1. GENERAL NOTES
1.1. SYMBOLS, ABBREVIATIONS AND MECHANICAL GENERAL NOTES ARE COMPOSITE. ALL SYMBOLS, ABBREVIATIONS AND MECHANICAL NOTES MAY NOT BE USED ON THIS PROJECT.
1.2. WORK INDICATED ON THESE DRAWINGS IS DIAGRAMMATIC AND SHOULD NOT BE SCALED TO ESTABLISH LOCATION OF THE DRAWINGS ARE INTENDED TO CONVEY THE SCOPE OF WORK AND INDICATE GENERAL ARRANGEMENTS OF ENGINEERED SYSTEMS. THE CONTRACTOR SHALL VERIFY ALL EXISTING CONDITIONS IN THE FIELD AND MAKE ADJUSTMENTS AS NECESSARY TO COMPLETE THE WORK.
1.1. FURNISH ALL LABOR, MATERIALS, TOOLS, EQUIPMENT AND SERVICES FOR ALL WORK, IN ACCORDANCE WITH PROVISIONS OF THE CONTRACT DOCUMENTS. ALTHOUGH SUCH WORK IS NOT SPECIFICALLY INDICATED, FURNISH AND INSTALL ALL SUPPLEMENTARY OR MISCELLANEOUS ITEMS, APPURTENANCES AND DEVICES INCIDENTAL TO OR NECESSARY FOR A SOUND, SECURE AND COMPLETE INSTALLATION, AT NO ADDITIONAL COST TO THE OWNER.
1.2. IT IS THE INTENTION OF THE CONTRACT DOCUMENTS TO CALL FOR FINISHED WORK, TESTED AND READY FOR OPERATION. ALL MATERIALS AND EQUIPMENT SHALL BE NEW, OF FIRST QUALITY AND COMPATIBLE WITH EXISTING SYSTEMS OR MATERIAL WHERE THEY INTERFACE, UNLESS OTHERWISE INDICATED.
1.3. ALL SPECIFIED EQUIPMENT AND SYSTEMS SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
1.4. IN ADHERENCE WITH THE INTENT OF THESE CONTRACT DOCUMENTS, PROVIDE FINISHED WORK, TESTED AND READY FOR OPERATION. WHEREVER THE WORD "PROVIDE" IS USED, IT SHALL MEAN "FURNISHED, INSTALL, BALANCE, ADJUST AND TEST, COMPLETE AND READY FOR USE".
1.5. ALL CEILING DEVICES (DIFFUSERS, LIGHTS, ETC.) SHALL COMPLY WITH BASE BUILDING STANDARDS.
1.6. CONTRACTOR SHALL VISIT SITE TO VERIFY EXISTING CONDITIONS AND COORDINATE WITH NEW PIPING, DUCTWORK, LIGHTING AND PROPOSED CEILING HEIGHTS. SUBMIT A COORDINATION SHOP DRAWINGS FOR REVIEW PRIOR TO ORDERING, FABRICATING OR INSTALLING ITEMS.
1.7. ALL VAV BOXES MUST HAVE 100% ACCESS FOR SERVICE AND PROPERTY MANAGEMENT.
1.8. OUTSIDE AIR INTAKES SHALL BE LOCATED A MINIMUM OF 3 MTR. AWAY FROM CONTAMINANT SOURCES INCLUDING PLUMBING VENTS, COMBUSTION EXHAUST, KITCHEN EXHAUST, AND BUILDING EXHAUST OUTLETS.
1.9. PROJECT PREMISES SHALL BE THOROUGHLY CLEANED AND READY FOR OCCUPANCY, INCLUDING ALL FINISHES OF EQUIPMENT PROVIDED AS PART OF THE CONTRACTOR'S WORK. PROVIDE ONE NEW SET OF CLEAN AIR FILTERS FOR PROJECT CLOSEOUT.
1.10. CONTRACTOR TO PROVIDE TEMPORARY FILTERS ON ALL SYSTEMS DURING CONSTRUCTIONS. ALL FILTERS TO BE REPLACED PRIOR TO TURN OVER SPACE. THE SHALL BE RESPONSIBLE TO CHANGE FILTERS DURING CONSTRUCTION TO MAINTAIN PROPER EQUIPMENT OPERATION.

2. COORDINATION AND SCHEDULING
2.1. All THE SERVICE FOR LABORATORY AREA ARE AT SERVICE FLOOR LOW LEVEL NOT AT GROUND FLOOR HIGH LEVEL
2.2. CONTRACTOR IS RESPONSIBLE FOR COMPLETE COORDINATION BETWEEN ALL SUB-CONTRACTORS, SUPPLIERS, GOVERNMENT AUTHORITIES HAVING JURISDICTION, BUILDING PERSONNEL, CODE ENFORCEMENT OFFICIALS, ARCHITECT/ENGINEER AND BUILDING OWNER.

3. CODE, PERMITS AND INSPECTIONS
3.1. ALL WORK SHALL BE DONE IN ACCORDANCE WITH LATEST APPLICABLE CODES, REGULATIONS AND STANDARDS. CONTRACTOR SHALL OBTAIN AND PAY FOR ALL NECESSARY PERMITS AND SHALL ARRANGE FOR ALL INSPECTIONS BY AUTHORITIES HAVING JURISDICTION.
3.2. APPROVAL AND SIGN-OFF BY ALL AUTHORITIES HAVING JURISDICTION IS REQUIRED AT THE COMPLETION OF PROJECT. SECURE PERMIT AND INSPECTION CERTIFICATES AND TRANSMIT SAME TO THE OWNER AT THE COMPLETION OF THE PROJECT.
3.3. PERFORM ALL WORK IN ACCORDANCE WITH THE FOLLOWING CODES AND STANDARDS:
3.3.A. ISO-15189
3.3.B. SMAONA DUCT CONSTRUCTION STANDARDS: LATEST EDITION
3.3.C. ASHRAE – 62.2, 170, 90.1
3.4. CODES AND STANDARDS LISTED ARE MINIMUM STANDARDS. WHERE CONTRACT DOCUMENTS CALL FOR A HIGHER STANDARD, CONTRACT DOCUMENTS WILL TAKE PRECEDENCE OVER ALL REFERENCED CODES AND STANDARDS. IF CONTRACT DOCUMENTS CONFLICT WITH CODES OR STANDARDS, CONTRACTOR SHALL INFORM ARCHITECT/ENGINEER, IN WRITING, PRIOR TO QUOTE.
3.5. CONTRACTOR SHALL COMPLY WITH ALL OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) AND ENVIRONMENTAL PROTECTION AGENCY (EPA) REQUIREMENTS.
3.6. CONTRACTOR SHALL COMPLY WITH RULES AND REGULATIONS OF ALL AFFECTED UTILITY COMPANIES.

4. SUBMITTALS (REFER TO PROJECT SPECIFICATIONS FOR DETAILS)
4.1. SUBMIT FOUR SETS OF SHOP DRAWINGS, TO ARCHITECT/ENGINEER AND OBTAIN APPROVAL, PRIOR TO ORDERING OF EQUIPMENT OR MATERIAL AND BEFORE FABRICATION OF COMPONENTS. SUBMIT SHOP DRAWINGS FOR THE FOLLOWING:
4.1.A. AIR DISTRIBUTION DEVICES AND ACCESSORIES.
4.1.B. ALL MANUFACTURED MECHANICAL EQUIPMENT.

5. RECORD (AS BUILT) DRAWINGS (REFER TO PROJECT SPECIFICATIONS FOR DETAILS))
5.1. REPRODUCIBLE RECORD DRAWINGS SHALL BE SUPPLIED BY CONTRACTOR, UPON WHICH CORRECTIONS SHALL BE MADE, TO PROVIDE AN ACCURATE AND COMPLETE RECORD OF THE WORK, AS INSTALLED. ALL DUCTWORK, EQUIPMENT, PIPING AND AIR DISTRIBUTION DEVICES SHALL BE SHOWN AND DIMENSIONED ON THE RECORD DRAWINGS. CONTRACTOR SHALL PROVIDE LATEST AUTOCAD VERSION AS-BUILT DRAWINGS AT THE COMPLETION OF THE PROJECT.
5.2. FULL SIZE AS-BUILT DRAWINGS SHALL BE SUPPLIED AT THE COMPLETION OF THE JOB.
5.3. PROVIDE A COMPLETE SET OF DRAWINGS ON A CD WHEN THE JOB IS COMPLETE.

6. MECHANICAL GENERAL NOTES
6.1. ALL EQUIPMENT TO BE LOCATED IN THE CEILING PLENUM SHALL BE SUITABLE FOR INSTALLATION IN ACCORDANCE WITH APPLICABLE CODES AND REGULATIONS.
6.2. ALL EQUIPMENT (INCLUDING DUCTWORK AND PIPING) SHALL BE SECURELY SUPPORTED FROM THE BUILDING STRUCTURE IN AN APPROVED MANNER. EQUIPMENT SHALL NOT GENERATE NOISE GREATER THAN CATALOG RATINGS. ALL EQUIPMENT AND APPURTENANCES SHALL NOT TRANSMIT NOISE OR VIBRATION TO THE OCCUPIABLE SPACES.
6.3. DUCTWORK SHALL BE INSTALLED TIGHT TO THE UNDERSIDE OF THE SLAB/DECK UNLESS OTHERWISE NOTED.
6.4. PROVIDE FIRE SAFING APPROVED BY THE AUTHORITY HAVING JURISDICTION, AROUND ALL PIPING AND DUCTWORK PENETRATIONS THROUGH BUILDING CONSTRUCTION TO MAINTAIN FIRE, SMOKE, AND SOUND RATINGS.
6.5. MECHANICAL EQUIPMENT, DUCTWORK, SUPPORTS, AND MATERIALS SHALL BE RELOCATED AS NECESSARY TO ACCOMMODATE INSTALLATION OF LIGHT FIXTURES AND SPRINKLER SYSTEM/PLUMBING PIPING.
6.6. THE CONTRACTOR SHALL FURNISH AND INSTALL ACCESS PANELS WHERE REQUIRED FOR ACCESS TO EQUIPMENT, VALVES, DAMPERS, CONTROLS, ETC. IN DUCTWORK AND/OR CONCEALED BEHIND FINISHES NOT INTENDED TO BE REMOVED; COORDINATE WITH THE ARCHITECT PRIOR TO ANY INSTALLATION.
6.7. MECHANICAL CONTRACTOR SHALL PROVIDE ALL MOTOR STARTERS, DISCONNECTS ETC. AS REQUIRED BY THE MECHANICAL EQUIPMENT; THE ELECTRICAL CONTRACTOR SHALL INSTALL AND PROVIDE FINAL CONNECTIONS. WHERE THE MECHANICAL SYSTEMS COME WITH INTEGRAL STARTERS, DISCONNECTS, ETC., THE ELECTRICAL CONTRACTOR SHALL PROVIDE FINAL CONNECTIONS.
6.8. ALL EQUIPMENT MUST BE INSTALLED SUCH THAT FACTORY REQUIRED CLEARANCES FOR SERVICEABILITY ARE MAINTAINED. NOTIFY THE ENGINEER IMMEDIATELY SHOULD ANY EQUIPMENT HAVE ACCESS LIMITED BECAUSE OF FIELD CONDITIONS, EQUIPMENT ORIENTATION, ETC. DO NOT INSTALL THIS EQUIPMENT UNTIL THE SITUATION HAS BEEN RESOLVED.
6.9. ALL HVAC BOOTS SHALL BE SEALED TO THE ROUGH OPENING OF THE DRYWALL OR INTERIOR AIR BARRIER.
6.10. TOTAL DUCT LEAKAGE FOR APARTMENT LEVEL SYSTEMS TO BE ≤4 L/S 12/10 SQMTR. MOCK UP DUCT TESTING WILL BE REQUIRED ON THE FIRST TWO APARTMENT LEVEL DUCT SYSTEMS FOR MULTI FAMILY HIGH RISE COMPLIANCE.
6.11. ALL HVAC DUCTWORK MUST BE VISUALLY INSPECTED BEFORE ACCESS IS COVERED UP.
6.12. ALL EQUIPMENT IN GARAGE LESS THAN 1.8 MTR AFF WILL REQUIRE PROTECTION, REFER TO ARCHITECTURAL DRAWINGS FOR DETAILS.

7. TESTING AND BALANCING (REFER TO PROJECT SPECIFICATIONS FOR DETAILS)
7.1. PROVIDE ALL NECESSARY ACCESSORIES TO ALLOW FOR PROPER AIR BALANCE. UPON COMPLETION OF THE INSTALLATION, ALL AIR SYSTEMS SHALL BE ADJUSTED AND BALANCED TO PROVIDE THE AIR FLOW RATE INDICATED. CONTRACTOR SHALL PROVIDE VOLUME DAMPERS, SPLITTER DAMPERS AND/OR VOLUME EXTRACTORS AS INDICATED OR REQUIRED FOR BALANCING. BALANCING WORK SHALL BE PERFORMED BY A CERTIFIED BALANCING CONTRACTOR WHO IS A MEMBER IN GOOD STANDING OF SMACNA OR SIMILAR. BALANCING WORK SHALL BE IN COMPLIANCE WITH THE STANDARD PROCEDURE MANUAL PUBLISHED BY THE TESTING AND BALANCING ORGANIZATION AFFILIATED WITH THE BALANCING CONTRACTOR. PRIOR TO ACCEPTANCE OF THE WORK, CONTRACTOR SHALL SUBMIT TO THE ARCHITECT/ENGINEER ALL APPROPRIATE FIELD DATA ON STANDARD FORMS OF THE TESTING AND BALANCING ORGANIZATION IN ACCORDANCE WITH STANDARD PROCEDURES.

8. SHEET METAL DUCTWORK (REFER TO PROJECT SPECIFICATIONS FOR DETAILS)
8.1. ALL NEW DUCTWORK SHALL BE CONSTRUCTED OF GALVANIZED SHEET METAL (UNLESS OTHERWISE INDICATED) AND INSTALLED IN ACCORDANCE WITH SMACNA DUCT CONSTRUCTION STANDARDS, 2005 EDITION, 2" PRESSURE CLASS. AUDIBLE LEAKAGE WILL NOT BE ALLOWED.
8.2. ALL NEW DUCTWORK MUST BE FIELD VERIFIED PRIOR TO FABRICATION, PURCHASE, OR INSTALLATION. NO ALLOWANCE WILL BE MADE FOR DUCTWORK THAT IS NOT USED.
8.3. ALL NEW DUCTWORK DIMENSIONS SHOWN ARE INSIDE CLEAR DIMENSIONS. DUCTWORK SIZES SHALL BE INCREASED TO ACCOMMODATE 25MM INTERNAL LINING WHERE INDICATED ON PLANS.
8.4. PROVIDE SINGLE THICKNESS TURNING VANES IN ALL DUCTWORK ELBOWS (45° & 90°). TURNING VANES SHALL COMPLY WITH SMACNA STANDARDS, 2005 EDITION.
8.5. INSULATION:
8.5.A. INSULATE NEW SUPPLY AIR DUCTWORK ENTIRELY WITH 25MM THICK FIBERGLASS DUCT WRAP WITH VAPOR BARRIER IN ACCORDANCE WITH IMC-604. SEAL SEAMS TOGETHER W/STAPLES AND AN APPROVED MASTIC SEALANT. THE USE OF DUCT TAPE IS NOT ACCEPTABLE.
8.5.B. ALL SUPPLY AND RETURN AIR DUCTS AND PLENUMS SHALL BE INSULATED WITH A MINIMUM OF R-6 INSULATION WHEN LOCATED IN UNCONDITIONED SPACES AND A MINIMUM OF R-8 INSULATION WHEN LOCATED OUTSIDE THE BUILDING. WHEN LOCATED WITHIN A BUILDING ENVELOPE ASSEMBLY THE DUCT OR PLENUM SHALL BE SEPARATED FROM THE BUILDING EXTERIOR, UNCONDITIONED, OR EXEMPT SPACES BY A MINIMUM OF R-8 INSULATION.
8.6. ALL SUPPLY DUCTS, AND FITTINGS INDICATED ON DRAWINGS TO BE LINED, SHALL BE INSULATED WITH DUCT LINER MEETING THE REQUIREMENTS OF ASTMC1071 AND THE ADDITIONAL FOLLOWING REQUIREMENTS:
8.7. HAVE A LIQUID WATER REPELLENCY RATING NOT LESS THAN 4 WHEN TESTED IN ACCORDANCE WITH INDA IST 80.6.
8.8. HAVE A POTENTIAL HEAT VALUE NOT EXCEEDING 2.3 kWh/KG WHEN TESTED IN ACCORDANCE WITH NFPA 259 AND MEETING THE CLASSIFICATION OF "LIMITED COMBUSTIBLE" AS DEFINED BY NFPA 90A.
8.9. MAXIMUM RATED VELOCITY NOT LESS THAN 30 M/S WHEN TESTED IN ACCORDANCE WITH ASTM C 1138, G21 AND G22.
8.10. RESISTANT TO MICROBIAL GROWTH USING A "NO GROWTH CRITERIA" WHEN TESTED IN ACCORDANCE WITH ASTM C 1138, G 21 AND G22.

9. FLEXIBLE DUCTWORK (REFER TO PROJECT SPECIFICATIONS FOR DETAILS)
9.1. MAXIMUM LENGTH OF FLEXIBLE DUCTWORK SHALL NOT EXCEED 1.8 MTR UNLESS OTHERWISE NOTED. USE ROUND METAL DUCTWORK WITH INSULATION WHERE NECESSARY TO MEET THIS REQUIREMENT. ROUND METAL DUCTWORK WITH INSULATION AND FLEXIBLE DUCT SIZE SHALL BE THE SAME AS THE NECK SIZE OF THE DIFFUSERS.
9.2. FLEXIBLE DUCT SHALL BE FACTORY GLASS FIBER INSULATED ASSEMBLY WITH VAPOR BARRIER JACKET AND MAXIMUM THERMAL CONDUCTANCE OF 0.23 BTUH/FT.SQ. PER °F. IT SHALL BE CONSTRUCTED OF MACHINE WOUND SPIRAL ALUMINUM HELIX OR REINFORCED ALUMINUM FOIL FABRIC MECHANICALLY LOCKED INTO ALUMINUM SPIRAL HELIX.
9.3. FLEXIBLE DUCT SHALL BE SUITABLE FOR A 3" W.C. POSITIVE WORKING PRESSURE AND SHALL BE LISTED AS CLASS 1 BY UL AT A FLAME SPREAD NOT TO EXCEED 25 AND SMOKE DEVELOPED NOT OVER 50 AND SHALL COMPLY WITH NFPA 90A.
9.4. MANUFACTURERS: GENFLEX TYPE IHPL, THERMAFLEX TYPE M-KC, OR FLEXMASTER TYPE II OR III.
9.5. FLEXIBLE DUCT SHALL BE CONNECTED TO SHEET METAL DUCTWORK WITH STAINLESS STEEL DUCT CLAMP WITH SWIVEL ACTION SCREW OR 100% NYLON SELF-LOCKING DUCT CLAMP AS APPROVED BY THE LOCAL AUTHORITIES.
9.6. CONICAL TAKEOFF DUCT CONNECTIONS ARE REQUIRED. FLANGED CONNECTIONS WITH DOUBLE BACKED FOAM TAPE WITH A MINIMUM OF 4 SHEET METAL SCREWS SHALL BE PROVIDED. SPIN-INS ARE NOT PERMITTED.

10. CONTROLS (REFER TO PROJECT SPECIFICATIONS FOR DETAILS)
10.1. THERMOSTAT SHALL BE INSTALLED 1.2 MTR (ADA COMPLIANCE) ABOVE FINISHED FLOOR WHERE SHOWN ON PLANS UNLESS NOTED OTHERWISE.

11. INSTRUCTION AND IDENTIFICATION (REFER TO PROJECT SPECIFICATIONS FOR DETAILS)
11.1. WRITTEN INSTRUCTIONS IN A SINGLE BINDER DESCRIBING THE PROPER OPERATION AND MAINTENANCE OF EQUIPMENT AND SYSTEMS SHALL BE PROVIDED TO THE OWNER AT THE COMPLETION OF THE WORK. THE CONTRACTOR SHALL DEMONSTRATE AND INSTRUCT THE OPERATION OF SYSTEMS TO THE OWNER'S REPRESENTATIVE. ALL VALVES, CONTROLS, ETC., SHALL BE PERMANENTLY IDENTIFIED AND LABELED WITH METAL TAGS OR ENGRAVED NAMEPLATES AS APPLICABLE. COORDINATE WITH HVAC ZONE SCHEDULE.

12. PIPING (REFER TO PROJECT SPECIFICATIONS FOR DETAILS)
12.1. THE CONTRACTOR SHALL NOT CORE DRILL CONCRETE SLAB WITHOUT THE KNOWLEDGE AND WRITTEN CONSENT OF THE STRUCTURAL ENGINEER AND THE BUILDING OWNER AND SHALL X-RAY PRIOR TO ANY CORE DRILLING. X-RAYING AND CORE DRILLING SHALL BE SCHEDULED WITH THE BUILDING OWNER.
12.2. PIPE HANGERS, SUPPORTS, AND COMPONENTS. GALVANIZED, METAL COATINGS: FOR PIPING AND EQUIPMENT THAT SHALL HAVE FIELD-APPLIED FINISH. NONMETALLIC COATINGS: ON ATTACHMENTS FOR ELECTROLYTIC PROTECTION WHERE ATTACHMENTS ARE IN DIRECT CONTACT WITH COPPER TUBING. THERMAL-HANGER SHIELD INSERTS: 100-PSI MIN. COMPRESSIVE-STRENGTH INSULATION ENCASED IN SHEET METAL SHIELD. MATERIAL FOR COLD PIPING: ASTM C 522, TYPE I CELLULAR GLASS OR WATER-REPELLANT TREATED, ASTM C 533, TYPE I CALCIUM SILICATE WITH VAPOR BARRIER.
12.3. PROVIDE REFRIGERANT PIPING IN ACCORDANCE WITH EQUIPMENT MANUFACTURER'S RECOMMENDATIONS. VERIFY LINE SIZES FOR EQUIPMENT FURNISHED. REFRIGERANT PIPING SHALL BE COPPER TYPE "ACR" WITH FORGED OR WROUGHT COPPER FITTINGS CONFORMING TO ASTM B280 AND COPPER DEVELOPMENT ASSOCIATION STANDARDS. JOINTS SHALL BE MADE WITH SILVER SOLDER SILFOS OR EQUAL. REFRIGERANT SUCTION PIPING INSULATE WITH CLOSED-CELL FLEXIBLE ELASTOMETRIC INSULATION 32MM THICK. PROVIDE A WEATHER RESISTANT FINISH ON INSULATION EXPOSED TO OUTDOORS. "ARMSTRONG", "HALSTEAD" OR EQUAL. PIPING CAPABLE OF CARRYING FLUIDS ABOVE 40°C OR BELOW 13°C SHALL BE INSULATED TO A MINIMUM OF R-3.
12.4. CONDENSATE DRAIN PIPING SHALL BE TYPE "L" HARD DRAWN COPPER TUBING WITH COPPER FITTING, CONDENSATE DRAIN PIPING SHALL BE INSULATED WITH 19MM THICK FIBER GLASS INSULATION WITH ASJ VAPOR BARRIER. PIPING CAPABLE OF CARRYING FLUIDS ABOVE 40°C OR BELOW 13°F SHALL BE INSULATED TO A MINIMUM OF R-3.

13. PIPE SUPPORT (REFER TO PROJECT SPECIFICATIONS FOR DETAILS)
13.1. SUPPORT VERTICAL PIPES AT EACH FLOOR OR VERTICALLY NOT MORE THAN 3 MTR APART.
13.2. SUPPORT HORIZONTAL PIPE AT 1.8 MTR MAXIMUM INTERVALS.

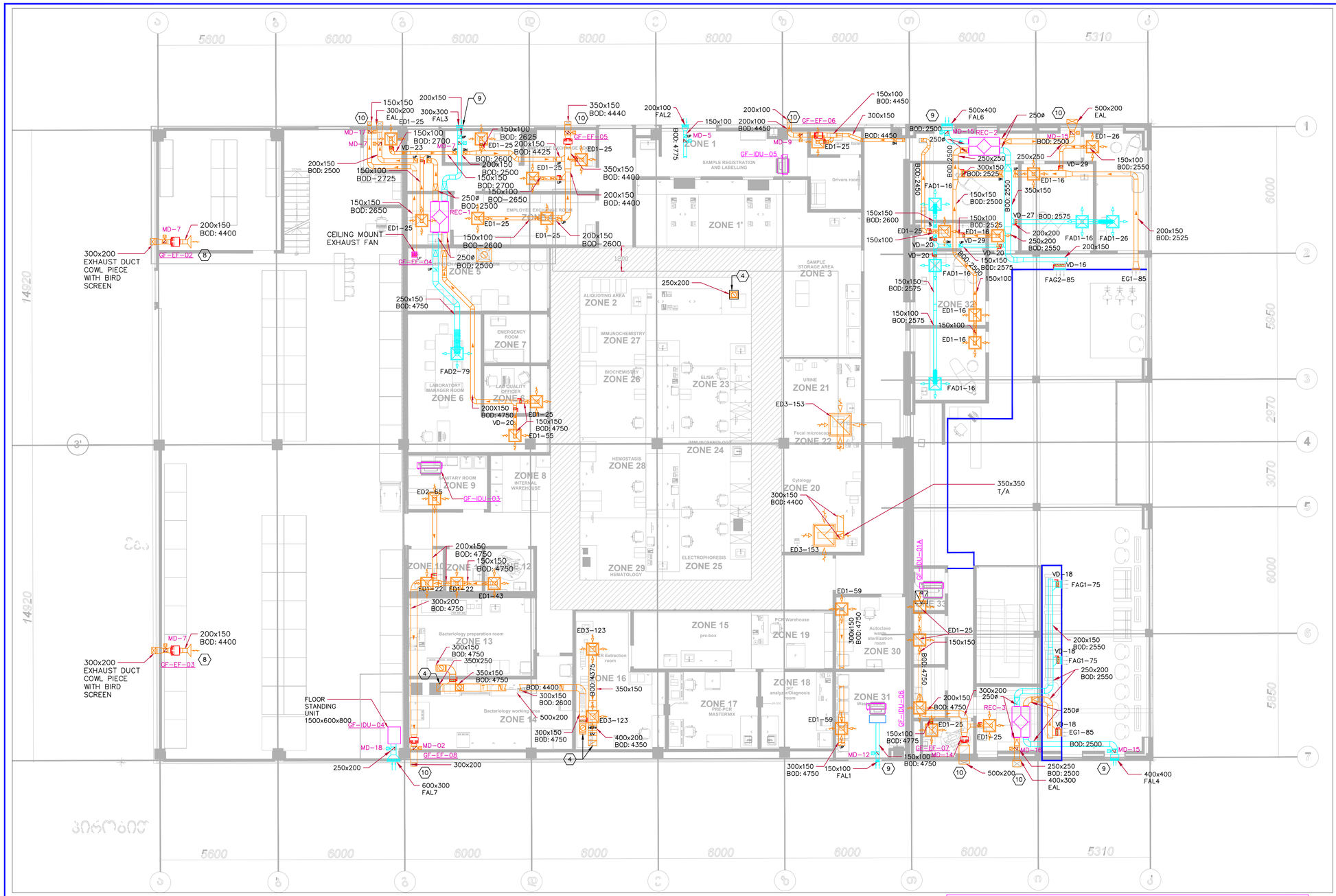
14. INSTALLATION (REFER TO PROJECT SPECIFICATIONS FOR DETAILS)
14.1. ALL PIPES SHALL BE INSTALLED IN A NEAT AND ORDERLY APPEARANCE AND FREE FROM CONTACT WITH STRUCTURE OR INSTALLED ITEMS.
14.2. RUN PIPING PARALLEL TO WALLS AND FLOORS OF BUILDING UNLESS OTHERWISE INDICATED.

AC	AIR CONDITIONING UNIT
ADP	APPARATUS DEW POINT
AF	AIR FILTER
AFF	ABOVE FINISHED FLOOR
AHU	AIR HANDLING UNIT
AI	ANALOG INPUT
AO	ANALOG OUTPUT
APD	AIR PRESSURE DROP
ARCH	ARCHITECTURAL
AS	AIR SEPARATOR
ATC	AUTO TEMPERATURE CONTROL
AV	AUDIO/VISUAL STROBE
BDD	BACK DRAFT DAMPER
BHP	BRAKE HORSE POWER
BLDG	BUILDING
BLW	BELOW
BP	BOOSTER PUMP
BTUH	BRITISH THERMAL UNIT PER HOUR
CC	COOLING COIL
CFM	CUBIC FEET PER MINUTE
CLG	CEILING
CO	CARBON MONOXIDE
CP	CONDENSER WATER PUMP
CR	CONDENSER WATER RETURN
CRAC	COMPUTER ROOM AIR CONDITIONING UNIT
CRD	CEILING RADIATION DAMPER
CS	CONDENSER WATER SUPPLY
CV	CONVERTER
CU	CONDENSING UINT
DB	DRY BULB TEMP
DDC	DIRECT DIGITAL CONTROL
DEX	DRYER EXHAUST
DI	DIGITAL INPUT
DIA	DIAMETER
DN	DOWN
DO	DAMPER OPERATOR
DO	DIGITAL OUTPUT
DPS	DIFFERENTIAL PRESSURE SWITCH
DWG	DRAWING
EA	EXHAUST AIR
EAT	ENTERING AIR TEMPERATURE
EF	EXHAUST FAN
ED	EXHAUST DIFFUSER
EG	EXHAUST GRILLE
EQUIP	EQUIPMENT
ESP	EXTERNAL STATIC PRESSURE
ET	EXPANSION TANK
ETR	EXISTING TO REMAIN
EWT	ENTERING WATER TEMPERATURE
EXIST	EXISTING
EXT	EXTERNAL
EUH	ELECTRIC UNIT HEATER
EWH	ELECTRIC WALL HEATER
F/A	FROM ABOVE
FD	FIRE DAMPER
FF	FRESH AIR FAN
FL	FLOOR
GE	GARAGE EXHAUST
GEF	GARAGE EXHAUST FAN
GSF	GARAGE SUPPLY FAN
HC	HEATING COIL
HP	HORSE POWER / HEAT PUMP
HR	HOUR
HS	HUMIDITY SENSOR
IN	INCH
KW	KILOWATT
LAN	LOCAL AREA NETWORK
LAT	LEAVING AIR TEMPERATURE
LF	LINEAR FEET
LPS	LITER PER SECOND
L/S	LITER PER SECOND
LWT	LEAVING WATER TEMPERATURE
M	LINEAR METER
MAX	MAXIMUM
MBH	1000 BTUH
MD	MOTORIZED DANOER
MECH	MECHANICAL
MIN	MINIMUM
MM	MILLIMETER
NC	NOISE CRITERIA
NOM	NOMINAL
No.	NUMBER
OA	OUTSIDE AIR
OAF	OUTSIDE AIR FAN
OAT	OUTSIDE AIR TEMPERATURE
DP	DIFFERENTIAL PRESSURE SENSOR
P	PRESSURE SENSOR
PA	PASCAL
PSI	POUNDS PER SQUARE INCH
RA	RETURN AIR
RAT	RETURN AIR TEMPERATURE
RD	RETURN DIFFUSER
RF	RETURN FAN
RG	RETURN GRILL
RHC	REHEAT COIL
RLA	RELIEF AIR
RLF	RELIEF FAN
RPM	REVOLUTION PER MINUTE
SA	SUPPLY AIR
SAD	SEE ARCHITECTURAL DRAWINGS
SAT	SUPPLY AIR TEMPERATURE
SD	SUPPLY DIFFUSER
SF	SUPPLY FAN
SG	SUPPLY GRILLE
SMD	SMOKE DAMPER
SR	SUPPLY REGISTER
SS	STAINLESS STEEL
T/B	TO BELOW
TEX	TOILET EXHAUST
TF	TRANSFER FAN
TR	TONES OF REFIGERENT
TRE	TRASH ROOM EXHAUST
TS	THERMOSTAT SENSOR
TSP	TOILET STATIC PRESSURE
TYP	TYPICAL
UH	UNIT HEATER
UNO	UNLESS NOTED OTHERWISE
V	VALVE (MOTORIZED)
VAV	VARIABLE AIR VOLUME
VFD	VARIABLE FREQUENCY/SPEED DRIVE
W	WATT
WB	WET BULB TEMP
WC	WATER COLUMN
WPD	WATER PRESSURE DROP
SA	SOUND ATTENUATOR

MECHANICAL LEGEND

TYPE—SD1-100—AIR FLOW— DIFFUSER TAG

- SUPPLY AIR DIFFUSER
- RETURN AIR DIFFUSER
- EXHAUST AIR DIFFUSER
- FLEX DUCT
- F.D. FIRE DAMPER
- S.D. SMOKE DAMPER
- SUPPLY AIR DUCT
- RETURN AIR DUCT
- FRESH AIR DUCT
- EXHAUST AIR DUCT
- INLINE EXHAUST FAN
- KITCHEN HOOD
- DP DIFFERENTIAL PRESSURE SENSOR
- P PRESSURE SENSOR
- THERMOSTAT
- INTAKE LOUVER
- VOLUME CONTROL DAMPER
- COWL PIECE WITH BIRD SCREEN
- ELECTRICAL UNIT HEATER
- TURNING VANES
- MOTORIZED DAMPER
- NON-RETURN DAMPER
- CONDENSATE PIPING
- VRF PIPING
- ROOF TOP CENTRIFUGAL EXHAUST FAN
- SOUND ATTENUATER



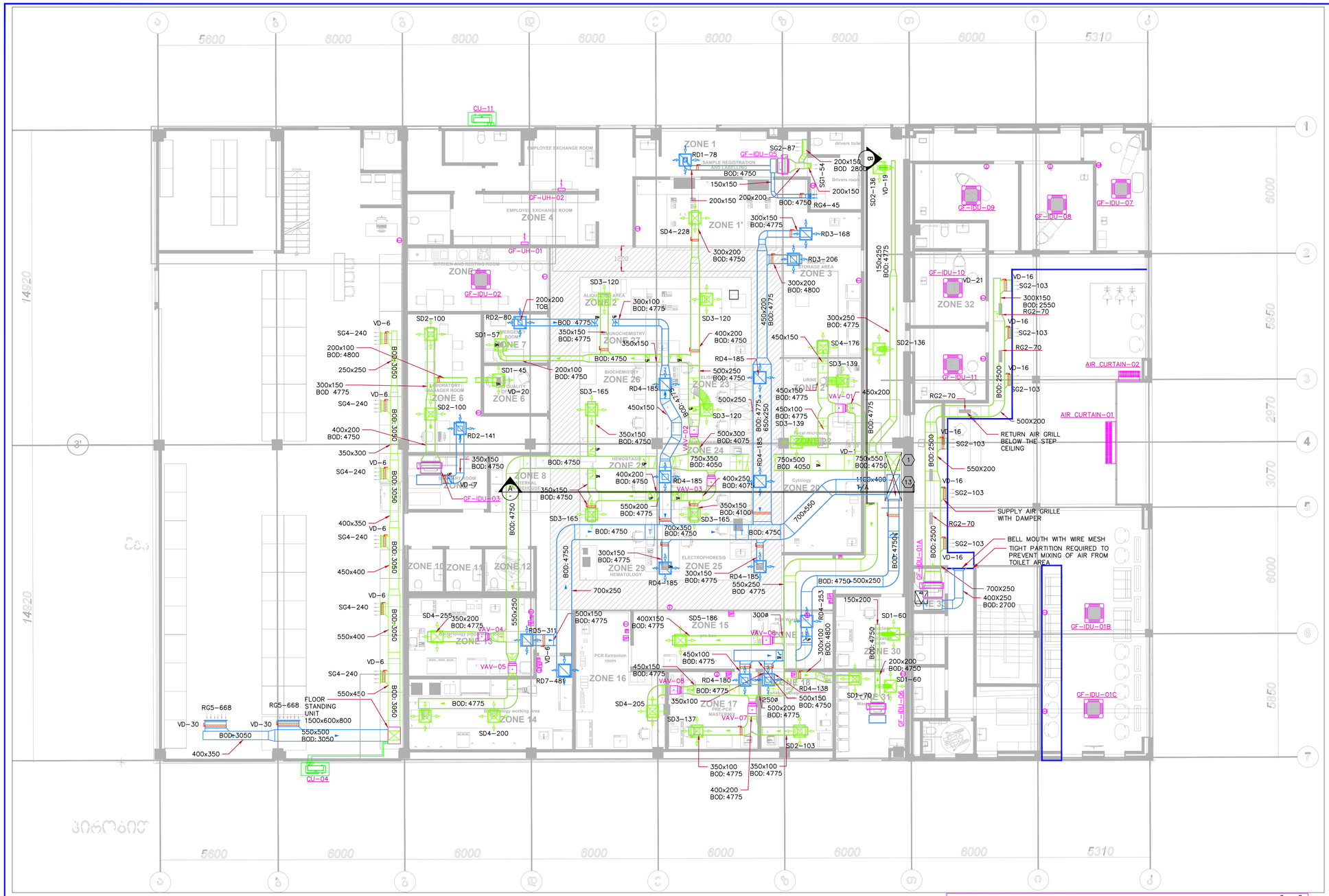
HVAC VENTILATION LAYOUT-GROUND FLOOR

1
H1.1A

SCALE: 1:100

NOTES BY SYMBOL "X"

1. SUPPLY/RETURN RISER DUCT FROM GF-AHU-02 PLACED AT THE ROOF.
2. ROOF TOP CENTRIFUGAL EXHAUST FAN GF-EF-10.
3. TO GF-AHU-01
4. EXHAUST DUCT CONNECTING TO ROOF TOP CENTRIFUGAL EXHAUST FAN
5. ROOF TOP CENTRIFUGAL EXHAUST FAN.GF-EF-01.
6. SUPPLY/RETURN AND EXHAUST AIR DUCT RISER FROM SERVICE FLOOR LEVEL TO GROUND FLOOR CEILING LEVEL.
7. FRESH AIR DUCT RISER FROM SERVICE FLOOR LEVEL TO GROUND FLOOR CEILING LEVEL.
8. PROVIDE BELL MOUTH OPENING FOR FRESH AIR/EXHAUST AIR DUCT AND PROTECT OPENING WITH 13 X 13mm WIRE MESH SCREEN GUARD.
9. FRESH AIR INTAKE LOUVER WITH MOTORIZED DAMPER
10. EXHAUST AIR DUCT COWL PIECE WITH WIRE MESH BIRD SCREEN.
11. CEILING MOUNTED EXHAUST FAN.
12. HI-WALL SPLIT AIR CONDITIONING UNIT.
13. RETURN AIR DUCT RISER TO GF-AHU-01
14. DUCT's ARE RUNNING AT SERVICE FLOOR LEVEL.
15. DUCT's ARE RUNNING AT GROUND FLOOR CEILING LEVEL.



HVAC AIRCONDITIONING LAYOUT-GROUND FLOOR

1
H1.1
SCALE: 1:100

NOTES BY SYMBOL "(X)"

1. SUPPLY/RETURN RISER DUCT FROM GF-AHU-02 PLACED AT THE ROOF.
2. ROOF TOP CENTRIFUGAL EXHAUST FAN GF-EF-10.
3. TO GF-AHU-01
4. EXHAUST DUCT CONNECTING TO ROOF TOP CENTRIFUGAL EXHAUST FAN
5. ROOF TOP CENTRIFUGAL EXHAUST FAN.GF-EF-01.
6. SUPPLY/RETURN AND EXHAUST AIR DUCT RISER FROM SERVICE FLOOR LEVEL TO GROUND FLOOR CEILING LEVEL.
7. FRESH AIR DUCT RISER FROM SERVICE FLOOR LEVEL TO GROUND FLOOR CEILING LEVEL.
8. PROVIDE BELL MOUTH OPENING FOR FRESH AIR/EXHAUST AIR DUCT AND PROTECT OPENING WITH 13 X 13mm WIRE MESH SCREEN GUARD.
9. FRESH AIR INTAKE LOUVER WITH MOTORIZED DAMPER
10. EXHAUST AIR DUCT COWL PIECE WITH WIRE MESH BIRD SCREEN.
11. CEILING MOUNTED EXHAUST FAN.
12. HI-WALL SPLIT AIR CONDITIONING UNIT.
13. RETURN AIR DUCT RISER TO GF-AHU-01
14. DUCT's ARE RUNNING AT SERVICE FLOOR LEVEL.
15. DUCT's ARE RUNNING AT GROUND FLOOR CEILING LEVEL.

HVAC DUCTING LAYOUT-FIRST FLOOR

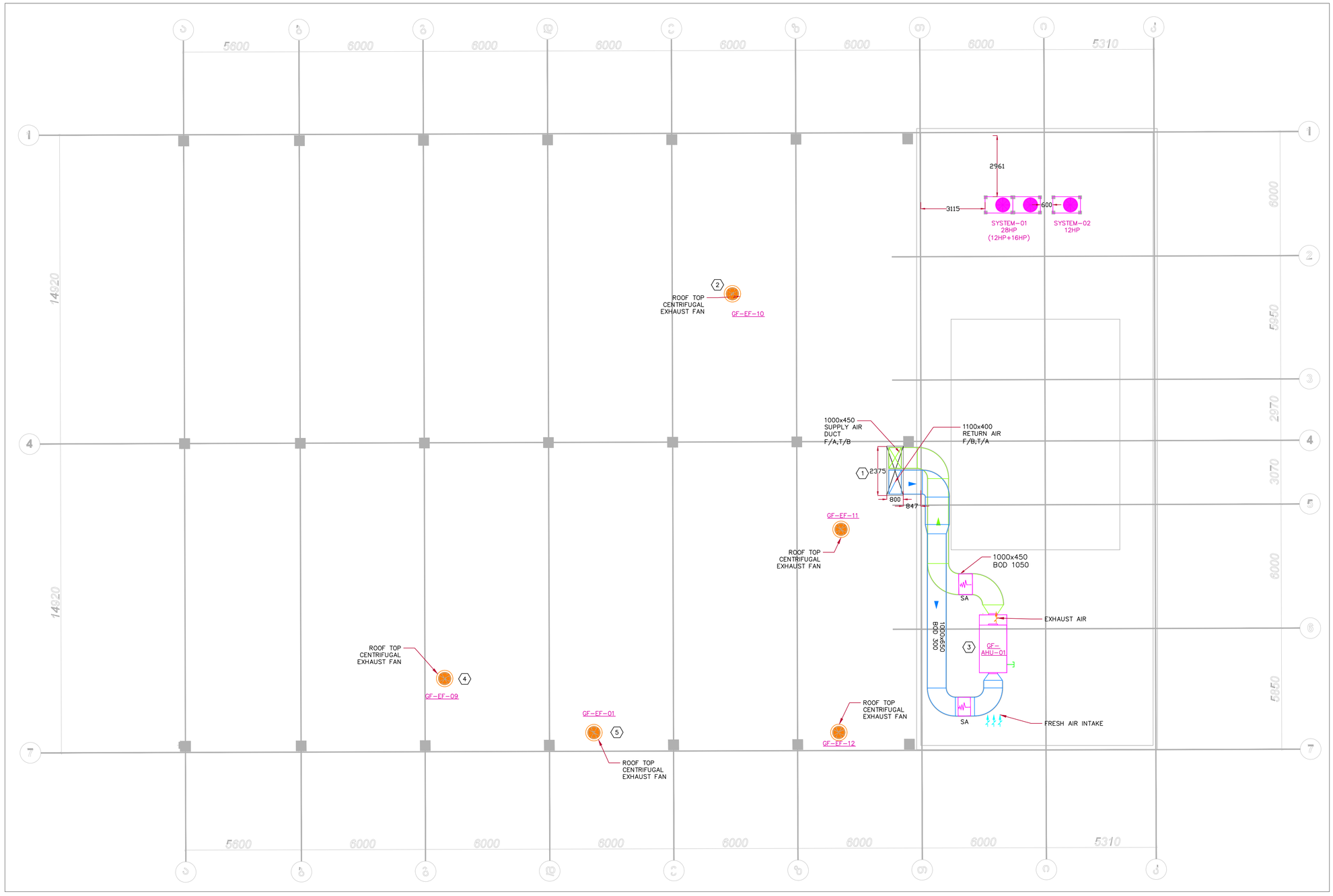
1
H1.2

SCALE: 1:100

ALL DIMENSIONS ARE IN MM

NOTES BY SYMBOL "(X)"

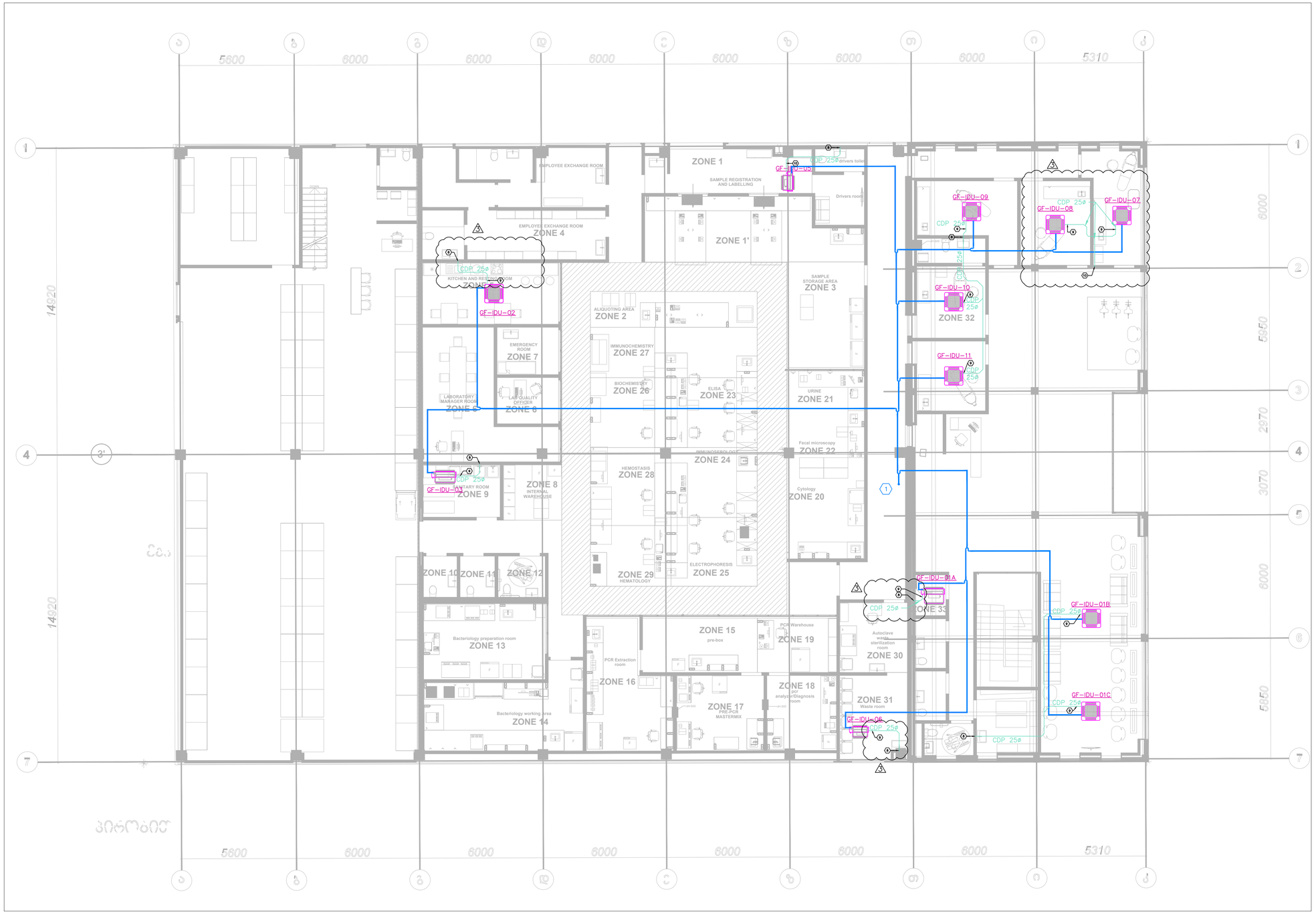
1. SUPPLY/RETURN RISER DUCT FROM GF-AHU-02 PLACED AT THE ROOF.
2. ROOF TOP CENTRIFUGAL EXHAUST FAN GF-EF-10.
3. TO GF-AHU-02
4. ROOF TOP CENTRIFUGAL EXHAUST FAN GF-EF-09.
5. ROOF TOP CENTRIFUGAL EXHAUST FAN.GF-EF-01.
6. SUPPLY/RETURN AND EXHAUST AIR DUCT RISER FROM SERVICE FLOOR LEVEL TO GROUND FLOOR CEILING LEVEL.
7. FRESH AIR DUCT RISER FROM SERVICE FLOOR LEVEL TO GROUND FLOOR CEILING LEVEL.
8. PROVIDE BELL MOUTH OPENING FOR FRESH AIR DUCT AND PROTECT OPENING WITH 13 X 13mm WIRE MESH SCREEN GUARD.
9. FRESH AIR INTAKE LOUVER WITH MOTORIZED DAMPER
10. EXHAUST AIR DUCT COWL PIECE WITH WIRE MESH BIRD SCREEN.
11. CEILING MOUNTED EXHAUST FAN.
12. HI-WALL SPLIT AIR CONDITIONING UNIT.
13. RETURN AIR DUCT RISER TO GF-AHU-02
14. DUCT's ARE RUNNING AT SERVICE FLOOR LEVEL.
15. DUCT's ARE RUNNING AT GROUND FLOOR CEILING LEVEL.



HVAC DUCTING LAYOUT-ROOF

1
H1.3

SCALE: 1:100



NOTES BY SYMBOL "X"

1. VRF RISER FROM SYSTEM-01 PLACED AT THE ROOF.
2. VRF RISER FROM SYSTEM-02 PLACED AT THE ROOF.
3. TO GF-AHU-01
4. CONDENSATE DRAIN PIPE DROPS TO LOWER LEVEL
5. CONDENSATE DRAIN PIPE CONNECTED TO NEAREST ROOF DRAIN.
6. TO SYSTEM-01 VRF OUTDOOR UNIT
7. TO SYSTEM-02 VRF OUTDOOR UNIT
8. CONDENSATE DRAIN PIPE DROPS TO DRAIN POINT
9. U-TRAP TO BE GIVEN
10. CONDENSATE DRAIN PIPE FROM HIGHER LEVEL

1
H2.1

HVAC PIPING LAYOUT-GROUND FLOOR

SCALE: 1:100

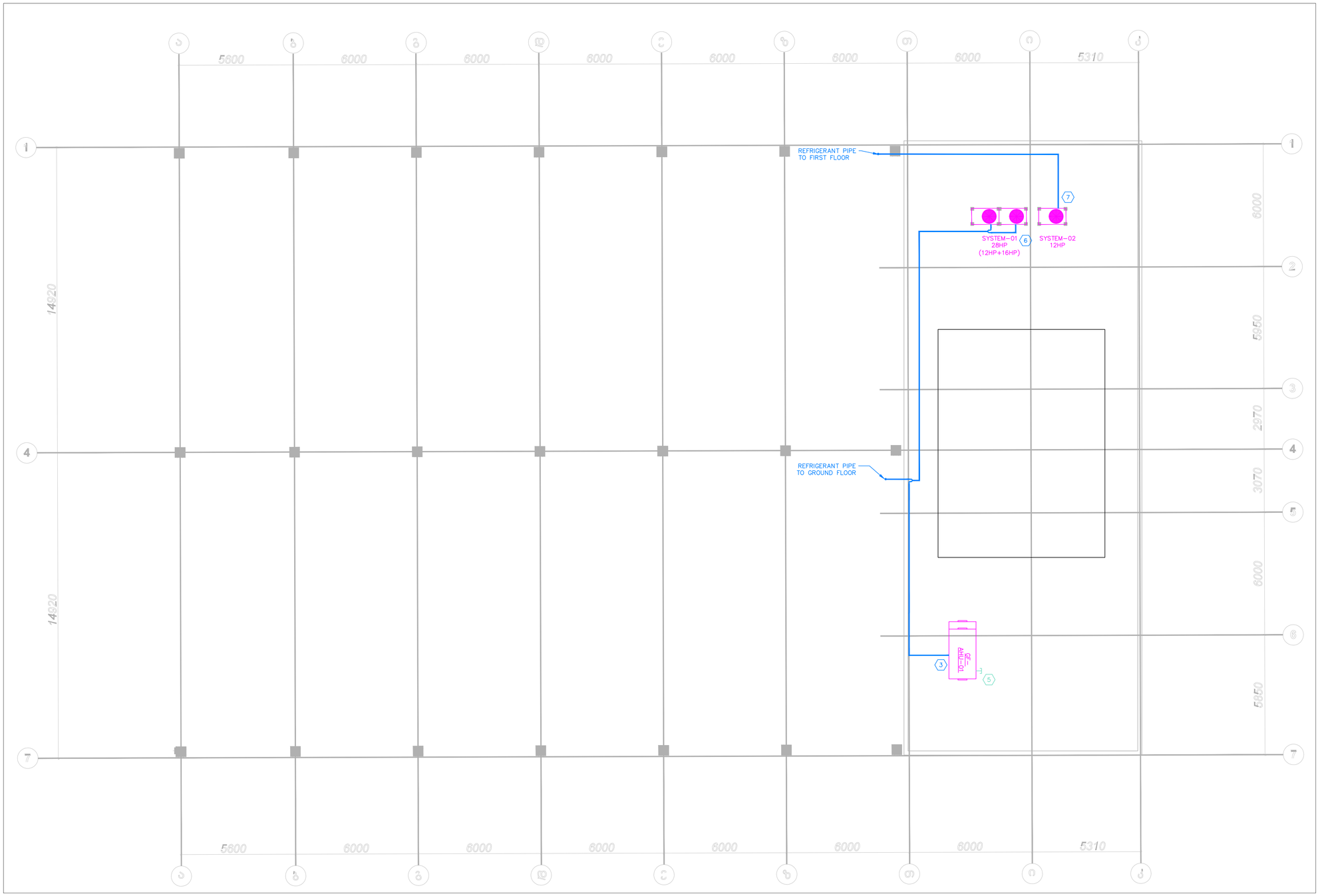
1
H2.2

HVAC PIPING LAYOUT-FIRST FLOOR

SCALE: 1:100

NOTES BY SYMBOL "X"

1. VRF RISER FROM SYSTEM-01 PLACED AT THE ROOF.
2. VRF RISER FROM SYSTEM-02 PLACED AT THE ROOF.
3. TO GF-AHU-01
4. TO HRU-01
5. CONDENSATE DRAIN PIPE CONNECTED TO NEAREST ROOF DRAIN.
6. TO SYSTEM-01 VRF OUTDOOR UNIT
7. TO SYSTEM-02 VRF OUTDOOR UNIT
8. CONDENSATE DRAIN PIPE CONNECTED TO DRAIN POINT.
9. U-TRAP TO BE GIVEN



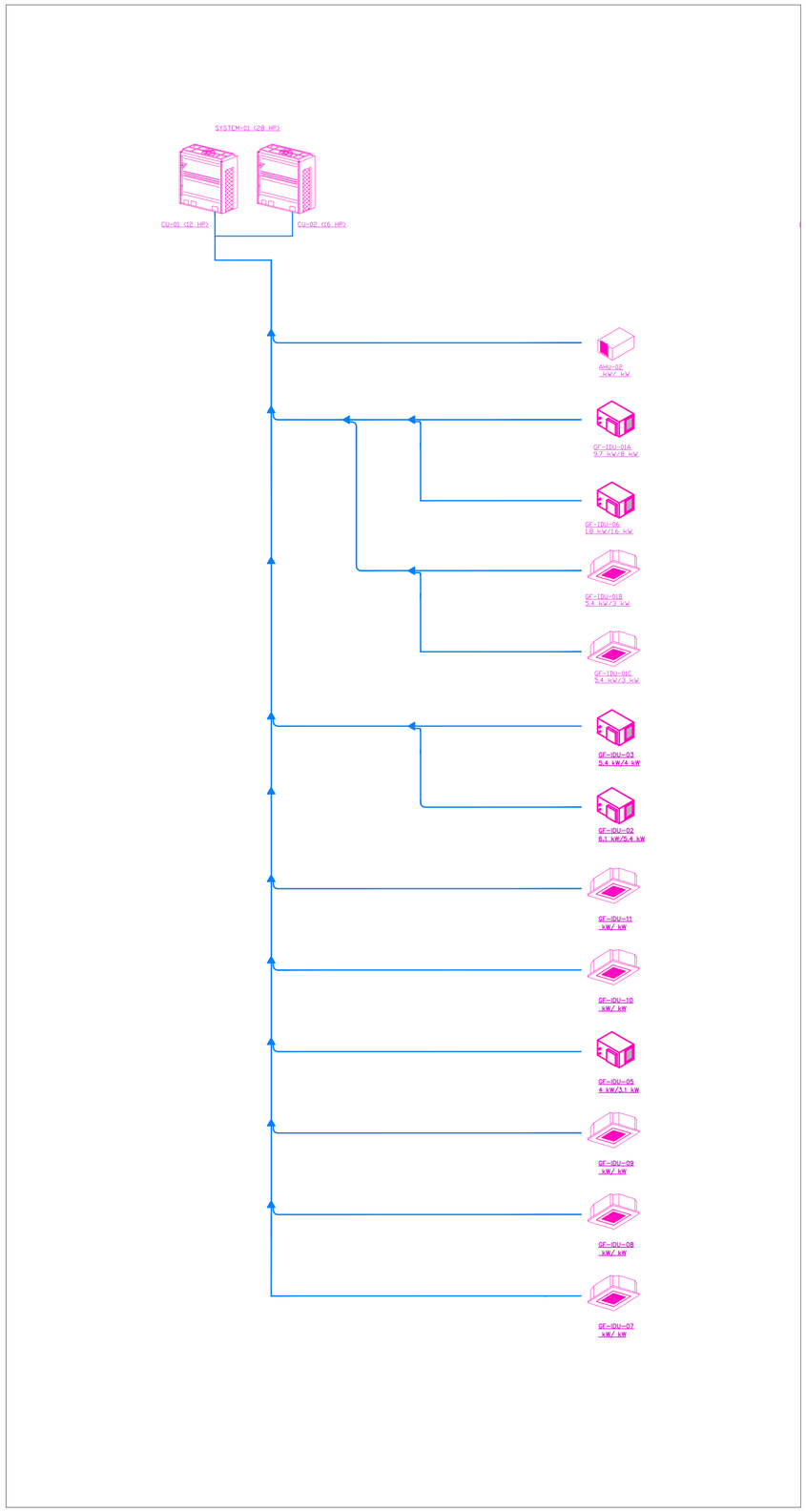
1
H2.3

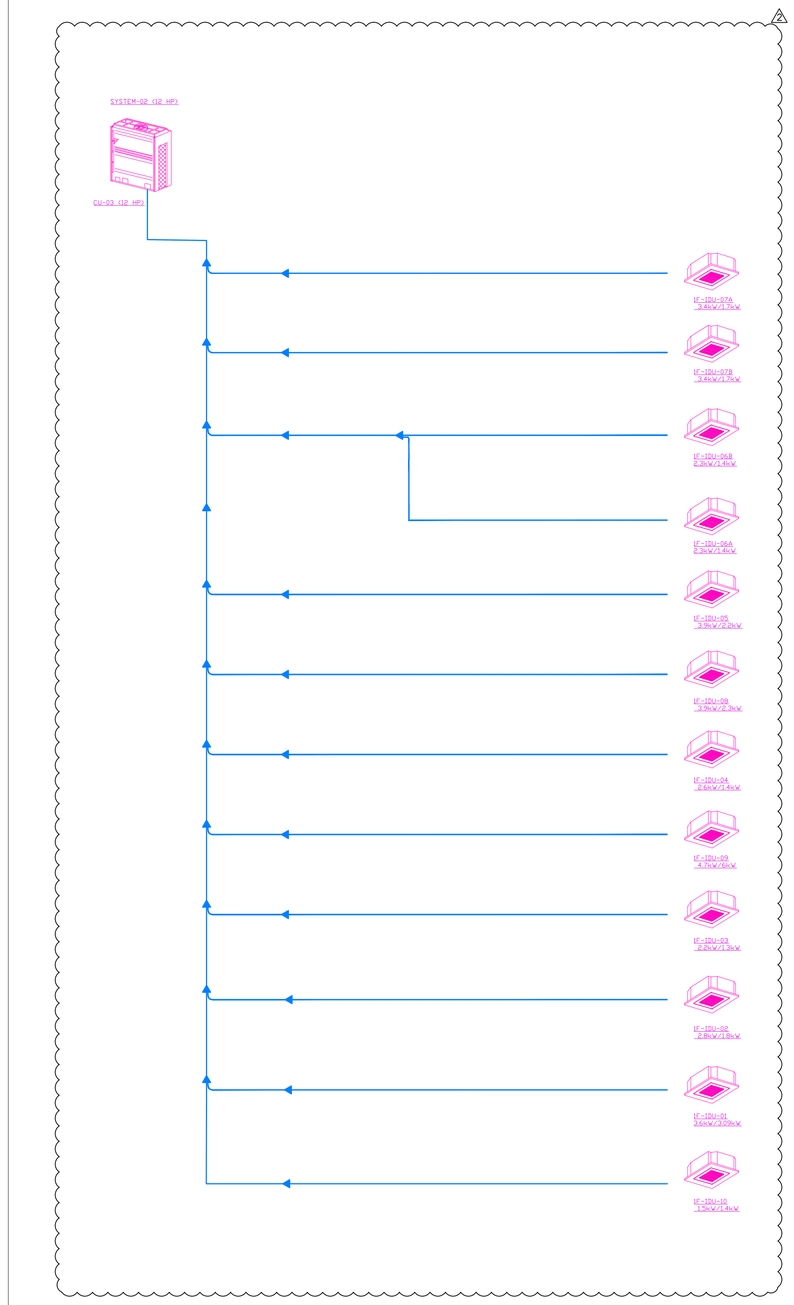
HVAC PIPING LAYOUT-ROOF

SCALE: 1:100

NOTES BY SYMBOL "⟨X⟩"

1. VRF RISER FROM SYSTEM-01 PLACED AT THE ROOF.
2. VRF RISER FROM SYSTEM-02 PLACED AT THE ROOF.
3. TO GF-AHU-01
4. CUSTOMIZED VRF AHU CONNECTED WITH AHU KIT
5. CONDENSATE DRAIN PIPE CONNECTED TO NEAREST ROOF DRAIN.
6. TO SYSTEM-01 VRF OUTDOOR UNIT SERVING GROUND FLOOR
7. TO SYSTEM-02 VRF OUTDOOR UNIT SERVING FIRST FLOOR
8. CONDENSATE DRAIN PIPE CONNECTED TO DRAIN POINT.





H5.2

VRF SYSTEM-01&02-SCHEMATIC

SCALE: NTS

INDOOR UNIT SCHEDULE

SL NO	TYPE OF AC	Area Served	AHU TAG	Supply Fan		Return Fan		Exhaust Air Flow Rate	Fresh Air Flow Rate	Qty	IDU SCHEDULE					Power consumption		Remark
											COOLING COIL DATA (DESIGN PARAMTER)				HEATING COIL DATA (DESIGN PARAMTER)			
				Air Flow Rate	External Static ESP	Air Flow Rate	External Static ESP				Total Coil load	Sensible coil load	Entering Air DB/WB	Leaving Air DB/WB	Total Capacity			
				LPS	Pa	LPS	Pa	CFM	CFM		kW	kW	°C	°C	kW	Type	W atts	
GROUND FLOOR																		
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17	FLM	Bacteriology room /working area Bacteriology preparation room Arch Zone 23-27 +Aliquoting area Zone-03 Biochemistry/Microscope+Faeces Microscopy+Citology Emergency room BCC children BCC adult-2 BCC adult-1 Male specimen collection room Female specimen collection room Zone-01 WD - 005 Extraction room Pre- Pcr Master mix area pcr analyzer/diagnosis Reception-Labelling-Dispatching prebox + pcr warehouse	GF-AHU-01	3700	400		-	731	1548	1	45.0	42.6	25.9 / 19.1	16.3 / 15.7	59.0	3-Phase 400 V, 50/60 Hz	5000	*Suit for outside installation *With VFD for supply fan *Final capacity as per vendor selection *Required HEPA filter with UV lamp at exhaust side also
18	CSU	Patient Reception	GF-IDU-01A	616	150	-	-	-	-	1	9.7	8	-	-	6	1-phase, 220-240V,50Hz	724	
19	CASSETTE		GF-IDU-01B/01C	192	-	-	-	-	-	2	2.7	1.5	-	-	1.55	1-phase, 220-240V,50Hz	57	
20	CSU	Quality officer room	GF-IDU-03	250	30	-	-	-	-	1	5.4	4	-	-	5.4	1-phase, 220-240V,50Hz	198	
21		Lab manager room																
23	CSU	Living room	GF-IDU-05	139	30	-	-	-	-	1	4	3.1	-	-	4	1-phase, 220-240V,50Hz	98	
24		Drivers room																
26	CSU	Autoclave sterilization room+waste room	GF-IDU-06	177	30	-	-	-	-	1	1.8	1.6	-	-	0.8	1-phase, 220-240V,50Hz	140	
27	CASSETTE	kitchen	GF-IDU-02	350	-	-	-	-	-	1	6.1	5.4	-	-	5	1-phase, 220-240V,50Hz	140	
28	CASSETTE	BCC children	GF-IDU-07	235	-	-	-	-	-	1	3.2	3.1	-	-	2.3	1-phase, 220-240V,50Hz	108	
29	CASSETTE	BCC adult-2	GF-IDU-08	53	-	-	-	-	-	1	1	0.9	-	-	0.5	1-phase, 220-240V,50Hz	57	
30	CASSETTE	BCC adult-1	GF-IDU-09	65	-	-	-	-	-	1	1.1	0.9	-	-	0.6	1-phase, 220-240V,50Hz	57	
31	CASSETTE	Male specimen collection room	GF-IDU-10	50	-	-	-	-	-	1	0.9	0.7	-	-	0.5	1-phase, 220-240V,50Hz	57	
32	CASSETTE	Female specimen collection room	GF-IDU-11	50	-	-	-	-	-	1	0.9	0.7	-	-	0.5	1-phase, 220-240V,50Hz	57	
FIRST FLOOR																		
1	CASSETTE	Cabinet N2	IF-IDU-01	264	-	-	-	-	-	1	3.6	3.5	-	-	3	1-phase, 220-240V,50Hz	65	
2	CASSETTE	Cabinet N1	IF-IDU-02	192	-	-	-	-	-	1	2.8	2.6	-	-	1.8	1-phase, 220-240V,50Hz	65	
3	CASSETTE	Office N1	IF-IDU-03	165	-	-	-	-	-	1	2.5	2.2	-	-	1.3	1-phase, 220-240V,50Hz	65	
4	CASSETTE	Office N2	IF-IDU-04	170	-	-	-	-	-	1	2.6	2.3	-	-	1.4	1-phase, 220-240V,50Hz	65	
5	CASSETTE	Office N3	IF-IDU-05	258	-	-	-	-	-	1	3.9	3.5	-	-	2.2	1-phase, 220-240V,50Hz	75	
6	CASSETTE	Office N4	IF-IDU-06A & 06B	152	-	-	-	-	-	2	2.3	2.05	-	-	1.4	1-phase, 220-240V,50Hz	65	
7	CASSETTE	Kitchen	IF-IDU-07A & 07B	227	-	-	-	-	-	2	3.4	3.1	-	-	1.7	1-phase, 220-240V,50Hz	65	
8	CASSETTE	Meeting Room	IF-IDU-08	221	-	-	-	-	-	1	3.9	3.1	-	-	2.3	1-phase, 220-240V,50Hz	75	
9	CASSETTE	Reception and corridor	IF-IDU-09	300	-	-	-	-	-	1	4.3	4.4	-	-	4.7	1-phase, 220-240V,50Hz	65	
10	CASSETTE	Private room	IF-IDU-10	91	-	-	-	-	-	1	1.5	1.2	-	-	1.4	1-phase, 220-240V,50Hz	65	

NOTE: 1.Given are Nominal capacities, Actual selection shall be done as per maximum ambient condition.
2.AHUs serving to Lab area shall be with 3 stage filtration (Prefilter, Final filter and HEPA filter) and shall be with inbult UV-Lamp
3.Power consumption given are approximate, actual power consumption shall be consider as per equipment technical data sheet

INDOOR UNIT SCHEDULE (SPLIT UNIT)

SL NO	TYPE OF AC	Area Served	AHU TAG	Supply Fan		Qty	COOLING COIL DATA (DESIGN PARAMTER)	HEATING COIL DATA (DESIGN PARAMTER)			Power consuption		Remark
				Air Flow Rate	External Static ESP		Total Coil load	Total Coil load	Entering Air DB °C	Leaving Air DB °C	Type	W atts	
				LPS	Pa		kW	kW					
FIRST FLOOR													
1	Hi-Wall	Electrical Room	1F-IDU-15/CU-15	583	-	1	7.8	-	-	-	1-phase, 230V 50Hz	2200	Cooling only
2	Floor standing ductable	Storage	GF-IDU-04/CU-04	1438	75	1	15.5	14.2	16.8	24.7	1-phase, 230V 50Hz	5284	Heat Pump

AIR CURTAIN

FLOOR SERVING	TAG	Qty	AREA	FLOW RATE L/s	STATIC PRESSURE (Pa)	POWER TYPE	ELECTRICAL POWER (W)
GROUND FLOOR	AIR CURTAIN-01	1	RECEPTION DOOR - 2.1 METER	1275	0	1 PHASE,220-240V	580
	AIR CURTAIN-02	1	RECEPTION- 1 METER	540	0	1 PHASE,220-240V	235

Note: *Power consumption given are approximate, actual power consumption shall be consider as per equipment technical data sheet

FRESH AIR FAN DETAILS

FLOOR SERVING	TAG	Qty	AREA / UNIT SERVED	FRESH AIR FLOW RATE L/s	STATIC PRESSURE (Pa)	FAN TYPE	POWER TYPE	ELECTRICAL POWER (W)
FIRST FLOOR	FF-FF-01	1	1F-IDU-1,2,3,9,10	91	70	IN-LINE DIRECT DRIVEN CABINET FAN	1-Phase,230V	95
	FF-FF-02	1	1F-IDU-4,5,6,7,8	164	100	IN-LINE DIRECT DRIVEN CABINET FAN	1-Phase,230V	178

Note: *Power consumption given are approximate, actual power consuption shall be consider as per equipment technical data sheet

VRF CONDENSING UNIT

Sl.No	System Reference	Unit type	Area served	Total cooling capacity			Total heating capacity		System configuration	Power Consumption	Location of unit
-	-	-	-	kW	MBH	TR	kW	MBH	HP	kW	-
1	SYSTEM-01	Heat pump (Heating and cooling)	Ground Floor	78.9	269	22	87.7	299	28 HP (12HP+16HP Nos)	18.5	Roof
2	SYSTEM-02	Heat pump (Heating and cooling)	First Floor	45	144	12	24.3	83	16 HP (16HPX1No)	11.0	Roof

Note: *Power consumption given are approximate, actual power consumption shall be consider as per equipment technical data sheet.

EXHAUST AIR FAN DETAILS

FLOOR SERVING	TAG	Qty	AREA	FLOW RATE L/s	STATIC PRESSURE (Pa)	FAN TYPE	POWER TYPE	ELECTRICAL POWER (W)
GROUND FLOOR	GF-EF-01	1	Extraction Room	311	500	ROOF TOP CENTRIFUGAL FAN	1-Phase,230 V	255
	GF-EF-02	1	Received goods Check point	88	70	IN-LINE DIRECT DRIVEN CABINET FAN	1-Phase, 230V	70
	GF-EF-03	1		88	70			
	GF-EF-04	1	Kitchen	56	50	CEILING MOUNTED TYPE	1-Phase, 230V	70
	GF-EF-05	1	Employee exchange room	160	50	IN-LINE CENTRIFUGAL CIRCULAR FAN	1-Phase, 230V	120
	GF-EF-06	1	Toilet-4,Toilet-5	50	50	IN-LINE CENTRIFUGAL CIRCULAR FAN	1-Phase, 230V	70
	GF-EF-07	1	5 Nos of WC at patient reception	125	50	IN-LINE CENTRIFUGAL CIRCULAR FAN	1-Phase, 230V	120
	GF-EF-08	1	Men, Women, Disabled Patients toilet & Sanitary room	155	100	IN-LINE DIRECT DRIVEN CABINET FAN	1-Phase, 230V	120
	GF-EF-09	1	Bacteriology room /working area, Bacteriology preparation, Extraction room. Biosafety cabinet Exhaust	306	100	ROOF TOP CENTRIFUGAL FAN	1-Phase,230 V	255
	GF-EF-10	1	Lab area . Biosafety cabinet Exhaust	128	100	ROOF TOP CENTRIFUGAL FAN	1-Phase,230 V	200
	GF-EF-11	1	Biochemistry/microscope and cytology	278	100	ROOF TOP CENTRIFUGAL FAN	1-Phase,230 V	250
	GF-EF-12	1	Autoclave & waste room	150	100	ROOF TOP CENTRIFUGAL FAN	1-Phase,230 V	120
FIRST FLOOR	1F-EF-01	1	Kitchen	50	130	CEILING MOUNTED TYPE	1-Phase, 230V	28
	1F-EF-02	1	Closet N1+WC+Closet N3	75	130	INLINE CENTRIFUGAL CIRCULAR FAN	1-Phase, 230V	95
	1F-EF-03	1	Battery room	36	50	CEILING MOUNTED TYPE	1-Phase, 230V	25

Note: *Power consumption given are approximate, actual power consumption shall be consider as per equipment technical data sheet

ELECTRIC UNIT HEATER

Description	Ref.Name	Area (Sq Ft)	Delta T (°F)	Electric source				Remark
				Heat Loss (Btu/Hr)	Heat Loss (KW)	Required Heating (KW)	Quantity (No.s)	
Employee exchange-01	GF-UH-01	269	60	4172	1.22	1.3	1	
Employee exchange-02	GF-UH-02	269	60	3812	1.12	1.3	1	

Note: *Power consumption given are approximate, actual power consumption shall be consider as per equipment technical data sheet.

VAV DETAILS

SL NO	TAG	AREA SERVED	QTY	FLOW RATE (L/S)	SIZE DIA (Inches)	POWER TYPE
1	VAV-01	URINE BIOCHEMISTRY / CYTOLOGY ROOM	1	454	10	1-Phase,230V
2	VAV-02	WORKING LAB BIOCHEMISTRY	1	628	10	
3	VAV-03	WORKING LAB BIOCHEMISTRY	1	360	10	
4	VAV-05	BACTERIOLOGY WORKING AREA	1	400	10	
5	VAV-04	BACTERIOLOGY PREPARATION ROOM	1	255	8	
6	VAV-06	PREBOX	1	186	6	
7	VAV-07	PCR ANALYZER/DIAGNOSIS	1	240	8	
8	VAV-08	EXTRACTION ROOM	1	205	8	

Note: *Power consumption given are approximate, actual power consumption shall be consider as per equipment technical data sheet.
*Reheat type.

SUPPLY AIR DIFFUSER

S.NO	TAG	NECK SIZE	QTY
1	SD1	150X150	5
2	SD2	225X225	5
3	SD3	300X300	9
4	SD4	375X375	6
5	SD5	450X450	1

RETURN AIR DIFFUSER

S.NO	TAG	NECK SIZE	QTY
1	RD1	150X150	1
2	RD2	225X225	2
3	RD3	300X300	2
4	RD4	375X375	9
5	RD5	450X450	1
6	RD7	600X600	1

EXHAUST AIR DIFFUSER

S.NO	TAG	NECK SIZE	QTY
1	ED1	150X150	32
2	ED2	225X225	1
3	ED3	300X300	4

SUPPLY AIR GRILLE

S.NO	TAG	NECK SIZE	QTY
1	SG1	300X100	1
2	SG2	500X100	7
3	SG3	200x100	-
4	SG4	500x200	6

RETURN AIR GRILLE

S.NO	TAG	NECK SIZE	QTY
1	RG1	300X100	-
2	RG2	400X100	5
3	RG3	500X100	-
4	RG4	200x100	1
5	RG5	100X200	2

FRESH AIR LOUVER

S.NO	TAG	NECK SIZE	QTY
1	FAL1	150X100	1
2	FAL2	200X100	1
3	FAL3	300X300	1
4	FAL4	400X400	1
5	FAL5	500X200	1
6	FAL6	500X400	2
7	FAL7	600X300	1

FRESH AIR DIFFUSER

S.NO	TAG	NECK SIZE	QTY
1	FAD1	150X150	5
2	FAD2	225X225	1

FRESH AIR GRILLE

S.NO	TAG	NECK SIZE	QTY
1	FAG1	300X100	2
2	FAG2	500X100	1

EXHAUST AIR GRILLE

S.NO	TAG	NECK SIZE	QTY
1	EG1	300X100	2