

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- TWO AIR COOLED CONDENSING UNIT (ACCU) (ONE STANDBY) WILL SUPPLY THE CONDITIONED AIR FOR INSIDE BUILDING
- 6- 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.
- 7- 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.
- 8- 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.
- 9- ALL REFRIGERANT PIPE SIZES AND REQUIRED COMPONENTS TO BE VERIFIED AND FINALIZED BY VENDOR.
- 10- EACH COMPRESSOR SHALL BE EQUIPPED WITH MINIMUM 4 STEP UNLOADING VALVE.
- 11- #1 REFERS TO HVAC SYSTEM STATUS SIGNAL TO F&G SYSTEM.
- 12- #2 REFERS TO UNIT INTERLOCKED WITH CORRESPONDING MOTORIZED DAMPER AND COMPLETE SHUT DOWN AND AUTOMATIC CHANGEOVER TO OTHER STANDBY UNIT.
- 13- THE MOTORIZED DAMPERS ON FRESH, RETURN DUCTS ARE PROPORTIONAL TYPE. THE MOTORIZED DAMPERS ON SUPPLY AND EXHAUST DUCTS ARE OPEN/CLOSE TYPE.
- 14- FLAMMABLE GAS DETECTOR (FGD) AND TOXIC GAS DETECTOR (TGD) ARE CONSIDERED AT THE FRESH AIR INTAKE OF AHUS.
- 15- THE BATTERY ROOM EXHAUST FAN MUST BE EXPLOSION PROOF TYPE (Eex d-ic-T3).
- 16- LIQUID INJECTION FOR COMPRESSORS SHALL BE CONSIDERED.
- 17- 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.
- 18- ALL EXHAUST FANS EXCEPT BATTERY ROOM, SHALL BE EQUIPPED WITH BACKDRAFT DAMPER.

REFERENCE DOCUMENTS	DOC. NO.
HVAC DESIGN CRITERIA	LRP-TNA-HV-99-SPC-0001
PROCESS CONTROL BUILDING NO.03 HVAC CALCULATION	LRP-TNA-HV-15-CAL-0001
PROCESS CONTROL BUILDING NO.03 HVAC EQUIPMENT DATA SHEETS	LRP-TNA-HV-19-DSH-0002

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	—HC	AIR DUCT
FC	TEMPERATURE CONTROLLER	—LL	REFRIGERANT HOT GAS LINE
PB	PUSH BUTTON	—LL	REFRIGERANT LIQUID LINE
O/O	ON/OFF	—SUC	REFRIGERANT SUCTION LINE
F&G	FIRE/GAS SYSTEM	EH	ELECTRICAL HEATER
S/D	SHUT DOWN		
DPT	DIFFERENTIAL PRESSURE TRANSMITTER		
CO ₂	CO ₂ SENSOR		

KEY PLAN



03	23-JAN-24	Approved for Construction	H.RASOOLI	H.RASOOLI	R.JAVADZADEH
02	13-SEP-23	Issued for Approval	H.RASOOLI	H.RASOOLI	AR.AHOOEI
01	24-JUL-23	Issued for Approval	H.RASOOLI	H.RASOOLI	AR.AHOOEI
00	13-MAY-23	Issued for Approval	H.RASOOLI	H.RASOOLI	AR.AHOOEI

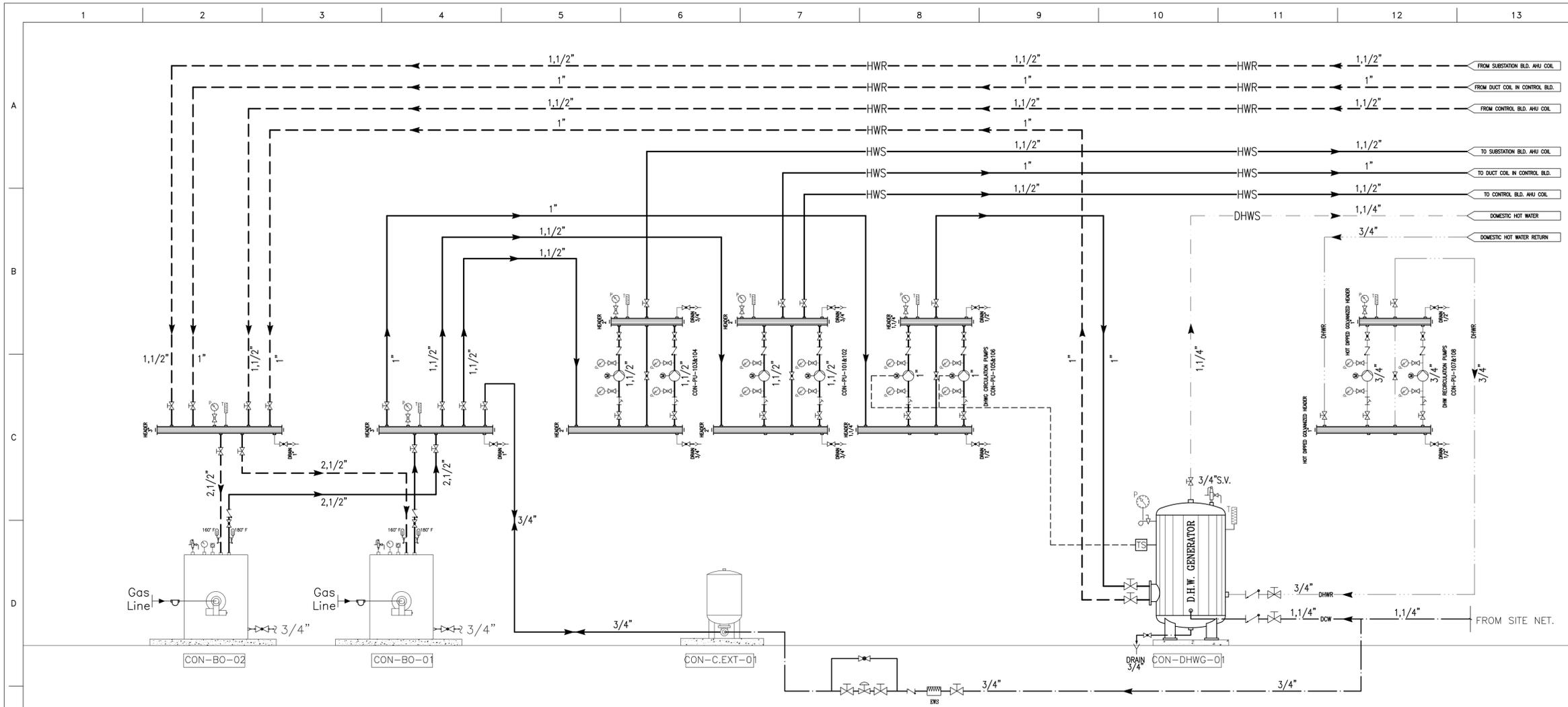
Rev. Date Purpose of Issue PRE'D. CHK'D. APR'D.

Project: **Completing the Remaining Documents of Design and Engineering Services for Lab2 Unit**

P.O. No.: XXXX	Client:	Consultant:
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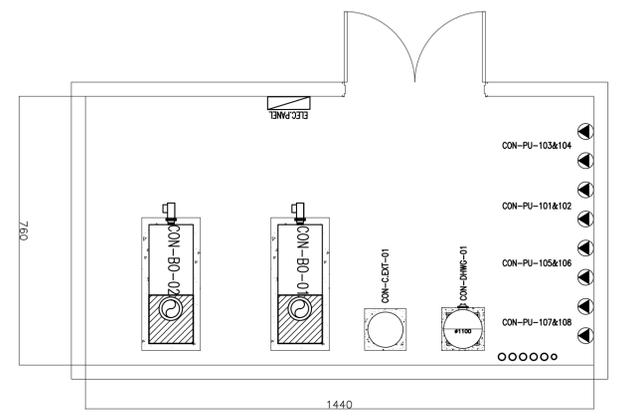
DRAWING TITLE: **PROCESS CONTROL BUILDING NO.03 HVAC P&ID**

OLD Doc. No.: -	Doc. No.: LRP-TNA-HV-19-PID-0002
Size: A1	SHEET No. 1 OF 2
	REV. 04



MECHANICAL FLOW DIAGRAM

Sc:NTS



MECHANICAL ROOM ARRANGEMENT

Sc:1/50

GENERAL NOTES

- 1-ALL DIMENSIONS ARE IN MILLIMETER UNLESS OTHERWISE NOTED.
- 2-ALL ELEVATIONS AND COORDINATES ARE IN METERS.
- 3-THE EXECUTIVE CONTRACTOR MUST CHECK ALL DIMENSIONS AT SITE PRIOR TO ANY FABRICATION & CONSTRUCTION.
- 4-THE EXECUTIVE CONTRACTOR SHALL PREPARE SHOP DRAWINGS WHICH HAVE BEEN COORDINATED WITH OTHER TRADES BEFORE OF ANY FABRICATION AND INSTALLATION.
- 5-CHIMNEY SHALL BE CONSTRUCTED FROM STAINLESS STEEL.
- 6-THE CHIMNEY SHALL HAVE A CLEAN OUT ACCESS AT BOTTOM OF THE STACK.
- 7-THE CHIMNEY SHALL HAVE "BALANCED DRAFT REGULATING DAMPER" AT THE HORIZONTAL PART OF CHIMNEY.
- 8- ALL CHIMNEYS SHALL BE EXTENDED MIN. 1.0 METERS FROM FINISHED FLOOR OF ROOF.
- 9-EACH BOILER ARE SIZED BY 100% FULL LOAD CAPACITY.
- 10-EACH BOILER SHALL BE INSTALLED WITH SEPARATE FLUE STACK.
- 11-EQUIPMENTS FOR CONDENSING BOILERS SHALL BE CONSIDERED BY VENDOR.
- 12-EQUIPMENTS SHALL BE INSTALLED AND TESTED ACCORDING TO MANUFACTURE MANUAL AND RECOMMENDATIONS.
- 13-WHEN MECHANICAL ROOM CONTROL PANEL RECEIVE GAS DETECTION COMMAND FROM F&G PANEL SHUT DOWN COMMAND WILL CLOSE NATURAL GAS SAFETY SHUT OFF VALVE AND SHUT DOWN THE BURNER.
- 14-THE MATERIAL OF HOT WATER SUPPLY AND RETURN PIPEWORK SHOULD BE OF BLACK STEEL PIPE ACCORDING TO STANDARD ASTM/ANSI A-53.
- 15-THE MATERIAL OF DOMESTIC COLD ,HOT AND RETURN WATER PIPE INSIDE MECHANICAL ROOM SHALL BE HOT-DIPPED GALVANIZED ACCORDING TO STANDARD ASTM/ANSI A-53.
- 16-NATURAL GAS PIPEWORK SHOULD BE OF BLACK STEEL PIPE ACCORDING TO DIN 2440 OR EQUAL STANDARD.
- 17-DOMESTIC HOT WATER AND HOT WATER SUPPLY AND RETURN PIPES SHALL BE INSULATED WITH 25mm THICKNESS ELASTOMERIC MATERIAL (EPDM) COVERED BY VAPOR BARRIER PLUS ALUMINUM CLADDING.
- 18-THE ACIDIC CONDENSATE SHALL BE DILUTED OR NEUTRALIZED BEFORE DISCHARGING INTO THE DRAINAGE SYSTEMS AND SHOULD MAINTAIN A PH LEVEL BETWEEN 7.5 AND 8.5.

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LEGEND

- DHWR DOMESTIC HOT WATER RETURN PIPE
- DHWS DOMESTIC HOT WATER SUPPLY PIPE
- DCW DOMESTIC COLD WATER PIPE
- HWS HOT WATER SUPPLY PIPE
- HWR HOT WATER RETURN PIPE
- EXP EXPANSION LINE SUPPLY PIPE
- SIGNAL
- GATE VALVE N.O.
- GLOBE VALVE N.C.
- GLOBE VALVE N.C.
- BALL VALVE
- CHECK VALVE
- STRAINER
- PRESSURE REGULATING VALVE
- REDUCER
- FLEXIBLE CONNECTION
- AIR VENT
- S.C. SUMMER CLOSED
- W.C. WINTER CLOSED
- N.C. NORMALLY CLOSED
- E.V.P. EVAPORATOR
- COMP COMPRESSOR
- FS FLOW SWITCH
- BO BOILER
- BU BURNER
- PU PUMP
- DHWG DOMESTIC HOT WATER GENERATOR
- C.EXT CLOSED EXPANSION TANK
- EWS MAGNETIC WATER SOFTENER
- IN-LINE PUMP
- HEADER
- PRESSURE GAUGE
- TEMPERATURE GAUGE
- PRESSURE RELIEF VALVE
- THERMOSTAT
- AQUASTAT

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Project
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Client:	Consultant:

DRAWING TITLE:
 PROCESS CONTROL BUILDING NO.03 FLOW DIAGRAM

OLD Doc. No.: -	Doc. No.: LRP-TNA-HV-19-PID-0002
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