



MAHATMA GANDHI MISSION TRUST
MGM INSTITUTE OF HEALTH SCIENCES, CENTRAL PURCHASE DEPARTMENT (CPD)
Plot 1 & 2, Sector -1 Kamothe, Navi Mumbai 410209

E-Tender of HVAC SYSTEM FOR BUNKER (MEP)

Tenders invited from reputed Manufactures or their authorised distributors / dealers of HVAC of MEP for Bunker - (Mechanical, Electrical and Plumbing), for supply to MGM New Bombay Hospital, Vashi, Navi Mumbai in the format given below:

Name & Address of Vendor: _____

MGM NEW BOMBAY HOSPITAL, VASHI.

HVAC SYSTEM - BOQ

| SI. No. | ITEM DESCRIPTION | QTY | UNIT | MATERIAL (RS) | LABOUR (RS) | RATE (RS) | AMOUNT (RS) |
|---------|---|-----|------|---------------|-------------|-----------|-------------|
| | HVAC SYSTEM | | | | | | |
| 1.00 | RECIRCULATED AIR HANDLING UNITS | | | | | | |
| | l) Supply ,Installation ,Testing and commissioning of Double skin Air Handling unit (Panel Thickness of 40mm+/-2mm) with thermal break profile complete with casing of hot dip G.I Casing of thickness of 0.8 mm pre -coated and pre -plasticized G.I for outer skin and 0.8 mm plain & G.I for Inner Skin encasing with 40mm polyurethane foam insulation having a density of 40 Kg. / CuM factory injected between them by injection moulding machine with thermal break profile recirculating Air Handling Unit along with Mixing box. AHU should be ceiling / Floor Mounted type with 1 / 2 fans backward curved plug fan suitable for static pressure as required, with 2 stage filtration banks of MERV 7 (Shall be mounted before coil section) & MERV 14 (Shall be mounted after fan section) filtration efficiency, drive set , 6/8 row deep chilled water coil, Electric Heater Bank(For AHUs as mention below) for RH control, SS 304 insulated drain pan. The unit includes suitable class IE3, TEFC motor with IP55 protection, suitable for 415 +/- 10 % volt , 50 ±5% cycle , combined power supply variation of ±10%, 3 Phase AC supply , vibration isolators,Rubber pads (min 1 inch thick), canvas connection ,bulk head light,door limit switches as per specification/datasheet. AHU should supply with necessary VFD (Qty of VFD should be as per no. of Fan) . AHUs shall be fitted with GI VCD's (Volume Control Damper) for supply/return/fresh air / purge air opening of AHU body with canvass connection. All supporting GI hangers, ,MS angles, channels nut , bolts, washers etc. necessary for unit installation shall be inclusive in the cost. All AHUs shall be suitable for Static Pressure as mentioned below. Vendor to consider the suitable size of FRLS power cable from panel to unit in scope of supply. | | | | | | |

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| | II) The variable frequency drive shall be PWM type (Pulse width modulation) microprocessor based .The drive shall have a keypad control, a LCD display module, and manual ON/OFF switch and bypass switch. The VFDs shall have integrated, factory built metallic enclosures of IP 20 rating, without any de-rating. VFDs shall conform to the recognized international standards like IEC and manufactured according to ISO 9001, BS 5750 part 1 & 2 and shall be UL listed. The VFDs shall have internal harmonic filters on both limbs of the DC bus to reduce current harmonics and protection for Electronic motor overload, Protection to motor and VFD against input transients, phase loss, short circuit, under voltage, over voltage, phase imbalance, motor over temp., phase to phase short circuit or earth fault at motor terminals.VFD shall be ready for BMS .(VFD shall have lowest speed locking arrangement to maintain desired minimum ACPH inside the area). Interlocking terminals & control wiring for fire damper, motorized dampers etc. as per control scheme from panel to damper etc. Including suitable FRLS Power cable, Control Cabling & double run earthing , cable tray from starter panel to equipment's up to 15 mtrs length. All should be as mentioned in tender specifications. | | | | | | |
| | III) The VFD bypass starter panel shall include (a) Suitable rating incoming MCCB/MCB, (b) Suitable rating AC-3 duty contactor(s), (c) overload relay with built-in single phasing preventer, (d) star delta timer (For S/D starters), (e)digital voltmeter, ammeter, selector switches, CTs & control MCBs, (f) Phase indicating lights & control MCBs, (g) Push buttons for manual start/stop of motor, ON status indicating light for starter with control MCB, (h) Minimum 2 pole auto/manual selector switch 4 NO + 4 NC potential free aux. contacts for use by Building automation system (i) Time delay relay for delayed restart of motor (j) 200-220/24V control power transformer (k) Interlocking terminals, control wiring & Power wiring for PIBC Valve , motorized dampers etc. as per control scheme from panel to damper etc. Including suitable Power cabling & double run earthing from starter panel to equipment's up to 15 mtrs length. All should be as mentioned in tender specifications. Cost of VFD drive & VFD bypass starter panel along with Copper power and control cabling, earthing ,cable tray etc. unto 10 mtr.length as mentioned below shall be inclusive in the AHU cost. VFD shall have auto restart after any power failure. | | | | | | |
| 1.01 | Floor : Basement (PET CT & Console) AHU Tag No : AHU-BF-01 CFM : 7200 TR : 11.7 Heater : (Thyristor based electric strip heater - 2.5KW X 3Nos.) Chilled water coil : 6/8 Row ESP : 50 mmwg Mixing box : Yes | 1 | Each | | | | |
| 1.02 | Floor : Basement (NM Department & other area) AHU Tag No : AHU-BF-02 CFM : 2370 TR : 5.5 Heater : (Thyristor based electric strip heater - 2.0KW X 3Nos.) Chilled water coil : 6/8 Row ESP : 50 mmwg Mixing box : Not required | 1 | Each | | | | |
| 1.03 | Floor : Basement (Physiotherapy) AHU Tag No : AHU-BF-03 CFM : 1500 TR : 3.5 Heater : (Thyristor based electric strip heater - 2.0KW X 3Nos.) Chilled water coil : 6/8 Row ESP : 40 mmwg Mixing box : Not required | 1 | Each | | | | |

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| 1.04 | Floor : Basement (6MV Halcyon & Console room) AHU Tag No : AHU-BF-04 CFM : 4350 TR : 7.5 Heater : (Thyristor based electric strip heater - 2.0KW X 3Nos.) Chilled water coil : 6/8 Row ESP : 50 mmwg Mixing box : Not required | 1 | Each | | | | |
| 1.05 | Floor : Basement (Reception) AHU Tag No : AHU-BF-05 CFM : 4125 TR : 10.0 Heater : (Thyristor based electric strip heater - 2.0KW X 3Nos.) Chilled water coil : 6/8 Row ESP : 50 mmwg Mixing box : Not required | 1 | Each | | | | |
| 2.00 | Supply, Installation, Testing & Commissioning of the Ceiling mounted Fan Coil Units, 3 speed Brushless DC motor, 3 rows cooling coil section, cleanable synthetic media filters, SS condensate drain pan with 9mm thick nitrile rubber insulation, powder coated galvanized steel housing, coil connections through copper pipes, condensate drain connections with insulated upvc pipe of 4mtr, wiring, control wiring in conduit up to thermostat boxes mounted on wall, Anchors, Hangers, Forged Brass ball valve set with and without strainer. The unit shall be provided with valve package comprising of pressure independent Balancing cum Control Valve with integrated 2 way motorized actuator in a single body for modulating operation suitable for static pressure of 1600 kPa and actuator shall be capable of withstanding 400 kPa shut off pressure, suitable for 24 V AC incoming power supply. Fan coil unit shall be suitable for 230 ± 10% 50 Hz single phase power supply. Internal wiring 10 core copper cable between Fan Coil Unit along with Copper power an | | | | | | |
| 2.01 | 2.0 TR nominal capacity as per Data Sheet given and mentioned above | 2 | Each | | | | |
| 2.02 | 1.5 TR nominal capacity as per Data Sheet given and mentioned above | RO | Each | | | | |
| 3.00 | Supply, Installation, Testing & Commissioning of the Digital modulating cooling thermostat with energy saving mode, LCD display, backlight, three speed controller for blower motor. Thermostat shall be mounted on the wall at suitable location. Internal wiring 10 core copper cable between Fan Coil unit and thermostat is included. | 2 | Each | | | | |
| 3.01 | Supply, Installation, Testing & Commissioning of the 230v/24V AC isolationTransformer for connection of Actuator of PIBCV of FCU and Modulating digital thermostat with necessary Enclosure accessories required to place in proper area with enclosure etc as required. | 2 | Each | | | | |

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| 4.00 | <p>EXHAUST/FRESH AIR CENTRIFUGAL FANS : Supply, Installation, Testing & Commissioning of AMCA Certified (For Air and Sound Performance) ceiling hung / floor mounted cabinet type exhaust/ fresh air centrifugal fans of following capacity with GSS casing construction and Epoxy coated MS impellers with high efficiency aero-foil sections, blades, the impeller is belt driven by TEFC squirrel cage induction motor of IP 44 protection. Motor should be of high efficiency class IE3 (as per IS 12615) suitable for 3 Phase 50 Hz 415V ± 10 %, of class 'F' insulation, fire rated flexible connection etc. including all accessories complete as required and as per specifications. Fan total efficiency should not be less than 70%, noise level should not be more than as specified in the data sheet when measured in hemispherical reverberant room conditions. All the fans shall be hot dip galvanized with minimum 220 GSM Zinc Coating and complete with bird screen at inlet. The fan shall be provided with suitable rating TP MPCB with star delta starter within MS enclosure complete with cabling & Earthing between fan and starter panel, complete as required confirming to specification. Gravity louvers will be provided at the discharge of the fan so as to avoid reverse flow. Static pressure shall be checked/verified by contractor prior to order. Entire fan model & AMCA Seal shall appear in technical submittal of fan. Air moving capacity shall be as follows:</p> | | | | | | |
| 4.01 | 940 CFM, SP50 mm wg for AHU fresh air fan, as per data sheet (Ref. Ventilation Data sheet) | 1 | Each | | | | |
| 5.00 | <p>CHILLED WATER PIPING: Supply, Laying/ fixing, testing and commissioning of following nominal sizes of chilled water piping inside the building (with necessary clamps, vibration isolators and fittings but excluding valves, strainers, gauges etc.) duly insulated with following PUF Insulation of minimum 36 - 40 Kg / cu m density, thermal conductivity 0.02 W/MK or better at 20 deg mean temperature.</p> <p>Note:-The Pipes of sizes 150 mm & below shall be M.S. 'C' class as per IS: 1239 and pipes size above 150 mm shall be welded black steel pipe heavy class as per IS: 3589, from minimum 6.35 mm thick M.S. Sheet for pipes upto 350 mm dia. and from minimum 7mm thick MS sheet for pipes of 400 mm dia and above. SMACNA Certified threaded rod system as per specifications with lock(s) and pre-crimped end fixing(s) to be used for supporting all pipes. For safety, the lock should not have inbuilt unlocking mechanism; separate key to be used to unlock it. To avoid wire slippage, locking mechanism should be wedge type, self locking and double channel type. Ball bearing(s) based or circular gear(s) based locking mechanisms are not acceptable. The threaded rod hangers should have a minimum safety factor of 5:1. Support system should be as per specifications. Rates offered shall be inclusive of necessary supports and ancilleries as per Specification.</p> | | | | | | |
| 5.01 | 80 mm dia with 40 mm thick insulation | 100 | metre | | | | |
| 5.02 | 65 mm dia with 40 mm thick insulation | 20 | metre | | | | |
| 5.03 | 50 mm dia with 40 mm thick insulation | 60 | metre | | | | |
| 5.04 | 40mm dia with 40 mm thick insulation | 16 | metre | | | | |
| 5.05 | 32 mm dia with 40 mm thick insulation | 75 | metre | | | | |
| 5.06 | 25 mm dia with 30 mm thick insulation | 90 | metre | | | | |
| 5.07 | 20 mm dia with 30 mm thick insulation | RO | metre | | | | |

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| 6.00 | PRESSURE INDEPENDENT MOTORIZED BALANCING CUM CONTROL VALVE (FOR COOLING APPLICATION): Supply, Installation, testing & commissioning of following sizes insulated electronic, self-balancing, pressure independent type dynamic balancing valve with integrated 2 way modulating control valve in a single body. The actuator shall be capable of accepting upto 10V DC and upto 20 mA electric signal and shall provide similar transduced feedback output to control system. Maximum close off pressure shall not be less than 6 Bar for upto 50 mm valves and 7 Bar for 65 mm & above. Valves should have pressure rating of 16 Bar minimum. The valves & actuators for AHU's units shall be compatible of linking with Building Automation System as per specification and complete as required. valves should be insulated to the same specifications as the connected piping and adequately supported complete as required confirming to specifications. | | | | | | |
| 6.01 | 25 mm dia with 30 mm thick insulation | 1 | Each | | | | |
| 6.02 | 32 mm dia with 40 mm thick insulation | 1 | Each | | | | |
| 6.03 | 40 mm dia with 40 mm thick insulation | 1 | Each | | | | |
| 6.04 | 50 mm dia with 40 mm thick insulation | 2 | Each | | | | |
| 6.05 | 65 mm dia with 40 mm thick insulation | RO | Each | | | | |
| 6.06 | 80 mm dia with 40 mm thick insulation | 1 | Each | | | | |
| 7.00 | INSULATED VALVES: Supply, Installation, testing & commissioning of MANUAL BUTTERFLY VALVE (extended stem) with Diecast Aluminium body, SS Disc, EPDM Rubber Seal & O-Ring, PN-16 pressure rating of following size for chilled water circulation piping duly insulated to the same specifications as the connected piping and adequately supported complete as required confirming to specifications. | | | | | | |
| 7.01 | 80 mm dia with 40 mm thick insulation | 2 | Each | | | | |
| 7.02 | 65 mm dia with 40 mm thick insulation | RO | Each | | | | |
| 7.03 | 50 mm dia with 40 mm thick insulation | 8 | Each | | | | |
| 8.00 | Supply, Installation, testing & commissioning of MOTORIZED BUTTERFLY VALVES with Diecast Aluminium Body, SS Disc, EPDM Rubber Seal & O-ring and minimum PN-16 pressure rating, conforming to BS 5155, IS 13095, with IP-55 actuator, capable of accepting upto 10V DC, and upto 20 mA electric signal and providing similar transduced feedback output to control system as required. (Third party BMS compatible) for chilled water circulation piping duly insulated to the same specifications as the connected piping and adequately supported complete as required confirming to specifications. | | | | | | |
| 8.01 | 80 mm dia with 40 mm thick insulation | RO | Each | | | | |
| 8.02 | 65 mm dia with 40 mm thick insulation | RO | Each | | | | |
| 9.00 | Supply, Installation, testing & commissioning of BALANCING VALVE WITH BUILT IN MEASURING FACILITY with C I body flanged construction with EPDM coated disc with long pitch with protected out pipe insulation & PN 16 pressure rating of following size for chilled water circulation piping duly insulated to the same specifications as the connected piping and adequately supported complete as required confirming to specification. | | | | | | |
| 9.01 | 80 mm dia with 40 mm thick insulation | 1 | Each | | | | |
| 9.02 | 65 mm dia with 40 mm thick insulation | RO | Each | | | | |

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| 10.00 | Supply, Installation, testing & commissioning of Y - STRAINER of Ductile CI Body flanged ends with stainless steel strainer of following size for chilled water circulation piping duly insulated to the same specifications as the connected piping and adequately supported complete as required confirming to specification. | | | | | | |
| 10.01 | 50 mm dia with 40 mm thick insulation | 2 | Each | | | | |
| 10.02 | 40 mm dia with 40 mm thick insulation | 1 | Each | | | | |
| 10.03 | 32 mm dia with 40 mm thick insulation | 1 | Each | | | | |
| 10.04 | 25 mm dia with 30 mm thick insulation | 1 | Each | | | | |
| 11.00 | Supply, Installation, testing & commissioning of BALL VALVE with flanged end type, PN 16 pressure rating for chilled water circulation piping duly insulated to the same specifications as the connected piping and adequately supported complete as required confirming to specification. (For pump Drain and AHU drain connection) | | | | | | |
| 11.01 | 20 mm dia with 30 mm thick insulation | RO | Each | | | | |
| 11.02 | 25 mm dia with 30 mm thick insulation | 6 | Each | | | | |
| 11.03 | 32 mm dia with 40 mm thick insulation | 6 | Each | | | | |
| 11.04 | 40 mm dia with 40 mm thick insulation | 6 | Each | | | | |
| 12.00 | Supply, Installation, testing & commissioning of Binder test points at chilled water pipelines i.e. inlet & outlet of air handling units duly insulated to the same specifications as the connected piping and adequately supported complete as required confirming to specification. | 20 | Each | | | | |
| 13.00 | Supply, Installation, testing and commissioning of Auto air vents valve 25mm dia including isolation valve, nut, bolts washer, gaskets etc. complete as required confirming to specification | 5 | Each | | | | |
| 14.00 | Supply, Installation, testing & commissioning of Flexible connector for following Dia. pipe having PN 16 working pressure with anti vacuum rings complete with flanges, nuts, bolts, seal etc. complete as required confirming to specification to be installed at chillers, primary & secondary pumps and AHUs suction and discharge duly insulated to the same specifications as the connected piping and adequately supported complete as required confirming to specification. | | | | | | |
| 14.01 | 50 mm dia with 40 mm thick insulation | 4 | Each | | | | |
| 14.02 | 40 mm dia with 40 mm thick insulation | 2 | Each | | | | |
| 14.03 | 32 mm dia with 40 mm thick insulation | 2 | Each | | | | |
| 14.04 | 25 mm dia with 30 mm thick insulation | 2 | Each | | | | |
| 15.00 | UPVC DRAIN PIPES: Supply, Installation, testing & commissioning of Rigid UPVC condensate drain pipes of following size duly insulated with 9 mm thick closed cell nitrile with factory laminated black treated woven cloth surface insulation in the form of pre-formed pipe sections and along with necessary clamps, fittings such as bends, tees etc. adequately supported complete as required confirming to specification. | | | | | | |
| 15.01 | 50 mm dia | 20 | metre | | | | |
| 15.02 | 40 mm dia | 25 | metre | | | | |
| 15.03 | 32 mm dia | 40 | metre | | | | |
| 15.04 | 25 mm dia | 80 | metre | | | | |
| 16.00 | Supply, Installation, testing & commissioning of industrial type pressure gauges with gun metal / brass valves complete as required. | 12 | Each | | | | |

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| 17.00 | Supply, Installation, testing & commissioning of the mercury in glass industrial type thermometers with thermowell. | 10 | Each | | | | |
| 18.00 | Supply, Installation, testing & commissioning of thermowell. | 10 | Each | | | | |
| 19.00 | Supply, Installation, testing & commissioning of Temperature sensors as shown in the scheme | 10 | Each | | | | |
| 20.00 | Providing fixing and testing of Flow switch for chilled water and condenser water system compatible to connect with Chiller plant manager as per specification. | RO | Each | | | | |
| 21.00 | Providing fixing and testing of Purge valve | 5 | Each | | | | |
| 22.00 | DUCTING FOR AIR CONDITIONING / VENTILATION: - FACTORY FABRICATED DUCTING: Supply, Installation, balancing and commissioning of factory fabricated 180 GSM coated GSS sheet metal rectangular/round ducting complete with neoprene rubber gaskets, elbows, splitter dampers, vanes, hangers, supports etc. as per SMACNA standard and as per approved drawings and specifications of following sheet thickness complete as required. horizontal ducts shall be rigidly and securely supported, in an approved manner, with trapeze hangers formed of galvanized steel rods and galvanized steel angle/channel or a pair of brackets, connected by galvanized steel rod under ducts. vertical ductwork shall be supported by structural members on each floor slab. Duct supports may be through galvanized steel insert plates left in slab at the time of slab casting. Galvanized steel cleat with a hole for passing the hanger rods shall be welded to the plates. Support system should be as per specifications. Rates offered shall be inclusive of necessary supports and ancilleries as per Specification. | | | | | | |
| 22.01 | Thickness 0.63 mm sheet | 700 | Sqm | | | | |
| 22.02 | Thickness 0.80 mm sheet | RO | Sqm | | | | |
| 23.00 | Supply, Installation, testing and commissioning of GI volume control duct damper complete with neoprene rubber gaskets, nuts, bolts, screws linkages, flanges etc. as per approved drawings complete as required confirming to specification . | 78 | Sqm | | | | |
| 24.00 | Supply, Fixing, testing and balancing of powder coated extruded aluminium Supply Air Grilles with aluminium volume control dampers as per approved drawings complete as required confirming to specification . | 10 | Sqm | | | | |
| 25.00 | Supply, Fixing, testing and balancing of powder coated extruded aluminium Return/exhaust Air Grilles with louvers but without volume control dampers as per approved drawings complete as required confirming to specification . | 3 | Sqm | | | | |
| 26.00 | Supply, Fixing, testing and balancing of Supply Air Diffusers of powder coated aluminium with aluminium volume control dampers, plenum with anti smudge ring & removable core as per approved drawings complete as required confirming to specification. | | | | | | |
| 26.01 | 450x450 | 10 | Each | | | | |
| 26.02 | 375x375 | 4 | Each | | | | |
| 26.03 | 300x300 | 20 | Each | | | | |
| 26.04 | 225x225 | 12 | Each | | | | |
| 27.00 | Supply, Fixing, testing and balancing of Return Air Diffusers of powder coated aluminium with aluminium volume control dampers, plenum with anti smudge ring & removable core as per approved drawings complete as required confirming to specification. | | | | | | |
| 27.01 | 450x450 | 4 | Each | | | | |
| 27.02 | 375x375 | 4 | Each | | | | |
| 27.03 | 300x300 | 20 | Each | | | | |
| 27.04 | 225x225 | 12 | Each | | | | |

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| 28.00 | FIRE DAMPERS: Supply, Fixing, testing and commissioning of UL certified (UL555 & UL555S) fire dampers in supply air duct/main branch and return air path as and where required of required sizes i/c control wiring, the damper shall be motorized and spring return so as to close the damper in the event of power failure automatically and open the same in case of power being restored. The spring return action shall be inbuilt mechanism and not externally mounted. The damper shall also be closed in the event of fire signal as per approved drawings complete as required confirming to specification . | | | | | | |
| 28.01 | Fire damper | 2 | Sqm | | | | |
| 28.02 | Actuator complete with control panel & wiring from 230V AC outlet | 5 | Each | | | | |
| 29.00 | LOUVERS: Supply, Fixing of powder coated extruded aluminium Fresh/ Exhaust air louvers comprising of inclined blade & extended out blade for disposal of rain water, bird screen suitable for outdoor application as per approved drawings complete as required confirming to specification . | 6 | Sqm | | | | |
| 30.00 | MOTORIZED DAMPERS: Supply, Fixing, testing and commissioning of motorized dampers in supply air duct/main branch and exhaust air duct as and where required of required sizes i/c control wiring with BMS compatible. The damper shall inter-locked with fans to facilitate opening/closing as per associated fans and as per fire signal as per approved drawings complete as required confirming to specification . | | | | | | |
| 30.01 | Motorized damper | RO | Sqm | | | | |
| 30.02 | Actuator complete with control panel & wiring from 230V AC outlet | RO | Each | | | | |
| 31.00 | FUSE LINK DAMPERS: Supply, Fixing, testing and commissioning of fuse link damper in supply air duct/main branch and exhaust air duct as and where required of required sizes. The damper shall facilitate closing when fire occurs in the duct as per approved drawings complete as required confirming to specification . | 10 | Sqm | | | | |
| 32.00 | DUCT INSULATION: Supply, Installation and fixing of following thickness closed cell Nitrile rubber (Class "0") with factory laminated black treated woven cloth surface insulation on existing duct after applying suitable adhesive for Nitrile rubber. The joints shall be sealed with 50 mm wide and 3 mm thick self adhesive nitrile rubber tape insulation complete as per specifications and as required. (adhesive shall be from same manufacturer) | | | | | | |
| 32.01 | 19 mm thick class "O" nitrile rubber insulation with factory woven glass cloth protection (Black Colour) (Mechanical Protection) for supply air ducts in free return air path & return air ducts | 600 | Sqm | | | | |
| 32.02 | 25 mm thick class "O" nitrile rubber insulation with factory woven glass cloth protection (Black Colour) (Mechanical Protection) for supply air ducts in exposed path | RO | Sqm | | | | |
| 33.00 | Supply, Installation, testing and comissioning of 24 G Al cladding for Exposed duct insulation. it shall be fitted with necessary accessories and other requirements. | RO | Sqm | | | | |
| 34.00 | Supply, Installation,testing and commissioning of acoustic insulation with following thickness Class 1 Nitrile rubber open cell type insulation along with necessary supports,nuts,bolts,gaskets, clips and in accordance with specification and drawings. | | | | | | |
| 34.01 | Acoustic Insulation of 19 mm thick (for TFA, AHU, SA / R.A ducts) | 15 | Sqm | | | | |
| 34.02 | Acoustic Insulation of 10mm thick (FCU duct acoustic insulation) | 5 | Sqm | | | | |

