



GENERAL NOTES

- 1- ALL FLOW RATES ARE IN L/S.
- 2- THIS SCHEMATIC IS INTENDED FOR AIR FLOW BALANCING SCHEME.
- 3- FIRE DAMPER ARE MOTORIZED TYPE AND WILL BE OPERATED VIA F&G PANEL COMMANDS.
- 4- EXHAUST FANS TO RUN CONTINUOUSLY AND INTERLOCKED WITH AHUS.
- 5- EXHAUST FANS TO RUN CONTINUOUSLY AND INTERLOCKED WITH AHUS.
- 6- TWO ROOF PACKAGED UNIT (PKG) (ONE STANDBY) WILL SUPPLY THE CONDITIONED AIR FOR INSIDE BUILDING.
- 7- DIFFERENTIAL PRESSURE SWITCH (DPS) ARE CONSIDERED FOR SPU'S ACROSS FILTER SECTION (BY UNIT MANUFACTURER) AND SET TO ALARM AT SET POINT DIFFERENTIAL PRESSURE A SIGNAL SHALL BE SENT TO PKG CONTROL & ELECTRICAL PANEL TO ALARM. IN ADDITION TWO (DPS) ARE CONSIDERED ACROSS FANS TO MONITOR FAN FAILURE. A SIGNAL SHALL BE SENT TO PKG CONTROL & ELECTRICAL PANEL TO ALARM AND AUTOMATIC CHANGEOVER TO OTHER STANDBY UNIT.
- 8- A COOLING THERMOSTAT WITH CHANGE-OVER SWITCH SHALL BE CONSIDERED ON RETURN DUCT TO CONTROL THE UNIT COMPRESSORS DOWN TO MAINTAIN THE INSIDE CONDITION TEMPERATURE.
- 9- WHENEVER THE PKG CONTROL & ELECTRICAL PANEL RECEIVED A SIGNAL FROM FIRE & GAS MONITORING SYSTEM, THE WHOLE SYSTEM MUST SHUT DOWN AND ALL ASSOCIATED MOTORIZED DAMPERS SHALL RETURN TO 100% CLOSED POSITION. IN ADDITION, HVAC SYSTEM STATUS SIGNAL SHALL SEND TO F&G SYSTEM VIA PKG CONTROL & ELECTRICAL PANEL.
- 11- ALL REFRIGERANT PIPE SIZES AND REQUIRED COMPONENTS TO BE VERIFIED AND FINALIZED BY VENDOR.
- 13- EACH COMPRESSOR SHALL BE EQUIPPED WITH MINIMUM 4 STEP UNLOADING VALVE.
- 16- #1 REFERS TO HVAC SYSTEM STATUS SIGNAL TO F&G SYSTEM.
- 17- #2 REFERS TO UNIT INTERLOCKED WITH CORRESPONDING MOTORIZED DAMPER AND COMPLETE SHUT DOWN AND AUTOMATIC CHANGEOVER TO OTHER STANDBY UNIT.
- 18- THE MOTORIZED DAMPERS ON FRESH, RETURN DUCTS ARE PROPORTIONAL TYPE. THE MOTORIZED DAMPERS ON SUPPLY AND EXHAUST DUCTS ARE OPEN/CLOSE TYPE.
- 19- FLAMMABLE GAS DETECTOR (FGD) AND TOXIC GAS DETECTOR (TGD) ARE CONSIDERED AT THE FRESH AIR INTAKE OF AHUS.
- 20- THE BATTERY ROOM EXHAUST FAN MUST BE EXPLOSION PROOF TYPE (Eex d-IC-13).
- 22- ALL EXHAUST FANS OF CABLE GALLERY TO RUN CONTINUOUSLY TO REMOVE HEAT FROM RELATED AREA.
- 23- LIQUID INJECTION FOR COMPRESSORS SHALL BE CONSIDERED.
- 25- HVAC CONTROL PANEL AND CONTROL SYSTEM WILL BE DESIGNED BY VENDOR. COMMUNICATION BETWEEN HVAC CONTROL SYSTEM AND FCS CONTROL SYSTEM AND RELATED SIGNALING SHALL BE CONSIDERED BY VENDOR BASED ON THE REQUIREMENTS THAT MENTIONED IN "SPECIFICATION FOR HVAC CONTROLS" DOCUMENT.
- 26- ALL EXHAUST FANS EXCEPT BATTERY ROOM, SHALL BE EQUIPPED WITH BACKDRIFT DAMPER.

REFERENCE DOCUMENTS

REFERENCE DOCUMENTS	DOC. NO.
HVAC DESIGN CRITERIA	LRP-TNA-HV-99-SPC-0001
SUBSTATION NO.05 HVAC CALCULATION	LRP-TNA-HV-19-CAL-0001
SUBSTATION NO.05 HVAC EQUIPMENT DATA SHEETS	LRP-TNA-HV-19-DSH-0001

LEGEND

AC	ACCUMULATOR	COMP	COMPRESSOR
MD	MOTORIZED DAMPER	H/O/A	HANDY-OFF-AUTOMATIC
RA	RETURN AIR	HLT	HIGH LIMIT TEMPERATURE
SA	SUPPLY AIR	FS	FLOW SWITCH
EA	EXHAUST AIR	SW	SWITCH
VD	VOLUME DAMPER	XL	RUNNING LAMP
TYP.	TYPICAL	HLT	HIGH LIMIT THERMOSTAT
CC	COOLING COIL	DPS	DIFFERENTIAL PRESSURE SWITCH
COMD	COMMAND	SPU	SPLIT PACKAGED UNIT
FA	FRESH AIR	S/D	SHUT DOWN
FD	FIRE DAMPER	MFD	MOTORIZED FIRE DAMPER
M	MOTOR	ACC	AIR COOLED CONDENSER
EF	EXHAUST FAN	—	CONTROL WIRING
TE	TEMPERATURE ELEMENT	—	REFRIGERANT HOT GAS LINE
TC	TEMPERATURE CONTROLLER	—	REFRIGERANT LIQUID LINE
PB	PUSH BUTTON	—	REFRIGERANT SUCTION LINE
O/O	ON/OFF	EH	ELECTRICAL HEATER
F&G	FIRE/GAS SYSTEM		
S/D	SHUT DOWN		
DPT	DIFFERENTIAL PRESSURE TRANSMITTER		
CO ₂	CO ₂ SENSOR		

KEY PLAN



04					
03					
02	28-NOV-23	AFC	H.RASOOLI	H.RASOOLI	AR.AHOOEI
01	12-MAY-23	Issued for Approval	H.RASOOLI	H.RASOOLI	AR.AHOOEI
Rev.	Date	Purpose of Issue	PRE'D.	CHK'D.	APR'D.

Project
Completing the Remaining Documents of Design and Engineering Services for LAB2s&Unit: 1:100

P.O. No.:XXXX

Client:  **Consultant:** 

DRAWING TITLE:
SUBSTATION NO.05 HVAC P&ID

OLD Doc. No.: - **Doc. No.:** LRP-TNA-HV-19-PID-0001

Size: A1 **SHEET No.:** 1 OF 1 **REV. 01**