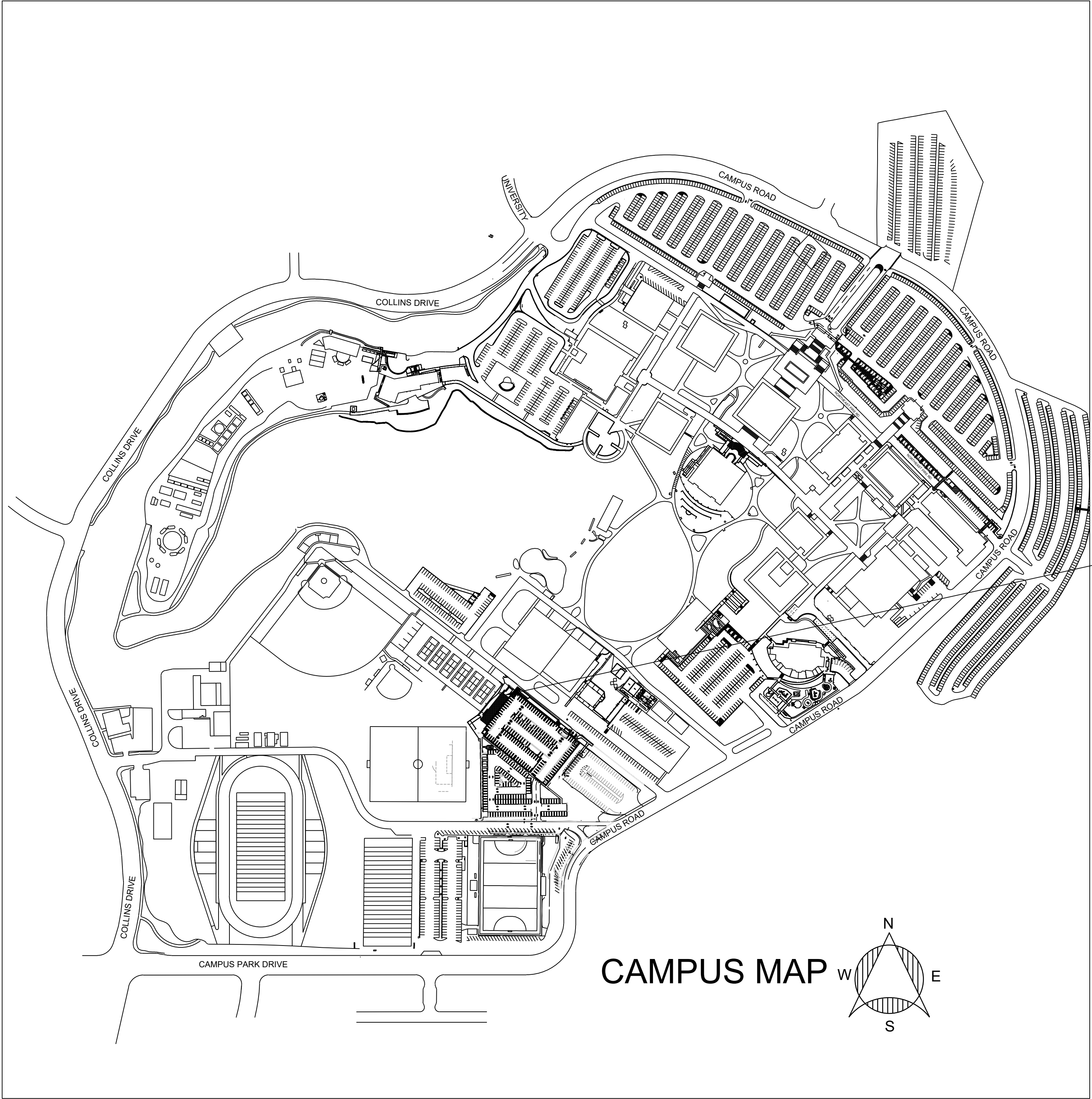


MOORPARK COLLEGE CAMPUS POLICE BUILDING

HVAC REPAIR



HATCH LEGEND
AREA OF CONSTRUCTION

SHEET INDEX

(# OF PAGES TOTAL= 4)

- T1 TITLE SHEET & CAMPUS MAP
- M1 NOTES, ABBREVIATIONS, AND SCHEDULES
- M2 MECHANICAL FLOOR PLANS
- M3 MECHANICAL ROOF PLAN AND DETAILS

SCOPE OF WORK

1. DEMO EXISTING ROOFTOP VRF HEAT PUMP OUTDOOR UNIT
2. INSTALL NEW ROOFTOP VRF OUTDOOR HEAT PUMP
3. REPLACE EXISTING LG SYSTEM CONTROLLER
4. REPLACE EXISTING AUTOMATED LOGIC BACNET ROUTER
5. FUNCTION TEST ALL VRF EQUIPMENT
6. INTEGRATE VRF SYSTEM CONTROLLER VIA AUTOMATED LOGIC BACNET ROUTER

APPLICABLE CODES

LIST OF CALIFORNIA CODE OF REGULATIONS
APPLICABLE CODES AS OF JAN. 1ST, 2024
ALL WORK SHALL CONFORM TO 2022 EDITION TITLE 24, CALIFORNIA CODE OF REGULATIONS (CCR)
2022 BUILDING STANDARDS ADMINISTRATIVE CODE, PART 1, TITLE 24 CCR

2022 CALIFORNIA BUILDING CODE (CBC), PART 2, TITLE 24 CCR

2022 CALIFORNIA ELECTRIC CODE (CEC), PART 3, TITLE 24 CCR

2022 CALIFORNIA MECHANICAL CODE (CMC), PART 4, TITLE 24 CCR

2022 CALIFORNIA PLUMBING CODE (CPC), PART 5, TITLE 24 CCR

2022 CALIFORNIA FIRE CODE (CFC), PART 9, TITLE 24 CCR
2022 CALIFORNIA REFERENCED STANDARDS CODE (CRSC), PART 11, PART 12, TITLE 24 CCR
2022 CALIFORNIA ENERGY CODE (CEC), PART 6, TITLE 24 CCR
PARTIAL LIST OF APPLICABLE NFPA STANDARDS
NFPA 90A STANDARD FOR THE INSTALLATION OF AIR CONDITIONING SYSTEMS 2021 EDITION

OWNER CONTACT

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CONSULTANTS

MECHANICAL ENGINEER AND ENGINEER OF RECORD
HUGH MCTERNAN
838 E. Front St. Ventura Ca. 93001
805 653-1722 hugh@aegroupme.com

MECHANICAL NOTES

1. SCOPE OF WORK: MECHANICAL WORK INCLUDES THE FOLLOWING: REPLACE (E) OUTDOOR HEAT PUMP UNIT ANS SYSTEM CONTROLLER. INCLUDED IS THE REMOVAL OF EXISTING REFRIGERANT AND RE-CHARGING TO PROPER LEVELS AFTER INSTALLATION OF NEW UNIT. EXISTING SYSTEM CONTROLLER SHALL BE REPLACED AND RE-PROGRAMMED FOR EXISTING INDOOR UNITS AND DISTRIBUTION UNIT. ALSO INCLUDED IS A BACNET INTERFACE TO THE EXISTING CAMPUS AUTOMATED LOGIC SYSTEM. ENTIRE SYSTEM SHALL BE FUNCTION TESTED IN ALL MODES WITH WRITTEN REPORT.

2. DIMENSIONS. ALL DIMENSIONS SHALL HAVE PREFERENCE OVER SCALE. ALL DIMENSIONS SHALL BE VERIFIED IN THE FIELD. ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN ENGINEERING DRAWINGS AND AS-BUILT CONDITIONS BEFORE PROCEEDING WITH WORK. IN NO CASE SHALL WORKING DIMENSIONS BE SCALED FROM PLANS, SECTIONS, OR DETAILS ON WORKING DRAWINGS. ALL SIZES OF EQUIPMENT AND MATERIALS SHALL BE VERIFIED WITH EQUIPMENT MANUFACTURER.

3. CODES AND STANDARDS: ALL WORK SHALL COMPLY WITH THE REQUIREMENTS OF THE 2022 CALIFORNIA PLUMBING CODE, THE 2022 CALIFORNIA MECHANICAL CODE, THE 2022 CALIFORNIA BUILDING CODE, 2022 CALIFORNIA ENERGY CODE, THE LOCAL JURISDICTION, AND STANDARD CONSTRUCTION PRACTICES. ALL MECHANICAL EQUIPMENT SHALL BE IN STRICT ACCORDANCE WITH THE EQUIPMENT SCHEDULE, AND SHALL BE NEW AND FREE FROM DEFECTS. CONTRACTOR SHALL OBTAIN APPROVED INSPECTIONS FOR ALL WORK AS REQUIRED BY OWNER, AND LOCAL JURISDICTION. CONTRACTOR SHALL MAINTAIN IN EFFECT ALL INSURANCE REQUIRED BY STATE LAWS, LOCAL JURISDICTION, AND GENERAL CONTRACTOR / OWNER. WHERE CONFLICT OR VARIATION EXISTS AMONGST CODES, SPECIFICATIONS, OR DRAWINGS, THE MOST STRINGENT SHALL GOVERN.

4. SUBMITTALS REQUIRED: PRIOR TO ORDERING EQUIPMENT AND MATERIALS, CONTRACTOR SHALL FURNISH SUBMITTALS OF ALL FIXTURES AND MATERIALS PROPOSED FOR USE IN THIS PROJECT. ALL FIXTURES AND MATERIALS SHALL BE INSTITUTIONAL GRADE HEAVY DUTY QUALITY. ORDERING OF FIXTURES AND MATERIALS SHALL ONLY PROCEED AFTER SATISFACTORY REVIEW OF ALL SUBMITTALS BY ENGINEER / OWNER. COPIES OF ALL OWNER'S MANUALS, WARRANTIES, AND OTHER WRITTEN INFORMATION REGARDING SYSTEMS SHALL BE SUBMITTED TO OWNER.

5. CONSTRUCTION OBSERVATION: IN ADDITION TO THE REQUIREMENT FOR OBTAINING INSPECTIONS BY THE LOCAL JURISDICTION, CONTRACTOR SHALL NOTIFY ENGINEER AT APPROPRIATE TIMES DURING THE CONSTRUCTION PROCESS SO THAT ENGINEER CAN VISIT SITE TO BECOME GENERALLY FAMILIAR WITH THE PROGRESS AND QUALITY OF CONTRACTOR'S WORK AND TO DETERMINE IF THE WORK IS PROCEEDING IN GENERAL ACCORDANCE WITH THE CONTRACT DOCUMENTS.

6. UNIT LOCATIONS: EQUIPMENT AND SYSTEM LOCATIONS SHOWN ARE APPROXIMATE ONLY. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL STRUCTURAL MEMBERS AND EXISTING CONDITIONS IN THE FIELD, AND LOCATE UNITS AND DUCTWORK TO AVOID INTERFERENCE. ANY SIGNIFICANT DEVIATIONS FROM THE PLANS SHALL BE CALLED TO THE ATTENTION OF THE ENGINEER. ALLOW CLEARANCE FOR DUCTWORK AND PIPING. ALL CLEARANCES REQUIRED BY UNIT MANUFACTURER SHALL BE MAINTAINED. ENTIRE INSTALLATION SHALL BE IN ACCORDANCE WITH CODES AND THE RECOMMENDED INSTALLATION PROCEDURES PUBLISHED BY THE MANUFACTURER.

7. ALL MECHANICAL SYSTEMS SHALL BE CLEARLY & PERMANENTLY LABELED. LABEL SHALL DETAIL THE AREA SERVED & UNIT TAG. ALL PIPING NEW PIPING SHALL BE LABELED WITH SERVICE AND FLOW DIRECTION.

8. CORRECTION OF WORK: THE CONTRACTOR SHALL PROMPTLY CORRECT ALL WORK THE OWNER FINDS DEFECTIVE OR FAILING TO CONFORM TO THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL BEAR ALL COSTS REQUIRED BY THE CONTRACT DOCUMENTS. IF ANY OF THE WORK IS FOUND TO BE DEFECTIVE OR NOT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS, THE CONTRACTOR SHALL CORRECT IT PROMPTLY AFTER RECEIPT OF A WRITTEN NOTICE FROM THE OWNER TO DO SO.

9. ALL REFRIGERANT PIPING SHALL BE US MANUFACTURED RIGID TYPE ACR COPPER (HARD) WITH WROT COPPER BRAZED FITTINGS WITH NITROGEN PURGE. ALL PIPE AND FITTINGS SHALL BE COVERED WITH 1" THICK CLOSED CELL INSULATION WITH ALUMINUM JACKET AND FORMED ALUMINUM FITTING. CLEAN EXISTING PIPING WITH RECTORSEAL TURBO-KLEEN PRODUCT. ALL SYSTEM PIPING SHALL BE TESTED WITH NITROGEN AS PER MANUFACTURER'S REQUIREMENTS. PERFORM VACUUM EVACUATION PER MANUFACTURER'S REQUIREMENT. REMOVE EXISTING R-410A REFRIGERANT FROM SYSTEM AND STORE FOR RE-INTRODUCTION INTO SYSTEM. MEASURE EXISTING PIPING SYSTEM FOR MANUFACTURER'S DETERMINATION OF PROPER REFRIGERANT CHARGE. PROPERLY CHARGE SYSTEM FOR OPTIMAL OPERATION.

10. REMOVE EXISTING R-410A REFRIGERANT FROM SYSTEM AND DISPOSE OF PER EPA REQUIREMENTS. MEASURE REMOVED REFRIGERANT. MEASURE EXISTING PIPING SYSTEM FOR MANUFACTURER'S DETERMINATION OF PROPER REFRIGERANT CHARGE. PROPERLY CHARGE SYSTEM WITH NEW REFRIGERANT AND NEW OIL AS NEEDED FOR OPTIMAL VRF SYSTEM OPERATION.

11. REPLACE EXISTING LG SYSTEM CONTROLLER WITH NEW LG CONTROLLER. PROGRAM CONTROLLER FOR PROPER COMPLETE SYSTEM OPERATION. PROVIDE WRITTEN SYSTEM COMMISSIONING PLANS FOR REVIEW PRIOR TO PERFORMING WORK. FUNCTION TEST SYSTEM FOR PROPER FUNCTION IN ALL MODES AND INCLUDE IN REPORT. CONNECT TO AUTOMATED LOGIC CONTROL SYSTEM VIA BACNET INTERFACE. REPLACE (E) ALC ROUTER. BACNET INTEGRATION SHALL BE PERFORMED BY AUTOMATED LOGIC DEALER.

12. PROVIDE O&M MANUALS TO OWNER. PROVIDE TWO HOURS OF TRAINING ON SYSTEM OPERATION AND MAINTENANCE.

EQUIPMENT SCHEDULE

		CAPACITY - BTUH		ELECTRICAL DATA				REFRIGERANT		NOTES	
TAG	MANF. & MODEL	COOLING	HEATING	VOLTAGE	PHASE	MCA	MOCP		(N) UNIT WEIGHT		
OU	LG	119,700	135,000	208	3	31	40	R-410A	507 LBS		COATED COILS
1	ARUM121BTE5	@95F DB	@43F DB						(E) UNIT WEIGHT 695 LBS		
CT	LG			24 VAC							NEW 110 VAC/24VAC TRANSFORMER
1	PACS5A000										FUSED BACNET TCP/IP
R	AUTOMATED LOGIC			24 VAC							NEW 110 VAC/24VAC TRANSFORMER
1	G5CE										FUSED
											ROUTER LOCATED IN IT ROOM

ABBREVIATIONS

ABBRV	ABBREVIATIONS	EXH	EXHAUST
ABV	ABOVE	FIN	FINISHED
AFF	ABOVE FINISHED FLOOR	FRM	FROM
AHU	AIR HANDLING UNIT	FLR	FLOOR
APPROX	APPROXIMATELY	GPM	GALLONS PER MINUTE
BLDG	BUILDING	MAX	MAXIMUM
BLW	BELOW	MIN	MINIMUM
BOT	BOTTOM	(N)	NEW
CFM	CUBIC FEET PER MINUTE	OC	ON CENTER
CL	CENTERLINE	OSA	OUTSIDE AIR
CLG	CEILING	POC	POINT OF CONNECTION
COND	CONDENSATE	PSI	POUNDS PER SQUARE INCH
CONT	CONTINUED	RAG	RETURN AIR GRILLE
DIA	DIAMETER	RAR	RETURN AIR REGISTER
DN	DOWN	SD	SMOKE DETECTOR
DWG	DRAWING	SHT	SHEET
(E)	EXISTING	SOV	SHUT-OFF VALVE
EA	EACH	SPEC	SPECIFICATIONS
EL	ELEVATION	(TYP)	TYPICAL
ELEC	ELECTRIC	UGND	UNDERGROUND
ELEV	ELEVATION	WCO	WALL CLEAN-OUT
EQUIP	EQUIPMENT		

(E) MECHANICAL SCHEDULE

DRAWING	LG MODEL #	
TAG		
IU-1	ARNU123TRC2	
IU-2	ARNU093TRC2	
IU-3	ARNU093TRC2	
IU-4	ARNU093TRC2	
IU-5	ARNU153TQC2	
IU-6	ARNU093TRC2	
IU-7	ARNU093TRC2	
IU-8	ARNU093TRC2	
IU-9	ARNU093TRC2	
IU-10	ARNU093TRC2	
IU-11	ARNU093TRC2	
IU-12	ARNU093TRC2	
DU-1	PRHR041A	
CT-1	PQCSW320A1E	TO BE REPLACED
OU-1	ARUB121BT3	TO BE REPLACED

Job Name/Location:
Date:
PO No.:
Architect: GC:
Engr: Mech:
Rep: (Company) (Project Manager)

Tag #:

PACS5A000
AC Smart 5 Controller
Central Control/Integration Solutions

Electrical:
Power Consumption 22 VA
Power Supply 24 VAC 60 Hz
40 VA transformer recommended.

Supported Network Protocols:
BACnet TCP/IP
Modbus TCP

Connectivity:
LG Communications 2 Channel/RS-485 V-Net*
Ethernet 10/100 BASE-T
*Channel 1 is configurable for RS-485 or V-Net.
Channel 2 is for V-Net communication only.

Communications Cabling Specifications (V-Net):
Type 2-conductor, stranded, twisted, shielded copper cable/PVC or vinyl jacket
Size AWG 18 x 2
Maximum Length 3,280 ft (end to end)
AWG: American Wire Gauge

Optional Accessories:
☐ PI-485 V-Net Interface Adapter for DFS - PMNFP14A0
☐ PI-485 V-Net Interface Adapter for ERV - PSNFP14A0
☐ I/O Module - PEXPMB000
☐ Power Distribution Indicator (PDI) - PQNUD1S41

Dimensions:

1. Touch Screen
2. SD Card Slot
3. Digital Outputs
4. Digital Inputs
5. V-Net Ports
6. 12 VDC Input
7. Ethernet Port
8. 24 VAC Input
9. Micro USB Port
10. Mini USB Port
11. Power Button

Surrounding Conditions:
Operating Temperature 32 to 104°F
Storage Temperature -4 to 140°F
Humidity 0-98% (non-condensing)

Unit Data:
Dimensions 10"W x 6-5/8"H x 1-3/16"D
Maximum Number of Devices 128
Maximum Number of ODU's 16 per V-net
Maximum Number of Controllers 2 per V-net

Standard Features:
• Configurable Home Screen
• HTML5 supported Graphical User Interface
• Removable micro-SD card with 8GB flash total storage for data backup
• Exportable Trending Logs for Temperature, Event and Operation
• 10 inch class (1024 x 600) TFT LCD Touch Screen
• Indoor Unit Control/Monitoring by Groups/Indoor Units
• Two Digital Input and two Digital Outputs for Device Interlocking

Basic Unit Function:
• Multiple Language Selections
• Operation - On/Off
• Mode - Auto/Cool/Dry/Heat/Fan Only
• Setpoint
• Fan Speed - Auto/Low/Med/High
• Louver Swing

Advanced Unit Function:
• Two Setpoint Auto-changover
• Two Setpoint Setback
• 200 Programmable Schedule Events with control of Setpoint, On/Off, Mode, Fan Speed, Controller Lock, and Louver Swing
• Temperature Setpoint Range Limit
• Remote Controller Lock (All, Setpoint, Mode, Fan Speed)
• Run Time Limit (Unoccupied Override)
• Software Device Interlocking
• Manual Control and Scheduling of IO Module
• Peak/Demand Control
• Visual Floor plan Navigation
• Error E-mail Notification
• Power Distribution Indicator (PDI) (optional)
• Energy Reporting with appropriate accessories

Notes:
Must follow installation instructions in the applicable LG installation manual.
Available functions/features may differ based on the connected system.
For a complete list of available accessories, contact your LG representative.
For continual product development, LG reserves the right to change specifications without notice.
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OptiFlex BACnet Gateway
BACnet Router and Controller

Part# G5CE

The Automated Logic® OptiFlex™ BACnet Gateway (Model G5CE) is an integral component of the WebCTRL® building automation system.

The OptiFlex BACnet Gateway is a BACnet Router (B-RT) and BACnet Building Controller (B-BC) supporting routing between multiple BACnet networks. It also supports custom control programs to easily integrate with third party BACnet or Modbus equipment such as variable speed drives, boilers, and lighting.

Key Features and Benefits
BACnet Features
BACnet Device Types
• BACnet Router (B-RT)
• BACnet Building Controller (B-BC)
• BACnet Broadcast Management Device (B-BBMD)
• Supports routing between BACnet/IP, BACnet/Ethernet, BACnet ARCnet, and BACnet MS/TP networks
• Supports up to
• 12,000 network visible BACnet objects
• 1,500 third party BACnet points
• Includes two additional BACnet ports for supporting either two simultaneous BACnet MS/TP networks (with up to 60 controllers each), or one ARCnet network (with up to 99 ARCnet controllers) and one BACnet MS/TP network (with up to 60 controllers)
• Can serve as a BACnet Broadcast Management Device (BBMD), routing any BACnet broadcast messages directly to other BBMD devices on the BACnet network
• Supports BACnet Foreign Device Registration (FDR)

Modbus Features
• Can act as a master or slave on a Modbus serial network
• Can act as a server or client on a Modbus TCP/IP network
• Supports up to 25 Modbus points

Hardware Features
• Supports and executes control programs
• Supports up to two BACnet/IP networks on the Gig-E port
• Supports Gig-E, 1,000 Mbps BACnet IP and DHCP IP addressing
• Ethernet port provides local access for system start-up and troubleshooting
• Supports network captures for advanced diagnostics
• Provides network statistics numerically or as trend graphs inside the WebCTRL building automation system
• Supports DIN rail and screw mounting
• Capacitor-backed real-time clock keeps time in the event of power failure or network interruption for up to three days

System Benefits
• Connects seamlessly to the WebCTRL building automation system
• Multiple serial communication ports to simultaneously route and

The WebCTRL® system gives you the ability to understand your building operations and analyze the results. Integrate environmental, energy, security and safety systems into one powerful management tool that allows you to reduce energy consumption, increase occupant comfort, and achieve sustainable building operations.

AUTOMATED LOGIC
1150 Roberts Boulevard, Kennesaw, Georgia 30144
770-429-3000 | www.automatedlogic.com

WE MAKE BUILDINGS BETTER.
Next level building automation engineered to help you make smart decisions.

Job Name/Location:
ARUM121BTE5
Multi V™ 5 with LGRED® 208-230V ODU
10 Ton Single Frame Heat Pump and Heat Recovery

Tag No.:
Date:
PO No.:

Top View

Right Side View

Front View

Left Side View

Bottom Mounting Holes

W	48-13/16"
H	66-17/32"
D	29-29/32"
L1	6-5/16"
L2	3-3/4"
L3	5-29/32"
L4	5-13/32"
L5	2-25/32"
L6	24-9/32"
L7	2-25/32"
L8	4-1/32"
L9	6-1/2"
L10	5-9/16"
L11	8-5/8"
L12	6-7/16"
L13	9-15/16"
L14	3-5/8"

Center of Gravity
X 23-7/32"
Y 15-5/8"
Z 25-9/16"

All dimensions have a tolerance of ± 0.25 in.
[Unit: inch]

M1	28-25/32"
M2	5/8"
M3	3-15/16"
M4	40-15/16"
M5	11-15/16"
M6	11-1/16"
M7	10-1/2"
M8	8-7/16"
M9	8-1/8"
M10	6-1/16"
M11	4-15/16"
M12	7-1/2"
M13	4-13/16"
M14	4-5/16"
M15	3-5/8"
M16	3"

Power Cord Routing Hole (Bottom): two (2) - ø2"
Two (2) 7/8" Diameter Wire Routing Holes (Bottom)
19/32" Diameter hole
Piping Routing Hole (Bottom): two - ø2-5/8", ø2-1/8"
Pitch of foundation bolt holes

For continual product development, LG reserves the right to change specifications without notice.
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SB_MultiV_5_ODU_ARUM121BTE5_2024_02_16_134652
Page 2 of 3

REV.	DATE

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VENTURA COUNTY COMMUNITY COLLEGE DISTRICT

DEPARTMENT OF
MAINTENANCE & OPERATIONS

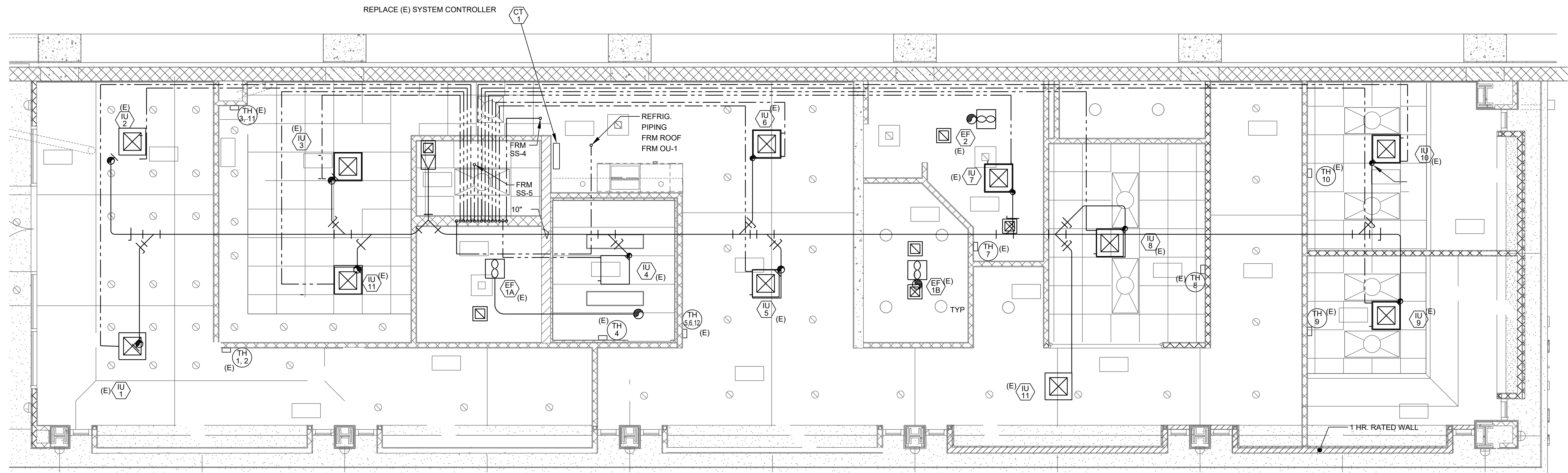
7075 CAMPUS RD.
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PHONE: (805) 378-1454 FAX: (805) 378-1593

SCALE:
AS SHOWN
DATE: 4-22-25
BLDG. NO.

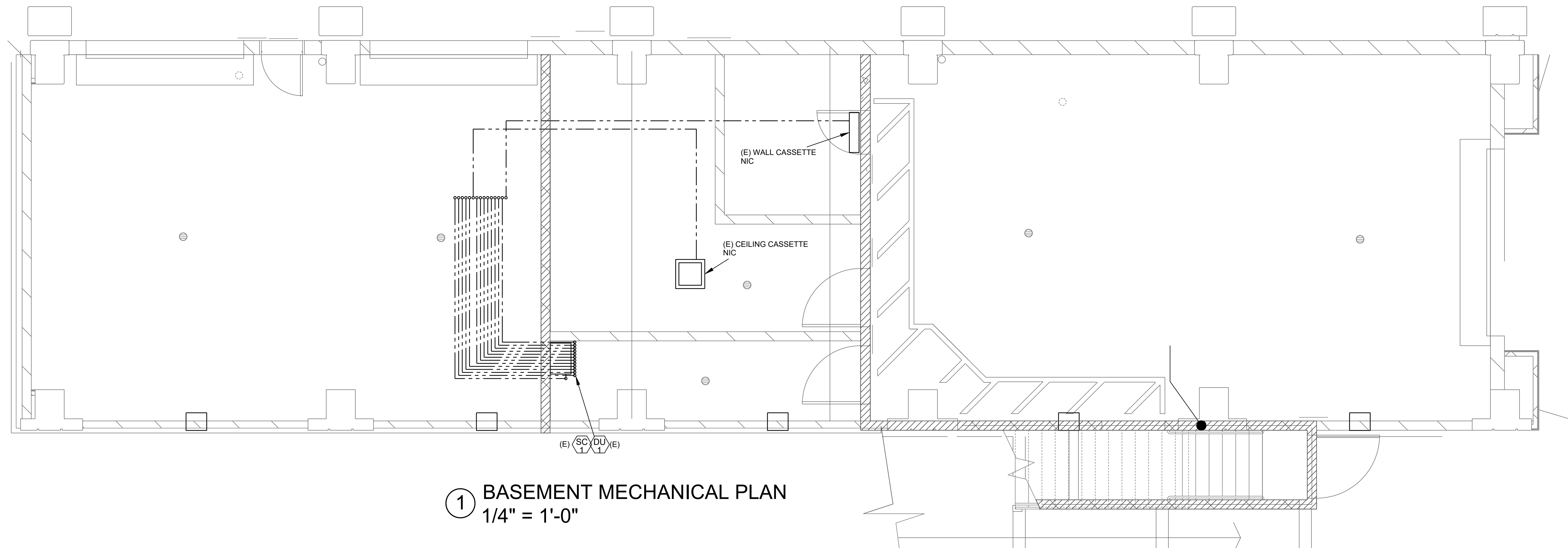
CAMPUS POLICE BUILDING
HVAC REPAIR PROJECT

NOTES, ABBREVIATIONS
& SCHEDULES

SHEET NO.
M1
OF 4



② OFFICE MECHANICAL PLAN
1/4" = 1'-0"



① BASEMENT MECHANICAL PLAN
1/4" = 1'-0"

REV.	DATE

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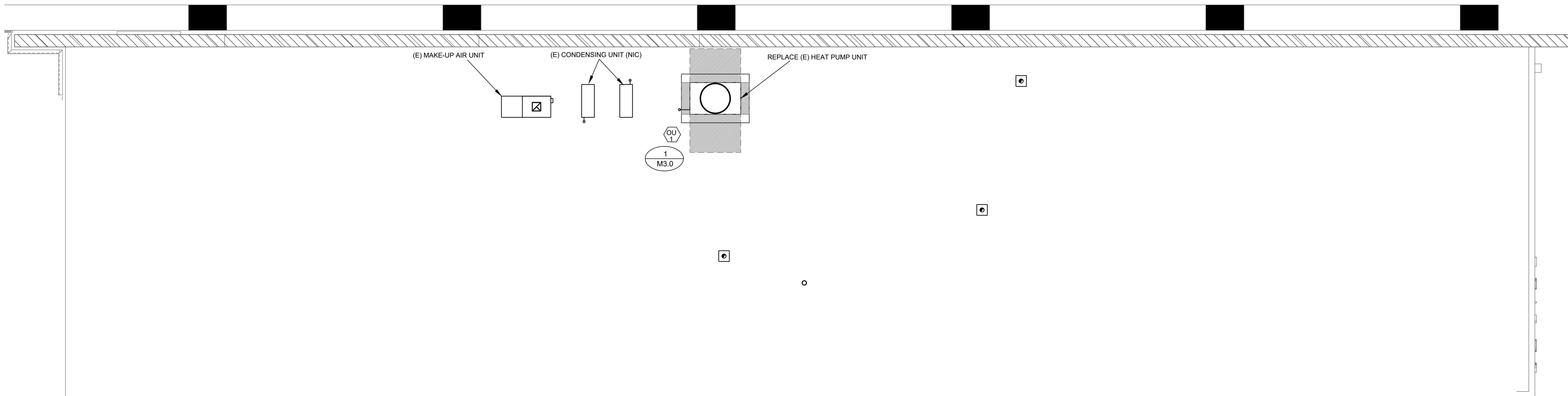
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CAMPUS POLICE BUILDING
HVAC REPAIR PROJECT

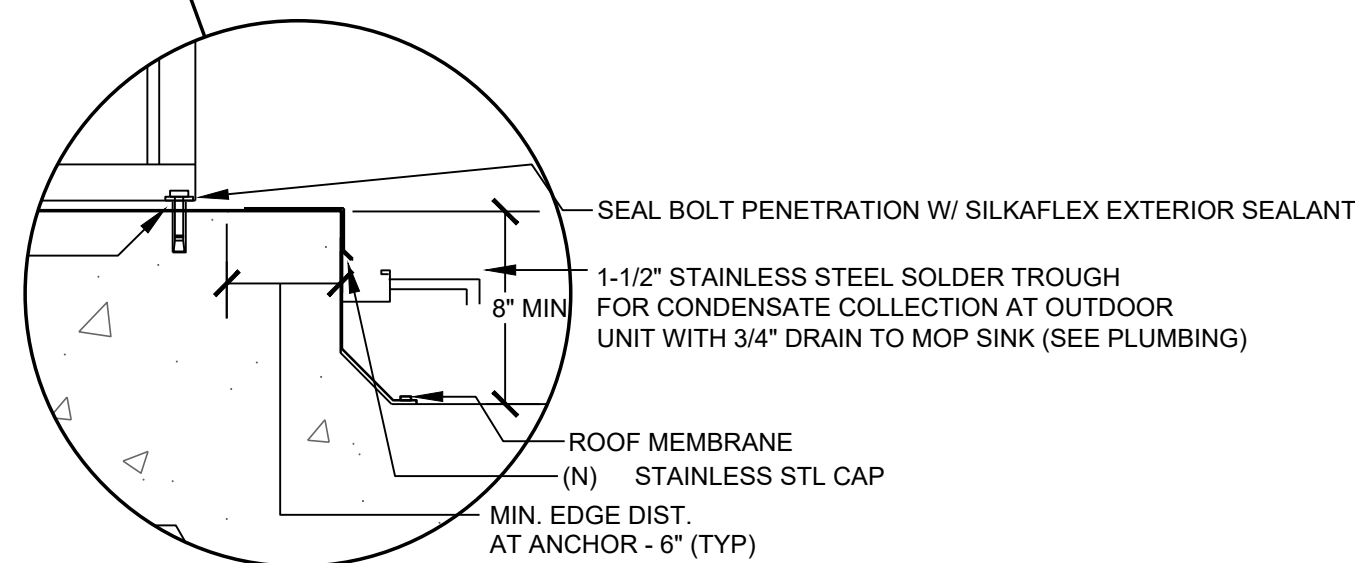
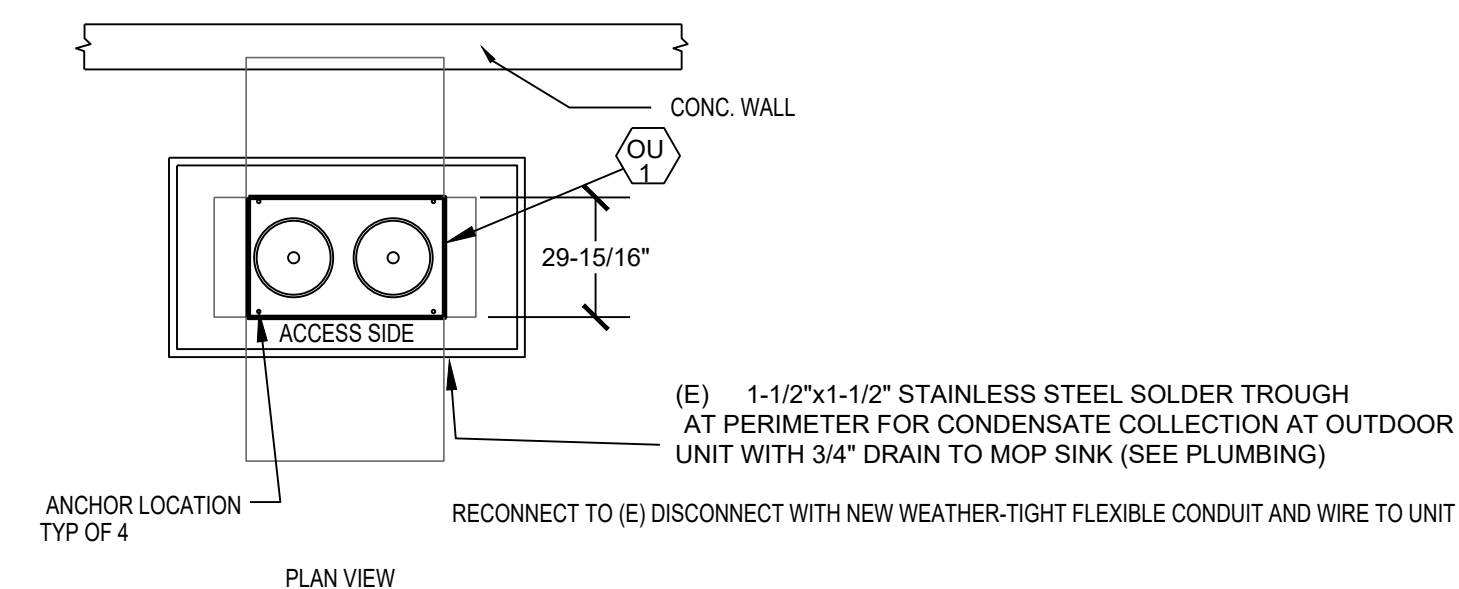
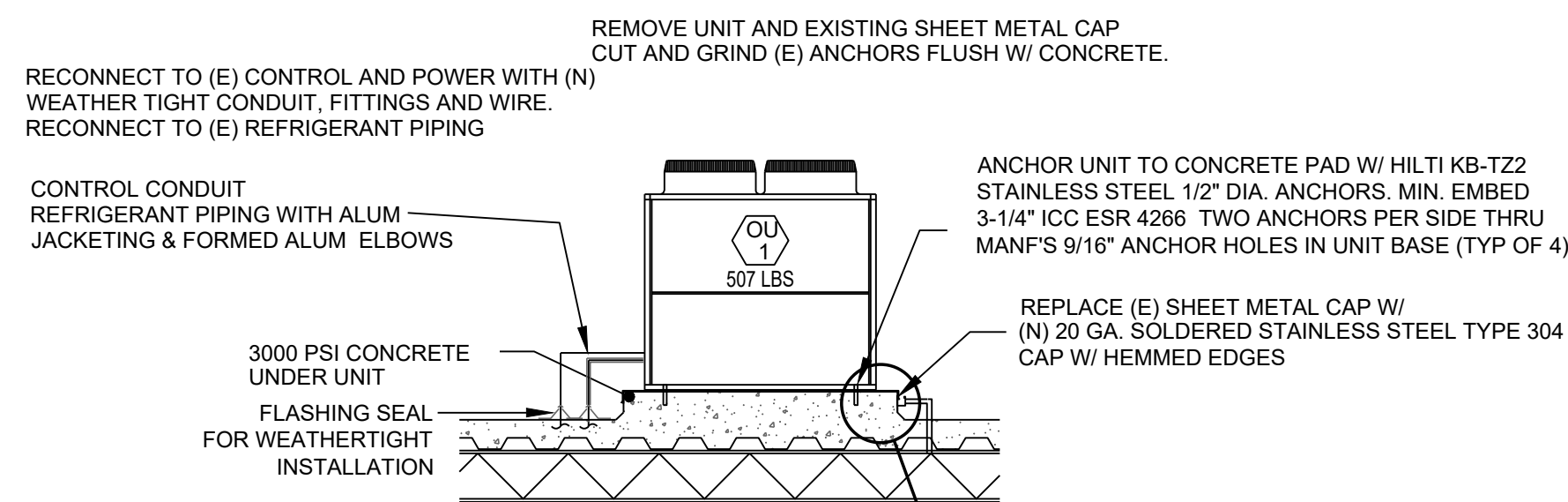
OFFICE MECHANICAL
FLOOR PLANS

SHEET NO.
M2
OF 4





1 ROOF MECHANICAL PLAN
1/4" = 1'-0"



2 OUTDOOR UNIT MOUNTING DETAIL
SCALE: NONE