal surfaces,Leg space all CPU area, inside of keyboard drawers, inside of shutters & base surface of drawers to be finished with 0.75mm th.laminate & all other surfaces to be finished with 2-3 coats of synthetic enamel paint,100nm wide skirting of 1mm thk. Laminate as per appvd. Shade inclusive of P/F of key board drawer, <u>4no set of drawers</u> and CPU stand fabricated out of 19mm comm.ply as /arch .drg. (38mmx38mm) SBW moulding & footrest fabricated out of with hard wood section 2.5"X2.5" with duco finish & inclusive of P/placing 12mm th.etched plate glass over table top & necessary hardware,Hettich/Godrej locks in all drawers&shutters,locking arrangement ,including 12x12mm SBW beading & i/c all necessary Hardware,Hettich/Godrej locks,locking arrangement,Hettich telescopic steel channel runner for drawers 6" long Hettich SS handles (as/appvd.sample)magnet catcher & polishing of wood grooves surface with melamine spray finish ,inclusive of p/f S.S.cable manager,inclusive of cutting & making hole complete with making good the surface.CPU platform size:(600x450x100mm)	1	No.		
a)	Table Size = 5'-0" x 2'-6" x 2'-6" (Branch Manager)	1	No.		
b)	Table Size = 4'-0" x 2'-0" x 2'-6" (ABM & Loan's Off.)	2	No.		
2	SIDE CABINET				
2.1	Providing & placing in position side cabinet having side partition, set of drawers 4 No's, shelves & shutter fabricated out of 19mm th.commercial ply with 6mm th.commercial ply wood backing & all exposed surfaces top side & front rear (wherever exposed)finished with 1.0 mm thk laminate & as /appvd. sample inside of shutter to be finished with 0.75 thk. Laminate & top to be covered with <u>12 mm th</u> .Glass with edge polish on all sides i/c P/f 100mm wide skirting of 1.0mm th. laminate (as per appvd sample and shade) i/c P/f necessary hardware, SS. Piano hinge(Hettich), locking arrangement with Hettich locks, telescopic steel channel runners (Hettich)for drawer,150mm S.S.Hettich handles as/appvd samplecomplete with painting the exposed internal surfaces of drawers, shelves,shutter with synthetic enamel paint & polish on exposed wood surface with melamine spray finishi/cP/F 75mm S.S tower bolts & magnet catcher.	0	No.		
a)	(Side Cabinet size 3'-6"x11'-4"x2'-6")	0	No.		
b)	(Side Cabinet size 3'-0"x11'-4"x2'-6")	8	No.		
4	NOTIC BOARD				
	P/f in notice board of overall size in 900X750mm fabricated out of 19mm comm.board finished with 12mm th. Cellotax board complete with 40mm T.W edging inclusive of P/fixing fabric of rate not less than Rs.150/meter. All wood surfaces to be finished with melamine spray finish.	1	No.s		
	TOTAL OF PART-II				

BILL OF QUANTITY FOR ELECTRICAL WORKS FOR INDIAN BANK, BRANCH & ATM AT AMBALA CITY, HARYANA.

S.NO.	PARTICULARS	Qty.	Unit	Rate	Amount
	Note:- Purchase Bills for & All wires ,cinduits and accessories to be submitted along with Final Bills.of Contractor				
	THE CONTRACTOR SHALL ENSURE THAT THE TOTAL LOAD FOR BRANCH IS BALANCED ON ALL THE 3PHASES, AS FAR AS IS POSSIBLE, WITH ALL THE AIR CONDITIONERS, COMPUTERS & OTHER LOAD POINTS IN RUNNING CONDITION.(CONDUITS LAYOUT PLAN TO BE SUBMITTED ALONG WITH FINAL BILL)				
	A - Light, Fan, 16A & 6A points - All switch & sokets shall be modular type complete with cover plate & GI/ MS box.				
I	ELECTRICAL WORK (PART-III)				
1.1	Wiring for the following light point/fan point/exhaust fan/light socket switch with 3x1.5 sq.mm copper conductor FRLS insulated 1100V grade multi strand wires(P+N+E) in concealed /surface using 20/25/32 rigid PVC conduit 16 SWG thick with all bend, tees, saddle mounting box, cover plate ceiling rose etc. wherever required etc. & cromium plate brass screw/rawl plug etc. The circuit wiring start from DB to point control box/switch box using 3x2.5 Sq.mm copper conductor FRLS LEAD FREE WIRE WITH RoHS Compliance insulated 1100V grade multi strand wires(P+N+E) identification ferrules at both end in PVC conduit 16 SWG thick complete in all respect. The conduit must be fixed with MS Saddle at every 80 cm on surface and conduit to be laid in ceiling with proper clamps/wall floor filling the chase with cement mortar and finish the same in original form/wooden partition above false ceiling chasses filled with cement mortar as required at site. Each circuit shall have separate earth wire. All switch socket must be for modular type with M.S. Boxes and plates etc. as required.				
	Note: Each circuit shall have independent earth wire. Each point shall be earthed. Circuit wiring is to be included in point rate wiring.				
a)	One point controlled by one 6 amp modular one way switch	26	Nos.		
b)	Two point controlled by one 6 amp modular one way switch	12	Nos.		
c)	Three point controlled by one 6 amp modular one way switch	0	Nos.		
d)	One wall fan controlled by one 6A modular one way switch, but switch at switch board level and 6A- 5pin socket has to provide near the wall fan at designated place for connections.	14	Nos.		
e)	one ceiling fan controlled by one 6A modular one way switch and one electronic 5 step fan regulator.	1	Nos.		
f)	One exhaust fan controlled by 6A modular switch, but ceiling rose has to be provide near the exhaust fan for connection.	4	Nos.		
d)	same as above wiring for call-bell point including brzzer	1	Nos.		
e)	Providing and laying wiring for 5 pin 5 amps light plug outlets with 2 Nos. 1.5 Sq.mm copper conductor PVC insulated 650V grade wire of FRLS quality in concealed PVC conduits of 25mm dia.of 2mm well thickness in false ceiling /wall / floor as directed including 1.0 sqmm PVC insulated copper wire of FRLS quality as earth wire complete as required. Item includes outlet box, Samp modular type switch / socket with matching plate of approved colour and shade.	15	Nos.		

g)	Wiring of AC points with $2x6 + 1x2.5$ sq.mm PVC insulated stranded Cu. Conductor wire of FRLS quality in ISI marked medium grade PVC conduits above ceiling including cost of conuts,wall chases complete as required including providing metel clade socket with SPMCB in sheet steel enclosure (one point per circuit,circuit shall not be paid extra).				9	Nos.		
2.0 ELECTRICAL FITTING & FIXTURES								
2.1 S/T/C of the following light fixtures								
	supply,delivery at site,receiving,handing,cartage at site,assembling,errection inculding the down rods as required at site,connecting,testing and commissioning of the following ceiling mounted reflector type compact fluorescent light fixtures,including the lamps.Rates shall include all taxes and duties,transportation etc. complete.							
a)	S/F of Energy efficient recessed mounted LED luminaire - GreenSquare, profiled recess mounted luminaire, energy efficient with longer life, resulting in lower operational cost Panasonic/ Anchor ABL13B367, Philips - RC370B LED30S-6500 G4 L60 W60 PSU OD 24W-3000LUMEN / or equivalent Wipro/ Crompton Greaves or any other make approved by Bank/ architect.				9	Nos.		
b)	FCS 518/211 2XPL-S 11W(PHILIPS)				9	Nos.		
c)	DNO91B LED6S-6500 PSU WH (PHILIPS)				31	Nos.		
d)	LED batten 2'-0" long ref. cat. TMC 501 P 1x T-LED 22W P3241, (PHILIPS)				1	Nos.		
e)	S/F of wall mounted fan 400mm sweep - Havells Palatina model or equivalent Bajaj / Crompton/ Alstom/ Usha				14	Nos.		
f)	do-1200mm sweep ceiling fan with electronic regulator (CG)HIGH Speed(Make-Usha/Orient) or Equivalent of apprvd make				1	Nos.		
g)	Supply & Fixing of fresh air fan 12" - Havells venti Air DSP metallic range model or equivalent Bajaj / Crompton/ Alstom/ Usha				4	Nos.		
h)	Supply & Installation of Philips / Bosch make 6W False Ceiling mounted speaker with necessary accessories including line matching transformer. Item including laying of 2Core 24/0.2 mm ATC Twin Twisted Speaker wire in the 20mm dia PVC conduit including giving connections. All complete as per approval of architect/ engineer.				4	Nos.		
3.0	Wiring for sub main in PVC conduit with the following sizes of FRLS insulated, 1100V grade copper conductor wire in surface/recessed on wall/floor/ceiling as required.							
a)	4x6 Sq.mm + 2x2.5 Sq.mm (for LDB)				30	R.mtr.		
b)	2x6 Sq.mm + 1x2.5 Sq.mm (for ups)				40	R.mtr.		

			40	R.mtr.
c)	4x10 + 2x4 Sq.mm (for power)			
4.0	Supply, laying, Testing and commissioning of 1100V grade XPLE Aluminium armoured cable with proper clamps along walls on existing cable trays/trench in ground etc. in an approved manner and as per follows.			
a)	4Cx25 Sq.mm	35	R.mtr.	
b)	4Cx16 Sq.mm	30	R.mtr.	
c)	4Cx10 Sq.mm	30	R.mtr.	
d)	3.5Cx50 Sq.mm with 2x6 SWG earth wire	55	R.mtr.	
5.0	Supplying and making ends terminal with brass compression glands and aluminium lugs for following size of XLPE insulated PVC sheathed aluminium conductor Armoured cable of 1.1 KV grade as required.	2	Nos.	
a)	4Cx25 Sq.mm	2	Nos.	
b)	4Cx16 Sq.mm	2	Nos.	
c)	4Cx10 Sq.mm	2	Nos.	
d)	3.5Cx50 Sq.mm	2	Nos.	
6.0	Supply, Installation, Testing, Commissioning of surface/recessed mountings, Double door 415 volts TPN MCB Distribution board of steel, 1.6 mm thick dust phosphatized and painted, inclusive of 200 amps, tinned copper busbars, earthbar, common neutral link, din bar for mounting of MCB'S detachable gland/knock out plate & with built in loose wire box, and superior make terminal connectors for all incoming and outgoing circuits duly prewired with adequate size of PVC insulated copper wires between the bus bars and the MCB'S as well as the incommers and up to the terminal connectors/neutral link and ready for installation of following ways as required:			
a)	8-way TPN DB (for light) Incommers:- 1 No. 63 Amp TPN (10 KA) MCB Outgoing:-3 Nos DP For Each Phase 9 Nos. 16/10 Amp (10 KA) SP/DP MCB 'C' Series (for switch boards) 9 Nos. 25/32 Amp (10 KA) SP/DP MCB 'C' Series (for POWER/ AC plug points) Blanking plates,SP/DP MCB as per site requirement.	1	Nos.	
b)	8way SPN DB (FOR UPS O/P) Incommers:- 1 No. 40 Amp DP (10 KA) MCB Outgoing:- 6 Nos. 10 Amp (10 KA) SP MCB 'C' Series C) 4way SPNDB with 2x40A DPMCB	1	Nos.	

Designers Engineers 7.8. F&W Faffinifon	Supplying, Installation, Testing & Commissioning of self supported wall mounted, front operated, vermin proof cubical type main panel board of approved make with KRYPTON POWER CONTROLS/AMPTECH ELECTRIC INDIA/ADVANCE CONTROLS PVT. LTD. made out of 14 gauge powder coated M.S sheet with hinged and lockable doors complete suitable for use on 415V 3 Phase 4 wire 50 cycles complete housed with incoming and outgoing. All complete supplying & fixing following accessories i/c interconnections etc complete as required. approved by bank engineer or architect.		
INCOMING	<ul style="list-style-type: none"> • 100 Amp 4 pole MCCB TPN 35 KA- 1NO. • 125 Amp 4 pole On-load Change Over Switch - 1No • Voltmeter digital 0-500v with selector switch – 1 no. • Amp meter, digital 0 - 200 A with selector switch and CTs – 1 no. • Indicating lamp RYB (LED) – 1 Set • 160 A TPN CU Bus bar 2 Set 	1	Nos.
OUTGOING	<ul style="list-style-type: none"> •63A 4-Pole MCCB, 25KA 1 No. •63A 4-Pole MCCB, 25KA, 1 No. •63Amp TPN MCB 2 Nos. 		
7.1	Providing and fixing 100 Amp 4 pole MCCB TPN 35 KA- 1NO. Complete in all respect.	1	No.
8.0	UPS POINT WIRING		
i)	<p>Wiring with 3x2.5 Sq.mm PVC insulated,1100V grade copper conductor FRLS LEAD FREE WIRE WITH RoHS Compliance wires in 2 mm thick PVC Conduit from UPS DB to computer points. Each point to have 3 no. 6A 5 pin modular type socket at below the table/counter and controlled by one 6A modular switch and one 6A indicator at above the table top in wooden partition / wall with all accessories. Inner/outer plates, metal / PVC box etc and to be fixed on wooden partition/by grouting on wall etc. as per site requirement.</p> <p>ii) Same as above but looped from first point & from first point to second point in a circuit including first point.</p> <p>iii) Wiring with 2x4 Sq.mm PVC insulated,1100V grade copper conductor FRLS LEAD FREE WIRE WITH RoHS Compliance wires in 2 mm thick PVC Conduit from UPS DB to computer points. Each point to have 16A 6 pin modular type socket at below the table/counter and controlled by one 16A modular switch at above the table top in wooden partition / wall with all accessories. Inner/outer plates, metal / PVC box etc and to be fixed on wooden partition/by grouting on wall etc. as per site requirement. (for ATM)</p>	8	Nos.
9.0	TELEPHONE SYSTEM		
9.1	Wiring for telephone points with 2 pair 4/5 pair .51mm dia ATC (annealed tinned Cu wire) with PVC insulated PVC sheathed telephone cable from tag block to the point including providing ferrules at both ends and termination at both ends including providing & fixing RJ 11 outlet, faceplate and mounting box complete of modular type (where 2 such points are shown, 2 such wires shall be provided) This work includes providing PVC conduits in chases from the raceway to the point.	15	Nos.

Engg.2 Supplying, laying, effecting terminations, testing and commissioning of 0.51mm dia Cu. Conductor, twisted , colour coded with polythene cap or barrier, telephone cables in the existing tray or in conduit including providing & fixing conduit pipe or cable tray as required from building tag block to the floor as required.			
a) Supplying & fixing 20 pair krone tag block with enclosure.	1 Nos.		
b) P/L 10 Pair of PVC insulated PVC sheathed multi core jelly filled armored telephone	25 Mtrs.		
10 COMPUTER NETWORKING			
10.1 Wiring for computer networking from I/O hub to computer workstation with Cat-6 computer cable including providing ferrules at both ends and termination at both ends including providing & fixing frame for Cat-6 with shutter , RJ 45 outlet, faceplate and mounting box complete of modular type, This work includes providing PVC conduits in chases from the I/O hub to the point.	15 Nos.		
10.2 Supplying and fixing 9U (Rack with glass door, opening in the front power panel 1(horizontal), cable manager 1 lock & key)	1 Nos.		
10.3 Supply, Installation, Testing & Commissioning of 24 port Jack Panel.	1 Nos.		
10.4 Supplying and fixing Patch Cord-2 Meter-(DBPS Mounting Cord, 7ft.)	15 Nos.		
10.5 Supplying and fixing Patch Cord-1 Meter-(DBPS Mounting Cord, 7ft.)	15 Nos.		
10.6 Switch 24 Port - D Link/ systimex	1 Nos.		
11 EARTHING			
a) Supply & Fixing Maintenance free Chemical Earthing Electrode based mild steel.Tube one inside the other (pipe-in - pipe)Technology earthing electrode with min(80-100)micron hot Galvanizing and filled inside with high conductive and anti corrosive chemical mixture.earth enhanced back fill compound-25 Kg, T One bag. Model T-19 should be minimum 65mm dia and 2000 mm lenght.The earth resistance should be<2 ohm & voltage in between neutral to earth sholud be < 2 volts. The earthing installation test certificate to be submit after measurement of earth resistance as per provision in IS 3043.(Panel Earthing) venders:(Tranviya Technologies Pvt. Ltd. contact person Mr.Amar singh badal, contact No.-9958467363) & National Engineering works contact person Mr.Raghuvir,contact No.-9999659311)	2 set		
b) Supply & Fixing Maintenance free Chemical Earthing Electrode based mild steel.Tube one inside the other (pipe-in - pipe)Technology earthing electrode with min(80-100)micron hot Galvanizing and filled inside with high conductive and anti corrosive chemical mixture.earth enhanced back fill compound-25 Kg, One bag. Model T-39 should be minimum 80mm dia and 2000 mm lenght.The earth resistance should be<2 ohm & voltage in between neutral to earth sholud be < 2 volts. The earthing installation test certificate to be submit after measurement of earth resistance as per provision in IS 3043.(UPS Earthing) venders:(Tranviya Technologies Pvt. Ltd. contact person Mr. Amar singh badal, contact No.-9958467363) & National Engineering works contact person Mr.Raghuvir,contact No.-9999659311)	1 Set		
11.2 Supplying and Fixing 25x3mm copper or GI Strip on wall with saddles & brass nut,bolt etc. including laying charges.	30 R.mtr.		
11.3 Supplying & laying of 1x 8 SWG Cu earth wire in PVC conduit	50 R.mtr.		
TOTAL OF PART-III			

AIR CONDITIONING WORK (PART-IV)

a) Rates quoted should include all dismantling work of brick masonry, chiselling of wall, saddle & clamping of drain & copper pipes and making good the chiseledord is mantled surface.

b) Removal of all malba to municipal dumping ground.

4.1 MACHINES

i Supply, installation, testing & commissioning of CASSETTE TYPE Split A.C Air-conditioning units,complete with SCROLL compressors Aircooled condenser with fan / cooling coil & refrigerant piping with controls & first charge of refrigerant R-22 gas & oil. The enclosure shall be factory painted to a smooth finish. The quoted rate shall include all necessary electrical work/ cabling right from DB onwards upto MCB Board to be provided near machine) & Referigerant Piping as required.upto 5Rmtr.per circuit.(with insulation)

ii Supply, installation, testing & commisioning of CASSETTE TYPE Air-conditioning units,complete with SCROLL compressors Air cooled condenser with fan / cooling coil & refrigerant piping with controls & first charge of refrigerant R-22 gas & oil. The enclosure shall be factory painted to a smooth finish. The quoted rate shall include all necessary electrical work/ cabling right from DB onwards upto MCB Board to be provided near machine) & Referigerant Piping as required.upto 5Rmtr.per circuit.(with insulation)

2 TR Cassette type A.C
0 Nos

iii Supply and installation of HI wall type BEE certified 3 Star 1.0TR,HR split type air conditioners (Daikin, Blue Star,Carrier,Hitachi) with cordles remote controller including connection of external & internal units and also including refrigerant piping upto 5 mtr.The indoor & Outdoor unit should be copper winding.

iv Supply and installation of HI wall type RFF certified 3 Star 1.5TR,HR split type air conditioners (Daikin, Blue Star,Carrier,Hitachi) with cordles remote controller including connection of external & internal units and also including refrigerant piping upto 5 mtr.The indoor & Outdoor unit should be copper winding.

4.2 REFRIGERANT PIPING

i Refrigerant piping upto 5 RM per circuit & first charge of Refrigerant and oil (TO BE INCLUDED)

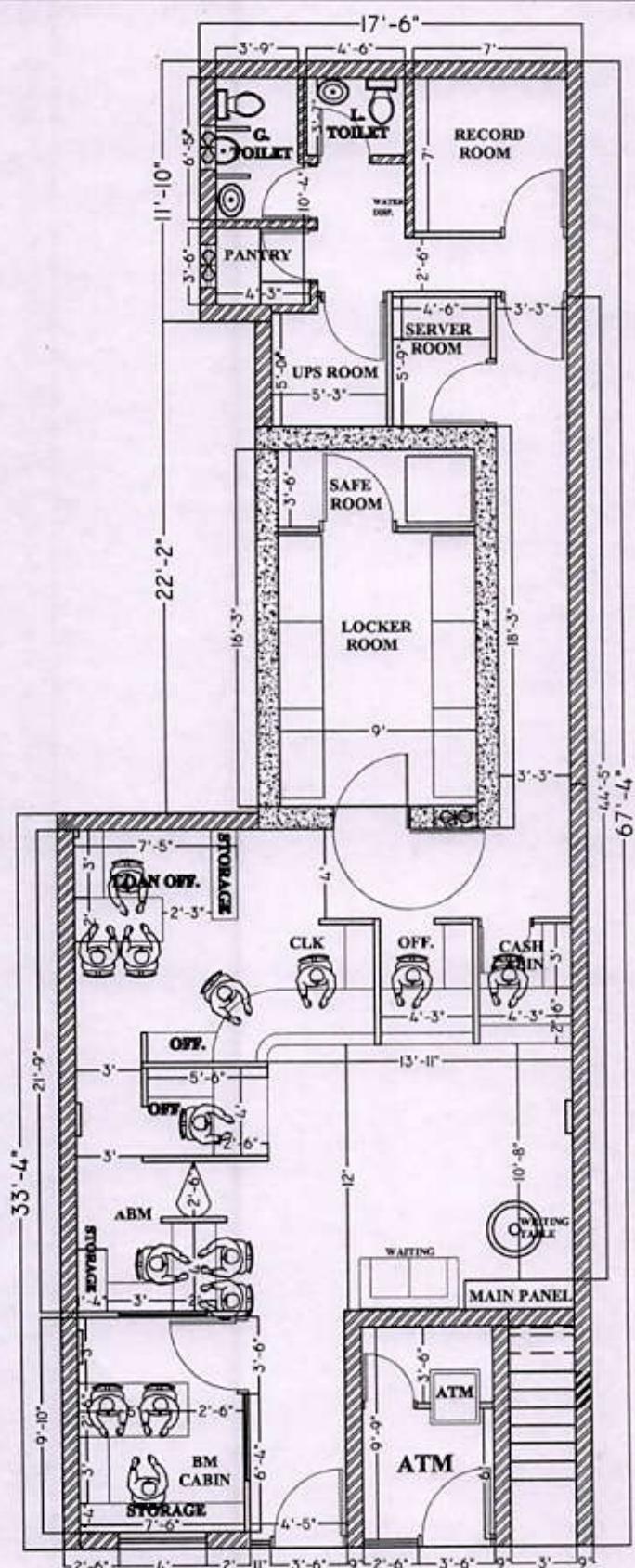
Extra Refrigerant piping beyond 5RM per circuit(with insulation) in split a.c with 12.7mm O.D. (Min. Wall Thickness - 0.80 mm) 40 Rmt
13mm thick insulation
0 Rmt

ii Extra Refrigerant 6/8 piping beyond 5RM per circuit (with insulation) in cassette a.c

AGES

Designers, Engineers

4.3 STANDS & CAGES	
iii	M.S.Stands for outdoor condensing units of 50x50x6mm angle Iron frame with anti-vibration rubber pipes & painted with primer 2 coat of black paint.
a	Split A.C.
b	Cassette type
4.4	Supplying, erection of M.S.Cages made from 35x35 x5mm M.S angle 25x5 m.s flat ,door and locking arrangement (for maintenance) for the nutshrp units the cages shall be properly welded grinded & painted with primer 2 coat of black with anti vibration rubber pipes and jali 1"x1" of 123 with wire grovetecl 6" clip with 1:3:6 pcc.
i	Split A.C.
ii	Cassette type
4.5	Supply and installation of additional drain pipe with proper slope by heavy gauge 25mm dia HDPE pipe.the drain pipe has to be led out to the toilets or drain outlet of the building outside the building with proper slope it must be ensured that the pipe is embedded in the wall and the wall properly finished.(with insulation)
4.6	Supply and installation of electronic type voltage stabiliser of 5KVA with incoming voltage range of 160-260V and output of 230+/-5V with overcurrent protection for the air-conditioners with arrangement for fixing on the wall and equipped with TDR & Voltmeter inclusive of connection etc.from the supply point provided by the Bank.CREST / INLINE / LOGICSTAR / BLUEBIRD.
4.7	Supply and installation of electronic type auto power cycler with four hours switching with indication and override facility. (ATM & SERVER ROOM)
TOTAL OF PART-IV	


PROJECT:

LAYOUT PLAN OF INDIAN
BANK BRANCH AT AMBALA
CITY, HARYANA.

SUBMIT TITLE
LAYOUT PLAN

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CLIENT:
INDIAN BANK

PLAN BY:VINAY

DATE: 25.04.2019

CHECKED BY:
SUNITA WATTAL

SHEET NO: 1

AAKAAR

D-168, TOP FLOOR

NEW RAJENDER NAGAR

NEW DELHI-110068

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