

Tender No. IITT/EU/2023-24/14/Corr-IV

Date: 13-10-2023

CORRIGENDUM – IV

Sub: Corrigendum for the Supply and Installation of Laboratory Furniture – II

Ref: 1) Tender No. IITT/EU/2023-24/14 dated 22.08.2023

2) Addendum/Corrigendum-I ref no: IITT/EU/2023-24/14/Corr-I dated 15-09-2023

3) Addendum/Corrigendum-II ref no: IITT/EU/2023-24/14/Corr-II dated 15-09-2023

4) Addendum/Corrigendum-III ref no: IITT/EU/2023-24/14/Corr-III dated 03-10-2023

With reference to the Tender No. IITT/EU/2023-24/14 dated 22.08.2023 for Supply and Installation of Laboratory Furniture – II, the competent authority is pleased to issue the following further addendum / corrigendum. This should be read along with the other terms & conditions as already published in the CPP & website.

1. Critical Dates of Tender:

S. No.	Details	In the place of		To be read as	
1	Bid submission close date & time	13-10-2023	15.00 hrs	24-10-2023	15.00 hrs
2	Closing date	13-10-2023	15.00 hrs	24-10-2023	15.00 hrs
3	Opening of Technical bids	14-10-2023	15.00 hrs	25-10-2023	15.00 hrs

2. Technical Specifications: Schedule of requirement

S. No.	Tender Specifications	In the place of	To be read as
1.	Page No. 5 of 61:	Sl.no. 12: Variable Air Volume System	Constant Air Volume (CAV) should be provided.
2.	Page No. 15 of 61:	Sl.no. 17: Variable Air Volume (VAV): - Make list- SYSTEMAIR / ALDES / TROX / SIEMENS / SCHNEIDER	Constant Air Volume (CAV):- Make list- SYSTEMAIR / ALDES / TROX

S. No.	Tender Specifications	In the place of	To be read as
3.	Page No. 1 of 61:	Item No. 9 – Spot extractor connected to the fume hood	Item No. 9 – Spot extractors (7 nos) should be provided with dedicated blower, motor and ducting facility.
4.	Page No. 1 of 61:	Item No. 10 – Spot extractor with blower and ducting facility.	Item No. 10 – Spot extractors (2 nos) should be provided with dedicated blower, motor and ducting facility.

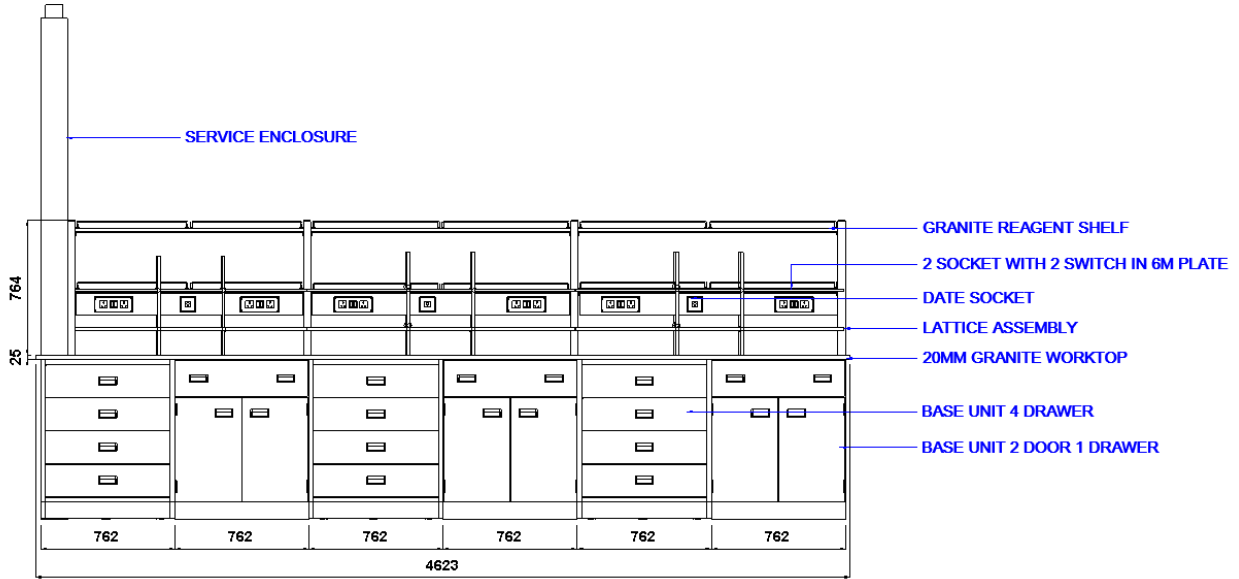
Additional Information:

S. No.	Tender Specifications	Additional information
1.	Page No. 16 of 61: Item 4: Island Tables with under storage cabinet & reagent shelves Type-1: 4570 mm (L) x 1770 mm (W)	CAD images: Please see below for the drawings for the item 4 which should be strictly followed.
2.	Page No. 17 of 61: Item 5: Island Tables with under storage cabinet & reagent shelves Type-2: 6550 mm (L) x 1530 mm (W)	CAD images: Please see below for the drawings for the item 5 which should be strictly followed.
3.	Page No. 17 of 61: Item 6: Island Tables with under storage cabinet & reagent shelves Type-3: 8535 mm (L) x 1800 mm (W)	CAD images: Please see below for the drawings for the item 6 which should be strictly followed.
4.	Page No. 17 of 61: Item 7: Island Tables with under storage cabinet & reagent shelves Type-4: 4572 mm (L) x 1520 mm (W) x 914 mm (H)	CAD images: Please see below for the drawings for the item 7 which should be strictly followed.
5.	Tender specifications for Exhaust Blower, Motor and Accessories, Fume hood Scrubber system Tender Item No. 1, 2, 3, 9 and 10	Please see the technical specifications given below;
6.	Technical specifications for Ducting, Dampers, Flexible Hoses and Accessories for Tender Item No. 1, 2, 3, 9 and 10	Please see the technical specifications given below;

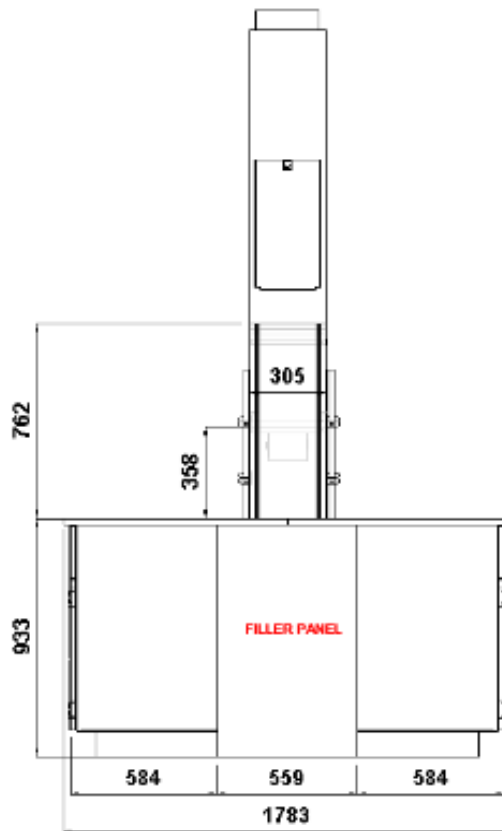
CAD images for Tender No. Item 4: Island Tables with under storage cabinet & reagent shelves Type-1: 4570 mm (L) x 1770 mm (W)

Measurements: ± 20 mm

04 numbers of **4570 mm (L) x 1800 mm (W) x 910 mm (H)** Island workbenches with fixed reagent racks should be supplied and installed. All the workbenches must be provided with the storage cabinets as shown below.



FRONT VIEW



SIDE VIEW

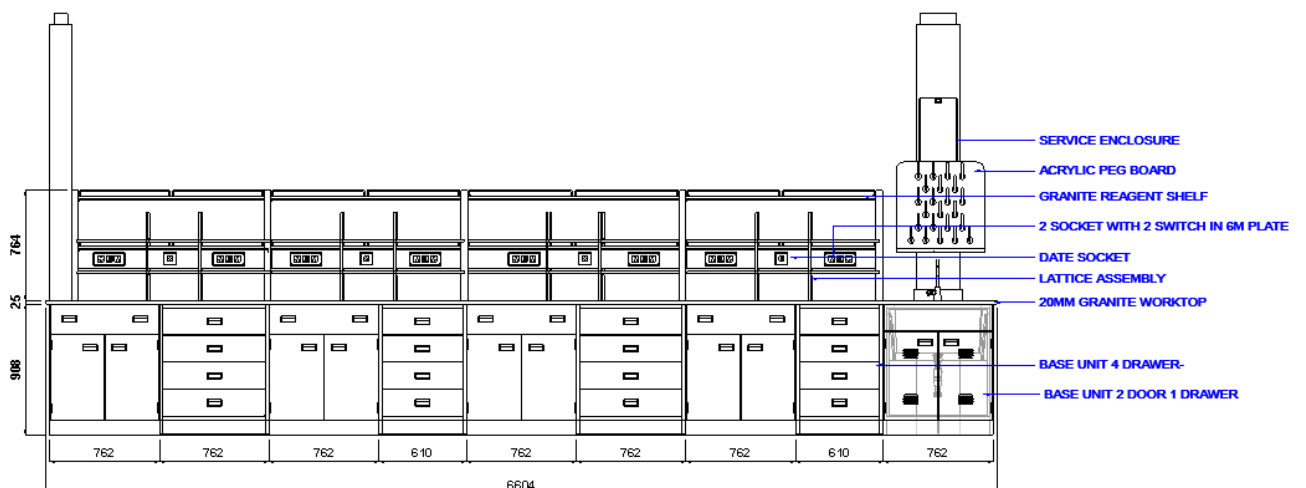


PLAN VIEW

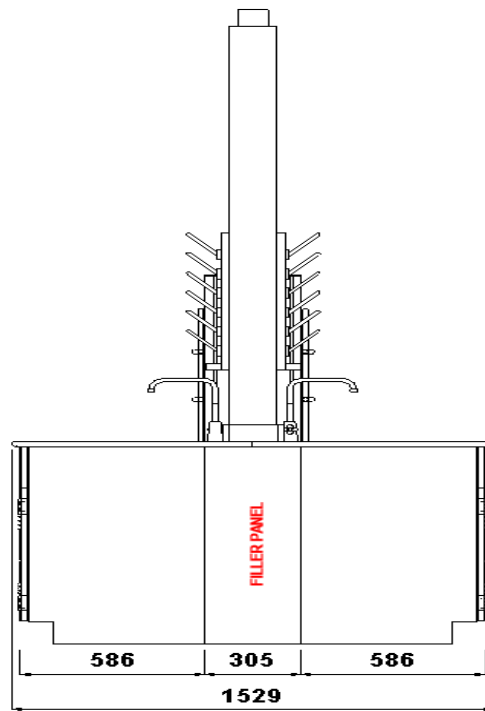
CAD images for Tender No Item 5: Island Tables with under storage cabinet & reagent shelves Type-2: 6550 mm (L) x 1530 mm (W)

Measurements: ± 20 mm

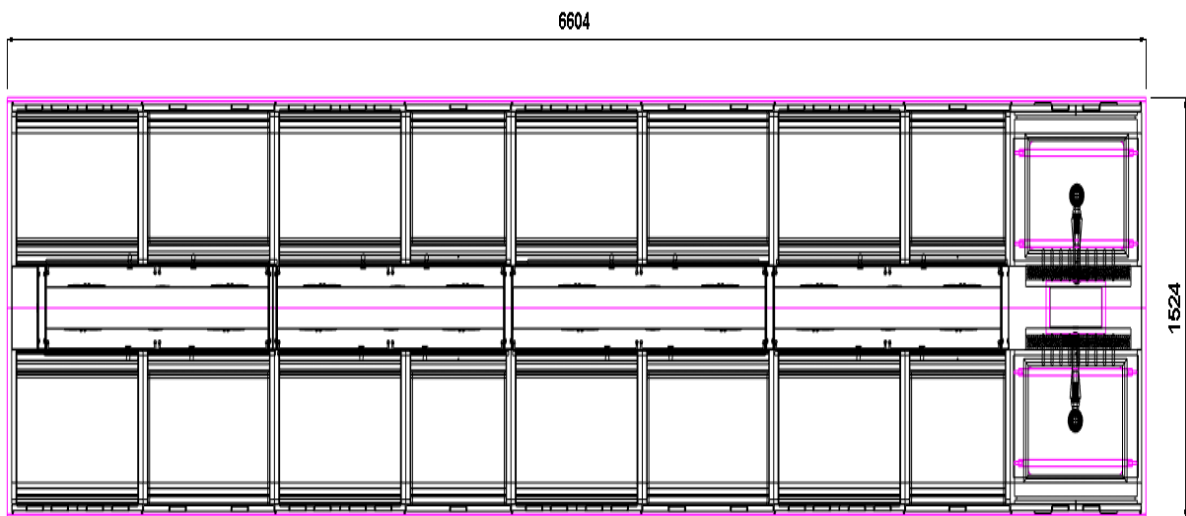
06 numbers of 6550 mm (L) x 1530 mm (W) x 910 mm (H) ± 20 mm Island workbench with reagent racks and two sinks on one side should be supplied and installed. All the workbenches should have the under-bench storage cabinets.



FRONT VIEW



SIDE VIEW

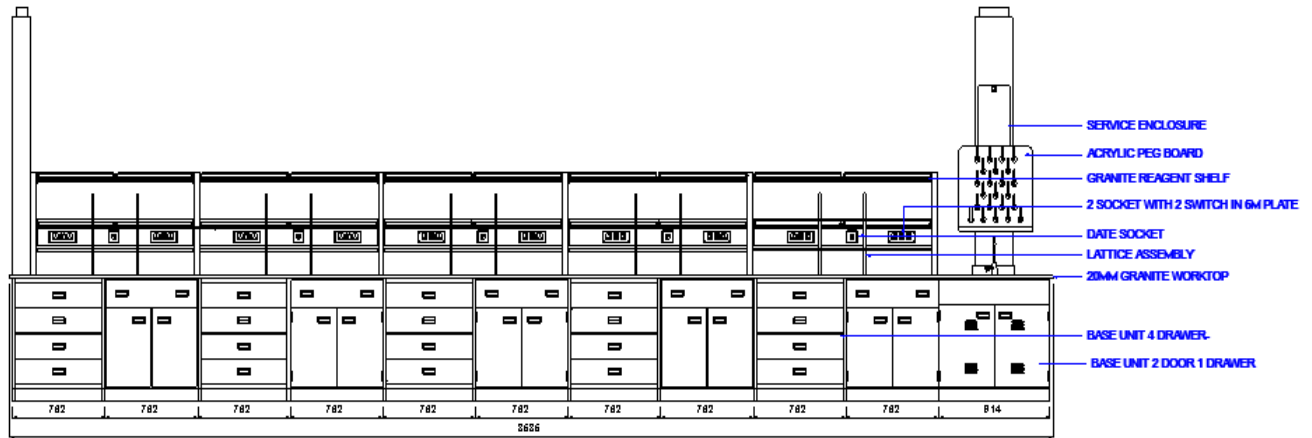


PLAN VIEW

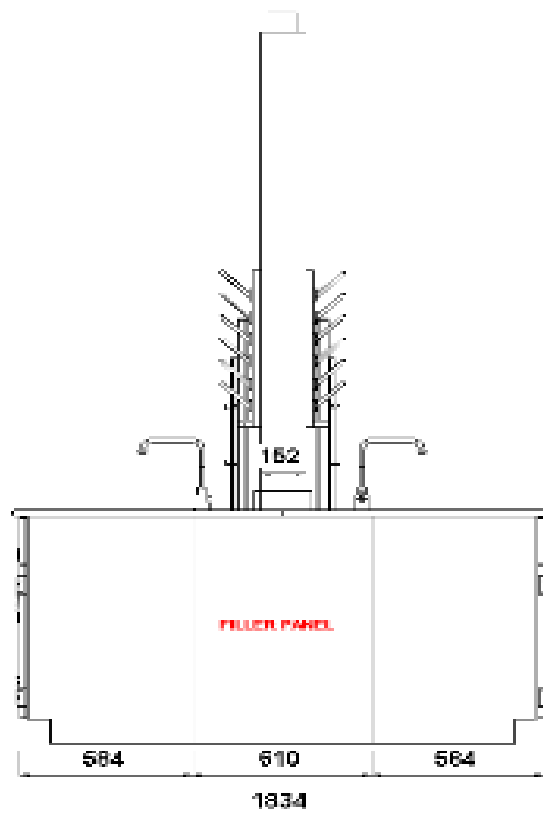
CAD images for Tender Item 6: Island Tables with under storage cabinet & reagent shelves Type-3: 8535 mm (L) x 1800 mm (W)

Measurements: ± 20 mm

03 numbers of 8530 mm (L) x 1800 mm x 910 mm (H) Island workbench with reagent racks and two sinks on one end of the table should be supplied and installed. All the workbenches should have the under-bench storage cabinets.

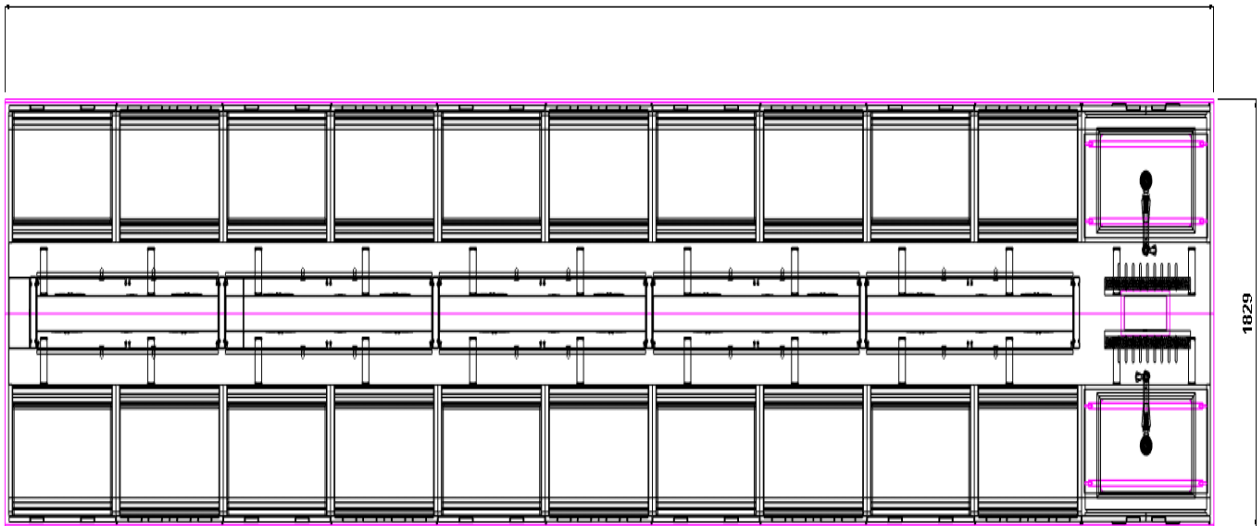


FRONT VIEW



SIDE VIEW

8585



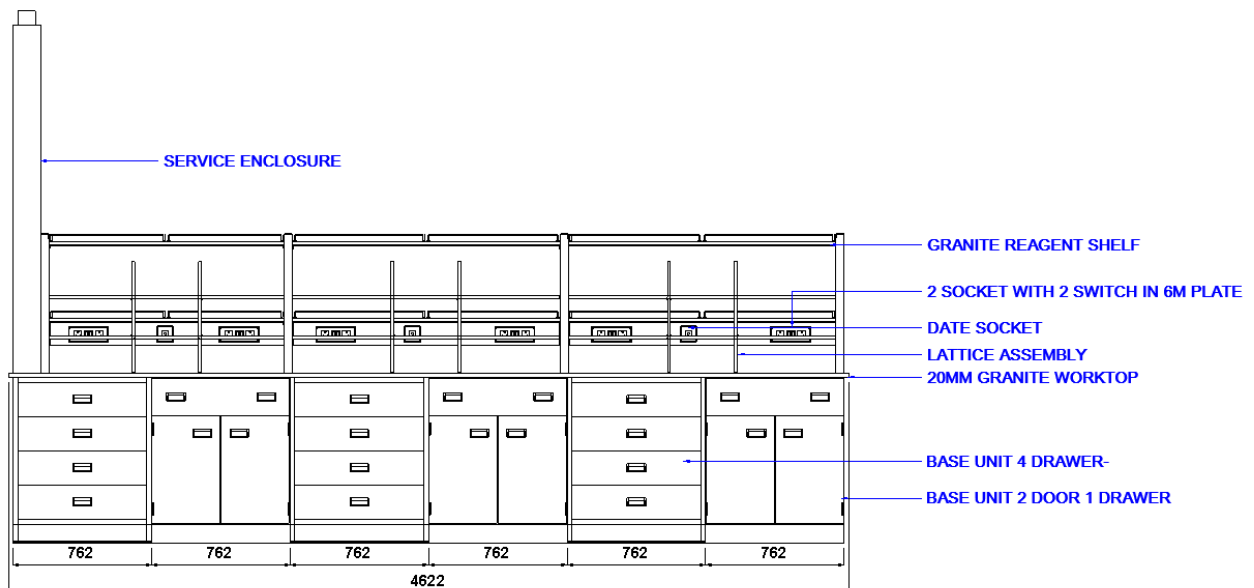
PLAN VIEW

CAD images for Tender No Item 7: Island Tables with under storage cabinet & reagent shelves

Type-4: 4572 mm (L) x 1520 mm (W) x 914 mm (H)

Measurements: ± 20 mm

03 numbers 4500 mm (L) x 1524 mm x 914 mm (H) Island workbench with reagent racks should be supplied and installed. All the workbenches should have the under-bench storage cabinets.



FRONT VIEW



SIDE VIEW

Technical Specifications for the PP Moulded Blowers:

Centrifugal PP Exhaust Fan

The exhaust fans supplied and installed shall be of 'Centrifugal Corrosion Resistant' type and shall be capable of delivering the design flow rate against all duct losses.

The fans shall be robust in construction and suitable for continuous duty operation. It shall be mounted with ease of maintenance and shall be installed with proper vibration isolators to minimize vibration transmission to ductwork and support structure.

Fans selected shall be silent and vibration free when running and suitable for outdoor use and shall not exceed 3000 rpm.

Aerodynamic performance of the fan shall be tested and comply 'ISO 5801' standards.

Sound level shall be tested and comply with 'ISO 5136.2' standards.

The casing shall be of self-supporting design, thermoformed welded by machine. The material of construction shall be polypropylene (PP) and suitable for use against corrosive 'medium' and a maximum allowable operating temperature of 70 °C.

No metal parts shall be exposed and in contact with the airstream.

Impeller material of construction shall be polypropylene (PP) and suitable for use against corrosive. And a maximum allowable operating temperature of 70 °C. It shall consist of 20 forward curved blades injection molded up to size 710 (thermoformed blades, automatically welded from 800). The impeller balancing shall be tested in accordance to VDI 2060, Q6.3 standards.

Electro-galvanized stand shall be used to support the fan and the motor in view of the corrosive environment.

A standard hub seal shall be fitted onto the impeller hub to prevent the corrosive 'medium' from contacting the shaft.

List of Approved makes for the Lab Fume Extraction & Scrubbing system:

Sl.No.	Description	Approved Makes
1.	PP MOULDED EXHAUST BLOWER	COLASIT / PLASTIFER
2.	BLOWER MOTOR	ABB / SIEMENS / CROMPTON GREAVES
3.	WET SCRUBBER WITH RECIRCULATION PUMP	CK AIRTECK / LIFE LINE / UNIVERSAL AIR CONTROL / CORROSION CONTROL
4.	PP SHEETS FOR EXHAUST DUCTING	MANDHANI / DUGAR / KHANNA / SIMONA / BECK
5.	ISOPHTHALIC RESIN	MECHEMCO / KAYSYNTH / ORSYN / SIMONA / CREST COMPOSITE
6.	DAMPERS	CK AIRTECK / LIFE LINE / UNIVERSAL AIR CONTROL / CORROSION CONTROL
7.	FLEXIBLE DUCT	FINOLEX / GIBBON
8.	ANCHOR FASTENERS	HILTI / FISCHER
9.	FASTENERS & WASHERS	TVS / UNBRAKO
10.	PPR / PPH PIPER	SANGIR / PRIME
11.	MINERAL WOOL	UP TWIGA / LLYODS / ROCK INSUL

SPECIFICATIONS FOR MOTOR AND ACCESSORIES:

Use an electric motor built to IEC standards foot mounted (B5), also in ex-protected or multistage versions, for the drive. The impeller hub is coated with aluminum. Power transmission from motor to impeller by means of an impeller directly fixing on the motor shaft in direct driven application. The impeller is fixed on to a flange bearing and the tightening adopter system guarantees secure mechanical connection.

Motor Standard IEC three-phase motors in accordance with IEC. Mounting B5.

Available in motor-mounted (IP55) or cabinet-mounted versions.

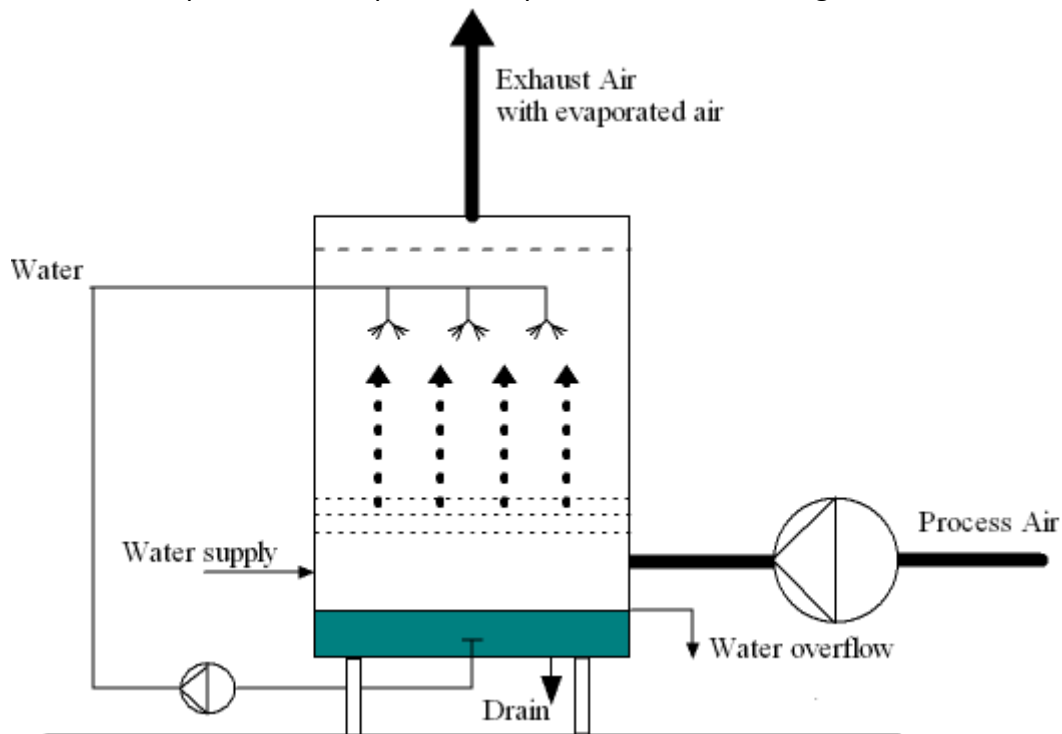
The fan shall be driven by a standard TEFC electric motor with class 'F' insulation and class 'B' temperature rise. Motor shall be suitable for outdoor installation with IP55 protection and suitable for operation with 415V/3Ph/50Hz electrical supply. Motor supplied shall be in accordance to IEC standards.

FUME WET SCRUBBER SPECIFICATION

1. These fume wet scrubbers should have one or two stages. Stage One removes the bulk of the contaminant from the air stream and may be continuously wetted to prevent plugging. The second stage should be a mist eliminator.
2. The Wet Scrubber's shall be manufactured of Polypropylene with FRP lining. Units are hydrostatically tested at the factory. The maximum temperature rating for polypropylene units is 60° Fahrenheit.
3. The Wet Scrubber shall be provided with access ports / doors to allow limited access to the internals of the unit. The Scrubber shell has flanged pipe connections or female NPT connections for introducing makeup and drain water as well as recirculation liquid connections.
4. The wet scrubbers should be equipped with random-dumped pall ring packing.
5. The Wet Scrubber should be equipped with a high efficiency (95% @ 15 micron and larger) mist eliminator. Material for the mist eliminator is PVC.

The proposed wet scrubbers should be furnished complete with auxiliaries and options described herein. The system shall include the following:

- All scrubber internals necessary to provide adequate process capture and to achieve the designed performance.
- Mist eliminator to achieve entrained liquid separation.
- Only Flanged connections for all external water fill, water makeup and drain piping as required.
- Self-contained recirculation system with all manual valve wherever requires along with scrubber pump.
- Ladder for sample collection, periodic inspection and monitoring



SPECIFICATIONS FOR DUCTING AND ACCESSORIES

TECHNICAL SPECIFICATION for PP/FRP DUCTING:

- a. PP means PPGL: One side smooth & glassy finish and other end is mat finish.
 - The smooth surface should be the inner surface of the duct.
 - On mat side, FRP lining to be done.

- 25 mm x 25 mm Stitch welding is done on inner surface and continuous welding on outer surface with 5 mm welding thickness.
- b. FRP Lining to be done on the outer surface of PPGL I.e. on mat side.
 - One-layer FRP is one mm.
 - The final layer should be with fine mat to have smooth and good finish.
 - While making the lining, there should not be any air pockets or any sort of uneven finish.
 - There should be time gap between the FRP layers, allowing each layer to be got dried.
 - c. Isothelic resin to be used. (Fire resistant 20 Seconds).
 - d. The make of PPGL sheet should be Reliance - Mumbai / Ducar - Ahmedabad.
 - e. The flange thickness should be 1.5 times of the duct thickness up to 750 mm and 2 times above 750 mm ducting.
 - f. All flanges are to be matched with M8, GI fasteners and flat washers on both the sides.
 - g. All the flanges should have fasteners at the 4 corners.
 - h. All the fasteners to be fixed at a pitch distance of between 125 mm to 150mm.
 - i. All the flanges should be properly ground and dressed.
 - j. Duct support distance should not be more than 2500 mm.
 - k. Any duct length should not be more than 3600 mm.
 - l. All square / rectangular ducts with more than 1800 mm length should have a brazing frame at the center on the external surface.
 - m. Provide 40 x 40 flanges up 750 mm duct size and 50 x 50 above 750 mm.
 - n. The finish paint should be admiral grey unless specified.
 - o. 5 mm Thick Neoprene gasket to be used between the flanges.

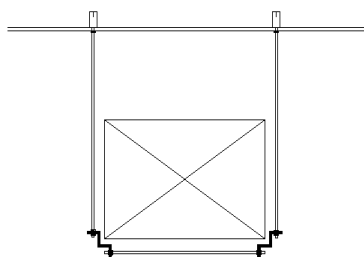
Duct Construction

The fabricated duct dimensions should be as per approved drawings and all connecting sections are dimensionally matched to avoid any gaps.

Duct Sizes In mm	Thickness of PP	Thickness of FRP
0-750mm	3 mm	3 mm
750-1500mm	5 mm	5 mm
1500-2000mm	5 mm	8 mm

Support System

A completely supporting system consisting of fully threaded rods, double L bottom brackets nuts, Washers, clamps for circular ducts and anchor bolts as supplied.



S.No.	Maximum Duct Size(mm)	Hanger Rod Diameter	Interval (mm)
1	Up to - 750	6 mm	2000
2	750 - 1500	8 mm	2000
3	1500 - 2000	10 mm	2000
4	Above 2000	12 mm	2000

To provide the required thermal brake effect, Neoprene or equivalent material of suitable thickness shall be used between duct joints.

Installation Practice

a. All necessary allowances and provision should be made for the beams, pipes, or other obstructions in the building whether or not the same are shown on the drawings. Where there is interference/ fouling with other beams, structural work, plumbing and conduits, the ducts shall be suitably as per actual site conditions.

b. Ducting over false ceiling shall be supported from the slab or from beams. In no case shall any duct be supported from false ceilings hangers or be permitted to rest on false ceiling. All Sheet work in dead or furred down spaces shall be erected in time to occasion no delay to other contractor's work in the building.

c. All ducts shall be totally free from vibration under all conditions of operation. Whenever ductwork is connected to fans that may cause vibration in the ducts, ducts shall be provided with a flexible connection, located at the unit discharge.

Dampers and Flexible Hose

General

Volume control damper sets shall be provided where specified according to the specifications in the offer BOQ. Dampers shall be double thickness heavier than the thickness of the large duct & shall be rigid in construction.

The volume control dampers shall be of an approved type, lever operated & complete with locking devices which will permit the dampers to be adjusted & locked in any positions.

Construct blades of 3 mm thick PP MOC, provide heavy-duty molded self-lubricating nylon bearings, 13mm (1/2") diameter Plastic axles spaced on 225mm (9") centers. Construct frame of 300 mm diameter outer with Flange for fitting minimum 6 bolts and nuts. The outer shell body shall be a transparent material of Poly propylene.

Automatic manual volume opposed blade shall be not over 225mm wide. The dampers for fresh air inlet shall additionally provide with fly mesh screen, on the outside of 0.8mm thickness with fine mesh.

Manually Adjustable Damper Sets:

Damper sets should be arranged in substantial supporting frames and each blade should be mounted on a shaft, which turns in sintered bronze bearings. All damper blades shall be interconnected by means of a suitable bar linkage for ganged operation.

All dampers shall be arranged with spindle horizontal and should be sized to handle the air quantities shown on the drawings. Where manually adjustable damper sets are installed in ductwork or other accessible locations the operating shafts should also be extended through the duct with a lockable quadrant fitted.

Bird Screens:

Galvanized woven mesh or weld mesh bird screens in rigid galvanized iron frames should be installed behind all Bypass exhaust air openings to the outside of the building.

Flexible Connections

Provide flexible duct connections wherever ductwork connects to vibration isolated equipment and on all exhaust final connections to spot extractor and as indicated on the drawings. Construct flexible connections of neoprene-coated flameproof fabric crimped into duct flanges for attachment to duct and equipment. Make air-tight joint. Provide adequate joint flexibility to allow for thermal, axial, transverse and torsional movement and also capable of absorbing vibrations of connected equipment.

Flexible connections shall be air tight and resistant to water and fire.

Flexible connections shall be fitted to isolate fans from equipments and/or ductwork. The connections shall be arranged to permit the renewal of the connection without disturbing the duct work or the plant. The metal parts of connected equipment shall be separated by not less than six inches and installed with sufficient slack to compensate for free movement of fans or spring vibration isolators.

Joint Measurements:

The following procedure for measurement shall be followed for the purpose of billing in case of items subject to variation in quantities.

Ducting:

Payment for ducting shall be based on the external surface area of the ducting.

The rate per square meter of the external surface shall include flanges, gaskets for joints, bolts and nuts, duct supports and hangers, vibration isolation pads or suspenders, flexible connections, inspection doors, dampers, turning vanes, straightening vanes, and any other item which will be required to complete the duct installation.

The external area shall be calculated by measuring the over-all width and depth (including the corner joints) in the centre of the duct section and over-all length of each duct section from flange face to flange face in case of duct lengths with uniform cross section.

Total area will be arrived at by adding up the areas of all duct sections.

In case of taper pieces average width and depth will be worked out as follows:

W1 = Width of small cross section

W2 = Width of large cross section

D1 = Depth of small cross section

D2 = Depth of large cross section

Average Width = $(W1 + W2)/2$

Average Depth = $(D1 + D2)/2$

Width and depth in the case of taper pieces shall be measured at the edge of the collar of the flange for duct/sections. Face to face length for taper piece shall be the mean of the lengths measured face to face from the centre of width and depth flanges.

For special pieces like bends, branches, and tees, etc., the same principle of area measurement as for linear lengths shall be adopted, except for bends and elbows, the length of which shall be the average of the lengths of inner and outer periphery along with curvature of angle of the piece.

1. Bill of Quantities

a. Fume Hoods

SL NO.	DESCRIPTION	UNIT	QTY
4 FEET BANCHTOP HUMEHOOD			
1	4 FEET BENCHTOP HOOD S=SWINGING TYPE FRONT PANEL COMBINATION SASH, SASH OPENING 28", 30" INTERNAL DEPTH, 48" LENGTH, PHENOLIC RESIN LINER, WITH INSERT TYPE WORKTOP	Nos.	4
2	PP CUPSINK 3x6x4	Nos.	8
3	REAR SCRIBE-18Hx00Dx5L, HEIGHT UP TO FALSE CEILING	Nos.	8
4	REAR SCRIBE-35Hx00Dx18L	Nos.	8
5	REAR SCRIBE - 57Hx00Dx05L	Nos.	8
6	BASE MOLDING 4 FT.	Nos.	4
7	FUMEHOOD ELECTRICAL SYSTEM-4+4 NOS 6/16A SOCKETS WITH SWITCH, NON-FLAME PROOF LIGHT FIXTURE ALONG WITH LED & 15 INTENSITY WITH 3 COLOR SETTINGS CONTROL SWITCH, FUMEHOOD DB AND INTERNAL WIRING WITHIN THE HOOD	Nos.	4
8	FUME HOOD MICROPROCESSOR BASED AIRFLOW MONITOR AND ALARM -VERTICAL - C/W SM7 SENSOR, SUITABLE POWER ADAPTOR	Nos.	4
9	FUMEHOOD FRONT CONTROL VALVE FOR ARGON	Nos.	8
10	FUMEHOOD FRONT CONTROL VALVE FOR COMPRESSED AIR	Nos.	4
11	FUMEHOOD FRONT CONTROL VALVE FOR CHILLED WATER IN	Nos.	4
12	FUMEHOOD FRONT CONTROL VALVE FOR CHILLED WATER OUT	Nos.	4
13	FUMEHOOD FRONT CONTROL VALVE FOR NITROGEN	Nos.	8
14	FUMEHOOD FRONT CONTROL VALVE FOR RAW WATER	Nos.	4
15	FUMEHOOD FRONT CONTROL VALVE FOR VACUUM	Nos.	8
16	FUMEHOOD SS304 INTERNAL TUBING UNTIL 150MM ABOVE THE HOOD WITH CAPPED END (1/2 FOR RW, VA, 1/2 WITH INSULATION CWI,CWO, 1/4 FOR N2,CA)	Nos.	40
17	BASE UNIT FH SOLVENT 1 DOOR-35Hx202x24L, PROVISION TO MOUNT 4 NOS ELECTRICAL SOCKETS.	Nos.	4
18	BASE UNIT FH ACID 1 DOOR-35Hx22Dx24L, PROVISION TO MOUNT 4 NOS ELECTRICAL SOCKET.	Nos.	4
19	FLOOR STANDING WORKTOP SUPPORT OF SIZE: 35Hx08L	Nos.	8

20	4 FT FUME HOOD CEILING ENCLOSURE WITH ACCESS DOOR, SIZE:18H x 30D x 48L, FOR COMBINATION SASH HOOD, HEIGHT UP TO FALSE CEILING	Nos.	4
21	EPOXY LATTICE ASSMBLY FOR 4' BENCHTOP FUMEHOOD	Nos.	4
22	4 FEET BENCH TOP FUME HOOD INSERT TYPE GRANITE WORKTOP.	Nos.	4
5 FEET BANCHTOP FUMEHOOD			
1	5 FEET BENCHTOP HOOD S=SWINGING TYPE FRONT PANEL COMBINATION SASH, SASH OPENING 28", 30" INTERNAL DEPTH, 60" LENGTH, PHENOLIC RESIN LINER, WITH INSERT TYPE WORKTOP	Nos.	6
2	PP CUPSINK 3x6x4	Nos.	12
3	REAR SCRIBE-18Hx00Dx5L, HEIGHT UP TO FALSE CEILING	Nos.	12
4	REAR SCRIBE-35Hx00Dx18L	Nos.	12
5	REAR SCRIBE - 57Hx00Dx05L	Nos.	12
6	BASE MOLDING 4 FT.	Nos.	12
7	FUMEHOOD ELECTRICAL SYSTEM-4+4 NOS 6/16A SOCKETS WITH SWITCH, NON-FLAME PROOF LIGHT FIXTURE ALONG WITH LED & 15 INTENSITY WITH 3 COLOR SETTINGS CONTROL SWITCH, FUMEHOOD DB AND INTERNAL WIRING WITHIN THE HOOD	Nos.	6
8	FUME HOOD MICROPROCESSOR BASED AIRFLOW MONITOR AND ALARM -VERTICAL - C/W SM7 SENSOR, SUITABLE POWER ADAPTOR	Nos.	6
9	FUMEHOOD FRONT CONTROL VALVE FOR ARGON	Nos.	12
10	FUMEHOOD FRONT CONTROL VALVE FOR COMPRESSED AIR	Nos.	6
11	FUMEHOOD FRONT CONTROL VALVE FOR CHILLED WATER IN	Nos.	6
12	FUMEHOOD FRONT CONTROL VALVE FOR CHILLED WATER OUT	Nos.	6
13	FUMEHOOD FRONT CONTROL VALVE FOR NITROGEN	Nos.	12
14	FUMEHOOD FRONT CONTROL VALVE FOR RAW WATER	Nos.	6
15	FUMEHOOD FRONT CONTROL VALVE FOR VACUUM	Nos.	12
16	FUMEHOOD SS304 INTERNAL TUBING UNTIL 150MM ABOVE THE HOOD WITH CAPPED END (1/2 FOR RW, VA, 1/2 WITH INSULATION CWI,CWO, 1/4 FOR N2,CA)	Nos.	60
17	BASE UNIT FH SOLVENT 2 DOOR-35Hx22Dx30L	Nos.	6
18	BASE UNIT FH ACID 2 DOOR-35Hx22Dx30L	Nos.	6
19	FLOOR STANDING WORKTOP SUPPORT OF SIZE: 35Hx08L	Nos.	18
20	5 FT FUME HOOD CEILING ENCLOSURE WITH ACCESS DOOR, SIZE:18H x 30D x 60L, FOR COMBINATION SASH HOOD, HEIGHT UP TO FALSE CEILING	Nos.	6
21	EPOXY LATTICE ASSMBLY FOR 5' BENCHTOP FUMEHOOD	Nos.	6
22	5 FEET BENCH TOP FUME HOOD INSERT TYPE GRANITE WORKTOP.	Nos.	6
6 FEET BANCHTOP FUMEHOOD			
1	6 FEET BENCHTOP HOOD S=SWINGING TYPE FRONT PANEL COMBINATION SASH, SASH OPENING 28", 30" INTERNAL DEPTH, 72" LENGTH, PHENOLIC RESIN LINER, WITH INSERT TYPE WORKTOP	Nos.	32
2	PP CUPSINK 3x6x4	Nos.	64
3	REAR SCRIBE-18Hx00Dx5L, HEIGHT UP TO FALSE CEILING	Nos.	64
4	REAR SCRIBE-35Hx00Dx18L	Nos.	64
5	REAR SCRIBE - 57Hx00Dx05L	Nos.	64
6	BASE MOLDING 4 FT.	Nos.	64

7	FUMEHOOD ELECTRICAL SYSTEM-4+4 NOS 6/16A SOCKETS WITH SWITCH, NON-FLAME PROOF LIGHT FIXTURE ALONG WITH LED & 15 INTENSITY WITH 3 COLOR SETTINGS CONTROL SWITCH, FUMEHOOD DB AND INTERNAL WIRING WITHIN THE HOOD	Nos.	32
8	FUME HOOD MICROPROCESSOR BASED AIRFLOW MONITOR AND ALARM -VERTICAL - C/W SM7 SENSOR, SUITABLE POWER ADAPTOR	Nos.	32
9	FUMEHOOD FRONT CONTROL VALVE FOR ARGON	Nos.	64
10	FUMEHOOD FRONT CONTROL VALVE FOR COMPRESSED AIR	Nos.	32
11	FUMEHOOD FRONT CONTROL VALVE FOR CHILLED WATER IN	Nos.	32
12	FUMEHOOD FRONT CONTROL VALVE FOR CHILLED WATER OUT	Nos.	32
13	FUMEHOOD FRONT CONTROL VALVE FOR NITROGEN	Nos.	64
14	FUMEHOOD FRONT CONTROL VALVE FOR RAW WATER	Nos.	32
15	FUMEHOOD FRONT CONTROL VALVE FOR VACUUM	Nos.	64
16	FUMEHOOD SS304 INTERNAL TUBING UNTIL 150MM ABOVE THE HOOD WITH CAPPED END (1/2 FOR RW, VA, 1/2 WITH INSULATION CWI,CWO, 1/4 FOR N2,CA)	Nos.	320
17	BASE UNIT FH SOLVENT 2 DOOR-35Hx22Dx36L	Nos.	32
18	BASE UNIT FH ACID 2 DOOR-35Hx22Dx36L	Nos.	32
19	FLOOR STANDING WORKTOP SUPPORT OF SIZE: 35Hx08L	Nos.	96
20	6 FT FUME HOOD CEILING ENCLOSURE WITH ACCESS DOOR, SIZE:18H x 30D x 72L, FOR COMBINATION SASH HOOD, HEIGHT UP TO FALSE CEILING	Nos.	32
21	EPOXY LATTICE ASSMBLY FOR 6' BENCHTOP FUMEHOOD	Nos.	32
22	6 FEET BENCH TOP FUME HOOD INSERT TYPE GRANITE WORKTOP.	Nos.	32

b. Exhaust System:

SI. NO.	DESCRIPTION	UNIT	QTY
CHEMICAL ENGINEERING BLOCK			
A	CENTRIFUGAL BLOWER & MOTOR		
1	Medium Pressure Direct Driven PP Centrifugal Blower (650-1100cfm @ 30-100mm static), with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	3
2	Motor 1.5KW/2P(2HP/2P) TEFC B5/Flange mounted 3phase 50Hz, IE2.Terminal box should be on top side. Motor Shall be compatible for VFD Operation. Refer Cluster details.	No.	3
B	WET SCRUBBERS & ACCESSORIES		

1	Vertical single stage packed bed scrubber with integrated water tank. The scrubber capacity is 850-1500 CFM and made up of PP+FRP material. The approximate size shall be 700 mm dia & 2500mm ht, complete with packing material, mist eliminator, inspection window, marine light with external switch and FRP coated MS ladder with handrail. Provision for Makeup Water connection with control Valve, Water Level Indicator, provision for Drain connection with Control Valve, Overflow Pipe with float valve. Scrubber Recirculation Pump with inlet Flange with Y-Strainer, ball valves, Outlet Flange with NRV, Ball Valve. Complete recirculation piping with suitable supports. Inlet and outlet flange for duct connections with gasket and Bolt Nuts. Vertical Seal less Scrubber Pump with enclosure suitable for 46 Lpm flow, 1HP, 3phase 50Hz, 415Volts. Provision for Dosing connection if any with Valve, Scrubber Mounting Bolt & Nuts with Anti Vibration Pads. The operating Temperature is upto 60deg C (max.) and Pressure drop across the scrubber shall not be more than 600Pa (approx.).	No	3
C	PP-FRP DUCTING & ACCESSORIES		
1	PP-FRP ducting using 3mm thick PPGL sheets 3mm thick FRP lining using isothelic resin including flanges & bends, gasket, support with threaded rod, clamps, anchor fasteners, washer nuts and bolts including UV resistant painting.	Sqm	85
2	MS Support for Ducts like threaded rod, anchor bolts, c-channel, clamps, angles, bolts & nuts. Inside lab, within Shaft & outside the building.	Kg.	120
3	PP moulded 300mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	3
4	PP moulded 200mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No	3
5	PP moulded 100mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No	6
6	PVC Coated Collapsible hose 300mm Dia with 350mm Dia Clips.	Rm	3
7	PVC Coated Collapsible hose 100mm Dia with 150mm Dia Clips.	Rm	12
8	Fumehood Base cabinet vent connection & Accessories	Set	3
8.1	40 mm PP Slip x Slip x Slip Tee	No.	3
8.2	40mm CTS Slip x MPT Male Adapter 50mm with Chuck Nut	No.	6
8.3	40mm CTS 90-Degree Slip x Slip Elbow	No.	6
8.4	40mm. x 2500mm PP Exhaust Pipe	No.	3
TOTAL OF CHEMICAL ENGINEERING BLOCK			
SI. NO.	DESCRIPTION	UNIT	QTY
CHEMISTRY LAB BLOCK			
A	CENTRIFUGAL BLOWER & MOTOR		
1	Medium Pressure Direct Driven PP Centrifugal Blower (4050-5500cfm @ 40-120mm static) with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	1
2	Motor 7.5KW/4P(10HP/4P) TEFC B3/Foot mounted 3phase 50Hz, IE2. Terminal box should be on top side. Motor Shall be compatible for VFD Operation.	No.	1
3	Medium Pressure Direct Driven PP Centrifugal Blower (2650-4000cfm @ 40-120mm static) with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	5
4	Motor 5.5KW/4P(7.5HP/4P) TEFC B5/Flange mounted 3phase 50Hz, IE2. Terminal box should be on top side. Motor Shall be compatible for VFD Operation.	No.	5

5	Medium Pressure Direct Driven PP Centrifugal Blower (650-1100cfm @ 30-60mm static) with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	2
6	Motor 1.1KW/2P(1.5HP/2P) TEFC B5/Flange mounted 3phase 50Hz, IE2. Terminal box should be on top side. Motor Shall be compatible for VFD Operation.	No	2
B	SCRUBBERS & ACCESSORIES		
1	Vertical single stage packed bed scrubber with integrated water tank. The scrubber capacity is 3250-4200 CFM and made up of PP+FRP material. The approximate size shall be 1200 mm dia & 4000mm ht, complete with packing material, mist eliminator, inspection window, marine light with external switch and FRP coated MS ladder with handrail. Provision for Makeup Water connection with control Valve, Water Level Indicator, provision for Drain connection with Control Valve, Overflow Pipe with float valve. Scrubber Recirculation Pump with inlet Flange with Y-Strainer, ball valves, Outlet Flange with NRV, Ball Valve. Complete recirculation piping with suitable supports. Inlet and outlet flange for duct connections with gasket and Bolt Nuts. Vertical Seal less Scrubber Pump with enclosure suitable for 117 Lpm flow, 2HP, 3phase 50Hz, 415Volts. Provision for Dosing connection if any with Valve, Scrubber Mounting Bolt & Nuts with Anti Vibration Pads. The operating Temperature is upto 60deg C (max.) and Pressure drop across the scrubber shall not be more than 600Pa (approx.).	No	5
2	Vertical single stage packed bed scrubber with integrated water tank. The scrubber capacity is 4250-6000 CFM and made up of PP+FRP material. The approximate size shall be 1350 mm dia & 4250mm ht, complete with packing material, mist eliminator, inspection window, marine light with external switch and FRP coated MS ladder with handrail. Provision for Makeup Water connection with control Valve, Water Level Indicator, provision for Drain connection with Control Valve, Overflow Pipe with float valve. Scrubber Recirculation Pump with inlet Flange with Y-Strainer, ball valves, Outlet Flange with NRV, Ball Valve. Complete recirculation piping with suitable supports. Inlet and outlet flange for duct connections with gasket and Bolt Nuts. Vertical Seal less Scrubber Pump with enclosure suitable for 148 Lpm flow, 2HP, 3phase 50Hz, 415Volts. Provision for Dosing connection if any with Valve, Scrubber Mounting Bolt & Nuts with Anti Vibration Pads. The operating Temperature is upto 60deg C (max.) and Pressure drop across the scrubber shall not be more than 600Pa (approx.).	No	1
C	PP-FRP DUCTING & ACCESSORIES		
1	PP-FRP ducting using 3mm thick PPGL sheets 3mm thick FRP lining using isophthalic resin including flanges & bends, gasket, support with threaded rod, clamps, anchor fasteners, washer nuts and bolts including UV resistant painting.	Sqm	415
2	MS Support for Ducts like threaded rod, anchor bolts, c-channel, clamps, angles, bolts & nuts. Inside lab, within Shaft & outside the building.	Kg.	465
3	PP moulded 300mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	27
4	PP moulded 200mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	4
5	PP moulded 100mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	16
6	PP moulded 400mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	6
7	PP moulded 200mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	2
8	PVC Coated Collapsable hose 300mm Dia with 350mm Dia Clips.	Rm	27
9	PVC Coated Collapsable hose 100mm Dia with 150mm Dia Clips.	Rm	32
10	Fume hood Base cabinet vent connection & Accessories	Set	27

10.1	40 mm PP Slip x Slip x Slip Tee	No.	27
10.2	40mm CTS Slip x MPT Male Adapter 50mm with Chuck Nut	No.	54
10.3	40mm CTS 90-Degree Slip x Slip Elbow	No.	54
10.4	40mm. x 2500mm PP Exhaust Pipe	No.	27
TOTAL OF CHEMISTRY LAB BLOCK			

SI. NO.	DESCRIPTION	UNIT	QTY
CIVIL AND ENVIRONMENTAL ENGG. BLOCK			
A	CENTRIFUGAL BLOWER & MOTOR		
1	Medium Pressure Direct Driven PP Centrifugal Blower (2650-4000cfm @ 40-120mm static) with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	1
2	Motor 3.7KW/4P(5HP/4P) TEFC B5/Flange mounted 3phase 50Hz, IE2.Terminal box should be on top side. Motor Shall be compatible for VFD Operation.	No.	1
3	Medium Pressure Direct Driven PP Centrifugal Blower (1150-1600cfm @ 30-130mm static), with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	1
4	Motor 2.2KW/2P(3HP/2P) TEFC B5/Flange mounted 3phase 50Hz, IE2.Terminal box should be on top side. Motor Shall be compatible for VFD Operation. Refer Cluster details.	No.	1
5	Medium Pressure Direct Driven PP Centrifugal Blower (650-1100cfm @ 30-100mm static), with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	1
6	Motor 1.5KW/2P(2HP/2P) TEFC B5/Flange mounted 3phase 50Hz, IE2.Terminal box should be on top side. Motor Shall be compatible for VFD Operation. Refer Cluster details.	No.	1
7	Medium Pressure Direct Driven PP Centrifugal Blower (650-1100cfm @ 30-100mm static), with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	2
8	Motor 1.1KW/2P(1.5HP/2P) TEFC B5/Flange mounted 3phase 50Hz, IE2.Terminal box should be on top side. Motor Shall be compatible for VFD Operation. Refer Cluster details.	No.	2
B	WET SCRUBBERS & ACCESSORIES		
	Vertical single stage packed bed scrubber with integrated water tank. The scrubber capacity is 2550-3200 CFM and made up of PP+FRP material. The approximate size shall be 1000 mm dia & 3750mm ht, complete with packing material, mist eliminator, inspection window, marine light with external switch and FRP coated MS ladder with handrail. Provision for Makeup Water connection with control Valve, Water Level Indicator, provision for Drain connection with Control Valve, Overflow Pipe with float valve. Scrubber Recirculation Pump with inlet Flange with Y-Strainer, ball valves, Outlet Flange with NRV, Ball Valve. Complete recirculation piping with suitable supports. Inlet and outlet flange for duct connections with gasket and Bolt Nuts. Vertical Seal less Scrubber Pump with enclosure suitable for 95 Lpm flow, 1HP, 3phase 50Hz, 415Volts. Provision for Dosing connection if any with Valve, Scrubber Mounting Bolt & Nuts with Anti Vibration Pads. The operating Temperature is upto 60deg C (max.) and Pressure drop across the scrubber shall not be more than 600Pa (approx.).	No	1

	Vertical single stage packed bed scrubber with integrated water tank. The scrubber capacity is 850-1500 CFM and made up of PP+FRP material. The approximate size shall be 700 mm dia & 2500mm ht, complete with packing material, mist eliminator, inspection window, marine light with external switch and FRP coated MS ladder with handrail. Provision for Makeup Water connection with control Valve, Water Level Indicator, provision for Drain connection with Control Valve, Overflow Pipe with float valve. Scrubber Recirculation Pump with inlet Flange with Y-Strainer, ball valves, Outlet Flange with NRV, Ball Valve. Complete recirculation piping with suitable supports. Inlet and outlet flange for duct connections with gasket and Bolt Nuts. Vertical Seal less Scrubber Pump with enclosure suitable for 46 Lpm flow, 1HP, 3phase 50Hz, 415Volts. Provision for Dosing connection if any with Valve, Scrubber Mounting Bolt & Nuts with Anti Vibration Pads. The operating Temperature is upto 60deg C (max.) and Pressure drop across the scrubber shall not be more than 600Pa (approx.).	No	2
C	PP-FRP DUCTING & ACCESSORIES		
1	PP-FRP ducting using 3mm thick PPGL sheets 3mm thick FRP lining using isophthalic resin including flanges & bends, gasket, support with threaded rod, clamps, anchor fasteners, washer nuts and bolts including UV resistant painting.	Sqm	200
2	MS Support for Ducts like threaded rod, anchor bolts, c-channels, clamps, angles, bolts & nuts. Inside lab, within Shaft & outside the building.	Kg.	280
3	PP moulded 300mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	7
4	PP moulded 200mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	2
5	PP moulded 150mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	3
6	PP moulded 100mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	12
7	PP moulded 300mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No	1
8	PP moulded 200mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No	1
9	PP moulded 150mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No	2
10	PVC Coated Collapsable hose 300mm Dia with 350mm Dia Clips.	Rm	7
11	PVC Coated Collapsable hose 100mm Dia with 150mm Dia Clips.	Rm	24
11.1	Fume hood Base cabinet vent connection & Accessories	Set	7
11.2	40 mm PP Slip x Slip x Slip Tee	No.	7
11.3	40mm CTS Slip x MPT Male Adapter 50mm with Chuck Nut	No.	14
11.4	40mm CTS 90-Degree Slip x Slip Elbow	No.	14
	40mm. x 2500mm PP Exhaust Pipe	No.	7
	TOTAL OF CIVIL AND ENVIRONMENTAL ENGG. BLOCK		

SI. NO.	DESCRIPTION	UNIT	QTY
	PHYSICS LAB BLOCK		
A	CENTRIFUGAL BLOWER & MOTOR		
1	Medium Pressure Direct Driven PP Centrifugal Blower (2650-4000cfm @ 40-120mm static) with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	1

2	Motor 5.5KW/4P(7.5HP/4P) TEFC B5/Flange mounted 3phase 50Hz, IE2.Terminal box should be on top side. Motor Shall be compatible for VFD Operation.	No.	1
3	Medium Pressure Direct Driven PP Centrifugal Blower (650-1100cfm @ 30-100mm static), with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	1
4	Motor 1.5KW/2P(2HP/2P) TEFC B5/Flange mounted 3phase 50Hz, IE2.Terminal box should be on top side. Motor Shall be compatible for VFD Operation. Refer Cluster details.	No.	1
5	Medium Pressure Direct Driven PP Centrifugal Blower (650-1100cfm @ 30-60mm static), with clamp adapter, Electro galvanized stand base frame and fasteners, weather cowl, stack support, motor guard, bird mesh, inlet and outlet flexible hose connections. Refer Cluster details.	No	1
6	Motor 1.1KW/2P(1.5HP/2P) TEFC B5/Flange mounted 3phase 50Hz, IE2.Terminal box should be on top side. Motor Shall be compatible for VFD Operation. Refer Cluster details.	No.	1
B	WET SCRUBBERS & ACCESSORIES		
	Vertical single stage packed bed scrubber with integrated water tank. The scrubber capacity is 3250-4200 CFM and made up of PP+FRP material. The approximate size shall be 1200 mm dia & 4000mm ht, complete with packing material, mist eliminator, inspection window, marine light with external switch and FRP coated MS ladder with handrail. Provision for Makeup Water connection with control Valve, Water Level Indicator, provision for Drain connection with Control Valve, Overflow Pipe with float valve. Scrubber Recirculation Pump with inlet Flange with Y-Strainer, ball valves, Outlet Flange with NRV, Ball Valve. Complete recirculation piping with suitable supports. Inlet and outlet flange for duct connections with gasket and Bolt Nuts. Vertical Seal less Scrubber Pump with enclosure suitable for 117 Lpm flow, 2HP, 3phase 50Hz, 415Volts. Provision for Dosing connection if any with Valve, Scrubber Mounting Bolt & Nuts with Anti Vibration Pads. The operating Temperature is upto 60deg C (max.) and Pressure drop across the scrubber shall not be more than 600Pa (approx.).	No	1
	Vertical single stage packed bed scrubber with integrated water tank. The scrubber capacity is 850-1500 CFM and made up of PP+FRP material. The approximate size shall be 700 mm dia & 2500mm ht, complete with packing material, mist eliminator, inspection window, marine light with external switch and FRP coated MS ladder with handrail. Provision for Makeup Water connection with control Valve, Water Level Indicator, provision for Drain connection with Control Valve, Overflow Pipe with float valve. Scrubber Recirculation Pump with inlet Flange with Y-Strainer, ball valves, Outlet Flange with NRV, Ball Valve. Complete recirculation piping with suitable supports. Inlet and outlet flange for duct connections with gasket and Bolt Nuts. Vertical Seal less Scrubber Pump with enclosure suitable for 46 Lpm flow, 1HP, 3phase 50Hz, 415Volts. Provision for Dosing connection if any with Valve, Scrubber Mounting Bolt & Nuts with Anti Vibration Pads. The operating Temperature is upto 60deg C (max.) and Pressure drop across the scrubber shall not be more than 600Pa (approx.).	No	1
C	PP-FRP DUCTING & ACCESSORIES		
1	PP-FRP ducting using 3mm thick PPGL sheets 3mm thick FRP lining using isophthalic resin including flanges & bends, gasket, support with threaded rod, clamps, anchor fasteners, washer nuts and bolts including UV resistant painting.	Sqm	175
2	MS Support for Ducts like threaded rod, anchor bolts, c-channels, clamps, angles, bolts & nuts. Inside lab, within Shaft & outside the building.	Kg.	200
3	PP moulded 300mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	5
5	PP moulded 200mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	1

7	PP moulded 100mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No.	5
8	PP moulded 400mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No	1
10	PP moulded 200mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No	1
11	PP moulded 150mm dia. single leaf Butterfly Manual damper with Both side flanges. Refer drawing.	No	1
12	PVC Coated Collapsable hose 300mm Dia with 350mm Dia Clips.	Rm	5
13	PVC Coated Collapsable hose 100mm Dia with 150mm Dia Clips.	Rm	10
14	Fume hood Base cabinet vent connection & Accessories	Set	5
14.1	40 mm PP Slip x Slip x Slip Tee	No.	5
14.2	40mm CTS Slip x MPT Male Adapter 50mm with Chuck Nut	No.	10
14.3	40mm CTS 90-Degree Slip x Slip Elbow	No.	10
14.4	40mm. x 2500mm PP Exhaust Pipe	No.	5
TOTAL OF PHYSICS LAB BLOCK			

c. Ductless Fume Hood:

SL NO.	DESCRIPTION	UNIT	QTY
LAB FUMEHOOD 5FT DUCTLESS AND ACCESSORIES			
1	60" wide ductless polypropylene fume hood with AirSafe automatic safety controller, folding sash, and vapor proof fluorescent light. Hood requires a minimum of four like filters for operation, not included in price. 220V AC	Nos	1
2	Multipurpose bonded carbon filter	NOS	4
3	220V, Electrical sockets with internal wiring	Nos	4
4	H Frame structure of 35H x 30D x 60L.; WC- without connecting Bar in front side; B3- Heavy duct castor with Brake in front and without break in rear.	Nos	1
5	Granite worktop Flat edge and 30mm thickness; 32D x 62L	Nos	1
6	EPOXY LATTICE ASSMBLY FOR 5' DUCTLESS FUMEHOOD	Nos.	1
LAB FUMEHOOD 6FT DUCTLESS AND ACCESSORIES			
1	72" wide Endeavour ductless polypropylene fume hood with AirSafe automatic safety controller, vertical safety glass sliding sash and vapor proof fluorescent light. Hood requires a minimum of four like filters for operation, not included in price. 220V AC	Nos	4
2	Multipurpose bonded carbon filter	Nos	16
4	Service fixtures for N2.	Nos	4
5	Service fixtures for VA.	Nos	4
7	Service fixtures for RW	Nos	4
8	Fume hood Internal Piping	Nos	12
9	230V Electrical Sockets (1+1) along with internal wiring	Nos	2
10	H Frame structure of 35H x 30D x 72L.; WC- without Connecting Bar in front side; B3- Heavy duct castor with Brake in front and without break in rear.	Nos	4
11	Granite worktop Flat edge and 30mm thickness; 32D x 74L	Nos	4
13	EPOXY LATTICE ASSMBLY FOR 6' DUCTLESS FUMEHOOD (ACPT600S220)	Nos.	4

d. Island tables

Type-1: 4570 mm (L) x 1770 mm (W)			
1	6/16A (RAW POWER) 2 SOCKET WITH 2 SWITCH IN 6M PLATE	Nos.	48
2	REAR SCRIBE-35Hx00Dx22L	Nos.	8
3	CAT 6A INFORMATION OUTLETS WITH POLYCARBONATE I/O FACE PLATE (DATA)	Nos.	24
4	BASE UNIT 4 DRAWER-35Hx22Dx30L	Nos.	24
5	BASE UNIT 2 DOOR 1 DRAWER-35Hx22Dx30L	Nos.	24
6	DOUBLE SIDED METAL ELECTRICAL RACEWAY, 05Hx06D	Inch	664
7	BASE MOLDING 4 FT.	Nos.	48
8	CORNOR CLIP	Nos.	24
9	REAGENT WORKTOP SUPPORT 12x51, REFER DRAWING	Nos.	8
10	REAGENT WORKTOP SUPPORT 12x58, REFER DRAWING	Nos.	16
11	BENCH MOUNT 12" DOUBLE SIDED COLUMN, SIZE: 30Hx12Dx02L, POWDER COATED ACCENT STRIP & BENCH MOUNTED, PROVISION TO MOUNT LATTICE ASSEMBLY.	Nos.	16
12	GRANITE REAGENT SHELF 12x51, SS 316L RETAINING ROD.	Nos.	8
13	GRANITE REAGENT SHELF 12x58, SS 316L RETAINING ROD.	Nos.	16
14	18/19mm THK. GRANITE WORKTOP IN SFT	Sqft	364
15	FLOOR STANDING WORKTOP SUPPORT OF SIZE: 35Hx08L	Nos.	48
16	2 HORIZONTAL AND 4 VERTICAL LATTICE ASSEMBLY FOR REAGENT RODS, 24H, 66L, O MOUNT ON BOTH SIDE UPRIGHT WITH FIXING SUPPORTS AND ACCESSORIES.	Nos.	24
17	SERVICE ENCLOSURE -12x6x112	Nos.	4
18	GRANITE SKIRTING. 4x1	Rft	20
Type-2: 6550 mm (L) x 1530 mm (W)			
1	6/16A (RAW POWER) 2 SOCKET WITH 2 SWITCH IN 6M PLATE	Nos.	96
2	ACRYLIC PEG BOARD WITH 23 PEGS WITH SS 316L TRAY, 610L x 610mm(H) WITH 90 DEGREE BEND TUBE UPTO SINK	Nos.	12
3	REAR SCRIBE-35Hx00Dx12L	Nos.	12
4	BENCH MOUNTED 1-WAY WATER FITTING WITH 8" RIGID/SWING GOOSENECK WITH AERATOR FOR RAW WATER	Nos.	12
5	CAT 6A INFORMATION OUTLETS WITH POLYCARBONATE I/O FACE PLATE (DATA)	Nos.	48
6	BASE UNIT 4 DRAWER-35Hx22Dx24L	Nos.	24
7	BASE UNIT 4 DRAWER-35Hx22Dx30L	Nos.	24
8	BASE UNIT 2 DOOR 1 DRAWER-35Hx22Dx30L	Nos.	48
9	DOUBLE SIDED METAL ELECTRICAL RACEWAY, 05Hx06D	Inch	1272
10	DECK MOUNTED DOUBLE HEAD EYE WASH/DRENCH	Nos.	6
11	BASE MOLDING 4 FT.	Nos.	88
12	CORNOR CLIP	Nos.	30
13	REAGENT WORKTOP SUPPORT 12x51, REFER DRAWING	Nos.	12
14	REAGENT WORKTOP SUPPORT 12x52, REFER DRAWING	Nos.	24
15	REAGENT WORKTOP SUPPORT 12x58, REFER DRAWING	Nos.	12
16	BENCH MOUNT 12" DOUBLE SIDED COLUMN, SIZE: 30Hx12Dx02L, POWDER COATED ACCENT STRIP & BENCH MOUNTED, PROVISION TO MOUNT LATTICE ASSEMBLY.	Nos.	30
17	BASE UNIT SINK 2 DOOR-35Hx22Dx30L, 1P=WITH PP TRAY	Nos.	12
18	GRANITE REAGENT SHELF 12x51, SS 316L RETAINING ROD.	Nos.	12
19	GRANITE REAGENT SHELF 12x52, SS 316L RETAINING ROD.	Nos.	24
20	GRANITE REAGENT SHELF 12x58, SS 316L RETAINING ROD.	Nos.	12
21	18/19mm THK. GRANITE WORKTOP IN SFT	Sqft	680

22	SINK SUPPORT KIT FOR 30" CABINET	Nos.	12
23	2 HORIZONTAL AND 4 VERTICAL LATTICE ASSEMBLY FOR REAGENT RODS, 24H, 65L	Nos.	48
24	PP SINK, SIZE: 600Lx450Dx315Hmm AND BOWL SIZE: 550Lx400Dx315Hmm	Nos.	12
25	WASTE, 1 1/2" BSP X 76mm	Nos.	12
26	ANTI SIPHON BOTTLE TRAP	Nos.	12
27	REDUCING COUPLER IN PP 51 X 31MM + PP PIPE LENGTHS - ONE FEET LENGTH - DIA. 38MM	Nos.	12
28	SERVICE ENCLOSURE -12x6x112	Nos.	12
29	GRANITE SKIRTING. 4x1	Rft	30
Type-3: 8535 mm (L) x 1800 mm (W)			
1	6/16A (RAW POWER) 2 SOCKET WITH 2 SWITCH IN 6M PLATE	Nos.	60
2	ACRYLIC PEG BOARD WITH 23 PEGS WITH SS 316L TRAY, 610L x 610mm(H) WITH 90 DEGREE BEND TUBE UPTO SINK	Nos.	6
3	REAR SCRIBE-35Hx00Dx24L	Nos.	6
4	BENCH MOUNTED 1-WAY WATER FITTING WITH 8" RIGID/SWING GOOSENECK WITH AERATOR FOR RAW WATER	Nos.	6
5	CAT 6A INFORMATION OUTLETS WITH POLYCARBONATE I/O FACE PLATE (DATA)	Nos.	30
6	BASE UNIT 4 DRAWER-35Hx22Dx30L	Nos.	30
7	BASE UNIT 2 DOOR 1 DRAWER-35Hx22Dx30L	Nos.	30
8	DOUBLE SIDED METAL ELECTRICAL RACEWAY, 05Hx06D	Inch	844
9	DECK MOUNTED DOUBLE HEAD EYE WASH/DRENCH	Nos.	3
10	BASE MOLDING 4 FT.	Nos.	52
11	CORNOR CLIP	Nos.	20
12	REAGENT WORKTOP SUPPORT 12x51, REFER DRAWING	Nos.	6
13	REAGENT WORKTOP SUPPORT 12x58, REFER DRAWING	Nos.	24
14	BENCH MOUNT 12" DOUBLE SIDED COLUMN, SIZE: 30Hx12Dx02L, POWDER COATED ACCENT STRIP & BENCH MOUNTED, PROVISION TO MOUNT LATTICE ASSEMBLY.	Nos.	18
15	BASE UNIT SINK 2 DOOR-35Hx22Dx36L, WITH PP TRAY	Nos.	6
16	GRANITE REAGENT SHELF 12x51, SS 316L RETAINING ROD.	Nos.	6
17	GRANITE REAGENT SHELF 12x58, SS 316L RETAINING ROD.	Nos.	24
18	18/19mm THK. GRANITE WORKTOP IN SFT	Sqft	530
19	FLOOR STANDING WORKTOP SUPPORT OF SIZE: 35Hx08L	Nos.	72
20	SINK SUPPORT KIT FOR 36" CABINET	Nos.	6
21	2 HORIZONTAL AND 4 VERTICAL LATTICE ASSEMBLY FOR REAGENT RODS, 24H, 65L	Nos.	30
22	PP BIG SINK, SIZE: 700Lx450Dx315Hmm AND BOWL SIZE: 650Lx400Dx315Hmm	Nos.	6
23	WASTE, 1 1/2" BSP X 76mm	Nos.	6
24	ANTI SIPHON BOTTLE TRAP	Nos.	6
25	REDUCING COUPLER IN PP 51 X 31MM + PP PIPE LENGTHS - ONE FEET LENGTH - DIA. 38MM	Nos.	6
26	SERVICE ENCLOSURE -12x6x112	Nos.	6
27	GRANITE SKIRTING. 4x1	Rft	30
Type-4: 4572 mm (L) x 1520 mm (W) x 914 mm (H)			
1	6/16A (RAW POWER) 2 SOCKET WITH 2 SWITCH IN 6M PLATE	Nos.	36
2	REAR SCRIBE-35Hx00Dx12L	Nos.	6
3	CAT 6A INFORMATION OUTLETS WITH POLYCARBONATE I/O FACE PLATE (DATA)	Nos.	18
4	BASE UNIT 4 DRAWER-35Hx22Dx30L	Nos.	18
5	BASE UNIT 2 DOOR 1 DRAWER-35Hx22Dx30L	Nos.	18

6	DOUBLE SIDED METAL ELECTRICAL RACEWAY, 05Hx06D	Inch	498
7	BASE MOLDING 4 FT.	Nos.	40
8	CORNOR CLIP	Nos.	20
9	REAGENT WORKTOP SUPPORT 12x51, REFER DRAWING	Nos.	6
10	REAGENT WORKTOP SUPPORT 12x58, REFER DRAWING	Nos.	12
11	BENCH MOUNT 12" DOUBLE SIDED COLUMN, SIZE: 30Hx12Dx02L, POWDER COATED ACCENT STRIP & BENCH MOUNTED, PROVISION TO MOUNT LATTICE ASSEMBLY.	Nos.	12
12	GRANITE REAGENT SHELF 12x51, SS 316L RETAINING ROD.	Nos.	6
13	GRANITE REAGENT SHELF 12x58, SS 316L RETAINING ROD.	Nos.	12
14	18/19mm THK. GRANITE WORKTOP IN SFT	Sqft	240
15	2 HORIZONTAL AND 4 VERTICAL LATTICE ASSEMBLY FOR REAGENT RODS, 24H, 66L, TO MOUNT ON BOTH SIDE UPRIGHT WITH FIXING SUPPORTS AND ACCESSORIES.	Nos.	18
16	SERVICE ENCLOSURE -12x6x112	Nos.	10
TOTAL OF ANNEXURE			

e. Bio-safety cabinet

SL NO.	DESCRIPTION	UNIT	QTY
4 FEET BIOSAFETY CABINET			
1	BIO SAFETY INTERNAL PIPING FOR 1NO SERVICE	Nos.	3
2	THE INTERCEPTOR CLASS II, A2 BIOLOGICAL SAFETY CABINET WITH MECHANICAL STAND SIZE: L=1100MM, D=815MM, H=1610MM WITH 1+1 NO 230 V ELECTRICAL SOCKETS WITH FLAP	Nos.	3
3	BIOSAFETY CABINET CASTER SET 102MM (40) (DURATEX PHENOLIC WHEEL WITH FRONT LOCKING WHEELS)	Nos.	3
4	BIOSAFETY CABINET UV GERMICIDAL LIGHT	Nos.	3
5	PANEL MOUNTED SERVICE FITTING FOR GAS	Nos.	3

f. Spot Extractor

SPOT EXTRACTOR			
1	CEILING BRACKET FOR SPOT EXTRACTOR 4x4x38	Nos.	9
2	CEILING MOUNTED PP SPOT EXTRACTOR WITH 15 DIA PP HOOD	Nos.	9

2. Cluster Details for Fume hoods, spot extractors:

Chemistry labs

Floor Level	Lab / Room Name	Equipment Description	Type of System	Total Eq Qty	Max Exhaust Volume	Total Exhaust Volume	Actual Exhaust volume	Blower Selected capacity		Blower Model Details	Discharge Velocity	Fan speed	Motor Power	VFD	Scrubber	Scrubber Pump
								Exhaust in cfm	Static in mm of wg							
			CAV/VAV	in no.	in cfm	in cfm	Max in cfm				in m/s	in rpm	in kw	in Kw		in Kw
Third Floor	Chemistry Lab-1	6' Fume Hood	CAV	4	840	3360	3360	3500	120	PP Blower	13.1	1555	5.5 KW/4P/50Hz	5.5 KW	SSPBS-1200	1.5KW
Third Floor	Chemistry Lab-2	6' Fume Hood	CAV	4	840	3360	3360	3500	120	PP Blower	13.1	1555	5.5 KW/4P/50Hz	5.5 KW	SSPBS-1200	1.5KW
Third Floor	Chemistry Lab-1	Tall unit	CAV	4	70	280	560	800	50	PP Blower	12.0	2590	1.1KW/2P/50Hz	1.1 KW	NA	NA
	Chemistry Lab-2	Tall unit	CAV	4	70	280										
Third Floor	Chemistry Lab-3	6' Fume Hood	CAV	4	840	3360	3360	3500	120	PP Blower	13.1	1555	5.5 KW/4P/50Hz	5.5 KW	SSPBS-1200	1.5KW
Third Floor	Chemistry Lab-4	6' Fume Hood	CAV	4	840	3360	3360	3500	120	PP Blower	13.1	1555	5.5 KW/4P/50Hz	5.5 KW	SSPBS-1200	1.5KW
Third Floor	Chemistry Lab-5	6' Fume Hood	CAV	4	840	3360	3360	3500	120	PP Blower	13.1	1555	5.5 KW/4P/50Hz	5.5 KW	SSPBS-1200	1.5KW
Third Floor	Chemistry Lab-3	Tall unit	CAV	4	70	280	560	800	50	PP Blower	12.0	2590	1.1KW/2P/50Hz	1.1 KW	NA	NA
	Chemistry Lab-4	Tall unit	CAV	4	70	280										
Third Floor	UG Chemistry lab	6' Fume Hood	CAV	4	840	3360	5430	6000	120	PP Blower	17.8	1516	7.5KW/4P/50Hz	7.5 KW	SSPBS-1350	1.5 KW
		5' Fume Hood	CAV	3	690	2070										

CHEMICAL ENGINEERING LABS

Third Floor	Nicolas Lab	6' Fume Hood	CAV	1	840	840	980	1000	120	PP Blower	15	2586	1.5KW/2P/50Hz	1.5 KW	SSPBS-700	0.75KW
		Tall unit	CAV	2	70	140										
Third Floor	Thiele Lab	6' Fume Hood	CAV	1	840	840	980	1000	120	PP Blower	15	2586	1.5KW/2P/50Hz	1.5 KW	SSPBS-700	0.75KW
		Tall unit	CAV	2	70	140										
Third Floor	Langmur Lab	6' Fume Hood	CAV	1	840	840	980	1000	120	PP Blower	15.0	2586	1.5KW/2P/50Hz	1.5 KW	SSPBS-700	0.75KW
		Tall unit	CAV	2	70	140										

CIVIL & ENVIRONMENTAL LABS

Second Floor	UG and PG lab	5' Fume Hood	CAV	2	690	1380	2440	3000	120	PP Blower	11.3	1527	3.7 KW/4P/50Hz	3.7 KW	SSPBS-1000	0.75KW
		4' Fume Hood	CAV	1	530	530										
	Geoenviromental Lab	4' Fume Hood	CAV	1	530	530										
Second Floor	UG and PG lab	Tall unit	CAV	2	70	140	460	600	70	PP Blower	9.0	2609	1.1 KW/2P/50Hz	1.1 KW	NA	NA
	Microbiology Lab	Spot extractor	CAV	1	90	90										
		Tall unit	CAV	1	70	70										
	Geoenviromental Lab	Spot extractor	CAV	1	90	90										
		Tall unit	CAV	1	70	70										
Second Floor	Water quality lab	4' Fume Hood	CAV	2	530	1060	1060	1500	120	PP Blower	14.4	2350	2.2 KW/2P/50Hz	2.2 KW	SSPBS-700	0.75KW
Second Floor	Water quality Lab	Spot extractor	CAV	2	90	180	480	600	70	PP Blower	9.0	2609	1.1KW/2P/50Hz	1.1KW	NA	NA
		Tall unit	CAV	1	70	70										
	Analytical Insrtrumental lab	Spot extractor	CAV	1	90	90										

	Air quality research Lab	Tall unit	CAV	2	70	140										
Ground floor	H2 N2 Plant	5' Fume Hood	CAV	1	690	690	690	1000	120	PP Blower	15.0	2586	1.5KW/2P/50Hz	1.5KW	SSPBS-700	0.75KW

PHYSICS LABS

Third Floor	Quantum & Multifunctional materials Lab	6' Fume Hood	CAV	2	840	1680	3360	3500	120	PP Blower	13.1	1555	5.5 KW/4P/50Hz	5.5 KW	SSPBS-1200	1.5KW
	Common facility	6' Fume Hood	CAV	1	840	840										
	PG Physics lab-3	6' Fume Hood	CAV	1	840	840										
Ground floor	Magnetism & Super conductivity Lab	6' Fume Hood	CAV	1	840	840	840	1000	120	PP Blower	15.0	2586	1.5 KW/2P/50Hz	1.5 KW	SSPBS-700	0.75KW
Ground floor	Plasma processing Lab	Spot extractor	CAV	4	90	360	430	600	70	PP Blower	9.0	2609	1.1 KW/2P/50Hz	1.1 KW	NA	NA
	Magnetism & Super conductivity Lab	Tall unit	CAV	1	70	70										

APPROVED MAKE LIST

1. FUME HOOD

Sr No	Item	MAKE
1	Fume hood	Waldner/ Kotterman/Equivalent
2	Fume Hood Valves	Water saver/Broen/Equivalent
3	Air flow Monitor	TEL, UK/Equivalent
4	Work Surface - Fume Hood	Granite
5	Fume hood Base Cabinet	Waldner/ Kotterman/Equivalent
6	PP Sink	Indigenous /Equivalent
7	Electrical / Data / Voice Sockets	Northwest/ MK/Equivalent

2. FURNITURE

Sr No	Item	MAKE
1	Furniture	Waldner/ Kotterman/Equivalent
2	Work Surface - Benches	18/19mm Thick Jet Black Granite
3	PP Sink	Indigenous /Equivalent
4	Water Tap	Water saver/ Broen/Equivalent
5	Bench Mounted Valves	Water saver/ Broen/Equivalent
6	Spot Extractor	Fumex /Equivalent
7	Eye Wash	Guardian / Broen/Equivalent
9	Electrical / Data / Voice Sockets	Northwest/ MK/Equivalent

3. EXHAUST

Sr No	Item	Approved Makes
1	Blower	Colasit/Plastifer
2	Blower Motor	ABB / CG
3	Wet Scrubber	Corrosion control/Airflow tech/FED
4	PP Sheets for exhaust ducting	Mandhani/Dugar/Khanna/Simona/beck
5	Isophthalic resin	Mechemco/Kaysnth/Orsyn/Simona/crest composite

The last date for submission of quotations (two bids) against our tender is extended to **25.10.2023 upto 03.00 p.m.**

All other terms and conditions of the tender document will remain the same.

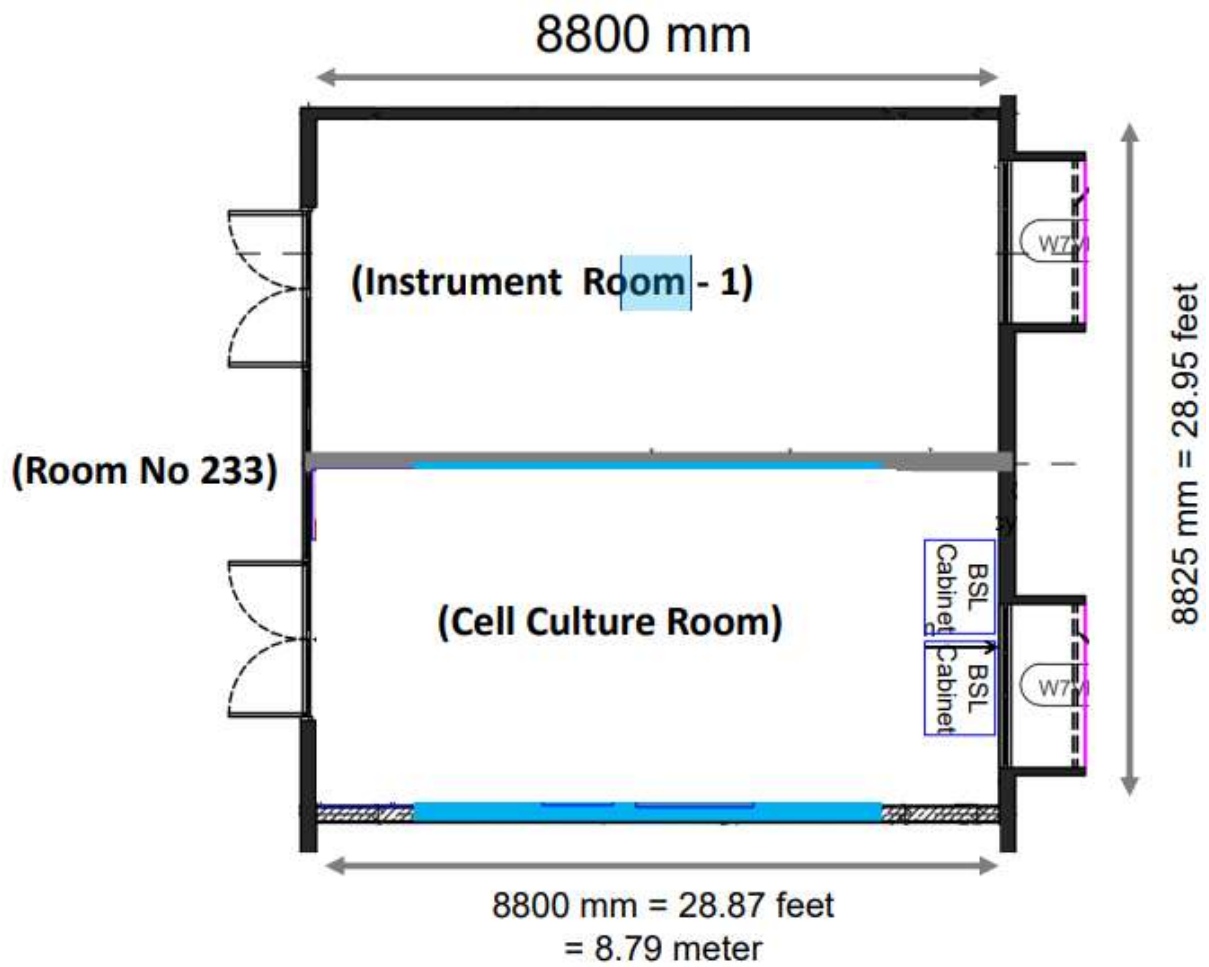
Sd/-

Assistant Registrar (P&S)

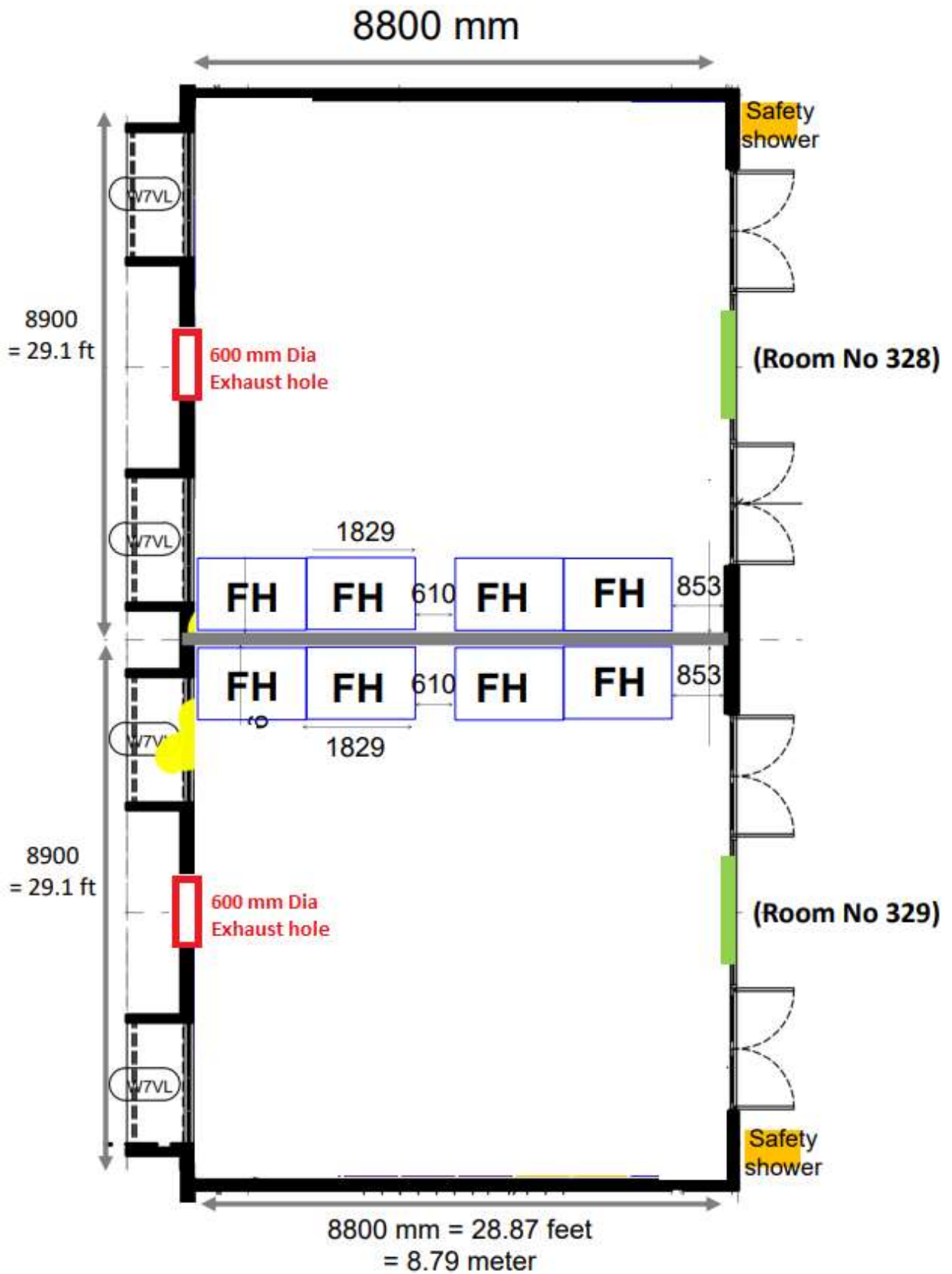
Department of Chemistry

**Proposed Layout for the Fume hood, Bio-safety
Cabinet and Island Tables**

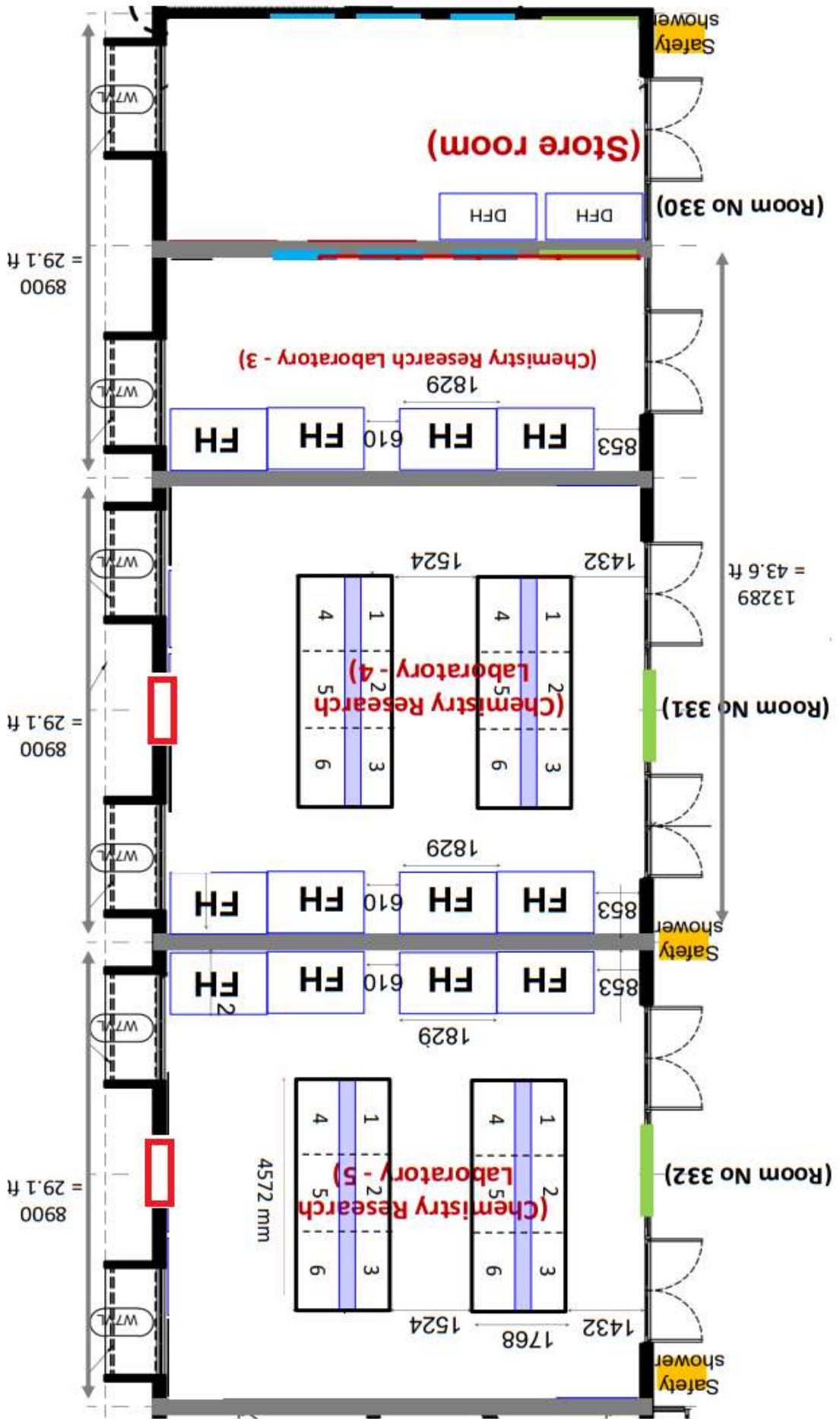
(Tender No. IITT/EU/2023-24/14)



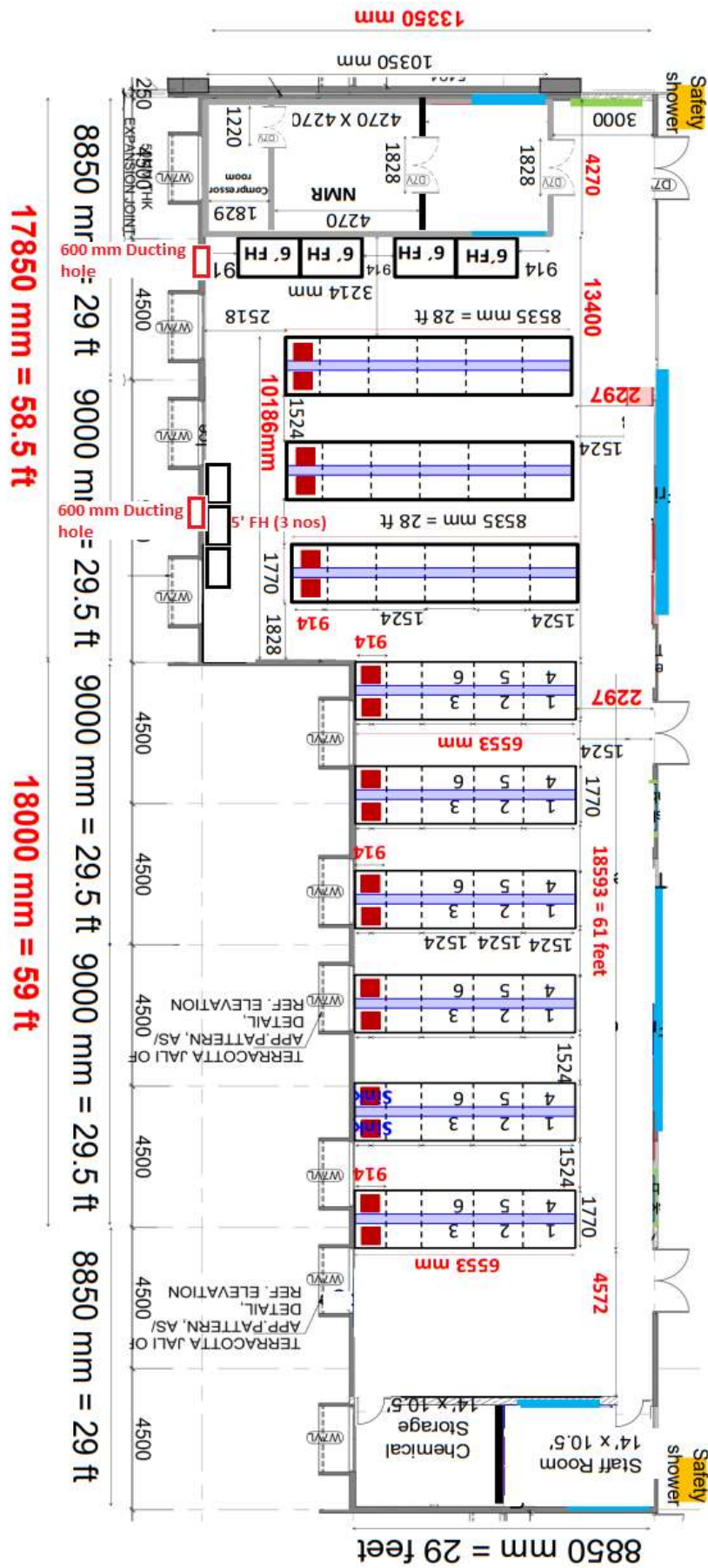
Second floor, Academic Building – II, IIT Tirupati.



Third floor, Academic Building – II, IIT Tirupati.



Third floor, Academic Building – II, IIT Tirupati.

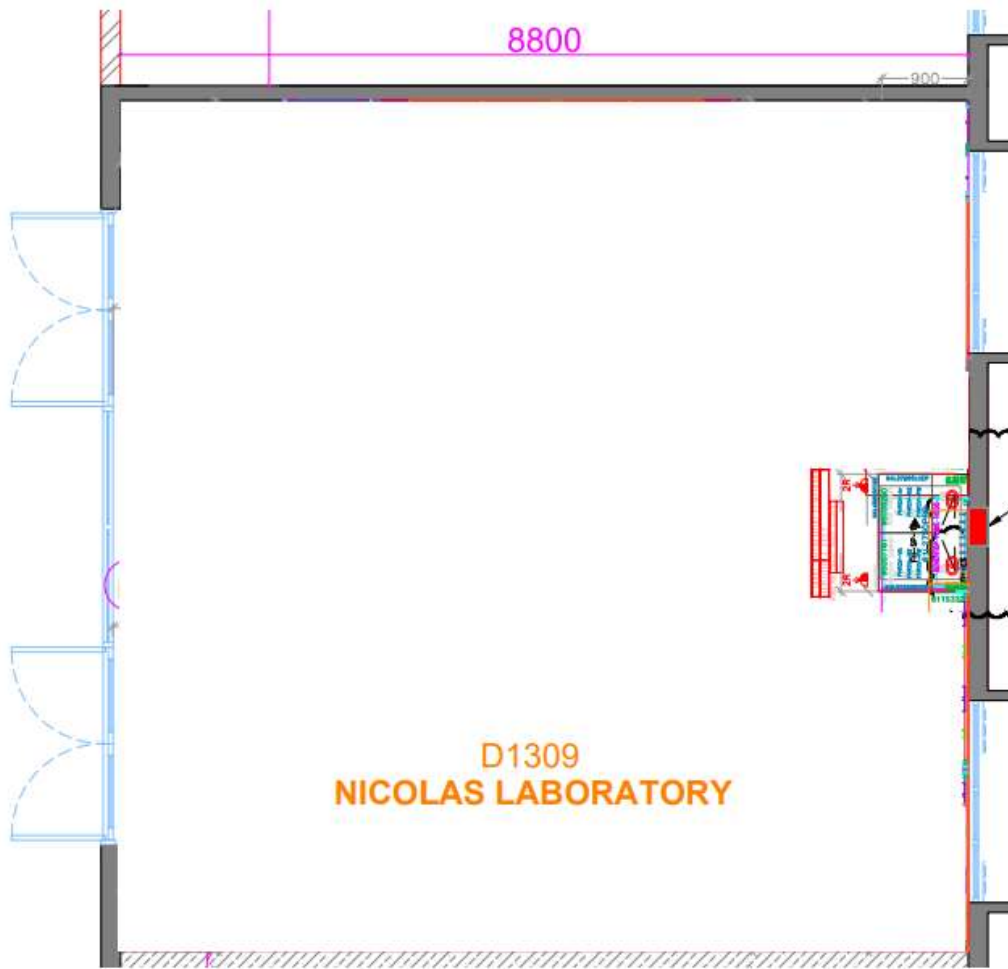


Third floor, Lecture Hall Complex; 6 feet fume hood (600 mm ducting hole at the top of the fume hood).

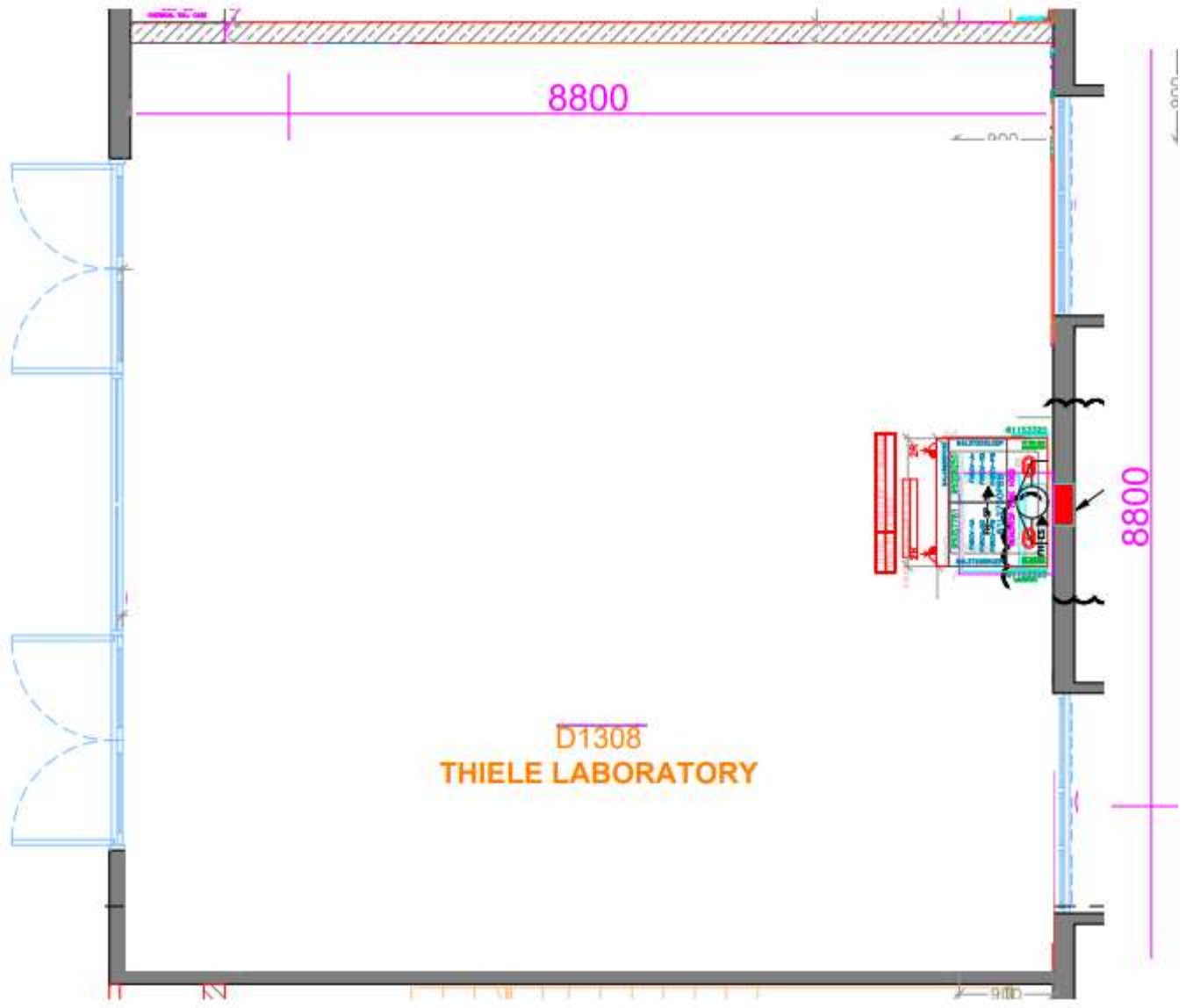
Department of Chemical Engineering

**Proposed Layout for the Fume hood, Bio-safety
Cabinet and Island Tables**

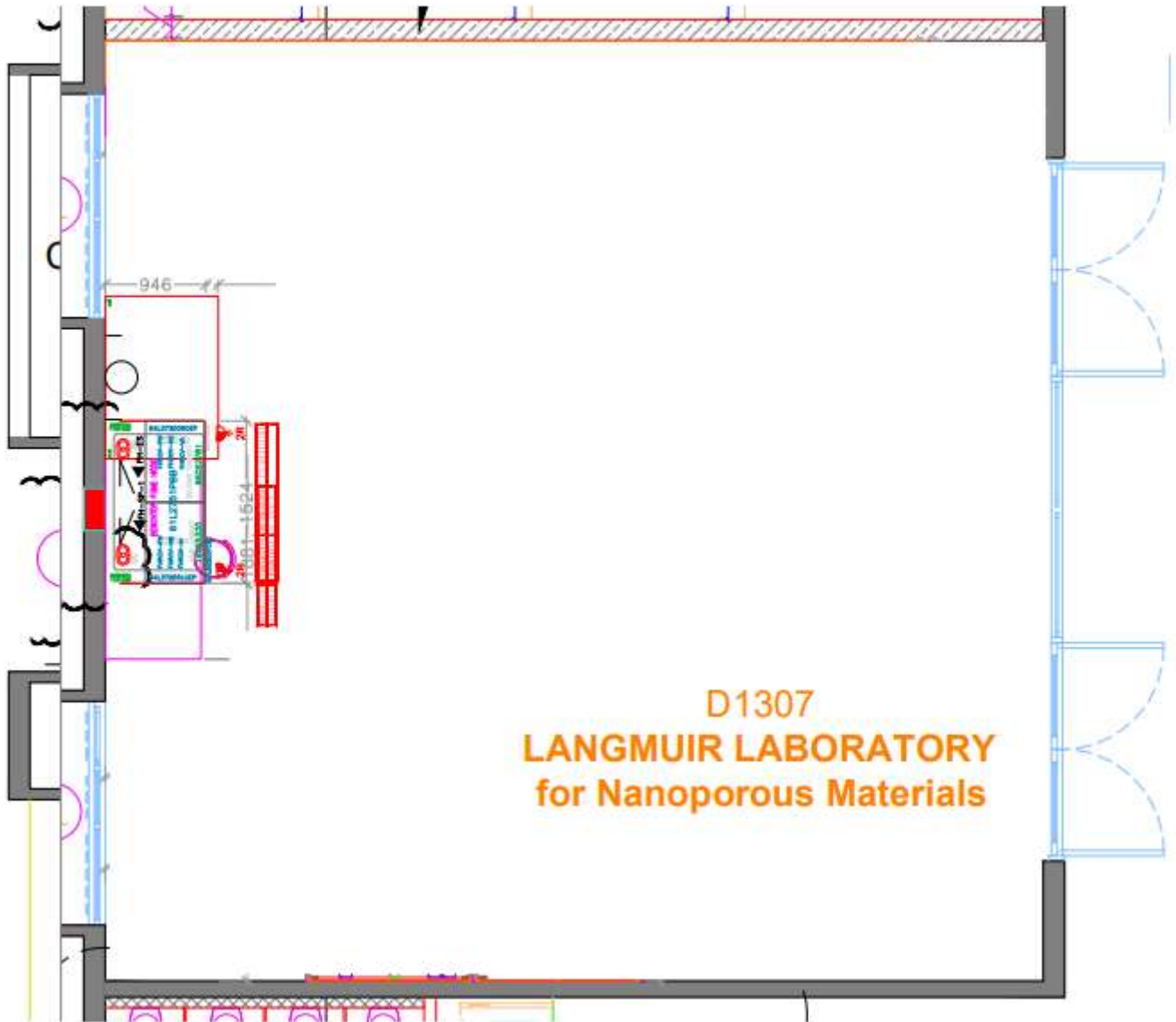
(Tender No. IITT/EU/2023-24/14)



Third floor, Academic Building – II (6 feet fume hood) with 380 mm ducting hole at the top of the fume hood.



Third floor, Academic Building – II; 6 feet fume hood (380 mm ducting hole at the top of the fume hood).

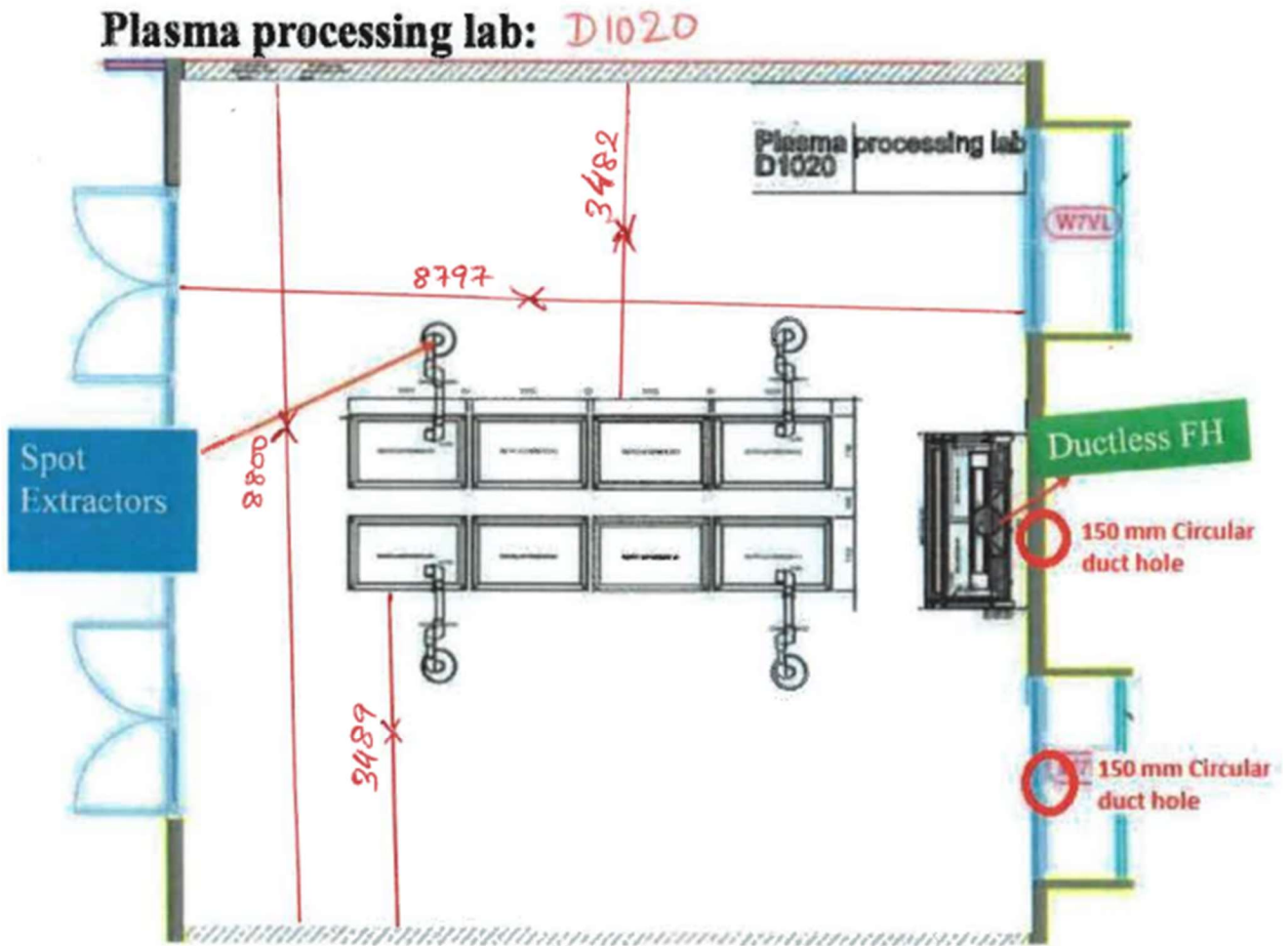


Third floor, Academic Building – II; 6 feet fume hood (380 mm ducting hole at the top of the fume hood).

Department of Physics

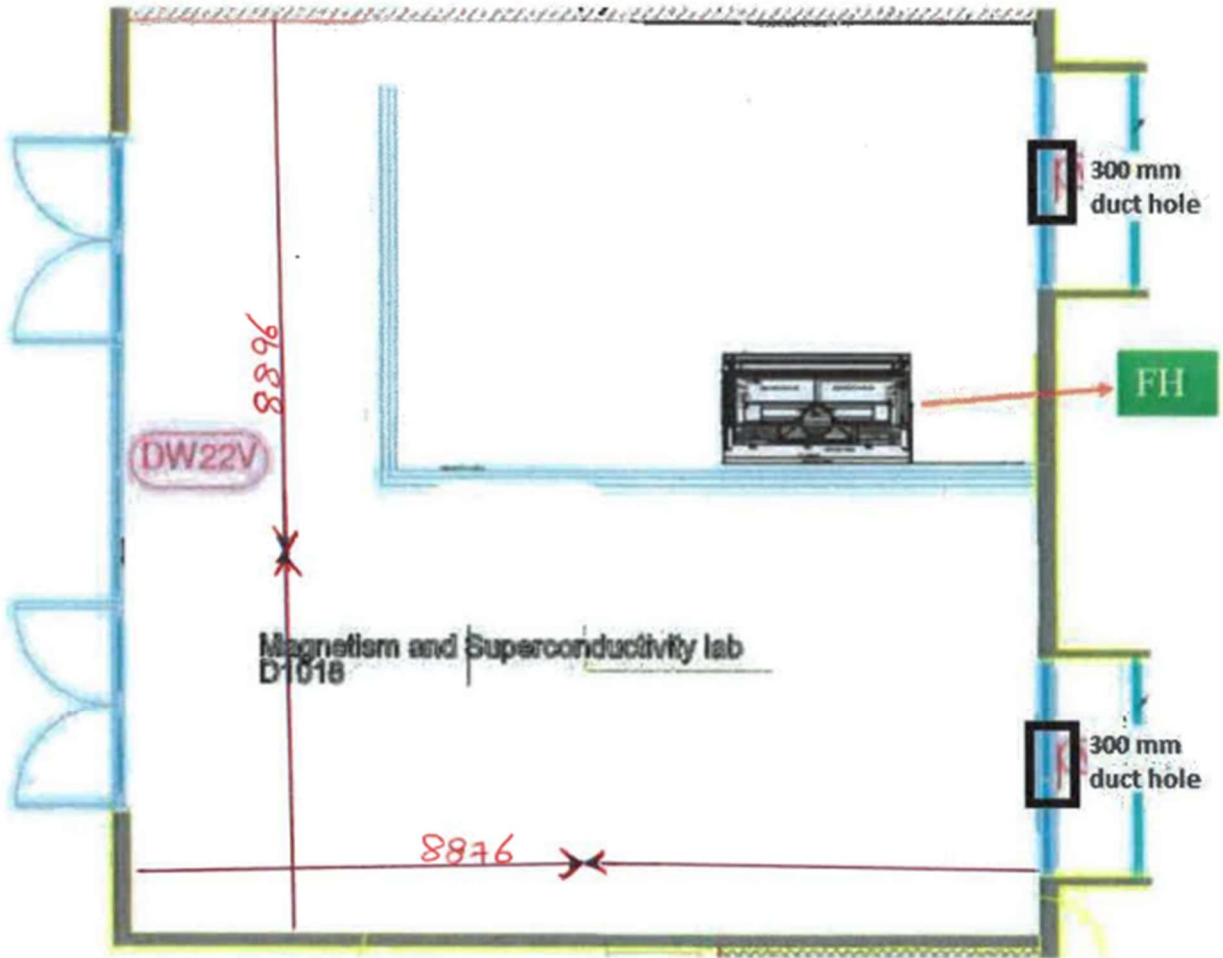
**Proposed Layout for the Fume hood, Bio-safety
Cabinet and Island Tables**

(Tender No. IITT/EU/2023-24/14)



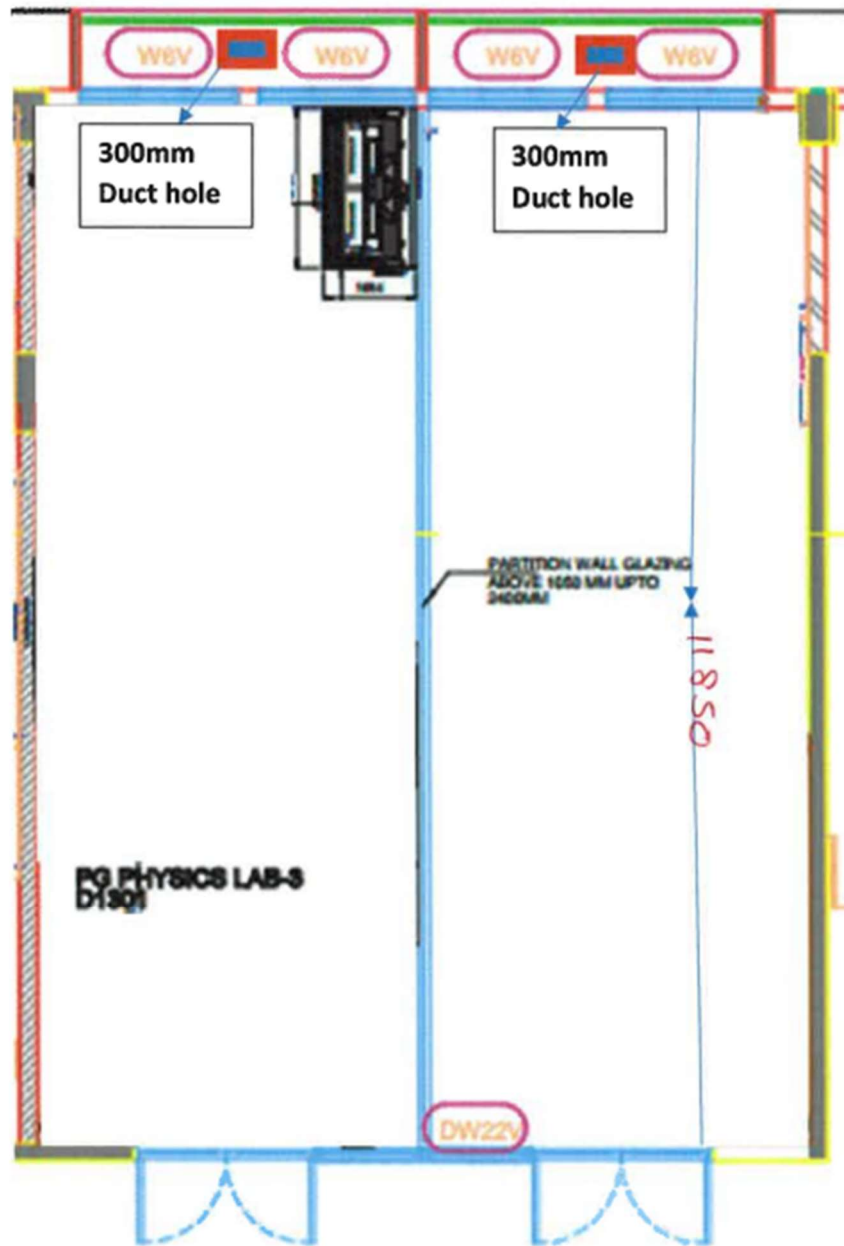
Ground Floor, Academic Building – II; Four Spot extractor (2 x 150 mm ducting hole at the top of the fume hood & Window).

Magnetism and Superconductivity lab: D1018



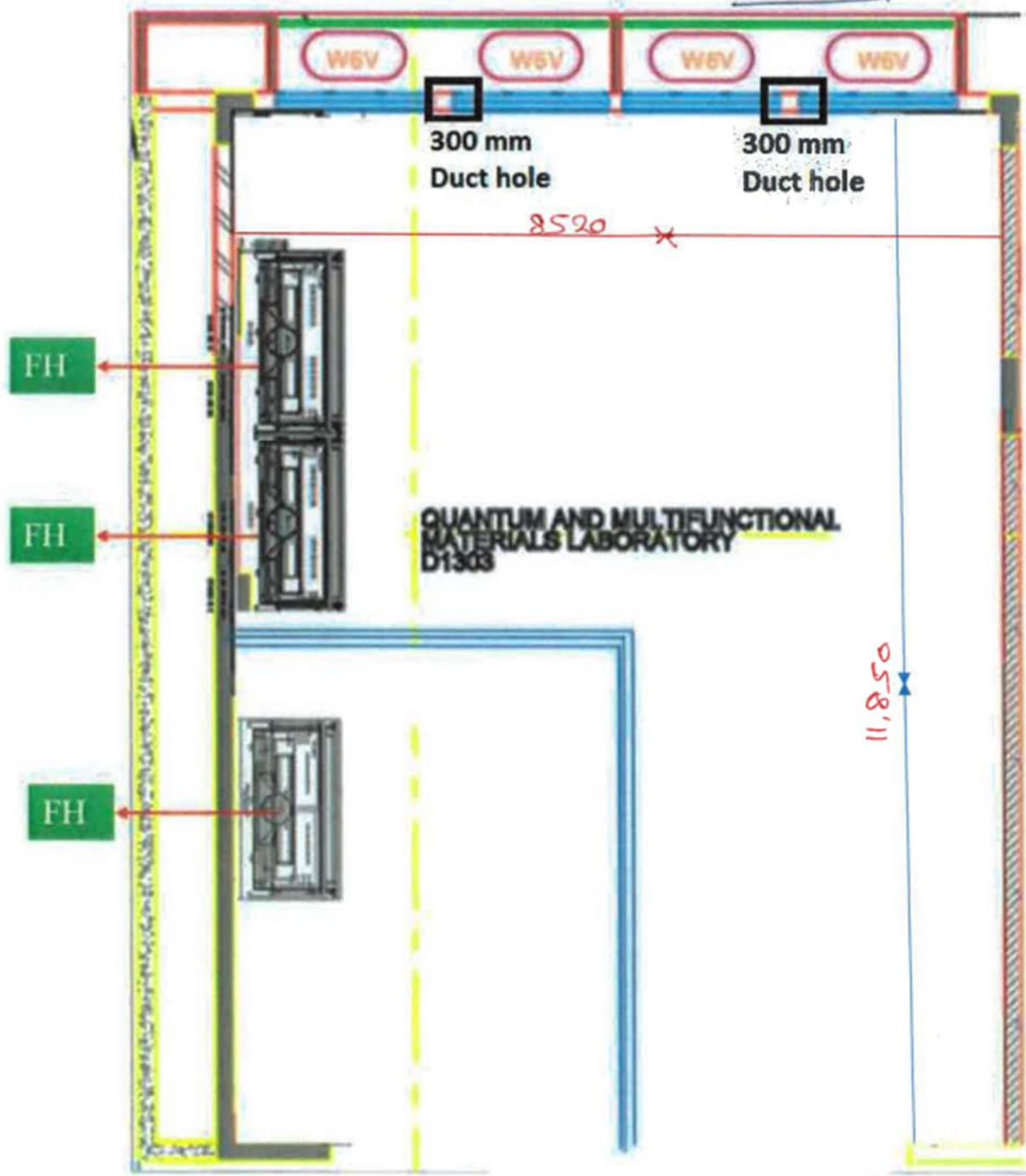
Ground Floor, Academic Building – II; 6 feet fume hood (2 x 300 mm ducting hole above the window).

PG PHYSICS LAB-3(D1301)



Third Floor, Academic Building – II; 6 feet fume hood (2 x 300 mm ducting hole at the top of the window).

QMML& Common Facility: D1303

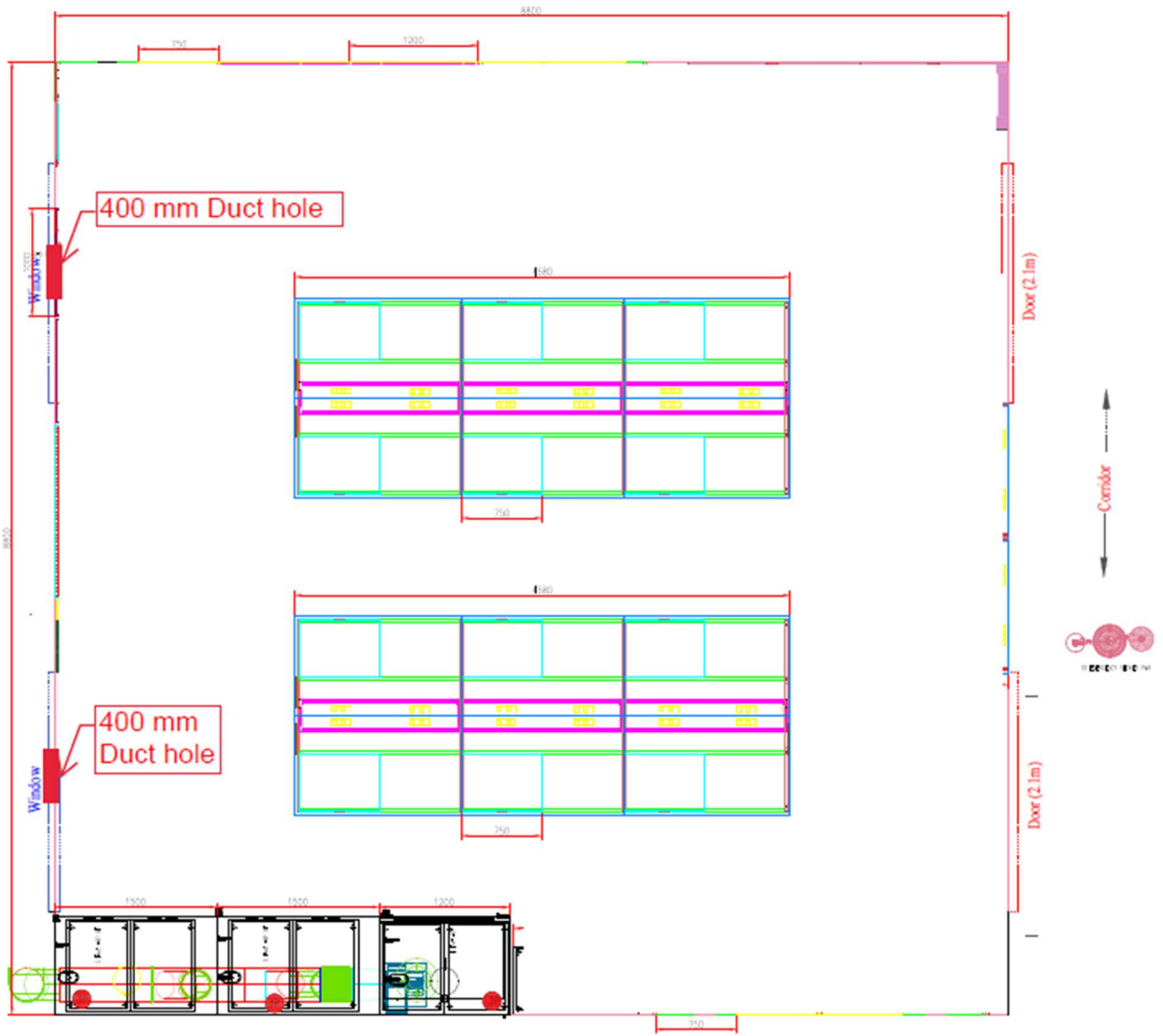


Third Floor, Academic Building – II; three nos of 6 feet fume hood (2 x 300 mm ducting hole at the top of the window).

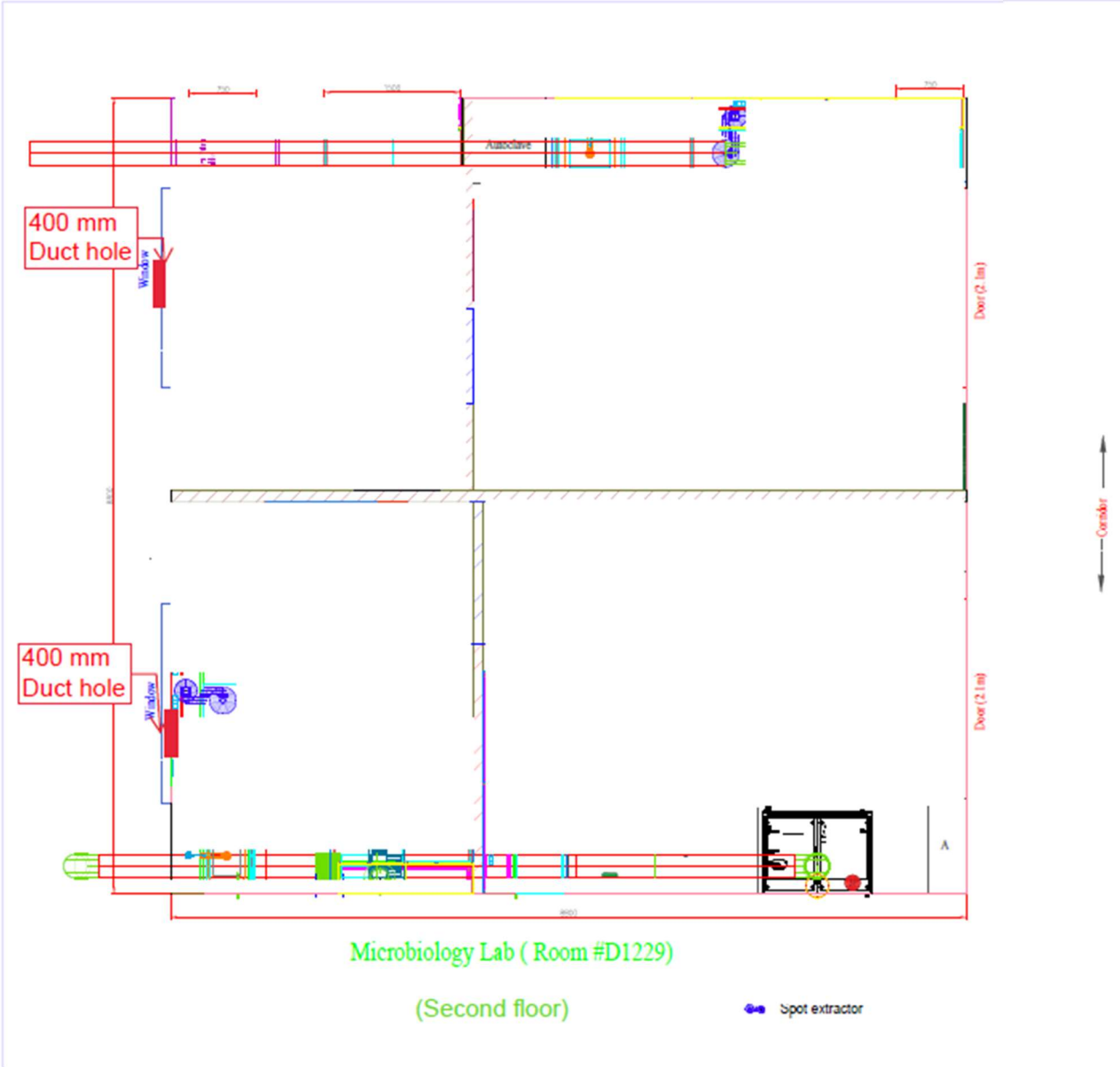
Department of Civil & Environmental Engineering

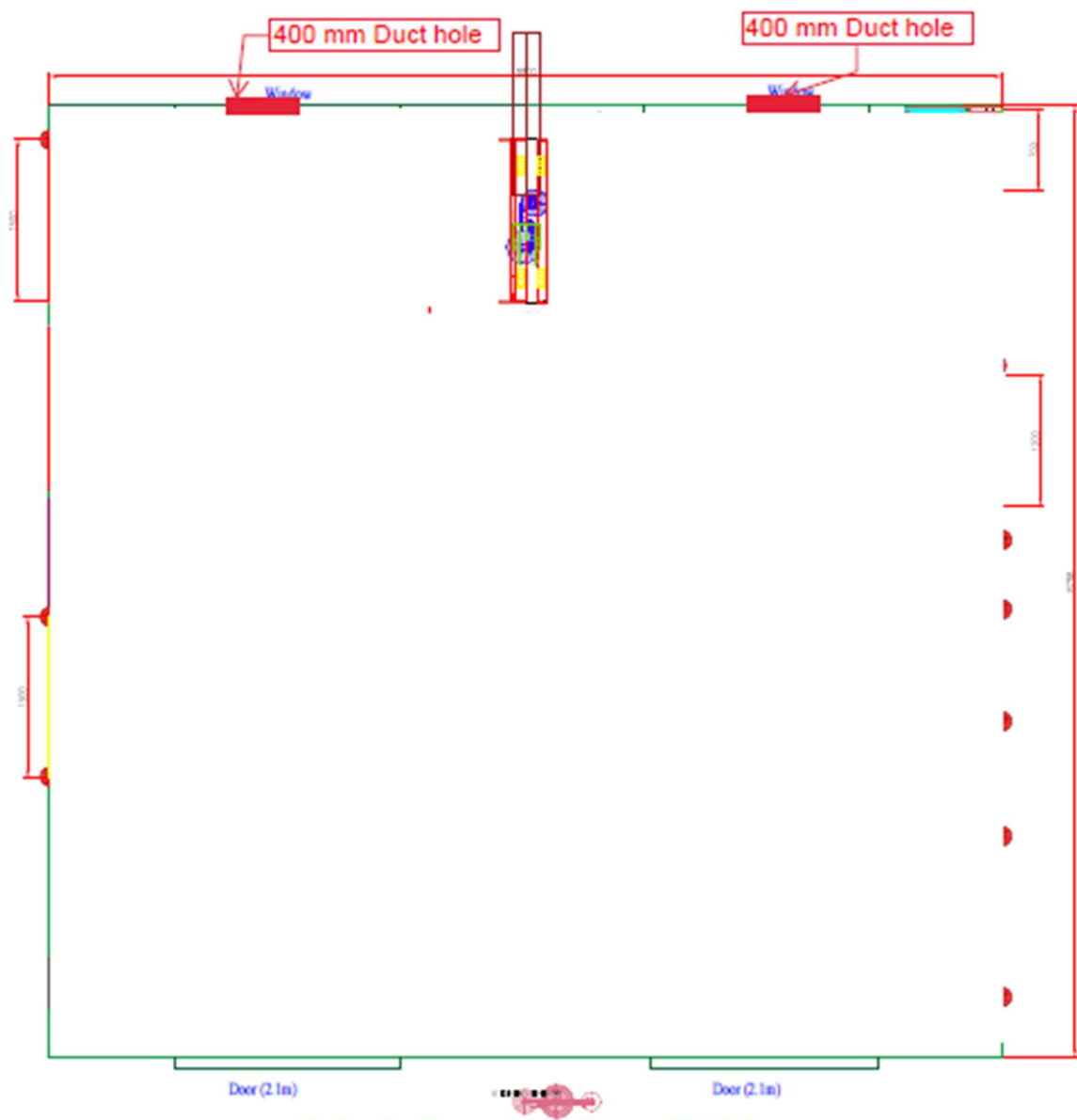
**Proposed Layout for the Fume hood, Bio-safety
Cabinet and Island Tables**

(Tender No. IITT/EU/2023-24/14)



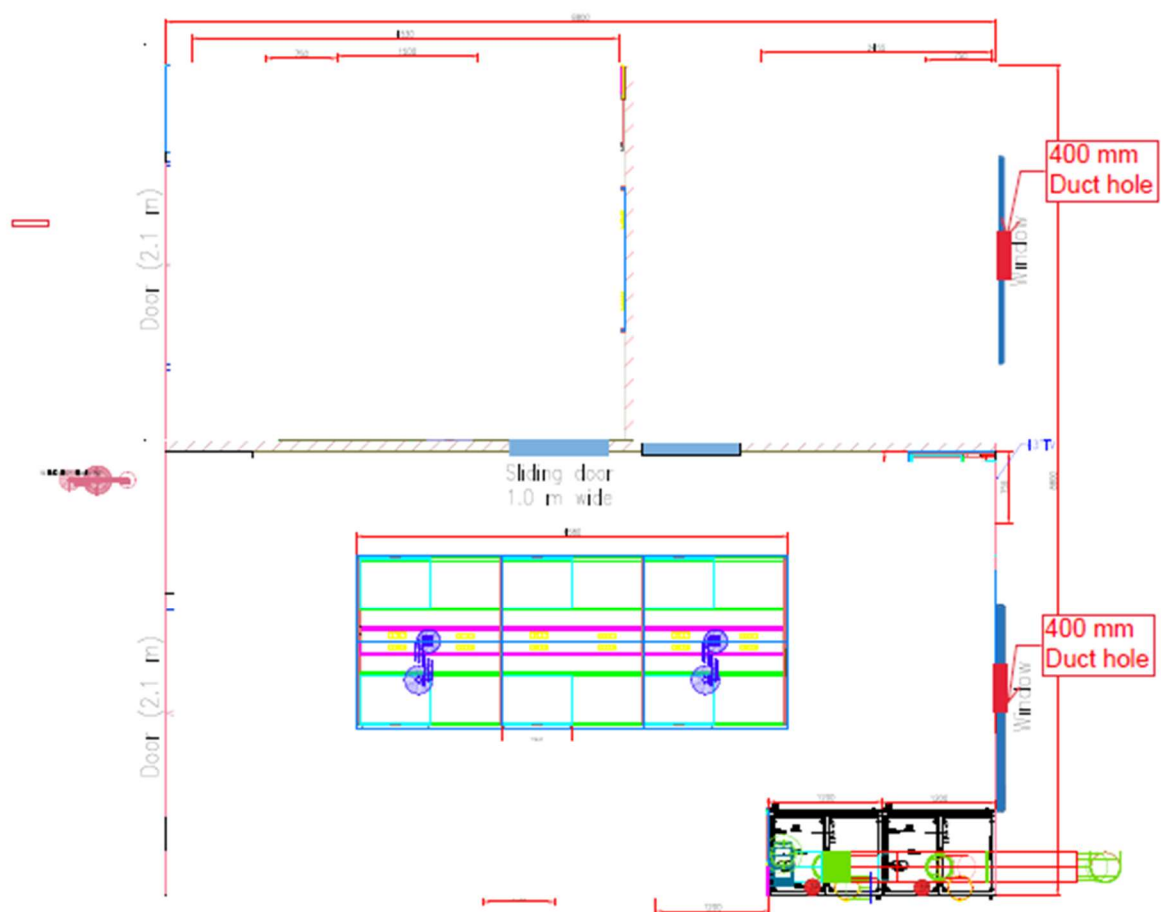
UG & PG Lab (Room# D1228) (Second floor)





Air Quality Research Lab (Room #D1230)
(Second floor)

 Spot extractor



WATER QUALITY LAB 2 (Second floor)

 Spot extractor

