MAZAGON DOCK SHIPBUILDERS LIMITED
(Formerly known as Mazagon Dock Ltd.)
CIN : U35100MH1934GOI002079
(A Government of India Undertaking)
Shipbuilders to the Nation
Dockyard Road, Mazagon,
Mumbai 400 010.
INDIA

Modernisation of Mazdock House facade at MDL, Mumbai.

VOLUME-III

Scope of Work
List of Tender Drawings
Price Bid (Part-II)

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1. SCOPE OF WORK:

1.1. Scope of Work in brief is as under.

1.1.1. Civil Works:

The existing building is a Ground + Six storey structure having approximate plinth area of 710 Sq.M. and total built up area of 4650 Sq.M. approx.

MDL intends to modernize the external facade of the existing building.

This building is MDL corporate office occupied by various departments including senior management's office. It is anticipated that during the execution period of façade works, delegates may visit the corporate office. In such cases the work are likely to be stopped to facilitate delegate and the site shall be made properly accessible to the delegates and also the site shall be kept clean for which debris etc may have to be shifted at short notice.

The subject work consists of Civil & Interior works, HVAC, plumbing, structural repairs, windows, finishing work viz painting etc. The item details are included in the BOQ, drawings, technical specifications of tender documents.

Civil & interior Work - The civil work contains, structural repairs, dismantling damaged portion of structure, repairing the same, replacing the same, replacing the existing windows with double glazed windows, UPVC fins with structural framework, GRC cladding with M.S framing, backing, plastering painting etc. replacing the external drainage, rainwater pipes.

1.1.2. Electrical Work :

The work consists of providing new cable as per the BOQ and drawings. Also do related electrical work for change in the power points location to suit new location of HVAC unit.

The electrical scope of work includes:-

i) Supply, Installation, Testing and Commissioning of MEDIUM VOLTAGE SWITCHGEAR
ii) Supply, Installation, Testing and Commissioning of DISTRIBUTION BOARDS
iii) Supply, Installation, Testing and Commissioning of MEDIUM VOLTAGE CABLING
iv) Supply, Installation, Testing and Commissioning of CONDUIT WIRING
v) Supply, Installation, Testing and Commissioning of LIGHT FIXTURES (LED

Down Lights (IP 67), LED Strip Lights (IP 65) & LED Bollard Light (IP 64) and EXHAUST FANS)

vi) Supply, Installation, Testing and Commissioning of PROTECTIVE EARTHING, LIGHTENING CONDUCTOR & ACCESSORIES

vii) Supply, Installation, Testing and Commissioning of STRUCTURED CABLING

viii) Supply, Installation, Testing and Commissioning of VRF PANEL (IP 65) APFC PANEL (IP 65)

The work will be carried out in the occupied building which will have human and vehicular traffic around, hence human safety should be also done to have least hindrance to the entry exit of the building.

The Mazagon dock being a restricted area under security the access at site is also restricted and is through temporary gate passes only.

All work, during its progress and upon completion, shall conform to lines, elevations and grades as shown on the drawings furnished by Architects. Should any details essential for efficient completion of the work been omitted from the drawings and specifications, it shall be the responsibility of the contractor to inform the Employer's / Architects concurrence, so that upon completion of the proposed work, the same will be accepted and ready to use.

1.1.3. HVAC System

Description of the Project

The Mazdock House is located in Mazagon Dock Shipbuilders Ltd, Mumbai. The main purpose of modification is to carry out the building Façade modification. The conventional DX system outdoor units (of split, window & precision ACs) were the hurdle for the building aesthetic look. These units have served their life and are low energy rated. Hence it is intended to remove the existing conventional type of air conditioning units and the same to be partially considered under buy back scheme. It is intended to have the new centralized VRF air conditioning system for every floor to ensure flexibility of operation, installation and maintenance of the HVAC system of the building using latest state of the art technology and also the energy efficient one. It is also intended to replace the old Precision ACs in Server Room of CIT dept. with the new PACs.

During tenure of the project, the regular business of MDL will be continuing in the various departments of Mazdock House building& hence Contractor need to execute the new HVAC system with minimum hindrance to the regular work of MDL and accordingly Project Management Plan is to be developed.

General Scope of Work

The general character and the scope of work to be carried out under this contract is illustrated in Drawings, Specifications and Schedule of Quantities. The Contractor shall carry out and complete the said work under this contract in every respect in conformity with the contract documents and with the direction of and to the satisfaction of the Consultant / Architect/ Client.

The contractor shall furnish all labour, materials and equipment as listed under Schedule of Quantities and specified otherwise, transportation and incidental

necessary for supply, installation, testing and commissioning of the complete air conditioning system as described in the Specifications and as shown on the drawings.

This also includes any material, equipment, appliances and incidental work not specifically mentioned herein or noted on the Drawings / Documents as being furnished or installed, but which are necessary and customary to be performed under this contract for completion of entire work.

The central Heating, Ventilation and Air- Conditioning (HVAC) system shall comprise of following:

a. VRV System Outdoor & Indoor Units for Office area & other area as per drawing.
b. Precision AC system for Data center (Server Room in CIT dept.)
c. Dehumidifiers for the Display Gallery
d. Air Curtain
e. Motor control centers, Wiring and earthing from MCC panels to various air conditioning equipment, control wiring and interlocking.
f. Refrigerant & condensate drain piping inclusive of all valves and fittings.
g. Sheet metal ducts inclusive of external insulation, acoustic lining, canvas connections, volume control dampers, Supply and return air registers and diffusers.
h. Insulation of pipes, ducts.
i. Automatic controls and instruments.
j. Vibration isolators for all HVAC equipment.

k. Wiring and earthing from MCC panels to various refrigeration, air conditioning and mechanical ventilation equipment, control wiring and interlocking.
l. Balancing, testing and commissioning of the entire HVAC system of Office area, Precision AC system for Data center and mechanical ventilation system installation.
m. Test reports, list of recommended spares, AS BUILT drawings, operation and maintenance manual for the entire HVAC installation.
n. Training of Customer's Staff.
o. Comprehensive all inclusive AMC for 3 years (for VRV/VRF & PAC) after completion of defect liability period.

Submission of program

Contractor is required to submit planned detailed execution methodology & schedule for review / approval by consultant / Client within 14 days of placement of order.

Appointment of sub-contractor/agency for HVAC work

The Principal Contractor shall propose the sub-contractor/agency which it intends to appoint for execution of HVAC works, with the submission of documentary proofs to prove the credentials of the agency and experience of earlier completed VRV/VRF systems for review and approval by the Consultant/MDL. The Principal Contractor shall appoint the sub-contractor/agency only after approval of the Consultant/MDL.

Dispatch of Materials to Site & their safe Custody

At the time of execution, area shall be provided taking into consideration the space available at site, for storage of delivered material/equipment upon request of contractor. Contractor has to make his own arrangement for storage, safety & security of the material delivered at site.

Program of dispatch of material shall be framed keeping in view the building progress.

Safe custody of all machinery and equipment supplied by the contractor shall be the responsibility of the contractor.

Coordination with Other Agencies

The contractor shall co-ordinate with all other agencies involved in the work so that the work of other agencies is not hampered due to his work. Ducting, piping, cabling or any other work, which directly affect the progress of building work, shall be given priority.

Quality of Materials & Workmanship

i) The components of the installation shall be of such design so as to satisfactorily function under all conditions of operation.
ii) The entire work of manufacture/fabrication, assembly and installation shall conform to sound engineering practice. The entire installation shall be such as to cause minimum transmission of noise and vibration to the building structure.
iii) All equipment's and materials to be used in work shall be manufactured in factories of good repute having excellent track record of quality manufacturing, performance and proper after sales service.

Care of the Building

Care shall be taken by the contractor during execution of the work to avoid damage to the building. He shall be responsible for repairing all such damages and restoring the same to the original finish at his cost. He shall also remove all unwanted and waste materials arising out of the installation from the site of work from time to time.

Inspection & Testing

All the equipments / materials shall be supplied with relevant quality / conformance / factory inspection documents.

Project Execution Team

The Contractor shall ensure that senior planning and erection personnel from his organization are assigned exclusively for this project. The Contractor shall appoint one Project manager. He shall be assisted on full time basis by erection engineers & supervisors. The entire staff shall be posted at site on full time basis.

The Contractor shall arrange to have mechanized& modern facilities of transporting material to place of installation for speedy execution of work.

Performance Guarantee
The contractor shall carry out the work in accordance with the Drawings, Specifications, Schedule of Quantities and other documents forming part of the Contract.

The contractor shall be fully responsible for the performance of the selected equipment (installed by him) at the specified parameters and for the efficiency of the installation to deliver the required result.

Complete set of drawings is appended with this tender and reference may be made to same for any details or information. The contractor shall also guarantee that the performance of various equipment individually, shall not be less than the quoted capacity; also, actual power consumption shall not exceed the quoted rating, during testing and commissioning, handing over and guarantee period.

Drawings
The HVAC Drawings issued with tenders, are diagrammatic only and indicate arrangement of various systems and the extent of work covered in the contract.

These Drawings indicate the points of supply and of termination of services and broadly suggest the routes to be followed. Under no circumstances shall dimensions be scaled from these Drawings.

The interiors drawings and details shall be examined for exact location of equipment, controls, grilles and diffusers. The contractor shall follow the tender drawings in preparation of his shop drawings, and for subsequent installation work. He shall check the drawings of other trades to verify spaces in which his work will be installed.

Maximum headroom and space conditions shall be maintained at all points. Where headroom appears inadequate, the contractor shall notify the Client – MDL/ Architect / Consultant before proceeding with the installation. In case installation is carried out without notifying, the work shall be rejected and contractor shall rectify the same at his own cost.

The contractor shall examine all interior, structural, plumbing, and electrical and other services drawings and check the existing works. Before starting the work, Contractor shall report to the Client / Architect / Consultant about any discrepancies and obtain clarification. Any changes found essential to coordinate installation of his work with other services and trades, shall be made with prior approval of the Client – MDL / Architect / consultant without additional cost to the Client – MDL.

Technical Data Sheet

Contractor shall submit the technical data sheet for all items after award of Contract and before procurement of the items

Shop Drawings
All the shop drawings shall be prepared on computer through AutoCAD System based on Drawings, site measurements and Interior Designer's Drawings.

Within two week of the award of the contract, contractor shall furnish, for the approval of the Client – MDL / Architect / Consultant, three sets of detailed shop drawings in A1 color printout of all equipment and materials including detailed ducting drawings showing exact location of supports, flanges, bends, tee connections, reducers, guide vanes, silencers, distribution grids, volume control dampers, collars, grilles, diffusers; detailed piping drawings showing exact location and type of supports, valves, fittings etc. Acoustic lining and external insulation details for ducts, pipe insulation etc; electrical panels inside / outside views, power and control wiring schematics, cable trays, supports and terminations.

These shop drawings shall contain all information required to complete the Project as per specifications and as required by the Client – MDL/ Architect / consultant. These Drawings shall contain details of construction, size, arrangement, operating clearances, and capacity of all items of equipment, also the details of all related items of work by other contractors.

Each shop drawing shall contain tabulation of all measurable items of equipment / materials / works and progressive cumulative totals from other related drawings to arrive at a variation-in-quantity statement at the completion of all shop drawings. Minimum 4 sets of drawings 'A1' size color printout shall be submitted after final approval along with softcopy.

Each item of equipment / material proposed shall be a standard catalogue product of an established manufacturer strictly from the manufacturers given in list of makes and quoted by the tenderer in technical data part.

When the Client – MDL / Architect / Consultant makes any amendments in the above drawings, the contractor shall supply three fresh sets of drawings with the amendments duly incorporated alongwith check prints, for approval.

No material or equipment may be delivered or installed at the job site until the contractor has in his possession, the approved shop drawing for the material / equipment / installation.

No claims for extension of time shall be entertained because of any delay in the work due to his failure to produce shop drawings at the right time, in accordance with the approved program.

Manufacturers drawings, catalogues, pamphlets and other documents submitted for approval shall be in four sets. Each item in each set shall be properly labeled, indicating the specific services for which material or equipment is to be used, giving reference to the governing section and clause number and clearly identifying in ink the items and the operating characteristics. Data of general nature shall not be accepted.

Also, wherever directed a mockup or sample installation shall be carried out for approval before proceeding for further installation.

Approval of shop drawings shall not be considered as a guarantee of measurements or of building dimensions. Where drawings are approved, said approval does not mean that the drawings supersede the contract requirements, nor does it in any way relieve the contractor of the responsibility or requirement to furnish material and perform work as required by the contract.

Where the contractor proposes to use an item of equipment, other than that specified or detailed on the drawings, which requires any redesign of the structure, partitions, foundation, piping, wiring or any other part of the mechanical, electrical layouts; all such re-design, and all new drawings and detailing required therefore, shall be prepared by the contractor at his own expense and gotten approved by the Client – MDL / Architect / Consultant. Any delay on such account shall be at the cost of and consequence of the Contractor.

Where the work of the contractor has to be installed in close proximity to, or will interfere with work of other trades, he shall assist in working out space conditions to make a satisfactory adjustment. If so directed by the Client – MDL/Architect/Consultant, the contractor shall prepare composite working drawings and sections at a suitable scale, not less than 1:100, clearly showing how his work is to be installed in relation to the work of other trades.

Within two weeks of approval of all the relevant shop drawings, the contractor shall submit four copies of a comprehensive anticipated variation in quantity statement to Consultant/MDL.

Quiet Operation and Vibration Isolation

All equipment shall operate under all conditions of load without any sound or vibration which is objectionable in the opinion of the Client – MDL / Architect / Consultant. In case of rotating machinery sound or vibration noticeable outside the room in which it is installed, or annoyingly noticeable inside its own room, shall be considered objectionable. Such conditions shall be corrected by the Contractor at his own expense. The contractor shall guarantee that the equipment installed shall maintain the specified NC levels. Further, any noise & vibration above specified industrial Standards / values shall not be accepted.

Accessibility

The Contractor shall verify the sufficiency of the size of the shaft openings, clearances in cavity walls and suspended ceilings for proper installation of his ducting and piping.

His failure to communicate insufficiency of any of the above, shall constitute his acceptance of sufficiency of the same.

The Contractor shall locate all equipment which must be serviced, operated or maintained in fully accessible positions. The exact location and size of all access panels, required for each concealed control damper, valve or other devices requiring attendance, shall be finalized and communicated in sufficient time, to be provided in the normal course of work.

Failing this, the Contractor shall make all the necessary repairs and changes at his own expense. Access panel shall be standardized for each piece of equipment / device / accessory and shall be clearly marked.

Materials and Equipment
All materials and equipment shall conform to the relevant Indian / International Standards and shall be of the approved make and design. Makes shall be strictly in conformity with list of preferred makes/manufacturers as per BOQ & attached list.

Electrical Installation
The electrical work related to air conditioning services, shall be carried out in full knowledge of, and with the complete coordination of the contractor. The electrical installation shall be in total conformity with the control wiring drawings prepared by the contractor and approved by the Consultant/Client – MDL.

All air conditioning equipment shall be connected and tested in the presence of an authorized representative of the Contractor, Consultant & MDL.

The system shall be commissioned only after the contractor has certified in writing that the electrical installation work for air cooling services has been thoroughly checked, tested and found to be totally satisfactory and in full conformity with the contract Drawings, Specifications and manufacturer's instructions. It is to be clearly understood that the final responsibility for the sufficiency, adequacy and conformity to the contract
requirements, of the electrical installation work for air conditioning services, lies solely with the contractor.

Completion Certificate:
On completion of the Electrical installation for air conditioning, a certificate shall be furnished by the contractor, counter signed by the licensed supervisor, under whose direct supervision the installation was carried out.

Testing & Commissioning

The performance, testing & commissioning of the complete HVAC system is required to be carried out by the HVAC Contractor to comply with the various parameters specified in the tender documents. Contractor shall submit Testing & Commissioning methodology for complete HVAC system for review & approval of Client / Consultant. Testing & commissioning of HVAC system shall be done strictly in accordance with approved methodology.

Contractor shall also provide four copies of record of all safety and automatic control settings for the entire installation. The installation shall be tested again after removal of defects and shall be commissioned only after approval by the Client – MDL/ Architect / Consultant.

All tests shall be carried out for satisfactory performance in the presence of the representatives of the Client – MDL / Architect / Consultant.

Contractor shall raise call for inspection sufficiently in advance for witness by Consultant /MDL via officially acceptable means such as e-mail & letters.

As Built Drawings
Contractor shall submit as built drawings as and when work in all respects is completed in a particular area. These drawings shall be submitted in the form of two sets of CD's and four set of Hard copy – 'A1' Size color printout.

These drawings shall clearly indicate complete HVAC system Equipment layouts, ducting and piping layouts, location of wiring and sequencing of automatic controls, location of all concealed piping, valves, controls, dampers, wiring and other services.

Operating Instruction & Maintenance Manual
Upon completion and commissioning of system the contractor shall submit a draft copy of comprehensive operating instructions, maintenance schedule and log sheets for all systems and equipment included in this contract.

This shall be supplementary to manufacturer's operating and maintenance manuals. Upon approval of the draft, the contractor shall submit four (4) complete bound sets of type written operating instructions and maintenance manuals; one each for retention by Consultant and Client – MDL / Architect / Consultant and two for Client – MDL's Operating Personnel.

These manuals shall also include basis of design, detailed technical data for each piece of equipment as installed, spare parts manual and recommended spares for period of maintenance of each equipment.

On Site Training
Upon completion of all work and all tests, the Contractor shall depute necessary operators, labor and helpers for operating the entire HVAC installation for a period of ten (10) working days, to enable the Client's personnel to get acquainted with the operation of the system. During this period, the contractor shall train the Client's nominated personnel in the operation, adjustment and maintenance of all equipment installed.

Servicing of HVAC System during Defect Liability Period
Contractor to arrange **quarterly** servicing of the HVAC system (VRV/VRF & PAC) installed to keep the system in good and trouble free operating conditions. **The servicing agency appointed should be OEM or authorized agency of OEM. It is preferred to appoint the AMC Contractor as a servicing agency/Contractor.**

Buy-Back of existing Air Conditioning Units
As per the list given in the tender documents, some of the existing old AC units (Split, Window and Precision type of AC) along with copper tubing & its accessories are to be taken out of MDL by Contractor under buy-back arrangement (as is where is condition) as per BOQ.
Some of the AC units as per the list given in the tender documents are to be dismantled by the Contractor and to be handed over to MDL as per BOQ. These ACs are not to be taken out by the Contractor under buy-back scheme.

The detailed scope of work has been indicated in the Bill of Quantities (BOQ) Price Bid Part-II at Enclosure-1.

2. **LIST OF TENDER DRAWINGS**

SR. NO	DESCRIPTION OF DRAWING	TENDER DRAWING NO
	ARCHITECTURAL DRAWINGS	
01	GA FLOOR PLAN SHEET - 1	JB15-109/MDL- TD-105
02	GA FLOOR PLAN SHEET - 2	JB15-109/MDL- TD-106
03	GA FLOOR PLAN SHEET - 3	JB15-109/MDL- TD-107
04	GA FLOOR PLAN SHEET - 4	JB15-109/MDL- TD-108
05	ELEVATIONS SHEET -1	JB15-109/MDL- TD-109
06	ELEVATIONS SHEET -2	JB15-109/MDL- TD-110
07	SECTIONS SHEET -1	JB15-109/MDL- TD-111
	ARCHITECTURAL DETAILS	
08	DOOR & WINDOWS SCHEDULE SHEET - 1	JB15-109/MDL- TD-113
09	DOOR & WINDOWS SCHEDULE SHEET - 2	JB15-109/MDL- TD-114
10	GLAZING DETAILS	JB15-109/MDL- TD-115
11	GRC DETAILS	JB15-109/MDL- TD-116
12	ARCHITECTURAL DETAILS SHEET - 1	JB15-109/MDL- TD-117
13	ARCHITECTURAL DETAILS SHEET - 2	JB15-109/MDL- TD-118
14	ARCHITECTURAL DETAILS SHEET - 3	JB15-109/MDL- TD-119
15	DEMOLITION ELEVATION SHEET - 1	JB15-109/MDL- TD-120
16	DEMOLITION ELEVATION SHEET - 2	JB15-109/MDL- TD-121
	STRUCTURAL DRAWINGS	
17	STRUCTURAL DETAILS SHEET - 1	JB15-109/MDL- TD-201
18	STRUCTURAL DETAILS SHEET - 2	JB15-109/MDL- TD-202
	HVAC DRAWINGS	
19	GROUND FLOOR HVAC LAYOUT SHEET - 1	JB15-109/MDL- TD-301
20	FIRST FLOOR HVAC LAYOUT SHEET - 2	JB15-109/MDL- TD-302
21	SECOND FLOOR HVAC LAYOUT SHEET - 3	JB15-109/MDL- TD-303
22	THIRD FLOOR HVAC LAYOUT SHEET - 4	JB15-109/MDL- TD-304
23	FOURTH FLOOR HVAC LAYOUT SHEET - 6	JB15-109/MDL- TD-305
24	FIFTH FLOOR HVAC LAYOUT SHEET - 6	JB15-109/MDL- TD-306
25	SIXTH FLOOR HVAC LAYOUT SHEET - 7	JB15-109/MDL- TD-307
26	TERRACE HVAC ODU LAYOUT	JB15-109/MDL- TD-308
	ELECTRICAL DRAWINGS	
27	SINGLE LINE DIAGRAM - ELECTRICAL	JB15-109/MDL- TD-401

28	SINGLE LINE DIAGRAM -APFC BANK	JB15-109/MDL- TD-402
29	SINGLE LINE DIAGRAM -LD EXTERNAL LDB	JB15-109/MDL- TD-403

Enclosure-1

PRICE BID (PART-II)
BILL OF QUANTITIES
(To be submitted online)

Sub: Modernisation of Mazdock House facade at North Yard, MDL, Mumbai.

Ref: MDL Tender No. 1800000031

INSTRUCTION TO THE BIDDER:

1. Bidder shall **NOT INCLUDE** The Work Contract Tax (WCT) under VAT and Service Tax in the rates for this section. Bidder is required to quote Work Contract Tax (WCT) under VAT and Service Tax including Swachh Bharat Cess and Kisan Kalyan Cess **SEPERATELY** in Percentage which will be added to the rate quoted for this section.
2. Bidder to note Clause No. 2 (Defect Liability Period), Clause No 3 (Performance bank Guarantee), Clause No 5 (Safety and Training), Clause No 6 (Terms of Payment), Clause No 7 (Prices and Taxes), Clause No 14 (Insurance), Clause No 15 (Water proofing Bank Guarantee), Clause No 11.10 (Availability of sand/ other construction material) of Volume II before quoting.
3. MDL reserves the right to increase the quantity of any item in the BOQ to any extent provided the increase in the total Estimated Amount due to this change in the quantity over BOQ quantity multiplied by specified rate for all the items put together do not exceed 25% of the Accepted Contract Value. Bidder to note Clause No 13.1 of Volume II before quoting.
4. Bidder should also note Clause No 27 (Integrity Pact Bank Guarantee) in Volume I before quoting.
5. Bidder's quoted amount at Item no 243 towards Buy Back of ACs shall be recovered from the Contractor's Running Account bills as applicable. Bidder to note Clause No 6.1.4 of Volume II before quoting. There are 151 nos. of AC's to be dismantled, List of 133 AC's under buy back scheme is at Enclosure – 2 and List of 18 AC's to be dismantled and handed over to MDL is at Enclosure- 3

SR. NO	ITEM DESCRIPTION	UNIT	QTY	RATE	AMOUNT
I	**Civil Work**				
A	**CONCRETE WORK**				
1	Providing and laying cement concrete in retaining walls, return walls, walls (any thickness) including attached pilasters, columns, piers, abutments, pillars, posts, struts, buttresses, string or lacing courses, parapets, coping, bed blocks, anchor blocks, plain window sills, fillets, sunken floor,etc., up to floor seven level, excluding the cost of centering, shuttering and finishing : --1:1½:3 (1 cement:1½ coarse sand:3 graded stone aggregate 20 mm nominal size)	m3	20.00		
2	Providing and laying damp-proof course 50 mm thick with cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size).	m2	10.00		
3	Making plinth protection 50 mm thick of cement concrete 1:3:6 (1 cement: 3 coarse sand : 6 graded stone aggregate 20 mm nominal size) over 75mm thick bed of dry brick ballast 40 mm nominal size, well rammed and consolidated and grouted with fine sand, including finishing the top smooth.	m2	160.00		
B	**REINFORCED CEMENT CONCRETE**				

4	Reinforced cement concrete work in beams, suspended floors, roofs having slope upto15^0 landings, balconies , shelves, chajjas, lintels, bands, plain window sills, staircases and spiral stair cases upto floor seven level, excluding the cost of centering , shuttering, finishing and reinforcement, with 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size).	m3	14.12		
5	**DESIGN MIX CONCRETE:** -Providing & laying in position machine batched, machine mixed Design Mix M-25 grade cement concrete for reinforced cement concrete work, using cement content as per approved design Mix, including pumping of concrete to site of laying but excluding the cost of centering , shuttering, finishing and reinforcement, including admixtures in recommended proportions as per IS :9103 to accelerate, retard setting of concrete, improve workability without impairing strength and durability as per direction of Engineer-in -charge. (Note :- Cement content considered in this item is @ 330 Kg/cum. Excess/less cement used as per design mix is payble/recoverable seperately). --All works above plinth level upto floor VI level	m3	14.65		
6	Extra for providing richer mixes at all floor levels. Note :- Excess/less cement over the specified cement content used is payable/recoverable seperately. --Providing & laying M-30 grade conrete instead of M-25 grade BMC/RMC. (Note:-Cement content considered in M-30 is @340 kg/cum)	m3	14.65		
7	Providing & fixing Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level. --Thermo- machanically Treated bars	kg	1401.11		
8	Centering & shuttering including strutting, propping etc. and removal of form for --Lintel, beams,plinth beams, girder, bressumers and cantilevers	m2	297.03		
9	Providing & fixing Steel reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding all complete above plinth level --Mild steel and Medium Tensile steel bars	kg	300.00		
10	Providing and applying POLYMER MODIFIED MORTAR(PMM) in proportion of 1(Polymer) : 5(Cement) : 15 (Quartz sand) by weight with water cement ratio of 0.35 including application of bond coat of Krishna Conchem or equivalent using brush in ratio of 1 (Polymer) :1 (Cement) : 0.35 (water) by weight including cleaning of surface with air mixed with water under pressure, and subsequent layer upto 10mm after hardening curing; all complete.(Polymer manufactured by sunanda, pidilite, fosroc, acro- chem, build core or equivalent) all complete as approved & as directed by Engineer.	kg	15000.00		
11	Removing existing corrosion in m.s./ tor steel bars by means of suitable light tapping, wire brushing and applying suitable chemicals viz.'Rusticide', 'Rust converter' and leaving for 24 hours, wash the deposits with water on next day etc. complete as directed.	Litre	15.00		
12	Providing and applying two coats of **Rust preventive coating of IPNET of Krishna** Conchem or equivalent approved make after cleaning the existing surface from	Litre	15.00		

	dust/ loose particles by applying air water under pressure etc complete as directed.				
13	Providing and laying micro-concrete of Polycrete-A or equivalent from approved manufacturer in line and level to match with existing layer, using bonding coat of Sunepoxy-358 (Resin : Hardner mixed in the ratio 1 : 0.5 by weight) or equivalent with existing surface, curing, excluding form work etc. complete as directed (Rate is inclusive of bonding polymer coat).	Kg	5000.00		
14	Providing and applying **Bonding coat** between concrete members like RCC slabs, columns, beams, Chajjas, pardis etc and cement mortar plaster using HACK AID PLAST of M/s. Sunanda Speciality Coatings Pvt. Ltd. or equivalent as per the instructions of manufacturer or Engineer Incharge; including cleaning the concrete surface thoroughly to remove dust, dirt, grime, deshuttering oils and rub down to a clean surface at all heights/ levels and locations and as directed by Engineer Incharge.	m2	50.00		
C	**BRICK WORK**				
15	Providing & laying Brick work with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor VII level in all shapes and sizes in : --Cement mortar 1:4 (1 cement : 4 coarse sand)	m3	60.00		
16	Providing & laying Half brick masonry with common burnt clay F.P.S. (non modular) bricks of class designation 7.5 in superstructure above plinth level up to floor VII level. : --Cement mortar 1:3 (1 cement :3 coarse sand)	m2	110.00		
17	Providing and fixing 200mm thick Siporex concrete block masonry with 1:4 cement sand mortar including curing etc. complete as directed.	m3	5.00		
D	**MARBLE & GRANITE WORK**				
18	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels. (Basic price of Rs. 2000/sq.mt. excluding tax): --Granite of any colour and shade --Area of slab upto 0.50 sqm	m2	5.00		
19	Providing and fixing 18 mm thick gang saw cut, mirror polished, premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels. (Basic price of Rs. 2000/sq.mt. excluding tax): --Granite of any colour and shade: --Area of slab over 0.50 sqm	m2	380.00		

E	WOOD & PVC WORK				
20	Providing & fixing wood work in frames of doors, windows, clerestory windows and other frames, wrought framed and fixed in position with hold fast lugs or with dash fasteners of required dia & length (hold fast lugs or dash fastener shall be paid for separately): --Second class teak wood	m3	0.20		
21	Providing & fixing Gypsum Board on partition and wall with GI screws at every 750mm c/c in vertical and horizontal directions to proper line, level including joints to be finished seamless with 48 mm wide self adhesive fibre tape. Etc. complete as directed.	m2	50.00		
22	Providing and fixing in position 38mm thick solid core water proof marine grade flush door shutters with marine ply as per IS : 710 (water proof quality) 40mm thick and T.W. lipping 38mmx12mm with T.W. beading (Architrave) 6mmx38mm to teakwood frames with approved door closer, door stopper, dead lock, SS finish handle including molding Aluminium grill wherever required finishes with Approved laminated sheet of 1.5mm thick on all sides as detailed drawing and as directed. (Type D01 & D02) (Basic Rate of Laminate of Rs. 490/- Sq.mt.)	m2	6.00		
23	Providing and fixing Fully Glazed Door Shutters with 12mm thick toughened glass fixed on patch fittings of appproved make and as per design and details given by the architect/ including locking arrangement, handles-350mm long, accessories, floor spring make "Dorma" BTS 84/75/approved equivalent as per door weight complete as directed (Type D04)	m2	3.00		
24	Providing and fixing Automatic sliding Door of size 2000mm X 2400mm height,with self cleaning roller, TUV type tested as per DIN 18650, smooth running, power unit 230V AC, Intigrated main switch, ultra modern category 2 control as per DIN EN 954-1, self learning with error self detection, automatic adjustment of hold open time at frequenting & crossing speed, swinelling cover, max. leaf wt. 100kg per leaf, max. clear passage opening 2500mm, drive diamension 190X110mm moving leaf with 12mm thick toughened clear polished glass etc. complete as per manufacture specifications. as directed. (Type D03)	m2	4.80		
25	Supply & fixing in position at all floors anodised of approved shade and colour finished aluminium work for windows, ventilators, louvers with extruded builtup standard sections of Jindal / Aluminax /Hindalco conforming IS: 733 & IS: 1285 fixing with dash fastners of required size, including filling up the gaps at junctions i.e. top, bottom & sides with required EPDM rubber / neoprene / polysulphide sealant etc. Alluminium section shall be smooth, rust free, straight and jointed mechanically wherever required, including cleat angle, alluminium snap beading for glazing / paneling, stainless steel screws all complete as per drawings & manufacturers specification and as directed by Engineer-in-charge.: --Providing and fixing glass panels in windows at all location and heights of following thickness etc. all complete as per drawings & specification and as directed by EIC (Mode of measurement :-Dimension in	m2	340.00		

	length and width of exposed finished surface of glass panel shall be measured sq.m nearest to 0.01): --26 mm thick (nominal) double glass unit with two glasses sealed with primary sealent by using Butyl sealent and secondary sealent by using silicon sealent comprising of the two glass panes of saint Gobain or equivalent make of 6mm thick SKN 165 + 8mm clear HS and separated by a gap of 12 mm by a aluminium spacer are filled with Desicant which absorb moisture present in the air within the unit. The air between the glass is dry which enables lesser heat transfer into the building. Contractor shall submit shop drawings for the same for approval of Architect/EIC etc.complete as directed.				
26	Providing and Fixing double glazed uPVC casement/sliding window / door, made of extruded profiles. Profiles of frames and sash will be mitered cut and fusion welded at all corners, including drilling of holes for fixing hardware and drainage of water etc., making arrangement for fixing of hardware, EPDM gasket, 1.2 ± 0.2 mm thick galvanised steel profile to be inserted in required profile, frame will be fixed to the wall with 8 mm x 100 mm long fasteners, all complete as per direction of Engineer-in-charge. : --Double glazed windows with glass 6mm HS Glass SKN 165 +12mm air gap +8mm HS glass of Saint Gobain or equivalent make, VLT=58%,SHGC Value = 0.32, U-Value.=1.5, int/ext reflection = 16%	m2	230.00		
27	Providing and fixing in position at all floors and levels, UPVC fins of size 150mm length, 50 mm wide & 2/3mm thick @ 200mm C/C of approved design and pattern etc. complete as per manufacturer specifications.	m2	220.00		
28	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Type 3.1 & 3.2 - 100mm wide & 100mm ht	M	620.00		
29	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Type 3.2 - 600mm wide & 200mm ht	M	190.00		
30	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Type 3.3 - 215mm wide & 245mm ht	M	150.00		
31	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint	M	280.00		

	& including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Type 3.3 - 130mm wide & 165mm ht				
32	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Type 2.5 - 900 X 325mm	M	170.00		
33	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Type 2.4 - 500 X 350mm	M	170.00		
34	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Type 2.2 - 550 X 325mm	M	170.00		
35	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Type 2.1 - 500 X 175mm	M	170.00		
36	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Type 2.3 - 700 X 200mm	M	40.00		
37	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Type 2. 6 - 300 X 200mm	M	130.00		
38	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Column - 1150mm X 1650mm X 12.45mt	nos	4.00		

39	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Column - 900mm X 950mm X 12.45mt	nos	4.00		
40	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Column - 950mm X 1650mm X 3.0mt	nos	3.00		
41	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Column - 250mm X 250mm X 2.1mt	nos	12.00		
42	Providing and fixing GRC cornice fixed with MS cleat, dowel plug, screws, & HILTI fasteners with plastic plug, & joints filled with white cement, silica sand sam bond chemical including MS framework with approved paint & including scaffilding and lifting at any height etc. complete as per manufacturer specification. Cornice Sizes are following:-: --Column - 600mm X 475mm X 19mt	nos	4.00		
43	Providing & fixing of Luxalon® Aluminium 50 BD Ventilated Façade / Sun Louver System manufactured by M/s. Hunter Douglas India Pvt. Ltd. of approved colour consisting of panel 50 mm wide x 75mm depth x 0.6mm thick panel length up to 4mtrs coil coated on a continuous paint line double baked and roll formed from enameled corrosion Resistance Aluminum Alloy AA3005 / AA5050 for higher strength and good Roll forming characteristics. Panels shall be mounted in a module of 150 mm on a mullion profile grooved (Slotted Fastening Profile) by means Locking Clips and Pop Rivet. Slotted Fastening Profile shall be fixed at 150 mm from panel ends and at a distance of maximum 1200 mm center to center across the panel span and Slotted Fastening Profile shall be fixed to a suitable sub-structure by means of Square Brackets. etc. complete. --Paint Finish: Panel shall be stove enameled and finished with Luxacote, a patented special three layered coating system (consisting of first a conversion layer of thickness 800-2000mg/sq mtr, a polyurethane basecoat of 16-20 microns, and a special top coat of polyamide particles of 8-12 microns thick to provide excellent abrasion and damage resistance) in a continuous coil coating process of the approved colour on the exposed side and the reverse side with epoxy. Mode of Measurements: Measurements shall be Length and Breadth of the fascia without any deductions for any openings.:	m2	130.00		

44	--Providing & fixing Bison Board on partition and wall with GI screws at every 750mm c/c in vertical and horizontal directions to proper line, level including joints to be finished seamless with 48 mm wide self adhesive fibre tape. Etc. complete as directed.	m2	270.00		
45	Modify the partition/ceiling to fixing the AC unit with necessary all accessories to matching the existing including carting debris away from site. carefully and without collateral damage and clearing the site, disposing debris with all leads lifts complete or as directed. etc. complete as per drawing or as directed.	nos	50.00		
46	Providing and fixing precast cement concrete railing with precast balusters @ 300mm C/C, shape & size as per design, with coping etc. complete as per drawing.	M	65.00		
F	**STEEL WORK**				
47	Providing, fabricating & erecting Structural steel work in single section, fixed with or without connecting plate, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	kg	4944.92		
48	Providing, fabricating & erecting Structural steel work riveted, bolted or welded in built up sections, trusses and framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer all complete.	kg	8500.00		
49	Steel work welded in built up sections/ framed work, including cutting, hoisting, fixing in position and applying a priming coat of approved steel primer using structural steel etc. as required. : --In gratings, frames, guard bar, ladder, railings, brackets, gates and similar works	kg	11000.00		
50	Providing and fixing stainless steel (Grade 316) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners , stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer-in-charge, (for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts, fasteners etc.).	kg	1410.00		
G	**FLOORING**				
51	Providing & laying 52 mm thick cement concrete flooring with concrete hardener topping, under layer 40 mm thick cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix : 2 graded stone aggregate 6 mm nominal size) by volume, hardening compound mixed @ 2 litre per 50 kg of cement or as per manufacturer's specifications. This includes cost of cement slurry, but excluding the cost of nosing of steps etc. complete.	m2	180.00		
52	Providing & fixing Kota stone slab flooring over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of	m2	170.00		

	the slab, including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) : --25 mm thick				
53	Providing & laying Crazy ceramic tile flooring, with under layer 12 mm thick cement mortar 1:4 (1 cement: 4 coarse sand), with joints not exceeding 5 mm, including filling the gaps with ordinary cement mixture & mixing with synthetic polyester fibre, triangular in shape having specific gravity of 1.34 to 1.40, cross section size ranging from 10 to 40 micron & length upto 6 mm , mixing fibre @ 125 grams per 50 kg of cement in cement mortar, including providing and mixing water proofing material in mortar @ 1 kg per 50 kg of cement , all complete as per direction of Engineer-in-charge. (Basic rate of tiles of Rs. 400/-Sq.mt)	m2	670.00		
54	Providing and laying Vitrified tiles in different sizes (thickness to be specified by the manufacturer), with water absorption less than 0.08% and conforming to IS: 15622, of approved brand & manufacturer, in all colours and shade, in skirting, riser of steps, laid with cement based high polymer modified quick set tile adhesive (water based) conforming to IS: 15477, in average 6 mm thickness, including grouting of joints (Payment for grouting of joints to be made separately). (Base price of Rs. 1200/- Sq.mt. excluding taxes) --Size of Tile 600x600 mm	m2	25.00		
55	Grouting the joints of flooring tiles having joints of 3 mm width, using epoxy grout mix of 0.70 kg of organic coated filler of desired shade (0.10 kg of hardener and 0.20 kg of resin per kg), including filling / grouting and finishing complete as per direction of Engineer-in-charge. --Size of Tile 600x600 mm	m2	25.00		
56	Providing and laying machine cut, mirror polished, Italian Marble stone flooring laid in required pattern in linear portion of the building all complete as per architectural drawings, with 18 mm thick stone slab laid over 20 mm (average) thick base of cement mortar 1:4 (1 cement : 4 coarse sand) laid and jointed with white cement slurry @ 4.4 kg/sqm including pointing with white cement slurry admixed with pigment to match the marble shade including rubbing, curing and polishing etc. all complete as specified and as directed by the Engineer-in-Charge. a. 18 mm thick Italian Marble stone slab,Perlato, Rosso verona, Fire Red or Dark Emperadore etc. (Base price of Italian Marbel is Rs. 4500/- Sq.mt. excluding taxes)	m2	10.00		
57	Providing and fixing sand Stone work (machine cut edges) for wall lining etc. (veneer work) upto 10 metre height, backing filled with a grout of average 12 mm thick cement mortar 1:3 (1 cement : 3 coarse sand) including pointing in white cement mortar 1:2 (1 white cement : 2 stone dust) with an admixture of pigment matching the stone shade.	m2	120.00		
58	Providing and fixing Composite marble of white shade for flooring & Cladding having thickness upto 18mm in required size, shade ,size as per drawing, laid over 20mm thick cement mortar 1:4 & 15mm thick backing coat plaster of CM 1:4, , cleaning all as per specifications and as directed. (Basic cost of composite	m2	25.00		

	marble/ Agglomerate Rs. 2500/- per sq.mt.excluding taxes)				
59	Providing and fixing Wet cladding of size 1000 X 3000 X 3mm thick Techlam porcelain sheet with matt & slip resistant finish, Techlam tile fixed with adhesive of MapaeiKeraflexi maxi s1, latcrete, kerakol or equivalent make. 2mm joints finished with epoxy grout of Mapaei or laticrete make, etc. complete as per manufacturer specifications.(Base price of Techlam porcelain sheet is Rs. 3600/-per SqM. excluding taxes)	m2	370.00		
60	Providing and fixing Dry cladding of size 1000 X 3000 X 3mm thick Techlam porcelain sheet with matt & slip resistant finish, framework with aluminium channel of 40X50X2 to 3mm thick @ 500mm C/C with powder coated angle of size 5X25X2mm thick fixed with anchor fastener, & SS self tapping screws.tile should be clean & structural silicon is applied & gaps between the tiles should be sealed with weather silicon etc. complete as per manufacturer specifications.(Base price of Techlam porcelain sheet is Rs. 3600/-per SqM. excliding taxes)	m2	50.00		
H	**ROOFING**				
61	Providing & applying 10 mm thick plaster of Paris (gypsum anhydrous) ceiling up to a height of 5m above floor level, over first class kail wood strips 25x6 mm with 10 mm gap in between and reinforced with rabbit wire mesh fixed to wooden frame (frame work to be paid separately) : --Flat surfaces	m2	225.00		
62	Providing & applying upto 8 mm thick plaster of Paris (gypsum anhydrous) ceiling up to a height of 5m above floor level, over first class kail wood strips 25x6 mm with 10 mm gap in between and reinforced with rabbit wire mesh fixed to wooden frame (frame work to be paid separately) :	m2	25.00		
63	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sections, power pressed from M.S. sheets and galvanized with zinc coating of 120 gms/sqm (both side inclusive) as per IS : 277 and consisting of angle cleats of size 25 mm wide x 1.6 mm thick with flanges of 27 mm and 37mm, at 1200 mm centre to centre, one flange fixed to the ceiling with dash fastener 12.5 mm dia x 50mm long with 6mm dia bolts, other flange of cleat fixed to the angle hangers of 25x10x0.50 mm of required length with nuts & bolts of required size and other end of angle hanger fixed with intermediate G.I. channels 45x15x0.9 mm running at the spacing of 1200 mm centre to centre, to which the ceiling section 0.5 mm thick bottom: wedge of 80 mm with tapered flanges of 26 mm each having lips of 10.5 mm, at 450 mm centre to centre, shall be fixed in a direction perpendicular to G.I. intermediate channel with connecting clips made out of 2.64 mm dia x 230 mm long G.I. wire at every junction, including fixing perimeter channels 0.5 mm thick 27 mm high having flanges of 20 mm and 30 mm long, the perimeter of ceiling fixed to wall/partition with the help of rawl plugs at 450 mm centre, with 25mm long dry wall screws @ 230 mm interval, including fixing of gypsum board to ceiling section and perimeter channel	m2	270.00		

	with the help of dry wall screws of size 3.5 x 25 mm at 230 mm c/c, including jointing and finishing to a flush finish of: tapered and square edges of the board with recommended jointing compound , jointing tapes , finishing with jointing compound in 3 layers covering upto 150 mm on both sides of joint and two coats of primer suitable for board, all as per manufacturer's specification and also including the cost of making openings for light fittings, grills, diffusers, cutouts made with frame of perimeter channels suitably fixed, all complete as per drawings, specification and direction of the Engineer in Charge but excluding the cost of painting with :: --12.5 mm thick tapered edge gypsum plain board conforming to IS: 2095- Part I				
64	Modular False Ceiling : Armstrong Modular ceiling grid(hot dipped galvanized steel section) shall have 595 x 595 mm x 15mm fine fissured tiles(lay-in type) in true horizontal level using a 15mm T bar section suspended from the ceiling slab using 2 mm wire at every 1200mm interval. And shall have fire rating of 60 minutes as per BS 476/23 of 1987, Noise reduction Coefficient (NRC) of 0.50-0.60, to resist temperature and humidity conditions up to 40 degree (104deg. F) and humidity of 99% RH.	m2	460.00		
65	Providing and fixing in position UV resistant X-structure/multiwall/multicell Polycarbonate sheet (Lexan Thermoclear of GE Plastics or equivalent 1200 mm width and max length upto 12.0 m,including UV resistant coating on both sides, providing specially designed serrated polycarbonate clamping section at all longitudinal joints (parallel to span) on supporting member, fixing to box purlins/runner using specially designed stainless steel clamps and fasteners SS304 grade,(or) specially designed anodised aluminium clamping section with EPDM/Neo prene gaskets to be located on supporting member, the fasteners to be fixed on pre drilled or self drilled hole, all fixing to be completely water tight. etc. complete as per manufacturer specifications. (Purlins, runners are paid seperately under the Structural steel item)	m2	110.00		
J	**FINISHING**				
66	Providing & applying 12 mm cement plaster of mix : : --1:4 (1 cement: 4 fine sand)	m2	225.00		
67	Providing & applying 18 mm cement plaster in two coats under layer 12 mm thick cement plaster 1:5 (1 cement: 5 coarse sand) and a top layer 6 mm thick cement plaster 1:3 (1 cement : 3 coarse sand) finished rough with sponge.	m2	3560.00		
68	Providing & applying 6 mm cement plaster of mix : --1:3 (1 cement : 3 fine sand)	m2	50.00		
69	Providing & applying textured exterior paint of required shade : --New work (Two or more coats applied @ 3.28 ltr/10 sqm) over and including priming coat of exterior primer applied @ 2.20kg/10 sqm	m2	200.00		
70	Providing & applying Acrylic Smooth exterior paint of required shade : --New work (Two or more coat applied @ 1.67 ltr/10	m2	25.00		

	sqm over and including priming coat of exterior primer applied @ 2.20 kg/ 10 sqm)				
71	Providing and applying two coat of approved primer of Asian paints / ICI and two coats of Ultima apex protek of Asian paints or Weather Shield Max of ICI (as per manufacturer's specification) to the entire external surface of the building after scrapping, brushing, cleaning, washing the surface, and including curing, filling the cracks with filler materials, leveling etc., all complete. (Mode of measurement actual surface area painted will be considered i.e. length x height less all opening and windows)	m2	4760.00		
72	Providing and applying two coats of fire retardant paint on cleaned wood / ply surface @ 3.5 sqm per litre per coat including preparation of base surface as per recommendations of manufacturer to make the surface fire retardant.	m2	142.03		
73	Providing & applying Epoxy paint (two or more coats) at all locations prepared and applied as per manufacturer's specifications including appropriate priming coat, preparation of surface, etc. complete.: --On steel work	m2	142.03		
74	Providing & applying Wall painting with acrylic emulsion paint of approved brand and manufacture to give an even shade : --Two or more coats on new work	m2	270.00		
75	Providing & applying Painting with synthetic enamel paint of approved brand and manufacture of required colour to give an even shade : --Two or more coats on new work over an under coat of suitable shade with ordinary paint of approved brand and manufacture	m2	25.00		
76	Providing & applying French spirit polishing : --Two or more coats on new works including a coat of wood filler	m2	10.00		
77	Providing & applying Polishing on wood work with ready mixed wax polish of approved brand and manufacture : --New/old work	m2	10.00		
78	Providing & applying Painting with aluminium paint of approved brand and manufacture to give an even shade .: --Two or more coats on new work	m2	10.00		
79	Providing and carrying out Pest-Control for termites, pests, white ants with final application of the chemical after completion of carpentry work. As per IS Code 6313 Part II or revisions thereof.including drilling holes at skirting level to allow the chemical to seep into walls, mixing chemical with the flooring mortar, contractor to give a certificate of Pest Treatment at the end of the job.(Measurement as per carpet area)	m2	4810.00		
80	Providing sand face plaster externally with groove in two coats using approved screened sand in all positions, including providing base coat of 15mm thick in cement mortar 1:4 mixing approved water proofing compound at the rate of 1 kilogramme / 50 kg of cement and curing the same for not less than two days and keeping the surface of base coat rough to receive the sand faced treatment 8mm thick in cement mortar 1:4 and finishing the surface by taking out grains and curing for 14 days including preparing the surface, watering	m2	2240.00		

	including providing & fixing 20 guage GI chicken mesh @ 150mm wide to junction of concrete & masonary, including preparing jambs,sills, grooves-30mm high, 15mm deep & 250mm C/C etc. ,including, pattas, wattas, rounding corners etc. complete.				
K	**REPAIRS TO BUILDING**				
81	Providing and fixing double scaffolding system (cup lock type) on the exterior side, up to seven story height made with 40 mm dia M.S. tube 1.5 m centre to centre, horizontal & vertical tubes joining with cup & lock system with M.S. tubes, M.S. tube challies, M.S. clamps and M.S. staircase system in the scaffolding for working platform etc. and maintaining it in a serviceable condition for the required duration as approved and removing it there after .The scaffolding system shall be stiffened with bracings, runners, connection with the building etc wherever required for inspection of work at required locations with essential safety features for the workmen etc. complete as per directions and approval of Engineerin-charge .The elevational area of the scaffolding shall be measured for payment purpose .The payment will be made once irrespective of duration of scaffolding.	m2	3710.00		
82	Providing and erecting bamboo's double scaffolding of required height, width and strength by sides of building for platform to enable departmental workmen to carry out repairs to building at any level from ground to any floor height as directed including removing the same and clearing the site..The payment will be made once irrespective of duration of scaffolding.	m2	25.00		
L	**DISMANTLING & DEMOLISHING**				
83	Demolishing R.C.C. work manually/ by mechanical means including cutting, stacking of steel bars and disposal of unserviceable material within 50 metres lead as per direction of Engineer - in- charge	m3	5.00		
84	Demolishing brick work manually/ by mechanical means including stacking of serviceable material and disposal of unserviceable material within 50 metres lead as per direction of Engineer-in-charge. --In cement mortar	m3	30.00		
85	Removing existing door or windows with frame and shutters and making good etc. to the existing surface.	nos	125.00		
86	Dismantling wood work in frames, trusses, purlins and rafters up to 10 metres span and 5 metres height including stacking the material within 50 metres lead : --Any size of wood	m3	1.00		
87	Dismantling steel work in built up sections in angles, tees, flats and channels including all gusset plates, bolts, nuts, cutting rivets, welding etc. including dismembering and stacking within 50metres lead. :-- Single/built up section	kg	2240.00		
88	Dismantling tile work in floors and roofs laid in cement mortar including stacking material within 50 metres lead. : --For thickness of tiles upto to 25 mm	m2	70.00		
89	Dismantling roofing including ridges, hips, valleys and gutters etc., and stacking the material within 50 metres lead of : : --Any type of sheet Sheet	m2	40.00		

90	Dismantling carefully existing pipeline of any dia,any material along with all its fittings viz. bib cock, collars, elbow etc and stacking at site.	M	500.00		
91	Dismantling old plaster of any thickness or skirting raking out joints and cleaning the surface for plaster including disposal of rubbish to the dumping ground within 50 metres lead	m2	3560.00		
92	Demolishing cement concrete manually/ by mechanical means including disposal of material within 50 metres lead as per direction of Engineer - in - charge.: --Nominal concrete 1:3:6 or richer mix (i/c equivalent design mix)	m3	25.00		
93	Dismantling precast concrete or stone slabs in walls, partition walls etc. including stacking within 50 metres lead : --Thickness above 40 mm up to 75 mm	m2	120.00		
94	Providing & fixing the Safety Net with 12mm Border rope, 4mm knotted, 1mm fishnet size -15mm X 15mm mesh to prevent the debris falling on ground /walkway etc. as per the direction of Engineer in charge.	m2	683.63		
95	Dismantling tile work in floors and roofs laid in cement mortar including stacking material within 50 metres lead.: --For thickness of tiles above 25 mm and up to 40 mm	m2	700.00		
96	Removing the waterproofing treatment and removing down the debris of the existing waterproofing treatment from the terrace by any means without causing dust nuisance and where directed including cleaning the site & carting away the same outside MDL to Municipal dumpig yard complete as directed.	m2	700.00		
97	Disposal of building rubbish / malba / similar unserviceable, dismantled or waste materials by mechanical means, including loading, transporting, unloading to approved unicipal dumping ground or as approved by Engineer-in-charge, beyond 50 m initial lead, for all leads including all lifts involved.	m3	200.00		
98	Covering the window with 6mm thick commercial plywood and removing after completion of work etc. complete as directed.	m2	560.00		
99	Dismantling aluminium/ Gypsum partitions, doors, windows, fixed glazing and false ceiling including disposal of unserviceable surplus material and stacking of serviceable material with in MDL Premises as directed by Engineer-in-charge.	m2	840.00		
100	Cutting holes up to 30x30 cm in walls including making good the same:: --With common burnt clay F.P.S. (non modular) bricks	nos	25.00		
M	**ALUMINIUM WORK**				
101	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per	kg	25.00		

	architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) : --Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15)				
102	Providing and fixing aluminium work for doors, windows, ventilators and partitions with extruded built up standard tubular sections/ appropriate Z sections and other sections of approved make conforming to IS: 733 and IS: 1285, fixing with dash fasteners of required dia and size, including necessary filling up the gaps at junctions, i.e. at top, bottom and sides with required EPDM rubber/ neoprene gasket etc. Aluminium sections shall be smooth, rust free, straight, mitred and jointed mechanically wherever required including cleat angle, Aluminium snap beading for glazing / paneling, C.P. brass / stainless steel screws, all complete as per architectural drawings and the directions of Engineer-in-charge. (Glazing, paneling and dash fasteners to be paid for separately) : For shutters of doors, windows & ventilators including providing and fixing hinges/ pivots and making provision for fixing of fittings wherever required including the cost of EPDM rubber / neoprene gasket required (Fittings shall be paid for separately) : --Anodised aluminium (anodised transparent or dyed to required shade according to IS: 1868, Minimum anodic coating of grade AC 15)	kg	25.00		
103	Providing and fixing glazing in aluminium door, window, ventilator shutters and partitions etc. with EPDM rubber / neoprene gasket etc. complete as per the architectural drawings and the directions of engineer-in-charge . (Cost of aluminium snap beading shall be paid in basic item): --With float glass panes of 5.50 mm thickness	m2	5.00		
104	Providing and pasting 3M or equivalent approved make frosted film on glazed portion of doors and partitions at locations as per detailed architectural drawing and as directed by engineer in charge	m2	5.00		
N	**WATER PROOFING**				
105	Providing and laying integral cement based water proofing treatment including preparation of surface as required for treatment of roofs, balconies, terraces etc consisting of following operations: a) Applying a slurry coat of neat cement using 2.75 kg/sqm of cement admixed with water proofing compound conforming to IS. 2645 and approved by Engineer-in-charge over the RCC slab including adjoining walls upto 300 mm height including cleaning the surface before treatment. b) Laying brick bats with mortar using broken bricks/brick bats 25 mm to 115 mm size with 50% of cement mortar 1:5 (1 cement : 5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge over 20 mm thick layer of cement mortar of mix 1:5 (1 cement :5 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge to required slope and treating similarly the adjoining walls	m2	700.00		

	upto 300 mm height including rounding of junctions of walls and slabs c) After two days of proper curing applying a second coat of cement slurry using 2.75 kg/ sqm of cement admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge. d) Finishing the surface with 20 mm thick jointless cement mortar of mix 1:4 (1 cement :4 coarse sand) admixed with water proofing compound conforming to IS : 2645 and approved by Engineer-in-charge including laying glass fibre cloth of approved quality in top layer of plaster and finally finishing the surface with trowel with neat cement slurry and making pattern of 300x300 mm square 3 mm deep. e) The whole terrace so finished shall be flooded with water for a minimum period of two weeks for curing and for final test. All above operations to be done in order and as directed and specified by the Engineer-in-Charge : --With average thickness of 120 mm and minimum thickness at khurra as 65 mm.				
O	**GENERAL ITEMS**				
106	Providing and fixing 12mm thick Saint Gobian toughened clear glass or equivalent approved make in partition fixed with heavy duty Stainless Steel Point fittings including sealing of edges, if required as per the detailed architectural drawing.	m2	20.00		
107	Providing and planting lawn as specified including excavation of the ground upto 30 cms deep ,removing and conveying unwanted stuff to a distance of 50mts radius as directed and providing & filling the ground with fresh garden soil manure at 3:1 proportion to a required height of 30cms and mixing garden soil manure thoroughly well, leveling, as directed, watering previous night, planting required variety of lawn grass as directed ,as per specification and maintaining till well established by watering, weeding, stirring of soil replacing of casualty's etc. complete including the cost of manure and mixing with good quality of earth and manure as directed.	m2	34.85		
108	Providing and fixing LOGO of size approx. 3mt. dia. made up of 2mm thick aluminium base plate for round circle with colour coat as per the creative with backlite glow. Letters L& D English and Marathi will be in 3D letters with inside LED with front colour coat as per the colour, rest logo design in will be colour coat Electronic material detail: Samsung LED with 3 year warranty, water proof power supply with 2 year warranty & timer with 1 year warranty.	nos	2.00		
109	Providing and fixing SS jali of grade 316 including fixing with necessary hardware etc. complete.	m2	10.00		
P	**PLUMBING WORKS**				
110	Providing and fixing soil, waste and vet pipes Centrifugally cast(spun)iron socket & spigot (S&S) pipe as per IS:3989: --100 mm dia.	M	300.00		
111	Providing and laying Double Flanged (screwed / welded) Centrifugally (Spun) Cast Iron, Class B (IS : 1536) : --150 mm dia.	M	20.00		
112	Providing and laying Double Flanged (screwed / welded) Centrifugally (Spun) Cast Iron, Class B (IS : 1536) : --100 mm dia.	M	10.00		

113	Supply, laying, testing & commissioning of Heavy quality C. I. roof drains with bell mouth, grating, sealing and setting in CC M - 150 applying three coats of anti corrosive Bitumastic paint etc. complete and as directed.: --230mm dia bell mouth for 150mm dia down take	nos	8.00		
114	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg), R.C.C. top slab with 1:2:4 mix (1 cement: 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand), finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design: --Inside dimensions 600x850 and 45cm deep for pipeline with three or more inlets --With common burnt clay F.P.S (non modular) bricks of class designation 7.5 :	nos	2.00		
115	Constructing brick masonry chamber for underground C.I. inspection chamber and bends with bricks in cement mortar 1:4 (1 cement : 4 coarse sand) C.I. cover with frame (light duty) 455x610 mm internal dimensions, total weight of cover with frame to be not less than 38 kg (weight of cover 23 kg and weight of frame 15 kg), R.C.C. top slab with 1:2:4 mix (1 cement: 2 coarse sand : 4 graded stone aggregate 20 mm nominal size), foundation concrete 1:5:10 (1 cement : 5 fine sand : 10 graded stone aggregate 40 mm nominal size), inside plastering 12 mm thick with cement mortar 1:3 (1 cement : 3 coarse sand), finished smooth with a floating coat of neat cement on walls and bed concrete etc. complete as per standard design: --Inside dimensions 455x610 and 45cm deep for pipeline with three or more inlets -- With common burnt clay F.P.S (non modular) bricks of class designation 7.5 :	nos	2.00		
116	Providing and laying non-pressure NP-2 class RCC pipes of approved quality with collars, jointed with stiff cement mortar (1:1) including providing tight packing of tarred spun yarn, CC (1:3:6) in bedding as specified under IS:1742/1960, form work, handling, cutting to required lengths, curing etc. complete as specified and as directed but exclusive of excavation.: --300 mm dia	M	5.00		
117	Providing and laying non-pressure NP-2 class RCC pipes of approved quality with collars, jointed with stiff cement mortar (1:1) including providing tight packing of tarred spun yarn, CC (1:3:6) in bedding as specified under IS:1742/1960, form work, handling, cutting to required lengths, curing etc. complete as specified and as directed but exclusive of excavation.:	M	5.00		

	--250 mm dia				
118	Providing and fixing square-mouth S.W. gully trap class SP-1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame o f 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design: 100x100 mm size P type: --With common burnt clay F.P.S. (non modular) bricks of class designation 7.5	Nos	1.00		
119	Providing and fixing square-mouth S.W. gully trap class SP-1 complete with C.I. grating brick masonry chamber with water tight C.I. cover with frame o f 300 x300 mm size (inside) the weight of cover to be not less than 4.50 kg and frame to be not less than 2.70 kg as per standard design: 100x100 mm size P type: --With Sewer bricks conforming to IS : 4885	Nos	1.00		
120	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes. Soil, Waste, Vent Pipes --110 mm dia pipe.	M	10.00		
121	Providing and fixing on wall face unplasticised Rigid PVC rain water pipes conforming to IS : 13592 Type A, including jointing with seal ring conforming to IS : 5382, leaving 10 mm gap for thermal expansion, (i) Single socketed pipes. --75 mm dia pipe.	M	10.00		
122	Providing and fixing new PVC cowl to sanitary line including scaffolding/ Jhulla etc. complete as directed. --110 mm dia	nos	8.00		
123	Providing and fixing new PVC cowl to sanitary line including scaffolding/ Jhulla etc. complete as directed. --90 mm dia	nos	4.00		
124	Providing and fixing PVC pipe in chases including clamps and necessary fittings to match pipe and making good the chases of following dia. --40 mm internal dia PVC pipe	M	10.00		
125	Providing and fixing PVC pipe in chases including clamps and necessary fittings to match pipe and making good the chases of following dia. --32 mm internal dia PVC pipe	M	10.00		
126	Providing and fixing 110 x 90mm PVC deep seal nahani traps upto 450 mm long arm, PVC heavy grating with or without vent connection as required.	nos	4.00		
127	Providing, laying and jointing glazed stoneware pipes class SP-1 with stiff mixture of cement mortar in the proportion of 1:1 (1 cement : 1 fine sand) including testing of joints etc. complete : --150 mm dia	M	5.00		
II	**Electrical Work**				
A	**POINT WIRING & CONDUITING WORK**				
	Note for Item no 128 & 129				

	a) All points wiring, circuit wiring, sub mains wiring shall be done using rigid FR PVC CONDUITS as required, conduits of minimum 2 mm thickness and shall comply with IS 2509 of 1973 or amendments there of and FIA approval. b) All switch boards under the point wiring shall be the standard boxes available and the same shall be suitable for concealed work/surface mounted work as per site. The boxes should be of Electro Zinc Plated/pvc as per the Manufactures standard practice as per site and should be suitable to accommodate number of control switches fan regulators, sockets, etc. as indicated in drawings. c) The entire wiring shall have continuous 2.5 sq.mm. approved make FR Copper conductor earth wire for earth continuity having Green colour in 660/1100 volts grade. d) The point wiring shall comply to IS 732. e) The entire work has to be carried out under the direct supervision of PMC/Consultant. f) All materials under this schedule shall deemed to be included by the Contractor in his scope. g) The entire work to be carried out as per the specifications laid down in the tenders, approved drawings, and as per final directions of PMC/Consultant/Architects.				
	h) The point wiring shall include wiring of light/fan outlet of any length from distribution board via switch or to the point and including providing circuit wiring, in minimum 25 mm dia PVC Conduit of 2 mm and using minimum 2.5 sq.mm FR Copper Conductor wires having Uniley bunching Class 5 Construction and having 99.99% Purity Copper and of approved make for Circuit and Point wiring and of 1100 Volts Grade and 2.5 sq.mm Yellow/Green Colour Copper wire for Earthing in 1100 Volts grade. All the FR wires should be of approved make. i) The entire work of the point wiring may be split into two parts i.e. partially to be laid on MS angle brackets ceiling supported or through existing floorings. It is understood that the bidder have included all the costs towards chasing the floors, removing the debris and redoing the flooring using cement mortar. All such costs shall be deemed to have been included. j) Providing point wiring for following light points using 2 x 2.5 sq.mm. FR copper conductor wires of approved make in 25 mm dia MMS PVC conduits as required, of approved make with necessary junction boxes/pull boxes complete with all accessories and continuous earthing up to fixtures and MCB DB using 1 No. 2.5 sq.mm. FR green colour copper earth wire of approved make as required and as per final direction and approval of the Consultant.				
128	Point wiring for light/fan/bell in 20 mm rigid PVC conduit with 1.0 sq.mm FRLS grade Copper wire with flush type switch and required accessaries as per specification No: WG-PW/SW and Note above	Nos	40.0		
129	Supplying&erectingmainswith2x2.5sq.mm.andearthwire 1.5sq.mmFRLSPVCcopperwireinrigidPVC conduit min.20mm dia. as per specification No: WG-MA/PC,	M	400.0		

	para no. 1.4.1 and Note above				
130	Providing wiring for 6/16 Amps. approved make switched socket outlet independently mounted using 3 Core x 2.5 Sq.mm FR Copper Conductor flexible wires for the first point and 3 Core x 2.5 sq. mm Copper conductor FR wires to 5 Pin Socket outlet in under floor race ways or extending the point using 25 mm dia 2 mm wall thickness PVC conduits of approved make with suitable sized manufactures standard electro plated boxes near the point. The rate shall also include supply and installation of 1 Nos, 6/16 Amps., 5 Pin Multistandard type Socket outlet, 1 Nos, 16 Amps., single pole modular type switch and necessary face plate and GI back box with interconnections all complete as required and as per final approval of the Consultant. **(4 such points shall be looped together and called as a Set, for Split type AC)**	Set	45.0		
131	Providing wiring for 6/16 Amps. switched socket outlet independently mounted using 3 Core x 2.5 Sq.mm FR Copper Conductor flexible wires for the first point and 3 Core x 2.5 sq. mm Copper conductor FR wires to 5 Pin Socket outlet in under floor race ways or extending the point using 25 mm dia 2 mm wall thickness PVC conduits of approved make with suitable sized manufactures standard electro plated boxes near the point. The rate shall also include supply and installation of 1 Nos, 6/16 Amps., 5 Pin Multistandard type Socket outlet, 1 Nos, 16 Amps., single pole modular type switch and necessary face plate and GI back box with interconnections all complete as required and as per final approval of the Consultant. **(for Individual Cassete A.C units)**	Nos	10.0		
B	**LIGHT FIXTURES & FAN FITTINGS**				
132	Supplying and erecting fresh air cum Exhaust fan of light duty 250 V A.C. 50 cycles 300mm. 1400 RPM rust proof body & blades, wire mesh, duly erected in an approved manner and marking Sr. No. an date of erection.	Nos.	30.0		
133	Extra for fixing the louvers/ shutters complete with frame for a exhaust fan of all sizes.	Nos.	30.0		
134	Supplying,Installation, testing and commissioning 25W LED DOWNLIGHTER, recessed in ceiling / surface wall mounted type. (IP Rating = IP 67)	Nos	6.0		
135	Supplying,Installation, testing and commissioning 36W LED UPLIGHTER, recessed in ceiling / surface Wall mounted type. (IP Rating = 67)	Nos	10.0		
136	Supplying,Installation, testing and commissioning 12W LED Strip Light.(IP Rating = 65)	M	200.0		
137	Supplying,Installation, testing and commissioning 10W LED BOLLARD LIGHT.(IP Rating = 64)	Nos	10.0		
C	**SWITCHGEAR : DISTRIBUTION BOARDS**				
138	Supplying & erecting triple pole and neutral distribution board (TPNDB) with door surface/ flush mounted suitable for 3 Pole MCCB as Incommer & outgoing SP MCB (12 Poles) or TP MCB of **4 ways** (12 Poles) on iron frame. (Vertical Busbar type) as per specification no. SW-SWR/MCBDB1	Nos	1.0		
139	Supplying & erecting triple pole and neutral distribution board (TPNDB) with door surface/ flush mounted	Nos	1.0		

	suitable for 3 Pole MCCB as Incommer & outgoing SP MCB (24 Poles) or TP MCB of **8 ways** (24 Poles) , on iron frame. (Vertical Busbar type) as per specification No. SW-SWR/MCBDB1				
140	Supplying, erecting & marking TPN MCB 40A to 63A, Cseries in provided distribution board as per specification No. SW-SWR/MCB	Nos	1.0		
141	Supplying, erecting & marking SPMCB 6A to 32A, B-series (for lighting) in provided distribution board as per specification No. SW-SWR/MCB	Nos	24.0		
142	Providing, erecting & commissioning RCCB only of electro magnetic type with 30/100/300 mA sensitivity and having capacity of 16/25 A. 2 pole complete as per specification No. SW-RCCB/RCCB	Nos	3.0		
D	**MV / LV CABLING & ITS ERMINATIONS(PRIMECAB / KEI/RR KABEL)**				
143	SITC of following sizes of 1.1 KV grade XLPE / PVC insulated Armored Copper/ Aluminum conductor cables laid over MS supports cable racks/trays or fixing on walls including clamping the cable to supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as re & quired. For more details read technical spec no. 8 & refer PWD 2013-2014 --Supplying, erecting & terminating XLPE armoured cable 3½ core 240 sq mm aluminium conductor with continuous 12.97 sq mm (8 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe in an approved manner.	M	600.0		
144	SITC of following sizes of 1.1 KV grade XLPE / PVC insulated Armored Copper/ Aluminum conductor cables laid over MS supports cable racks/trays or fixing on walls including clamping the cable to supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as re & quired. For more details read technical spec no. 8 & refer PWD 2013-2014 --Supplying, erecting & terminating PVC armoured cable 3½ core 150 sq mm aluminium conductor with continuous 12.97 sq mm (8 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/AL	M	60.0		
145	SITC of following sizes of 1.1 KV grade XLPE / PVC insulated Armored Copper/ Aluminum conductor cables laid over MS supports cable racks/trays or fixing on walls including clamping the cable to supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as re & quired. For more details read technical spec no. 8 & refer PWD 2013-2014 --Supplying, erecting & terminating PVC armoured cable 4 core 10 sq mm copper conductor continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/CU	M	300.0		
146	SITC of following sizes of 1.1 KV grade XLPE / PVC insulated Armored Copper/ Aluminum conductor cables laid over MS supports cable racks/trays or fixing on	M	100.0		

	walls including clamping the cable to supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as re & quired. For more details read technical spec no. 8 & refer PWD 2013-2014 --Supplying, erecting & terminating PVC armoured cable 4 core 6 sq mm copper conductor continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/CU				
147	SITC of following sizes of 1.1 KV grade XLPE / PVC insulated Armored Copper/ Aluminum conductor cables laid over MS supports cable racks/trays or fixing on walls including clamping the cable to supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as re & quired. For more details read technical spec no. 8 & refer PWD 2013-2014 --Supplying, erecting & terminating PVC armoured cable 4 core 4 sq mm copper conductor continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/CU	M	25.0		
148	SITC of following sizes of 1.1 KV grade XLPE / PVC insulated Armored Copper/ Aluminum conductor cables laid over MS supports cable racks/trays or fixing on walls including clamping the cable to supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as re & quired. For more details read technical spec no. 8 & refer PWD 2013-2014 --Supplying, erecting & terminating PVC armoured cable 3 core 2.5 sq mm copper conductor continuous 5.48 sq mm (12 SWG) G.I. earth wire complete erected with glands & lugs, on wall/ trusses/pole or laid in provided trench/ pipe as per specification no. CB-LT/CU	M	50.0		
149	SITC of following sizes of 1.1 KV grade XLPE / PVC insulated Armored Copper/ Aluminum conductor cables laid over MS supports cable racks/trays or fixing on walls including clamping the cable to supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as re & quired. For more details read technical spec no. 8 & refer PWD 2013-2014 --Providing & erecting Hot deeped Galvanised Perforated type Cable tray manufactured from 16 swg (1.6 mm thick) GI sheet of 300 mm width & 75 mm height complete with necessary coupler plates & hardware in approved manner	M	300.0		
150	SITC of following sizes of 1.1 KV grade XLPE / PVC insulated Armored Copper/ Aluminum conductor cables laid over MS supports cable racks/trays or fixing on walls including clamping the cable to supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as re & quired. For more details read technical spec no. 8 & refer PWD 2013-2014 --Providing & erecting Hot deeped Galvanised Perforated type Cable tray manufactured from 16 swg (1.6 mm thick) GI sheet of 150 mm width & 75 mm height	M	50.0		

	complete with necessary coupler plates & hardware in approved manner				
151	SITC of following sizes of 1.1 KV grade XLPE / PVC insulated Armored Copper/ Aluminum conductor cables laid over MS supports cable racks/trays or fixing on walls including clamping the cable to supports cable racks or fixing on walls including clamping the cable to supports in an approved manner as re & quired. For more details read technical spec no. 8 & refer PWD 2013-2014 --Supplying & erecting I.S.I. mark Rigid P.V.C. conduit 25 mm. dia. with necessary accessories in wall/floor with chiselling appropriately as per specification No: WG-MA/CC, para no. 1.2.	M	100.0		
E	**LT PANELS (legrand TPN MCCB with Encloser)**				
152	**VRV panel (IP Rating = IP 65)** **a. Incomer :** 1 No., of 630 Amps., Four Pole, Microprocessor based Moulded Case Circuit Breaker with built in over-current, short circuit and earth fault releases. Icu=Ics=36 kA=1sec **b.Metering Section** :1 No., CT Operated load manager of approved make. The Load manager should have Ammeter, Voltmeter, kWH, kVAR, Power Factor & Frequency meter. **c.Indication Section For Incoming Section :** 3 Nos., Phase Indicating lamps, Led type of approved make. 3 Nos., One Red and One Green and One Amber Led type lamps for indicating MCCB is in `ON' or `OFF' or 'TRIP' position. **d.Current Transformers For Incoming Section** :3 Nos. of 630/5 Amps Cast Resin type Current Transformers, having 15 VA burden and Class-1 accuracy for metering purpose. **e. Busbar** : 630 Amps uniformly rated, continuous duty, 415 V AC, 3 Phase and Neutral Copper Bus-bars having SC withstand capacity of 36 kA for 1 sec, with colour coded heat shrink sleeves supported on SMC type grip supports. The Horizontal / Vertical sections of the busbars should all be uniformly rated for 630 Amps. **f. Outgoings :** 400A,FP, MCCB,25kA- 2 Nos. 63A,FP, MCB,10kA - 10 Nos. 40A,FP, MCB,10kA - 1 Nos.	Nos	1.00		
153	**APFC Panel : 100 kVAR (IP Rating = IP 65)** **a. Incomer :**1 No., of 400 Amps., Four Pole, Moulded Case Circuit Breaker with built in over-current, short circuit releases. The Breaker shall be suitable for 415 Volts 50 Hz., AC supply and with 230 Volts AC Shunt Trip Coil. Icu=Ics=Icw=25 kA for 1sec. **b.Metering Section :1** No. 6 Step 3 Phase Sensing CT Operated approved make APFC Relay. **c.Indication Section For Incoming Section :** 3 Nos., Phase Indicating lamps, Led type of approved make. 3 Nos., One Red and One Green and One Amber Led type lamps for indicating MCCB is in `ON' or `OFF' or 'TRIP' position. **d.Current Transformers For Incoming Section :**3 Nos.	Nos	1.00		

	of 400/5 Amps Cast Resin type Current Transformers, having 15 VA burden and Class-1 accuracy for metering purpose. **e. Busbar :** 400 Amps uniformly rated, continuous duty, 415 V AC, 3 Phase and Neutral Copper Bus-bars having SC withstand capacity of 25 kA for 1 sec, with colour coded heat shrink sleeves supported on SMC type grip supports. The Horizontal / Vertical sections of the busbars should all be uniformly rated for 400 Amps. **c.Outgoings :** Set of 100 Amps TP MCCB, Icu=Ics=16 kA for 1 sec, with 02 Nos 160 Amps Semi Conductor Type 120 KA Din Type Fuses with Thyristors for 20 kVAR Dry Type Capacitors with 7% detuned harmonic suppression reactor filters of approved make - 4 nos --Set of 100 Amps TP MCCB, Icu=Ics=16 kA for 1 sec with 02 Nos 160 Amps Semi Conductor Type 120 KA Din Type Fuses with Thyristors for 10 kVAR Dry Type Capacitors with 7% detuned harmonic suppression reactor filters of approved make - 2 nos --6 - set of terminal blocks and control fuses and Connecting cables from Terminal Block to Capacitors using suitable electrolytic grade copper bus-bars/ XLPE insulated Copper Cables as required.				
F	**EARTHING**				
154	Providing and fixing in position, the following sizes of earthing strips or wires including providing all fixing accessories and effecting proper connections and as per final directions and approval of the Consultant. -- Providing earthing with Galvanised cast iron earth plate size 60 x 60 x 0.6 cm with funnel with a wire mesh for watering and brick masonry block C.I. cover complete with all materials, testing & recording the results as per specification No. EA-EP	Nos.	2		
155	Providing and fixing in position, the following sizes of earthing strips or wires including providing all fixing accessories and effecting proper connections and as per final directions and approval of the Consultant. -- Supplying and erecting G.I. strip of required size used for earthing on wall and/or any other purpose with necessary GI clamps fixed on wall painted with bituminous paint in an approved manner with joint required. as per specification No (EA-EP).	Kg	20		
156	Providing and fixing in position, the following sizes of earthing strips or wires including providing all fixing accessories and effecting proper connections and as per final directions and approval of the Consultant. -- Supplying and erecting G. I. Earth Wire of high purity of different sizes used for earthing or any other purposes on wall with necessary G. I. Clamps fixed on wall/cable/ conduit with screws in an approved manner.	Kg	80		
157	Providing and fixing in position, the following sizes of earthing strips or wires including providing all fixing accessories and effecting proper connections and as per final directions and approval of	Kg	180		

	the Consultant. -- Supplying and erecting Annealed bare copper wire of high purity of different sizes used for earthing on wall with necessary copper clamps fixed on wall/cable/conduit with screws in an approved manner.				
G	**Ligthning Conductor & Accessories**				
158	Supplying & erecting conventional spike type air termination suitable to carry lightning stroke made up of heavy gauge 40 mm dia copper pipe of standard length with 5 Nos. copper spikes fixed on copper ball as air terminals duly threaded in copper pipe erected on provided foundation in an approved manner	Nos.	1.0		
159	Providing and Back filling earth conductivity enhancing mineral earthing compound of 25 kg Bag complete.	Nos.	1.0		
III	**HVAC Work**				
A	**Precision Air conditioning work. (Indoor and Outdoor Units)**				
160	Supply and delivery at MDL site of Close Control Units; Air Cooled Direct Expansion type with Inverter Compressor, totally Double skin sandwitched panels on all four side with 20 mm 32 Kg/ cum Glass wool internal insulation , eco-friendly R-410A refrigerant, Bottom discharge type complete with dynamically balanced fan driven by EBM make Electronically Commutated (EC) motor with fiberglass blade, Hydrophilic coated cooling coil. The unit shall be equipped with high efficiency filters G4, micro processor based programmable logic controller, Heater, Modulating Humidifier, Liquide receiver, Oil Separetor, Electronic Expansion Valve, SS drain tray, Water Leak Detector, RS 485 Card. Air Cooled Condensor should be provided with fan speed regulator & AntiCorrosive coating to Condensor coil. Preferred Make: Stulz, Climaveneta, Bluebox, Emerson: --10 TR Actual Capacity at 6770 CFM; based on Return air conditions: 20 +/- 2 Deg. C, RH 50 +/-10% and with Ambient 40 Deg C (Condenser should work upto 45 Deg C) -- **Qty :** (2Working + 1Standby)	Nos	3.00		
B	**Refrigerant Piping and related low side work**				
161	Supply, Installation, Testing and Commissioning of 16 SWG Hard drawn copper refrigerant piping (liquid / hot gas) complete with 25 mm thick nitrile rubber insulation, GI supports, clamps, GI Cable tray & cable tray cover etc. (Consider 40 R.mtr per circuit) Refrigeration piping will have to be taken in G.I cable tray and cable tray cover with neccessary support, saddles, hangers ,anchor fastners, necessary bends, tees and fittings,(considering two pipe for Gas & Liquid). Nitrogen Pressure Test of the Piping, and Vacuumizing before pre-charging is part of the piping installation scope. Preferred Make: (Armacell/thermobreak/superlon	M	120		
162	Supply, Installation, Testing and Commissioning of PAC Power Cabling using Copper Conductor Armoured Cable from indoor to the outdoor unit; considering 40 rmt/circuit	M	120		
163	Supply, Installation, Testing and Commissioning of GI B-Class hard drawn drain piping; considering 10	M	30		

	rmt/unit				
164	Supply, Installation, Testing and Commissioning of Set of GI Stand for indoor and outdoor unit.	Set	3		
165	Providing and filling at site First charge of R-410A Gas (IDU to ODU inclusive of installed length of refrigerant piping at site) per unit.	Nos	3		
166	Installation, Testing & commissioning of above Close Control Units; along with copper refrigerant piping, necessary electrical installation with cabling, drain piping, etc. all complete as directed by Consultant/MDL Engineers. Installation also includes cost of lifting, shifting, positioning at site as per drawing.	Nos	3		
167	Supply, Installation, Testing and Commissioning of Return Air Plenum for PAC Unit.	Nos	3		
168	Supply, Installation, Testing and Commissioning of Return Air Motorized Damper.	Nos	3		
169	Comprehensive, all inclusive, Annual Maintenance Charges for entire PAC System after end of 1 year of Defects Liability Period (Inclusive of 1 Year Warranty period). The PAC System shall include all items covered in Electrical, Electronic and Mechanical devices as per the installation: --AMC charges for First Year , after completion of Defect liability period	AU	3		
170	Comprehensive, all inclusive, Annual Maintenance Charges for entire PAC System after end of 1 year of Defects Liability Period (Inclusive of 1 Year Warranty period). The PAC System shall include all items covered in Electrical, Electronic and Mechanical devices as per the installation: --AMC charges for Second Year , after completion of Defect liability period	AU	3		
171	Comprehensive, all inclusive, Annual Maintenance Charges for entire PAC System after end of 1 year of Defects Liability Period (Inclusive of 1 Year Warranty period). The PAC System shall include all items covered in Electrical, Electronic and Mechanical devices as per the installation: --AMC charges for Third Year , after completion of Defect liability period	AU	3		
C	**VRV OUTDOOR UNITS**				
	Note for Item No 172 to 179: Supply and delivery at MDL site of Modulating outdoor units, with multi scroll compressors having Invertor Based Compressor based on Unit Configuration. The Unit should have Condenser fan, Electrical Accessories & Microprocessor Based Control panel, isolating valves and all the necessary accessories for proper functioning of the Condensing units and shall be suitable to outdoor application. The unit to be shipped with full charge of Refrigerant and oil, refrigeration-piping controls, first charge of refrigerant etc.The unit shall be compatible for BMS operation- Neccessary relay card /soft integrator to be provided. The unit should comply with Min C.O.P of 3.7. Unit coil fins to have hydrauphilic coating. The unit to provide the rated capacity at 35°C outdoor ambient conditions. Vendor to select unit standby capacity with configuration equivalent to the highest installed compressor capacity inside the unit or 30% of total unit TR; whichever is				

	higher. Preferred Make:Daikin, Mitsubishi Electric, Hitachi --Refrigerant used shall be CFC free gas R410A. --Outdoor units shall be suitable for delivering following cooling capacities at actual site condition. NOTE:- Vendor to select ODU MODULES as per best Available Configuration. Below mentioned capacities are minimum cooling requirements. Standby capacity shall be over and above these capacities.				
172	Total cooling requirement : 30.5TR---Ground floor (Refer Note above)	Nos.	1		
173	Total cooling requirement : 35.00TR---First floor (Refer Note above)	Nos.	1		
174	Total cooling requirement : 44.50TR---Second floor (Refer Note above)	Nos.	1		
175	Total cooling requirement : 29.00TR---Third floor (Refer Note above)	Nos.	1		
176	Total cooling requirement : 26.00TR---Fourth floor (Refer Note above)	Nos.	1		
177	Total cooling requirement : 41.00TR---Fifth floor (Refer Note above)	Nos.	1		
178	Total cooling requirement : 33.50TR---Sixth floor (Refer Note above)	Nos.	1		
179	Total cooling requirement : 9.50TR---Fourth floor Data Centre (Refer Note above)	Nos.	1		
D	**VRV INDOOR UNITS**				
	Note for Item No 180 to 182: --Supply and delivery at MDL site of Ductable, Cassette & Hi-Wall Type Units as follows in VRF System suitable for functioning with above outdoor units: Indoor Fan coil unit consisting of minimum 3 row-cooling coil blower with motor, filters, drain pan & casing. The indoor unit shall be complete with all necessary controls including air and refrigerant temperature sensors and electronic expansion valves thus giving individual, variable refrigerant flow. The electronic expansion valve shall be controlled by the 'fuzzy logic' microprocessor control system via a control board within the indoor unit that includes a unit address recognition system. Indoor cassette units shall have standard inbuilt condensate drain pump along with all the accessories as supplied by the manufacturer. The indoor units shall be suitable for a power supply of 240V/ 1 phase/ 50Hz OR 415V / 3 phase / 50Hz. **HIGH WALL UNITS WITH CORDLESS REMOTE CONTROLLER AND STANDARD BATTERIES AND HOLDER**				
180	Min. TR requirement: 1.00TR (Refer Note above)	Nos.	38		
181	Min. TR requirement: 1.50TR (Refer Note above)	**Nos.**	23		
182	Min. TR requirement: 2.00TR (Refer Note above)	**Nos.**	35		
	Note for Item no 183 to 184: --Supply and delivery at MDL site of Ductable, Cassette & Hi-Wall Type Units as follows in VRF System suitable for functioning with above outdoor units: Indoor Fan coil unit consisting of minimum 3 row-cooling coil blower with motor, filters, drain pan & casing. The indoor unit shall be complete with all necessary controls including air and refrigerant				

	temperature sensors and electronic expansion valves thus giving individual, variable refrigerant flow. The electronic expansion valve shall be controlled by the 'fuzzy logic' microprocessor control system via a control board within the indoor unit that includes a unit address recognition system. Indoor cassette units shall have standard inbuilt condensate drain pump along with all the accessories as supplied by the manufacturer. The indoor units shall be suitable for a power supply of 240V/ 1 phase/ 50Hz OR 415V / 3 phase / 50Hz. **DUCTABLE UNITS WITH CORDLESS REMOTE CONTROLLERS AND STANDARD BATTERIES AND HOLDER**				
183	Min. TR requirement: 3.0 TR (Refer Note above)	Nos.	1		
184	Min. TR requirement: 4.5 TR (Refer Note above)	Nos.	1		
	Note for Item no 185 to 187: Supply and delivery at MDL site of Ductable, Cassette & Hi-Wall Type Units as follows in VRF System suitable for functioning with above outdoor units: Indoor Fan coil unit consisting of minimum 3 row-cooling coil blower with motor, filters, drain pan & casing. The indoor unit shall be complete with all necessary controls including air and refrigerant temperature sensors and electronic expansion valves thus giving individual, variable refrigerant flow. The electronic expansion valve shall be controlled by the 'fuzzy logic' microprocessor control system via a control board within the indoor unit that includes a unit address recognition system. Indoor cassette units shall have standard inbuilt condensate drain pump along with all the accessories as supplied by the manufacturer. The indoor units shall be suitable for a power supply of 240V/ 1 phase/ 50Hz OR 415V / 3 phase / 50Hz. **CASSETTE UNITS WITH CORDLESS REMOTE CONTROLLERS AND STANDARD BATTERIES AND HOLDER**				
185	Min. TR requirement: 1.00TR (Refer Note above)	Nos.	30		
186	Min. TR requirement: 1.50TR (Refer Note above)	Nos.	22		
187	Min. TR requirement: 2.0 TR (Refer Note above)	Nos.	18		
188	SITC of condensate drain pump kit along with all necessary accessories.	Nos.	96		
189	SITC of AHU Control box with Linear expansion valve and necessary accessories	Nos.	2		
190	SITC of Refnet joint, Linear expansion valve with all necessary accessories.	Nos.	340		
191	SITC of Central Remote Control Basic type with batteries and holder.	NOS.	8		
192	Providing and Fixing of removable core, Al. Powder Coated Supply / Return Air Ceiling grills with internally operated volume control damper of powder coated aluminum construction, the damper blades shall be black powder coated finish along with GI Plenum box and flange for duct connection. --SqM. Rate of Grills	m2	3		
193	Providing and Fixing of removable core, Al. Powder Coated Supply / Return Air Ceiling grills with internally operated volume control damper of powder coated	Nos	1		

	aluminum construction, the damper blades shall be black powder coated finish along with GI Plenum box and flange for duct connection. --Volume Control Damper				
	Note for Item No 194 to 203: --Supply, Installation, Testing & Commissioning of Seamless heavy gauge Copper piping insulated with nitrile rubber of 25 mm thickness. Refrigeration piping will have to be taken in the piping rack /G.I cable tray and cable tray cover with neccessary support, saddles, hangers ,anchor fastners, necessary bends, tees and fittings,(considering two pipe for Gas & Liquid). **Nitrogen Pressure Test of the Piping, and Vacuumizing before pre-charging is part of the piping installation scope. Preferred Insulation Make: Armacell/Superlon/K-Flex** **Note: Below quantities of refrigerant piping are based on the Indoor & Outdoor unit locations as shown in the tender drawings for specified configuration.** **Contractor should prepare shop drawing along with refrigerant piping drawing based on the system configuration being offered by them and confirm the refrigerant piping sizing and quantities & get it approved by the Consultant.**				
194	F 38.10 mm (Refer Note above)	M	325		
195	F 31.75 mm (Refer Note above)	M	90		
196	F 28.6 mm (Refer Note above)	M	120		
197	F 25.4 mm (Refer Note above)	M	130		
198	F 22.2 mm (Refer Note above)	M	200		
199	F 19.05 mm (Refer Note above)	M	550		
200	F 15.9 mm (Refer Note above)	M	715		
201	F 12.7 mm (Refer Note above)	M	240		
202	F 9.52 mm (Refer Note above)	M	500		
203	F 6.35 mm (Refer Note above)	M	500		
204	Providing and fixing of Control Cabling between the indoor units & outdoor units. 4C x 2.5 Sq.mm 2XWY XLPE insulated, PVC inner sheathed, copper conductor, armoured , FRLS PVC outer sheathed cables	M	7000		
205	Supply, fabrication, fixing in positions with suitable GI angle supports GI perforated cable trays bolted type with all necessary bends, connectors etc. and fabricated using minimum 14 gauge CRCA sheet and maximum width of 600 mm & height of 50 mm. Further the rate shall also include supporting of these trays from ceiling using minimum 10mm fully threaded GI Rods and anchor bolts, all complete as required.	M	500		
206	Supply, fabrication, fixing in positions with suitable GI angle supports GI perforated cable trays bolted type with all necessary bends, connectors etc. and fabricated using minimum 14 gauge CRCA sheet and maximum width of 300 mm & height of 50 mm. Further the rate shall also include supporting of these trays from ceiling using minimum 10mm fully threaded GI Rods and anchor bolts, all complete as required.	M	800		
207	Supply, fabrication, fixing in positions with suitable GI angle supports GI perforated cable trays bolted type	M	1000		

	with all necessary bends, connectors etc. and fabricated using minimum 14 gauge CRCA sheet and maximum width of 150 mm & height of 50 mm. Further the rate shall also include supporting of these trays from ceiling using minimum 10mm fully threaded GI Rods and anchor bolts, all complete as required.				
208	Supply, fabrication, fixing in positions with suitable GI angle supports GI perforated cable trays bolted type with all necessary bends, connectors etc. and fabricated using minimum 14 gauge CRCA sheet and maximum width of 50 mm & height of 50 mm. Further the rate shall also include supporting of these trays from ceiling using minimum 10mm fully threaded GI Rods and anchor bolts, all complete as required.	M	1000		
209	Providing and fixing of Drain piping in CPVC with all fittings, bends, supports and clamps, including chasing and drilling holes in walls. **Preferred Make: CPVC PIPE: PRINCE / ASTRAL; INSULATION : SUPERLON/K-FLEX/ARMACELL** --20 mm dia. CPVC pipe with 6 mm thick nitrile rubber insulation.	M	600		
210	Providing and fixing of Drain piping in CPVC with all fittings, bends, supports and clamps, including chasing and drilling holes in walls. **Preferred Make: CPVC PIPE: PRINCE / ASTRAL; INSULATION : SUPERLON/K-FLEX/ARMACELL** --25 mm dia. CPVC pipe with 6 mm thick nitrile rubber insulation.	M	200		
211	Providing and fixing of Drain piping in CPVC with all fittings, bends, supports and clamps, including chasing and drilling holes in walls. --20 mm dia. CPVC pipe.	M	100		
212	Providing and fixing of Drain piping in CPVC with all fittings, bends, supports and clamps, including chasing and drilling holes in walls. --25 mm dia. CPVC pipe.	M	50		
213	Providing and fixing of Drain piping in CPVC with all fittings, bends, supports and clamps, including chasing and drilling holes in walls. --32 mm dia. CPVC pipe.	M	200		
214	Providing and fixing of Drain piping in CPVC with all fittings, bends, supports and clamps, including chasing and drilling holes in walls. --40 mm dia. CPVC pipe.	M	450		
215	Supply, Installation, Testing, Commissioning of Galvanized Sheet Sheet of 120 GSM Rectangular Ducting as per specification complete with Tie rod supports, nut-bolts, neoprene gaskets duly installed. Leak Testing of ducts at site shall be carried out as per SMACNA standard. 24 G galvanized sheet steel	m2	10		
216	Providing and fixing of Acoustic lining for ducting with 12.5 mm thick resin bonded fiberglass rigid boards having 24 kg/cu.mt density, fixed with Nut Bolts & covered with RP tissue paper & 26 G perforated Aluminium sheet as per routing.	m2	10		
217	Providing and Fixing of 19mm Closed Cell Elastomeric Nitrile Rubber Insulation having Density Between 40 to	m2	10		

	60 Kg/m3. The Insulation Material to be FM Approved. The insulation shall have fire performance such that it passes Class 'O' and Class 1 for surface spread of flame. All insulation joints to be sealed with minimum 3" width 3mm Thk Self Adhesive tape of same material. The width of the sheet is 1000mm. **Vendor to provide the certificates of water permeability, Moisture Diffusion Resistance Factor or 'μ' value, Class O & Class 1.**				
218	Providing and fixing of single phase, movable, Portable dehumidification unit of exhibition area. (100 CFM) **Preferred Make: Ampha, Origin, Advance.**	Nos	1		
219	M. S. hot dip galvanized structural work fabricated as per the site requirement/design for HVAC works.	Kg	2000		
	Note for Item No 220 to 227: **--**Installation, Testing and Commissioning of VRF outdoor unit all complete alongwith all accessories, copper refrigerant piping, necessary electrical installation with cabling, drain piping with adequate charging of refrigerant gas same as that provided by factory pre charged gas for complete length of copper piping from each indoor to respective outdoor units etc. all complete as directed by MDL Engineers. **Cost includes lifting, shifting, positioning at site as per drawing, the outdoor units to the terrace floor and necessary top up refrigerant gas.**				
220	Total cooling requirement : 30.5TR---Ground floor (Refer Note above)	Nos.	1		
221	Total cooling requirement : 35.00TR---First floor (Refer Note above)	Nos.	1		
222	Total cooling requirement : 44.50TR---Second floor (Refer Note above)	Nos.	1		
223	Total cooling requirement : 29.00TR---Third floor (Refer Note above)	Nos.	1		
224	Total cooling requirement : 26.00TR---Fourth floor (Refer Note above)	Nos.	1		
225	Total cooling requirement : 41.00TR---Fifth floor (Refer Note above)	Nos.	1		
226	Total cooling requirement : 33.50TR---Sixth floor (Refer Note above)	Nos.	1		
227	Total cooling requirement : 9.50TR---Fourth floor Data Centre (Refer Note above)	Nos.	1		
	Note for 228 to 230: **--**Installation, Testing and Commissioning of following Ductable, Cassette & Hi-Wall Type Units as follows in VRF System complete along with cordless remote controllers, accessories, copper refrigerant piping, necessary electrical installation with cabling, drain piping and drain pump kit , adequate charging of refrigerant gas same as that provided by factory pre charged gas for complete length of copper piping from each indoor to respective outdoor units etc. all complete as directed by MDL Engineers. **Installation also includes cost of lifting, shifting, positioning at site as per drawing, the Indoor Units to the respective locations on each floor as per drawing/as directed as MDL Engineers. HIGH WALL UNITS WITH CORDLESS REMOTE CONTROLLER AND STANDARD BATTERIES AND**				

	HOLDER				
228	Min. TR requirement: 1.00TR (Refer Note above)	Nos.	38		
229	Min. TR requirement: 1.50TR (Refer Note above)	Nos.	23		
230	Min. TR requirement: 2.00TR (Refer Note above)	Nos.	35		
	Note for 231 to 232: **--**Installation, Testing and Commissioning of following Ductable, Cassette & Hi-Wall Type Units as follows in VRF System complete along with cordless remote controllers, accessories, copper refrigerant piping, necessary electrical installation with cabling, drain piping and drain pump kit , adequate charging of refrigerant gas same as that provided by factory pre charged gas for complete length of copper piping from each indoor to respective outdoor units etc. all complete as directed by MDL Engineers. **Installation also includes cost of lifting, shifting, positioning at site as per drawing, the Indoor Units to the respective locations on each floor as per drawing/as directed as MDL Engineers. DUCTABLE UNITS WITH CORDLESS REMOTE CONTROLLERS AND STANDARD BATTERIES AND HOLDER**				
231	Min. TR requirement: 3.0 TR (Refer Note above)	Nos.	1		
232	Min. TR requirement: 4.5 TR (Refer Note above)	Nos.	1		
233	**CASSETTE UNITS WITH CORDLESS REMOTE CONTROLLERS AND STANDARD BATTERIES AND HOLDER** Min. TR requirement: 1.00TR	Nos.	30		
234	**CASSETTE UNITS WITH CORDLESS REMOTE CONTROLLERS AND STANDARD BATTERIES AND HOLDER** Min. TR requirement: 1.50TR	Nos.	22		
235	**CASSETTE UNITS WITH CORDLESS REMOTE CONTROLLERS AND STANDARD BATTERIES AND HOLDER** Min. TR requirement: 2.0 TR	Nos.	18		
236	Providing core cuts in RCC slabs/RCC wall etc. --100 mm dia	nos	2		
237	Providing core cuts in RCC slabs/RCC wall etc. --50 mm dia	nos	2		
238	Supply, installation, testing and commissioning of wall mounted air curtain along with the interlock with door and making good as directed by MDL engineers. Aircurtain to be in 18swg Al powder coated construction with 2 speed control. Width of the aircurtain to be 2700mm and 2.5 m length air throw. **Preferred Make: Russel/Ruskin/Airtech**	nos	2		
239	Dismantling & removing existing DX Split High Wall Indoor & Outdoor Unit, piping work & all its accessories etc. all complete in all terms including lifting and shifting the same to a proper place designated by client on site.	nos	17		
240	Comprehensive, all inclusive Annual Maintenance Charges for entire VRF System after end of 1 year of Defects Liability Period (Inclusive of 1 Year Warranty period). The VRF System shall include all items covered in Electrical, Electronic and Mechanical devices as per installation. --AMC charges for First Year , after completion of Defect	LS	1		

	Liability Period				
241	Comprehensive, all inclusive Annual Maintenance Charges for entire VRF System after end of 1 year of Defects Liability Period (Inclusive of 1 Year Warranty period). The VRF System shall include all items covered in Electrical, Electronic and Mechanical devices as per installation. --AMC charges for Second Year, after completion of Defect Liability Period	LS	1		
242	Comprehensive, all inclusive Annual Maintenance Charges for entire VRF System after end of 1 year of Defects Liability Period (Inclusive of 1 Year Warranty period). The VRF System shall include all items covered in Electrical, Electronic and Mechanical devices as per installation. --AMC charges for Third Year , after completion of Defect Liability Period	LS	1		
	TOTAL				
	WCT under VAT (in Percentage)				
	Service Tax including Swachh Bharat Cess and Kisan Kalyan Cess (in Percentage)				
	NET TOTAL				
	BUY BACK ITEM				
243	Buy Back Price (Rebate) to be quoted by the Bidder for dismantling existing Split / Window AC units (outdoor & indoor) -133 Nos along with its piping & all accessories and taking away the same outside MDL premises as directed by Engineer in Charge including loading, transporting, unloading etc all complete. It shall be taken out under buy back scheme for the price as quoted. **(The bidder is required to offer their quote subject to minimum of ₹6, 16,944/- as buy back price)**	LS	1		
	GRAND TOTAL (NET TOTAL - REBATE)				

Enclosure- II

List of 133 AC (For Buy Back Scheme)

GROUND FLOOR			
	Sr. No.	**MDL Asset No**	**Asset description**
ADMIN OFFICE	1	400312840	Split Air Conditioner 2 TON Voltas-Verties.
	2	400312841	Split Air Conditioner 2 TON Voltas-Verties.
	3	400312842	Split Air Conditioner 2 TON Voltas-Verties.
	4	400312843	Split Air Conditioner 2 TON Voltas-Verties.
	5	400312844	Split Air Conditioner 2 TON Voltas-Verties.
	6	400312845	Split Air Conditioner 2 TON Voltas-Verties.
	7	400312846	Split Air Conditioner 2 TON Voltas-Verties.
	8	400312847	Split Air Conditioner 2 TON Voltas-Verties.
TRANSPORT	9	Not Avlb.	Window Air Conditioner 1.5 TON Voltas.
TELEPHONE EXCHANGE	10	400312675	Split Air Conditioner 2 TON (6000 Kcal/Hr) Voltas
	11	400312676	Split Air Conditioner 2 TON (6000 Kcal/Hr) Voltas
	12	400312677	Split Air Conditioner, Capacity-NA, AMTREX
	13	NA	Split Air Conditioner 1.5 TON (18000 BTU/Hr)-Godrej
Heritage Gallery	14	400310356	Split Air Conditioner 1.5 TON Voltas
	15	400310357	Split Air Conditioner 1.5 TON Voltas
	16	400310358	Split Air Conditioner 1.5 TON Voltas
FIRST FLOOR			
SB-PSC	17	400310561	SPLIT AIR CONDITIONER -2TON-VOLTAS
	18	400310562	SPLIT AIR CONDITIONER -2TON-VOLTAS
	19	400310564	2TR SPLIT AIR CONDITIONER VOLTAS MAKE.
	20	400310568	2TR SPLIT AIR CONDITIONER VOLTAS MAKE.
	21	400312868	SPLIT AC (6100 W) HAIER MAKE
	22	400312869	SPLIT AC (6100 W) HAIER MAKE
	23	400312870	SPLIT AC (6100 W) HAIER MAKE
	24	400312871	SPLIT AC (6100 W) HAIER MAKE
	25	400312872	SPLIT AC (6100 W) HAIER MAKE
	26	400312873	SPLIT AC (6100 W) HAIER MAKE
	27	400312874	SPLIT AC (6100 W) HAIER MAKE
	28	400312875	SPLIT AC (6100 W) HAIER MAKE
	29	400312876	SPLIT AC (6100 W) HAIER MAKE
	30	400312877	SPLIT AC (6100 W) HAIER MAKE
	31	400312878	SPLIT AC (6100 W) HAIER MAKE
Interal Audit	32	400312269	SPLIT AIR CONDITIONER 2 TON (24000 BTU/Hr)-Godrej
	33	400312282	SPLIT AIR CONDITIONER 2 TON (24000 BTU/Hr)-Godrej
	34	400312309	SPLIT AIR CONDITIONER 2 TON (24000 BTU/Hr)-Godrej

	35	400312335	SPLIT AIR CONDITIONER 2 TON (24000 BTU/Hr)-Godrej
	36	400312704	SPLIT AIR CONDITIONER 1.5 TON (18000 BTU/Hr)-TCL
	37	400313207	SPLIT AIR CONDITIONER 1.5 TON (18000 BTU/Hr)-TCL
2nd FLOOR			
HR	38	400310325	SPLIT A.C -Amtrex- 1.5 TON - [PA to GM(HR)]
	39	NA	SPLIT A.C - Carrier - (4500 Kcal/Hr) -1.5 TON (GM-HR)
	40	400312662	Window A.C -O General- Capacity-NA- Staff Seating
	41	400312663	Window A.C -O General- Capacity-NA- Staff Seating
	42	NA	Window A.C -Voltas-Capacity-NA-Cabin-Mr.Pradhan
	43	400311033	Window A.C -O General-Capacity-NA- Cabin-Mr.Mishra
	44	Na	Window A.C -Voltas-Capacity-NA- HRO Cabin
	45	400310003	SPLIT A.C - Voltas Vectra - (4500 Kcal/Hr) -1.5 TON (Conference Room)
	46	400310007	SPLIT A.C - Voltas Vectra - (4500 Kcal/Hr) -1.5 TON (Conference Room)
	47	400310009	SPLIT A.C - Voltas Vectra - (4500 Kcal/Hr) -1.5 TON (Conference Room)
	48	400310012	SPLIT A.C - Voltas Vectra - (4500 Kcal/Hr) -1.5 TON (Conference Room)
	49	400310013	SPLIT A.C - Voltas Vectra - (4500 Kcal/Hr) -1.5 TON (Conference Room)
	50	NA	Window A.C -Make & Capacity-NA- Cabin-Mr.Mali
	51	NA	Window A.C -Voltas -Capacity-NA- Cabin-Mr.Dalal
Hindi Cell	52	400312665	Window A.C -O General-Capacity-NA- Hindi Cell
	53	400312667	Window A.C -O General-Capacity-NA- Hindi Cell
Corporate Plg.	54	400312666	Window A.C -O General-Capacity-NA Cabin-Mr.Paithankar
	55	NA	Window A.C -Voltas Vectra-Capacity-NA-HOD Cabin
3rd FLOOR			
Finance Dept.	56	400313326	YORK SPLIT A.C -2T (24000 BTU/Hr)
	57	400313327	YORK SPLIT A.C -2T (24000 BTU/Hr)
	58	400313328	YORK SPLIT A.C -2T (24000 BTU/Hr)
	59	400313329	YORK SPLIT A.C -2T (24000 BTU/Hr)
	60	400313330	YORK SPLIT A.C -2T (24000 BTU/Hr)
	61	400313331	YORK SPLIT A.C -2T (24000 BTU/Hr)
	62	400313332	YORK SPLIT A.C -2T (24000 BTU/Hr)
	63	400313333	YORK SPLIT A.C -2T (24000 BTU/Hr)
	64	400313334	YORK SPLIT A.C -2T (24000 BTU/Hr)

	65	400313335	YORK SPLIT A.C -2T (24000 BTU/Hr)
	66	400313336	YORK SPLIT A.C -2T (24000 BTU/Hr)
	67	400313337	YORK SPLIT A.C -2T (24000 BTU/Hr)
	68	400313338	YORK SPLIT A.C -2T (24000 BTU/Hr)
	69	400313339	YORK SPLIT A.C -2T (24000 BTU/Hr)
	70	400313340	YORK SPLIT A.C -2T (24000 BTU/Hr)
	71	400313341	YORK SPLIT A.C -2T (24000 BTU/Hr)
	72	400313342	YORK SPLIT A.C -2T (24000 BTU/Hr)
	73	400313343	YORK SPLIT A.C -2T (24000 BTU/Hr)
	74	400311191	Window A.C - TCL Make- 1.5 TON
	75	400312305	SPLIT A.C - Godrej Make- 2 TON (24000 BTU/Hr)
	76	400312306	SPLIT A.C - Godrej Make- 2 TON (24000 BTU/Hr)
4th FLOOR			
CIT	77	400310255	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	78	400310256	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	79	400310257	SPLIT A.C 2 TON (24000BTU/Hr) -TCL Make
	80	400310259	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	81	400310260	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	82	400310261	SPLIT A.C 1.1TON (13200 BTU/Hr) - Godrej
	83	400310263	SPLIT A.C 1.1TON (13200 BTU/Hr) - Godrej
	84	400310264	SPLIT A.C 1.0TON (13200 BTU/Hr) - Godrej
	85	400310265	SPLIT A.C 2 TON (24000BTU/Hr) -TCL Make
	86	400310268	SPLIT A.C 1.0TON (13200 BTU/Hr) - Godrej
	87	400310270	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	88	400310271	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	89	400310272	SPLIT A.C 2 TON (24000BTU/Hr) -TCL Make
	90	400310274	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	91	400310275	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	92	400310276	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	93	400310278	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	94	400310279	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	95	400310283	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	96	400310284	SPLIT A.C 2 TON (24000BTU/Hr) -TCL Make
	97	400310311	SPLIT A.C 2.0TON (24000 BTU/Hr)- Godrej
	98	400310254	**PRECISION A.C- 10 TON- Emerson Make-Server Room**
	99	400310277	**PRECISION A.C- 10 TON- Emerson Make-Server Room**
	100	400310281	**PRECISION A.C- 10 TON- Emerson Make-Server Room**
5th FLOOR			
5th FLOOR	101	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG Make D (S&HE) Cabin
	102	NA	SPLIT A.C 1.5TON (18000 BTU/Hr)- LG Make TA to D (S&HE) Cabin

	103	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG Make D(S) Cabin
	104	NA	SPLIT A.C 1.5TON (18000 BTU/Hr)- LG Make TA to D (S) Cabin
	105	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG Make D (CP&P) Cabin
	106	NA	SPLIT A.C 1.5TON (18000 BTU/Hr)- LG Make TA to D (CP&P) Cabin
	107	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG Make D (F) Cabin **(Shifted to Battery Room of CIT Dept 4th Floor)**
	108	NA	SPLIT A.C 1.5TON (18000 BTU/Hr)- LG Make TA to D (F) Cabin **(Shifted to SB-Maintenance Dept and kept in custody)**
5th FLOOR	109	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG Make Conference Room
	110	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG Make Conference Room
	111	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG MakeConference Room
	112	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG Make Conference Room
	113	400310013	SPLIT A.C 1.5TON (18000 BTU/Hr)- LG Make TA to CMD Cabin
	114	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG Make Board Room
	115	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG Make Board Room
	116	NA	SPLIT A.C 2.0TON (24000 BTU/Hr)- LG Make Board Room
6th FLOOR			
F-Central Accounts	117	400312692	SPLIT A.C (5000 W) 1.4 TON - Haier Make
	118	400312695	SPLIT A.C (24000 BTU/Hr) 2 TON - TCL Make
	119	400313162	SPLIT A.C (5000 W) 1.4 TON - Haier Make
	120	400313163	SPLIT A.C (5000 W) 1.4 TON - Haier Make
	121	400313164	SPLIT A.C (5000 W) 1.4 TON - Haier Make
	122	400313165	SPLIT A.C (5000 W) 1.4 TON - Haier Make
	123	400313167	SPLIT A.C (24000 BTU/Hr) 2 TON - TCL Make
	124	400313168	SPLIT A.C (24000 BTU/Hr) 2 TON - TCL Make
	125	400313169	SPLIT A.C (24000 BTU/Hr) 2 TON - TCL Make
F-Costing & Budgeting	126	400312693	SPLIT A.C (5000 W) 1.4 TON - Haier Make
	127	400313166	SPLIT A.C (5000 W) 1.4 TON - Haier Make
Project Taxation	128	400313234	SPLIT A.C -1.5 TON (5275 W)-ONIDA-3 STR
	129	400313235	SPLIT A.C -1.5 TON (5275 W)-ONIDA-3 STR
	130	400313236	SPLIT A.C -1.5 TON (5275 W)-ONIDA-3 STR

Dept.	131	400313237	SPLIT A.C -1.5 TON (5275 W)-ONIDA-3 STR
	132	400313238	SPLIT A.C -1.5 TON (5275 W)-ONIDA-3 STR
	133	400313239	SPLIT A.C -1.5 TON (5275 W)-ONIDA-3 STR

Enclosure-III

List of 18 ACs (To be dismantled and handed over to MDL)

GROUND FLOOR			
	Sr. No.	**Asset No**	**Asset description**
TELEPHONE EXCHANGE	1	400314187	Split Air Conditioner 1.8 TON (6450 W) Voltas
	2	400314188	Split Air Conditioner 2 TON Voltas
1st FLOOR			
	Sr. No.	**Asset No**	**Asset description**
SB-PSC	3	400313958	SPLIT AIR CONDITIONER 2 TON (7000W)-Hitachi
	4	400313959	SPLIT AIR CONDITIONER 2 TON (7000W)-Hitachi
	5	400313960	SPLIT AIR CONDITIONER 2 TON (7000W)-Hitachi
5th FLOOR			
	Sr. No.	**Asset No**	**Asset description**
5th FLOOR	6	NA	SPLIT A.C 1.9TON (6700 W)- ONIDA Make Waiting Lounge
	7	NA	SPLIT A.C 1.9TON (6700 W)- ONIDA Make Waiting Lounge
	8	NA	SPLIT A.C 1.9TON (6700 W)- ONIDA Make CMD Cabin
	9	NA	SPLIT A.C 1.9TON (6700 W)- ONIDA Make CMD Cabin
6th FLOOR			
	Sr. No.	**Asset No**	**Asset description**
Estate	10	400314200	SPLIT A.C (6450 W) 1.8 TON - Voltas Make
	11	400314201	SPLIT A.C (6450 W) 1.8 TON - Voltas Make
	12	400314202	SPLIT A.C (6450 W) 1.8 TON - Voltas Make
CS & LA	13	400314203	SPLIT A.C (6450 W) 1.8 TON - Voltas Make
	14	400314204	SPLIT A.C (6450 W) 1.8 TON - Voltas Make
	15	400314205	SPLIT A.C (7000 W) 2 TON - Voltas Make
	16	400314206	SPLIT A.C (6450 W) 1.8 TON - Voltas Make
	17	400314207	SPLIT A.C (7000 W) 2 TON - Voltas Make
NOTE : **York Window A.C -Capacity-1.5 T. will be dismantled & taken back by MDL Shipbuilding Maintenance dept. (SB-MTC) during execution of HVAC work.**			
Finance Dept. **3rd Floor**		400313466	Window A.C - Make-YORK-Capacity-1.5 T.