

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICE

406 N High St
Anamosa, Iowa 52205

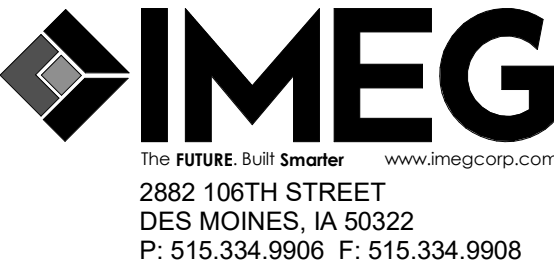
RFB945100-01

9451.00 DOC ASP LUA A/C Replacement

9451.00 DOC ASP LUA
A/C Replacement

406 N High St
Anamosa, Iowa 52205

IOWA DEPARTMENT OF
ADMINISTRATIVE
SERVICE



VICINITY MAP



APPLICABLE CODES

APPLICABLE CODES	
CONTRACTOR SHALL COMPLY WITH APPLICABLE CODES AND LOCAL AMENDMENTS INCLUDING, BUT NOT LIMITED TO, THE FOLLOWING:	
BUILDING CODE:	IBC 2015 EDITION
FIRE CODE:	IFC 2015 EDITION
PLUMBING CODE:	UPC 2021 EDITION
MECHANICAL CODE:	IMC 2021 EDITION
ELECTRICAL CODE:	NFPA 70 (NEC) 2020 EDITION
LIFE SAFETY CODE:	NFPA 101 2012 EDITION
ENERGY CONSERVATION CODE:	IECC 2012
LOCAL BUILDING CODE:	CURRENT EDITION

SCOPE OF WORK

REMOVE AND REPLACE EXISTING AIR HANDLING UNIT AND RETURN FAN IN THIRD FLOOR MECHANICAL ROOM SERVING THE LUA SECOND AND THIRD FLOOR AREAS. REMOVE AND REPLACE EXISTOR AIR COOLED CONDENSING UNIT SERVING THE EXISTING AIR HANDLING UNIT BEING REMOVED.

PROJECT DIRECTORY

CLIENT:	IOWA DEPARTMENT OF ADMINISTRATIVE SERVICE
MECHANICAL ENGINEER:	IMEG CORP. 2882 106TH STREET DES MOINES, IA 50322 PHONE: (858) 368- 3418 CONTACT: MIKE MCCARTY
ELECTRICAL ENGINEER:	IMEG CORP. 2882 106TH STREET DES MOINES, IA 50322 PHONE: (515) 334-4317 CONTACT: TONY DELOUIS

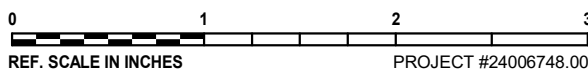
DRAWING INDEX

Sheet List	
Number	Name
PROJECT COVERSHEET	
G000	PROJECT COVERSHEET
HVAC	
M000	HVAC COVERSHEET
M201	FIRST FLOOR PLAN - HVAC
M202	SECOND FLOOR PLAN - HVAC
M203	THIRD FLOOR PLAN - HVAC
M300	ENLARGED PLANS
M301	ENLARGED PLANS
M400	HVAC DETAILS
M401	HVAC DETAILS
M500	CONTROL DIAGRAMS
M600	HVAC SCHEDULES
ELECTRICAL	
E000	ELECTRICAL COVERSHEET
E203	THIRD FLOOR PLAN - ELECTRICAL
E400	ELECTRICAL DETAILS AND SCHEDULES
14	

CONSTRUCTION MANAGER
MCSOUGH CONSTRUCTION
217 E 2ND ST SUITE 120
DES MOINES, IA 50309

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REVISIONS

No.	Date	Revision / Issue
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SHEET INFORMATION

Issue	BID DOCUMENTS
Date	2/28/2025
Project #	24006748.00
Drawn	MIKMCC
Checked	PETERN
Approved	MIKMCC

SHEET TITLE
PROJECT COVERSHEET

Scale:	12" = 1'-0"
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SHEET NUMBER

G000

NAME

10'-0"

HEIGHT ABOVE PROJECT 0'-0"

KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL

INDICATES DIRECTION OF TRUE NORTH

PLAN OR DETAIL NUMBER

PLAN OR DETAIL NAME

VIEW NAME

1/8" = 1'-0"

PLAN OR DETAIL SCALE

INDICATES SIMILAR DETAIL REFERENCED IN MULTIPLE LOCATIONS

DETAIL REFERRED TO BY SECTION CUT

SHEET DETAIL IS LOCATED ON

1

4

2

3

LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)

NEW

EXISTING TO BE REMOVED (SHORT DASHED PATTERN)

NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)

EXISTING

EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)

EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E

TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

TAG-1

UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

CONTRACTOR ABBREVIATION KEY	
ABBR:	DESCRIPTION:
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR
V.C.	VENTILATION CONTRACTOR

CONTACT PERSONS:	
DESCRIPTION:	PERSON:
PROJECT MANAGER	MIKE MCCARTY
MECHANICAL	MIKE MCCARTY
ELECTRICAL	TONY DELOUIS

HVAC SYMBOL LIST	
NOT ALL SYMBOLS MAY APPLY.	
SYMBOL:	DESCRIPTION:
	DRAIN
	HEATING WATER RETURN
	HEATING WATER SUPPLY
	REFRIGERANT LIQUID
	REFRIGERANT
	REFRIGERANT SUCTION
	PIPE CAP
	PIPE DOWN
	PIPE UP OR UP/DOWN
	DIRECTION OF FLOW IN PIPE
	UNION/FLANGE
	SHUTOFF VALVE NORMALLY OPEN
	SHUTOFF VALVE NORMALLY CLOSED (S GPM)
	CONTROL VALVE (THREE-WAY)
	CONTROL VALVE (TWO-WAY)
	CHECK VALVE
	"WYE" - STRAINER
	"WYE" - STRAINER W/SHUTOFF VALVE AND HOSE CONNECTION WITH CAP
	FLEXIBLE CONNECTION
	PRESSURE/TEMPERATURE TEST PLUG
	REDUCER - REFERENCE SPECIFICATION FOR CONCENTRIC/ECCENTRIC AND FOT/FOB
	MANUAL AIR VENT
	DRAIN VALVE WITH HOSE CONNECTION AND CAP
	PRESSURE GAUGE (FURNISHED WITH BALL VALVE)
	STATIC SWITCH
	DIRECTION OF AIR FLOW
	MANUAL VOLUME DAMPER
	DUCT CAP
	DUCT DOWN
	DUCT UP
	SUPPLY/OUTSIDE AIR DUCT SECTION
	RETURN AIR DUCT SECTION
	EXHAUST/RELIEF AIR DUCT SECTION
	AIR TERMINAL PROPERTIES SYMBOL NECK SIZE/CFM
	TERMINAL AIR BOX
	OPPOSED BLADE DAMPER (REFER TO SCHEDULE)
	PARALLEL BLADE DAMPER (REFER TO SCHEDULE)
	DIFFERENTIAL PRESSURE SENSOR
	THERMOSTAT/SENSOR
	TEMPERATURE SENSOR WITH WELL
	THERMOMETER WITH WELL (FILLED TYPE)

HVAC ABBREVIATION KEY	
ABBR:	DESCRIPTION:
DMPR	DAMPER
DN	DOWN
FMCS	FACILITY MANAGEMENT CONTROL SYSTEM
N.C.	NORMALLY CLOSED
NIC	NOT IN CONTRACT
N.O.	NORMALLY OPEN
SCCR	SHORT CIRCUIT CURRENT RATING
TAB	TERMINAL AIR BOX
TYP	TYPICAL

HVAC SHEET INDEX	
M000	HVAC COVERSHEET
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M300	ENLARGED PLANS
M301	ENLARGED PLANS
M400	HVAC DETAILS
M401	HVAC DETAILS
M500	CONTROL DIAGRAMS
M600	HVAC SCHEDULES
GRAND TOTAL: 10	

DUCT ABBREVIATION KEY	
ABBR.	DESCRIPTION
EA	EXHAUST AIR
OA	OUTSIDE AIR
RA	RETURN AIR
RE	RELIEF AIR
SA	SUPPLY AIR

TEMPERATURE CONTROL GENERAL NOTES:

1. REFER TO EQUIPMENT SCHEDULES TO CROSS REFERENCE WHICH CONTROL DIAGRAMS APPLY TO WHICH ITEMS OF EQUIPMENT.

2. EACH D.I., D.O., A.I. AND A.O. POINT SHOWN FOR ALL CONTROL DIAGRAMS SHALL BE DISCRETE FROM ALL OTHER POINTS EXCEPT AS SPECIFICALLY NOTED.

3. ALL WIRING, CONTROL COMPONENTS, DEVICES AND PROGRAMMING SHOWN ON THESE CONTROL DRAWINGS SHALL BE PROVIDED BY THE TCC UNLESS SPECIFICALLY NOTED OTHERWISE.

4. TEMPERATURE CONTROL CABLING, CONDUIT, BOXES, IDENTIFICATION: REFER TO THE SPECIFICATION LIST OF REQUIREMENTS. THE FOLLOWING SCHEDULE IS PROVIDED AS A CONVENIENCE. REFER TO SECTION 23 09 00 AND DIV 26 FOR ADDITIONAL DETAILED REQUIREMENTS.

A. CABLE/WIRE JACKET COLOR: BLUE

B. CONDUIT BOX COLOR ABOVE FINISHED CEILINGS AND UNFINISHED SPACES WITHOUT CEILINGS: BLUE

C. CONDUIT BOX COLOR IN SPACES WITH EXPOSED FINISHED STRUCTURE: BLUE

D. CABLE/WIRE INSTALLATION: IN CONDUIT

5. ALL ACTUATORS SHALL BE OF THE ELECTRICAL TYPE FOR THIS PROJECT.

6. MODULATING SIGNALS SHALL BE DISPLAYED AS % OPEN (SIGNALS DISPLAYED AS % CLOSED ARE NOT ACCEPTABLE).

7. PRESSURE TRANSMITTERS WHOSE SIGNAL IS UTILIZED FOR MAINTAINING DUCT STATIC PRESSURE SHALL BE WIRED DIRECTLY TO THE CONTROLLER THAT MODULATES FAN SPEED. SIGNAL SHALL BE COMPLETELY INDEPENDENT OF THE FMCS NETWORK.

8. ALL CONTROL COMPONENTS SUCH AS RELAYS, SWITCHES, DDC CONTROLLERS, ETC. SHALL BE MOUNTED IN STEEL ENCLOSURES WITH STEEL MOUNTING BACKPLATES PER SPECIFICATION 23 09 00.

9. EACH CONTROL PANEL SHALL HAVE A LAMINATED COPY OF THE APPLICABLE SEQUENCE OF OPERATION AND CONTROL DIAGRAM INDICATING THE POINTS, COMPONENTS AND OPERATION OF EQUIPMENT ASSOCIATED WITH EACH PANEL. REFER TO SECTION 23 09 00 FOR ADDITIONAL REQUIREMENTS.

10. TCC SHALL EXTEND CONTROL SIGNAL FROM ADDRESSABLE RELAY DEVICE SERVING EACH AIR HANDLING UNIT. REFER TO ELECTRICAL DRAWINGS FOR LOCATIONS. TCC SHALL EXTEND AND TERMINATE WIRING AS REQUIRED FOR EQUIPMENT SHUTDOWN.

11. TCC SHALL PROVIDE POWER SUPPLIES FOR ALL 24VAC POWER REQUIREMENTS TO INCLUDE, BUT NOT LIMITED TO, DAMPER AND VALVE ACTUATORS, AND OTHER CONTROL COMPONENTS AND DEVICES. REFER TO CONTROLS SPECIFICATIONS FOR POWER SUPPLY REQUIREMENTS. REFER TO MECHANICAL FLOOR PLANS FOR POWER SUPPLY LOCATIONS. PROVIDE LOW VOLTAGE WIRING FROM POWER SUPPLIES TO ALL CONTROLLERS, MONITORS, COMPONENTS AND DEVICES REQUIRING 24 VAC POWER. ADDITIONAL POWER SUPPLIES NOT SHOWN AND REQUIRED FOR A COMPLETE AND OPERATIONAL SYSTEM SHALL BE PROVIDED BY THE TEMPERATURE CONTROL CONTRACTOR. THE TEMPERATURE CONTROL CONTRACTOR SHALL PROVIDE FINANCIAL PROVISIONS WITHIN THEIR BID FOR THE ELECTRICAL CONTRACTOR TO PROVIDE BRANCH POWER TO THE ADDITIONAL POWER SUPPLIES. COORDINATE THE LOCATION OF ADDITIONAL POWER SUPPLY CABINET WITH THE ELECTRICAL CONTRACTOR.

12. TCC SHALL PROVIDE CONDUIT RUNS AS REQUIRED FOR OUTDOOR EQUIPMENT AND FOR EQUIPMENT INSTALLED REMOTELY FROM THE MAIN BUILDING THAT IS BEING MONITORED OR CONTROLLED BY THE FMCS.

13. ELEMENT LENGTHS FOR BOTH MIXED AIR TEMP SENSORS AND LOW LIMIT TEMP SWITCHES SHALL BE MINIMUM 1 LINEAR FOOT PER SQUARE FOOT OF COIL SURFACE AREA. PROVIDE MULTIPLE SENSORS AND SWITCHES AS NEEDED TO ACHIEVE REQUIRED ELEMENT LENGTHS. LOCATE RESET SWITCHES MAX. 6'-6" ABOVE ADJACENT STANDING SURFACE (E.G. ROOF, PLATFORM OR FLOOR) SO THE RESET SWITCH CAN BE CYCLED WITHOUT THE NEED FOR A LADDER.

14. CONTROL DIAGRAMS ARE SCHEMATIC IN NATURE AND DO NOT SHOW ALL REQUIRED CONTROL DEVICES AND COMPONENTS. REFER TO FLOOR PLANS, FLOW DIAGRAMS AND DETAILS FOR ADDITIONAL CONTROL DEVICES, COMPONENTS AND REQUIREMENTS NOT SHOWN ON THESE CONTROL DRAWINGS.

15. TCC SHALL PROVIDE ALL CONTROL COMPONENTS AND ACCESSORIES AS REQUIRED FOR EQUIPMENT TO BE CONTROLLED AS DESCRIBED IN THE SEQUENCE OF OPERATION REGARDLESS OF WHETHER ALL CONTROL COMPONENTS OR POINTS ARE SHOWN IN THE ASSOCIATED CONTROL DIAGRAM.

MECHANICAL GENERAL NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES.

1. DRAWINGS SHOWING LOCATIONS OF EQUIPMENT, DUCTWORK, PIPING, ETC. ARE DIAGRAMMATIC AND MAY NOT ALWAYS REFLECT EXACT INSTALLATION CONDITIONS. DRAWINGS SHOW THE GENERAL ARRANGEMENT OF DUCTWORK, PIPING, EQUIPMENT, ETC., AND MAY NOT INCLUDE ALL OFFSETS AND FITTINGS REQUIRED FOR COMPLETE INSTALLATION. THE DRAWINGS SHALL BE FOLLOWED AS CLOSELY AS ACTUAL BUILDING CONSTRUCTION AND THE WORK OF OTHERS WILL PERMIT.

2. CATALOG AND MODEL NUMBERS SHALL NOT BE CONSIDERED COMPLETE, BUT ARE GIVEN AS AN AID TO THE CONTRACTOR AND TO INDICATE THE QUALITY REQUIRED. CONTRACTOR IS RESPONSIBLE FOR THE COMPLETE DESCRIPTION OF MATERIAL SCHEDULED ON THESE DRAWINGS AND IN THE SPECIFICATIONS. THE DESCRIPTION OF THE MATERIAL AND SCHEDULED PERFORMANCE TAKES PRECEDENCE OVER THE MODEL NUMBER. THE FIRST MANUFACTURER SCHEDULED IS THE BASIS OF DESIGN.

3. DETERMINATION OF QUANTITIES OF MATERIAL AND EQUIPMENT REQUIRED SHALL BE MADE BY THE CONTRACTOR FROM THE DOCUMENTS, WHERE MATERIAL AND/OR QUANTITY DISCREPANCIES ARISE BETWEEN DRAWINGS, SCHEDULES AND/OR SPECIFICATIONS, THE HIGHER QUALITY/ GREATER NUMBER SHALL GOVERN.

4. DO NOT SCALE DRAWINGS. VERIFY ALL DIMENSIONS AND CLEARANCES FROM SUBMITTALS, AND OTHER APPROPRIATE DRAWINGS OR PHYSICALLY AT SITE. REVIEW ALL DRAWINGS, INCLUDING THOSE OF OTHER TRADES.

5. COORDINATE ALL WORK WITH ALL OTHER TRADES PRIOR TO INSTALLATION TO PROVIDE CLEARANCES REQUIRED FOR OPERATION, MAINTENANCE, CODE COMPLIANCE, AND TO VERIFY NON-INTERFERENCE WITH OTHER WORK. DO NOT FABRICATE PRIOR TO VERIFICATION OF NECESSARY CLEARANCES FOR ALL TRADES. BRING ANY INTERFERENCES OR CONFLICTS TO THE ATTENTION OF THE ENGINEER BEFORE PROCEEDING WITH FABRICATION OR EQUIPMENT ORDERS.

6. REVIEW SPACE REQUIREMENTS OF EQUIPMENT SPECIFIED OR SUBSTITUTED AND MAKE REASONABLE ACCOMMODATIONS IN LAYOUT AND POSITIONING TO PROVIDE PROPER ACCESS.

7. ANY CHANGES REQUIRED TO ELIMINATE CONFLICTS OR THAT RESULT FROM A FAILURE TO COORDINATE SHALL BE MADE BY THE CONTRACTOR WITHOUT ADDITIONAL COST OR EXPENSE TO OTHERS.

8. EACH CONTRACTOR IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH ELECTRICAL CHANGES REQUIRED FOR EQUIPMENT PROPOSED THAT DIFFERS FROM THE BASIS OF DESIGN.

9. EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.

10. SEAL ALL FLOOR, WALL, AND ROOF PENETRATIONS AIRTIGHT WHERE CONDUITS, PIPING, AND DUCTS PENETRATE. PENETRATIONS THROUGH EXTERIOR WALLS AND ROOF SHALL BE SEALED AIRTIGHT WITH WATERPROOFING MATERIALS RECOMMENDED BY MANUFACTURER FOR OUTDOOR USE.

11. CAULK ALL PIPE AND DUCT PENETRATIONS OF FULL HEIGHT NON-FIRE RATED WALL, PARTITION, FLOOR, AND ROOF ASSEMBLIES. THIS IS ESSENTIAL TO PREVENT NOISE TRANSMISSION FROM ONE ROOM TO ANOTHER AND TO PROVIDE THE DESIRED NC LEVELS WITHIN ROOMS.

12. WHERE PIPES AND DUCTS ARE SHOWN TO PENETRATE FLOORS, PROVIDE SLEEVED OPENINGS WITH THE TOP EDGE RAISED ABOVE FLOOR SURFACE IN ACCORDANCE WITH ALL RELEVANT SPEC SECTIONS. SEAL SLEEVE PERIMETER TO BE WATERTIGHT.

13. EQUIPMENT SIZES AND SERVICE CLEARANCE REQUIREMENTS VARY AMONG DIFFERENT MANUFACTURERS. CONSULT MANUFACTURER SHOP DRAWINGS FOR EQUIPMENT SIZES AND REQUIRED SERVICE CLEARANCES. COORDINATE WITH LAYOUT OF EQUIPMENT PADS, PIPING, DUCTWORK, ETC.

14. DO NOT BLOCK TUBE PULL OR EQUIPMENT SERVICE CLEARANCES.

15. MAINTAIN A MINIMUM WORKING CLEARANCE OF 3'-6" IN FRONT OF ALL ELECTRICAL EQUIPMENT REQUIRING MAINTENANCE, INSPECTION, AND TESTING INCLUDING BUT NOT LIMITED TO PANELS, DISTRIBUTION PANELS, SWITCHBOARDS, MOTOR CONTROL CENTERS, TRANSFORMERS, EQUIPMENT DISCONNECTS AND STARTERS.

16. MAINTAIN THE DEDICATED ELECTRICAL EQUIPMENT SPACE DEFINED BY THE WIDTH / DEPTH OF ELECTRICAL EQUIPMENT MEASURED FROM THE FLOOR TO A HEIGHT 6'-0" ABOVE THE EQUIPMENT OR THE CEILING, WHICHEVER IS LOWER. SYSTEMS FOREIGN TO THE ELECTRICAL DISTRIBUTION SYSTEM ARE NOT ALLOWED IN THE DEDICATED ELECTRICAL SPACE INCLUDING: DUCTWORK, PIPING, ETC.

17. DO NOT EXCEED 25 LBS PER HANGER AND A MINIMUM SPACING OF 2'-0" ON CENTER WHEN ATTACHING TO METAL ROOF DECKING (LIMITATION NOT REQUIRED WITH CONCRETE ON METAL DECK). THIS INCLUDES ADJACENT ELECTRICAL AND ARCHITECTURAL ITEMS HANGING FROM DECK. IF THE HANGER RESTRICTIONS CANNOT BE ACHIEVED, SUPPLEMENTAL FRAMING OFF STEEL FRAMING SHALL BE ADDED. ANCHORS EMBEDDED IN CONCRETE SHALL BE CRACKED CONCRETE APPROVED IN ACCORDANCE WITH SPECIFICATIONS.

18. PROVIDE ACCESS DOORS AT ALL DUCT MOUNTED EQUIPMENT.

19. EXISTING AIR INLET AND OUTLET CFM SHOWN ON DRAWINGS ARE FROM EXISTING DRAWINGS, AND ARE FOR REFERENCE ONLY. CONTRACTOR SHALL USE PRE-BALANCE VALUES, AND NOT EXISTING CFM SHOWN ON DRAWINGS.

20. PIPE DRAIN LINES FROM EQUIPMENT TO NEAREST FLOOR DRAIN.

21. INSTALL ALL REFRIGERANT LIQUID AND SUCTION PIPING SIZED PER EQUIPMENT MANUFACTURER RECOMMENDATIONS.

MECHANICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL MECHANICAL SHEETS AND TRADES.

1. EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS, AND STAFF. VERIFY EXISTING CONDITIONS AND REPORT ANY CONFLICTS BEFORE PROCEEDING.

2. NOT ALL EXISTING DUCTWORK AND PIPING IS SHOWN. VERIFY EXISTING CONDITIONS BEFORE STARTING WORK. NOTIFY ENGINEER OF ANY CONFLICTS WITH NEW WORK.

3. FIELD VERIFY THE AVAILABLE CLEARANCES FOR DUCTWORK AND PIPING BEFORE FABRICATION. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.

4. EACH CONTRACTOR SHALL FIELD VERIFY ACCESSIBILITY TO THE AREA OF THEIR WORK AND SHALL NOTIFY THE CONSTRUCTION MANAGER PRIOR TO BIDDING IF OTHER UTILITIES ARE REQUIRED TO BE REMOVED OR RELOCATED TO ALLOW ACCESS TO THEIR AREA OF WORK.

5. EACH CONTRACTOR SHALL CUT AND PATCH ROOFS, WALLS, AND FLOORS ASSOCIATED WITH THEIR WORK.

6. THE CONTRACTOR IS RESPONSIBLE FOR REMOVAL AND REPLACEMENT OF CEILINGS, CEILING TILES, AND CEILING GRIDS ASSOCIATED WITH AREAS OF WORK BY ALL CONTRACTORS.

7. WHERE EXISTING MECHANICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, PIPING, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING MECHANICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.

8. PROVIDE TEMPORARY CONNECTIONS TO MAINTAIN EXISTING SYSTEMS IN SERVICE DURING CONSTRUCTION. MAINTAIN ACCESS TO EXISTING MECHANICAL INSTALLATIONS THAT REMAIN ACTIVE.

9. OBTAIN PERMISSION FROM OWNER BEFORE SHUTTING DOWN ANY SYSTEM FOR ANY REASON. MAINTAIN SERVICE TO ALL COMPONENTS THAT ARE TO REMAIN UNTIL NEW SYSTEMS ARE INSTALLED.

10. MAINTAIN EXISTING SYSTEM IN SERVICE UNTIL NEW SYSTEM IS COMPLETE AND READY FOR TIE IN AND SWITCHOVER. DRAIN SYSTEM ONLY TO MAKE SWITCHOVERS AND CONNECTIONS. OBTAIN PERMISSION FROM OWNER BEFORE PARTIALLY OR COMPLETELY DRAINING SYSTEM. MAKE CHANGEOVER TO NEW SYSTEMS WITH MINIMUM OUTAGE.

11. DISCONNECT AND REMOVE MECHANICAL DEVICES AND EQUIPMENT SERVING EQUIPMENT THAT HAS BEEN REMOVED.

12. PROPERLY RECLAIM AND DISPOSE OF ALL REFRIGERANT IN REMOVED EQUIPMENT/ REFRIGERANT PIPING. RECLAIMED REFRIGERANT SHALL HAVE DOCUMENTATION AS REQUIRED BY THE AUTHORITY HAVING JURISDICTION (AHJ).

9451.00 DOC ASP LUA
A/C Replacement

406 N High St
Anamosa, Iowa 52205

IOWA DEPARTMENT OF
ADMINISTRATIVE
SERVICE

PROFESSIONAL SEAL

KEY PLAN

CONSTRUCTION MANAGER
MCGOUGH CONSTRUCTION
217 E 2ND ST SUITE 120
DES MOINES, IA 50309

AGENCY APPROVAL

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REVISIONS

No. Date Revision / Issue

SHEET INFORMATION

Issue BID DOCUMENTS

Date 2/28/2025

Project # 24006748.00

Drawn MIKMCC

Checked PETERN

Approved MIKMCC

SHEET TITLE

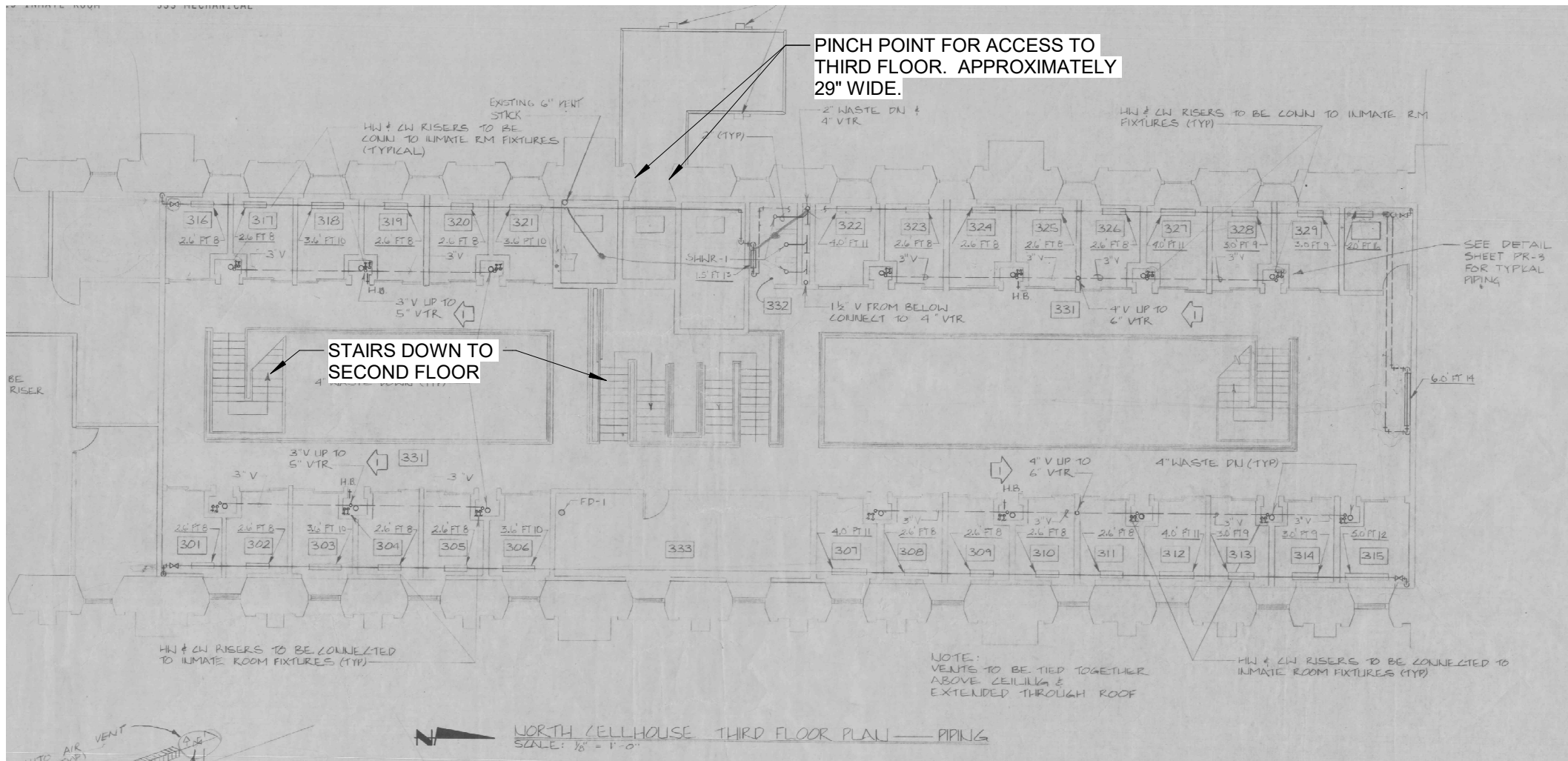
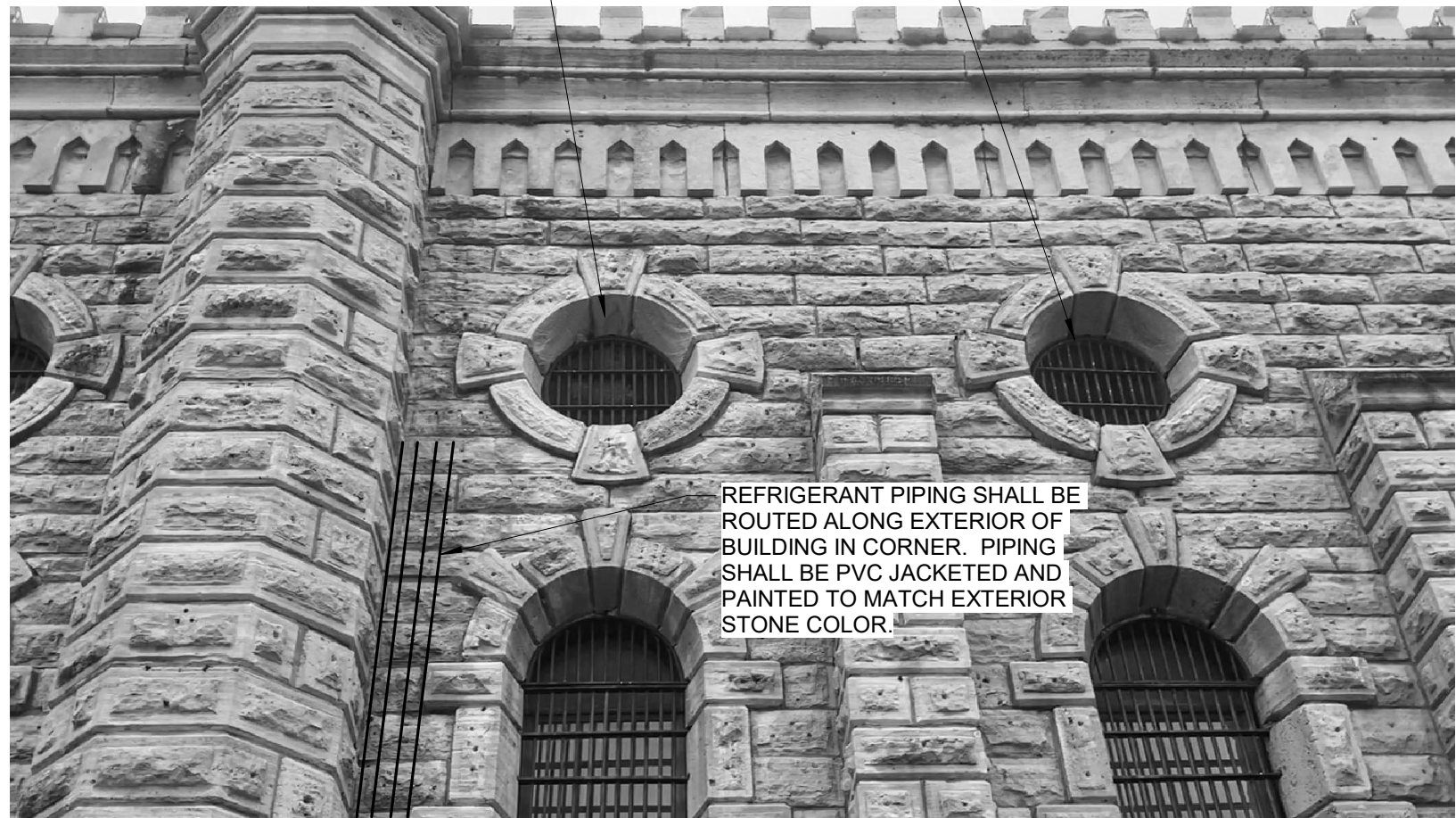
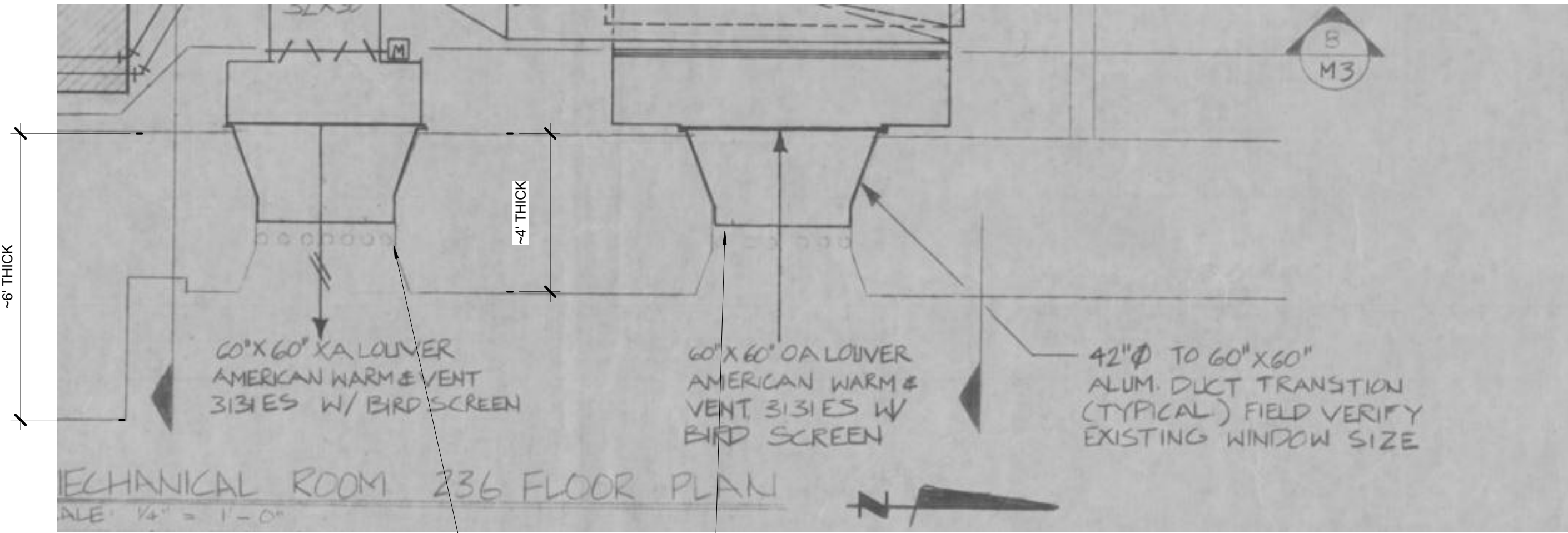
HVAC COVERSHEET

SCALE

Scale: As indicated

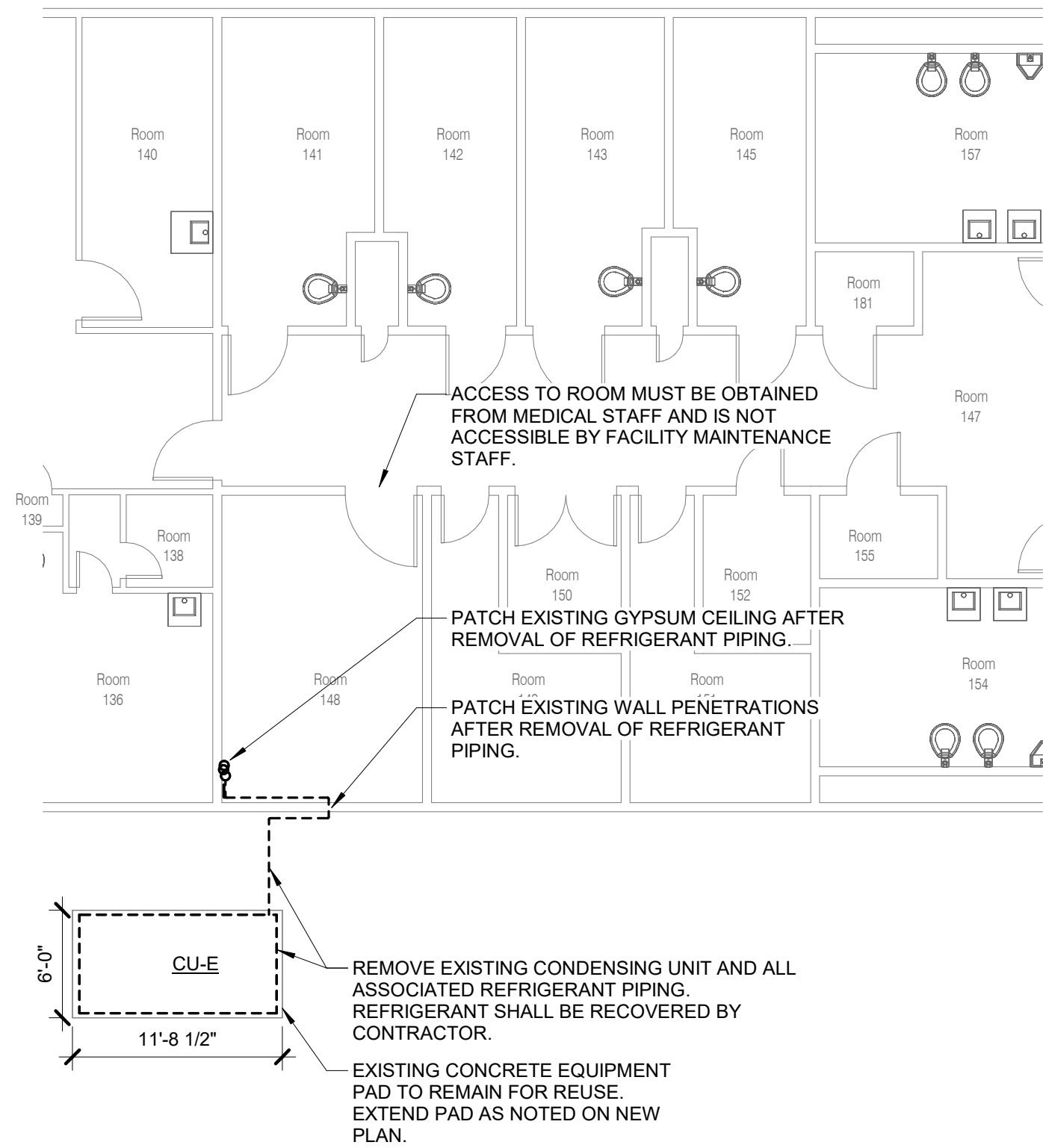
SHEET NUMBER

M000



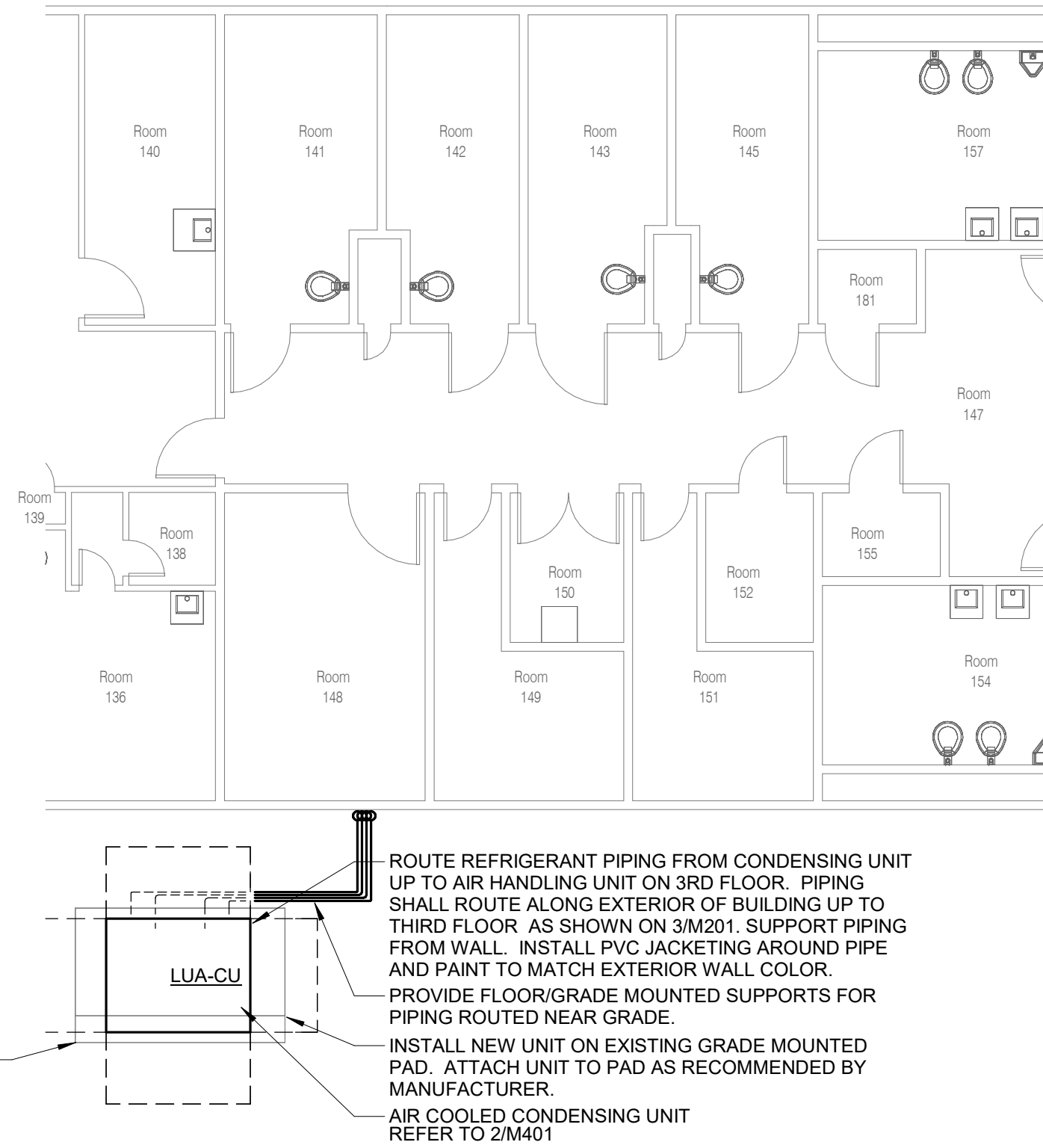
3 THIRD FLOOR EXTERIOR WALL CONDITION

NO SCALE



1 FIRST FLOOR DEMOLITION PLAN - PIPING

1/8" = 1'-0"



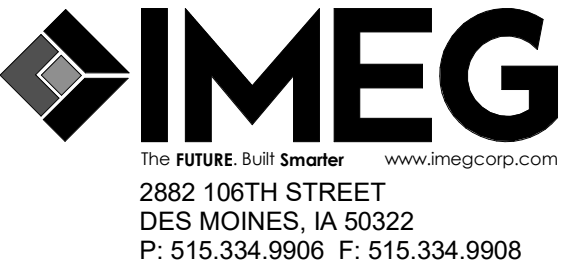
2 FIRST FLOOR PLAN - PIPING

1/8" = 1'-0"

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406 N High St
Anamosa, Iowa 52205

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICE



PROFESSIONAL SEAL

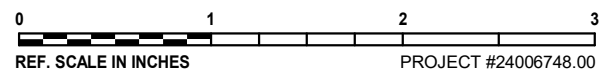
KEY PLAN

CONSTRUCTION MANAGER
MCGOUGH CONSTRUCTION
217 E 2ND ST SUITE 120
DES MOINES, IA 50309

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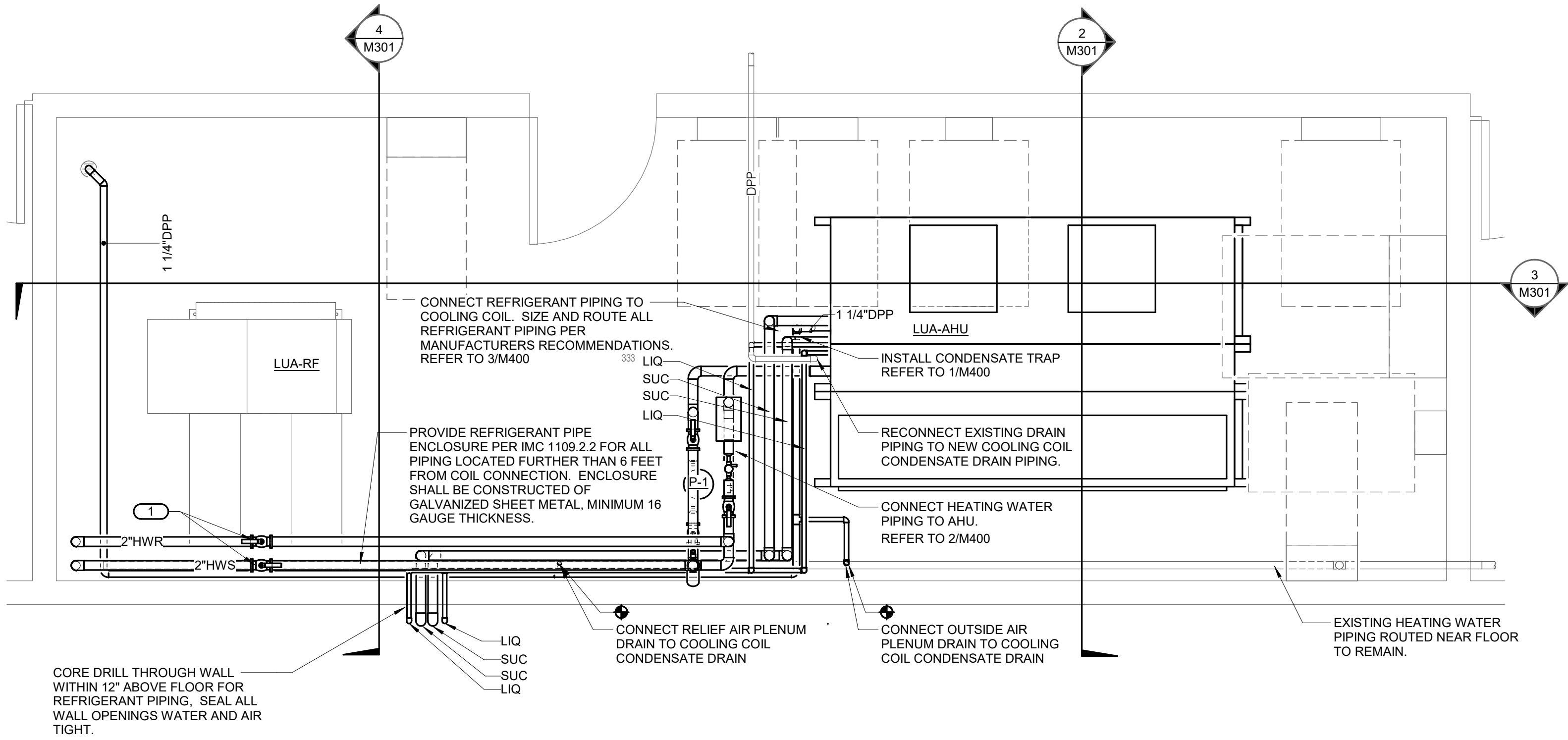
Issue **BID DOCUMENTS**
Date **2/28/2025**
Project # **24006748.00**
Drawn **MIKMCC**
Checked **PETERN**
Approved **MIKMCC**

SHEET TITLE
FIRST FLOOR PLAN - HVAC

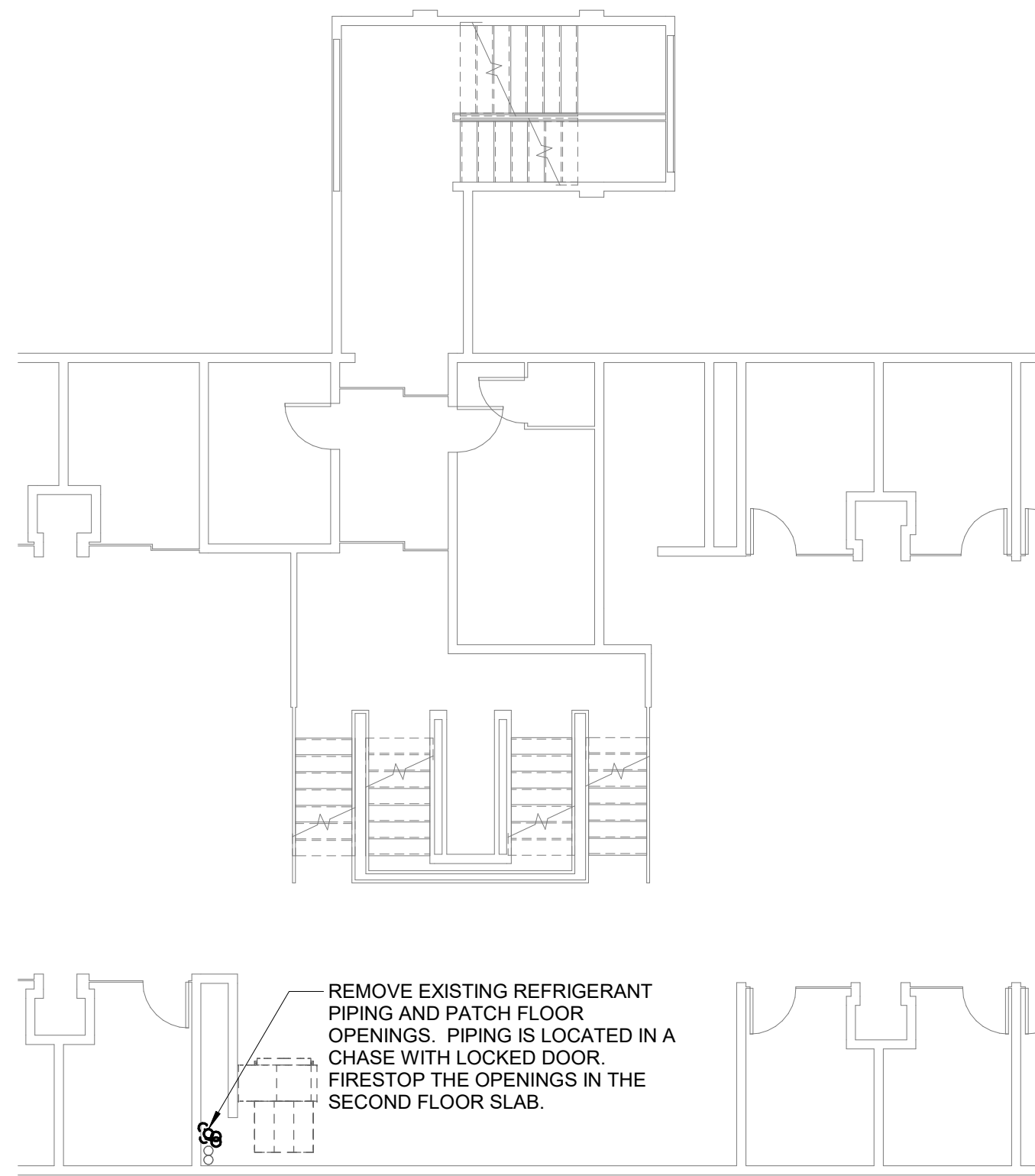
Scale: **As Indicated**

SHEET NUMBER

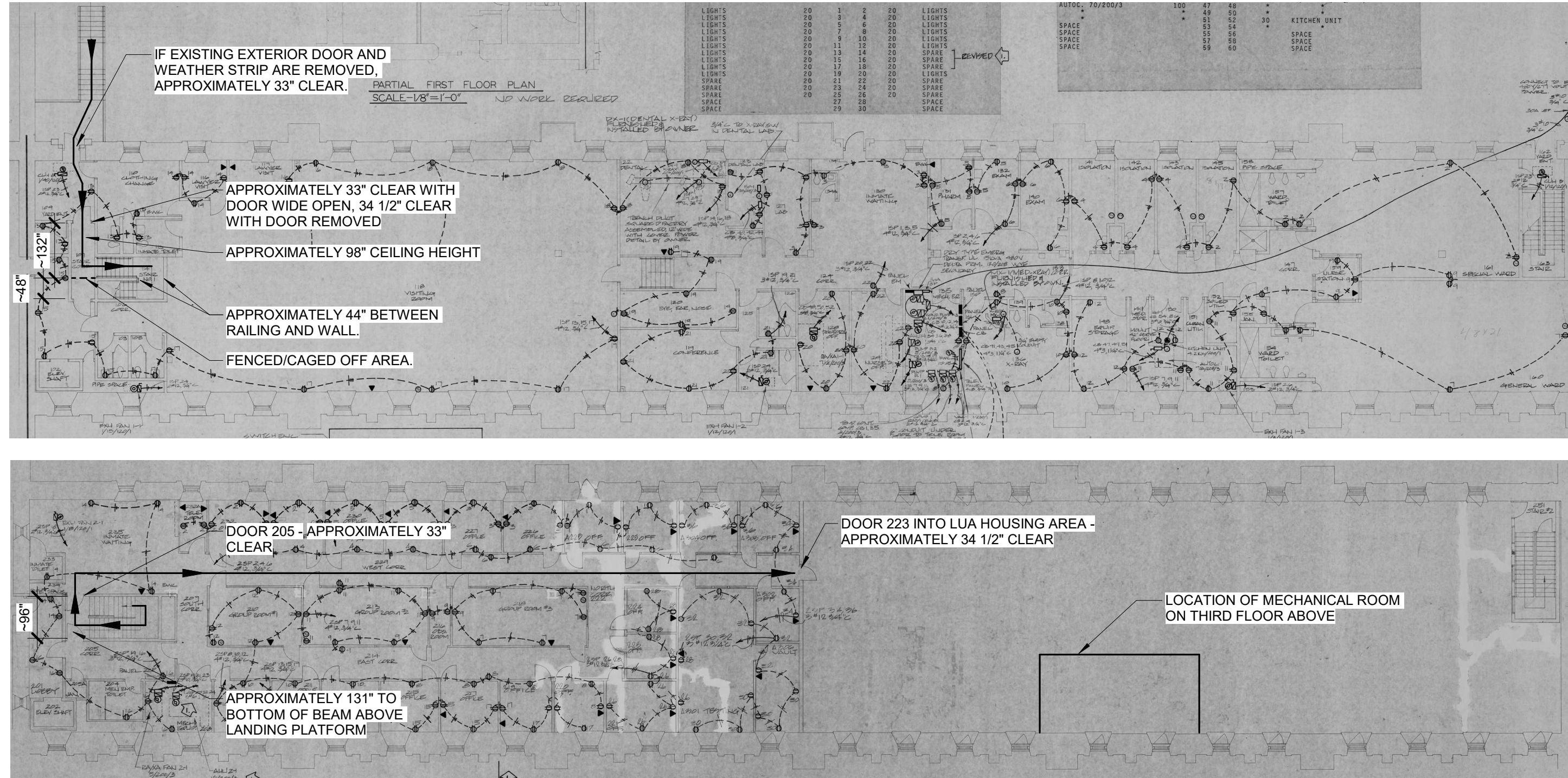
M201



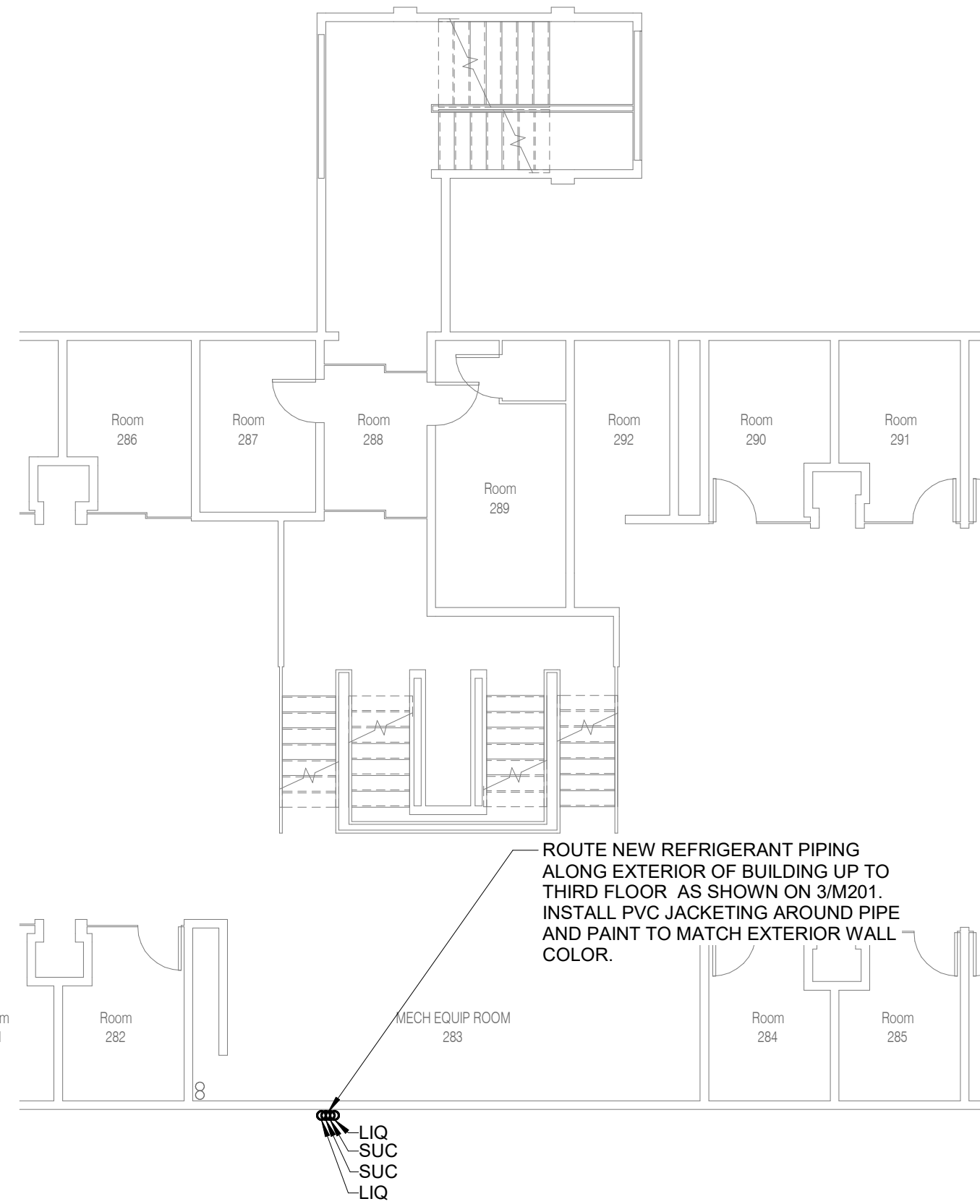
3 ENLARGED THIRD FLOOR PLAN - PIPING
1/2" = 1'-0"



1 SECOND FLOOR DEMOLITION PLAN - PIPING
1/8" = 1'-0"



4 ROUTE TO BRING AHU INTO BUILDING
NO SCALE



2 SECOND FLOOR PLAN - PIPING
1/8" = 1'-0"

GENERAL NOTES:

- BUILDING EXTERIOR WALLS HAVE NOT BEEN DRAWN TO MATCH EXISTING. EXISTING EXTERIOR WALLS ARE MUCH THICKER AND HAVE ARCHITECTURAL FEATURES WITH WIDER AND NARROWER WALLS. EXTERIOR WINDOWS HAVE NOT BEEN DRAWN. WINDOWS ARE LOCATED BETWEEN CELLS. REFER TO M201 FOR ADDITIONAL INFORMATION.

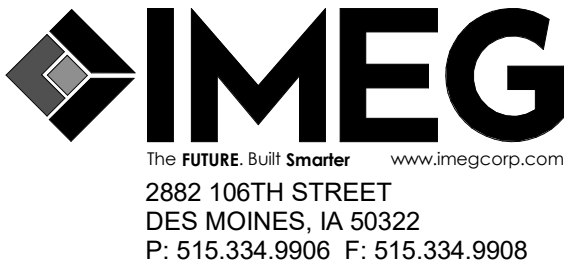
KEYNOTES:

- INSTALL A SET OF SHUTOFF VALVES ON HEATING WATER MAINS. A SINGLE SHUTDOWN OF THE HEATING WATER SYSTEM SHALL BE PLANNED WITH THE OWNER. COMPLETE DEMOLITION OF HEATING WATER PIPES BACK TO VERTICAL MAINS AND THEN EXTEND NEW PIPING TO THE NEW SHUTOFF VALVES DURING THE SHUTDOWN. PIPING DOWNSTREAM OF THE SHUTOFF VALVES CAN BE COMPLETED ONCE HEATING SYSTEM IS ACTIVE.

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PROFESSIONAL SEAL

KEY PLAN

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MCGOUGH CONSTRUCTION
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DES MOINES, IA 50309

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REF. SCALE IN INCHES PROJECT #24006748.00

REVISIONS

No.	Date	Revision / Issue
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SHEET INFORMATION

Issue	BID DOCUMENTS
Date	2/28/2025
Project #	24006748.00
Drawn	MIKMCC
Checked	PETERN
Approved	MIKMCC

SHEET TITLE

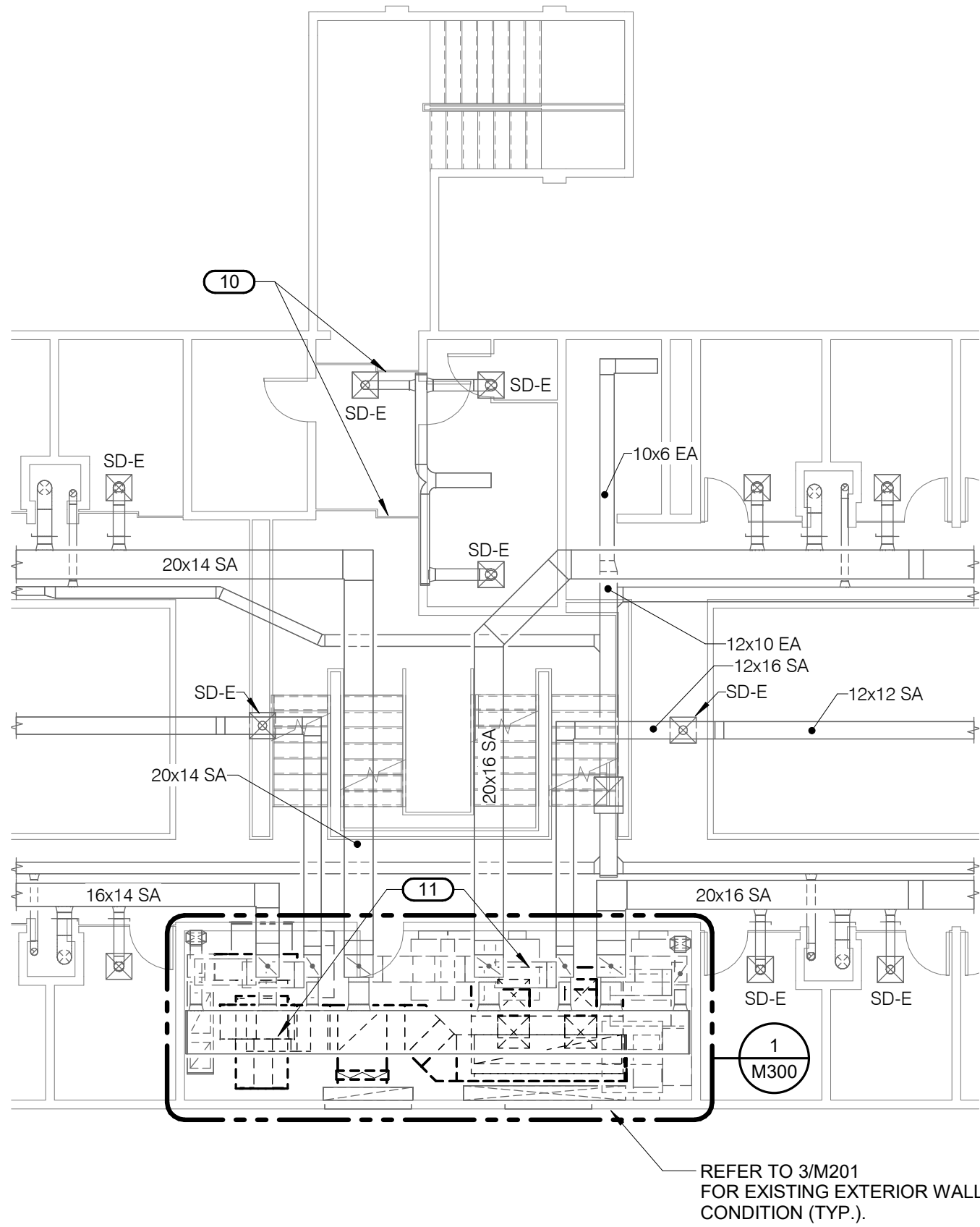
SECOND FLOOR PLAN - HVAC

SCALE
As Indicated

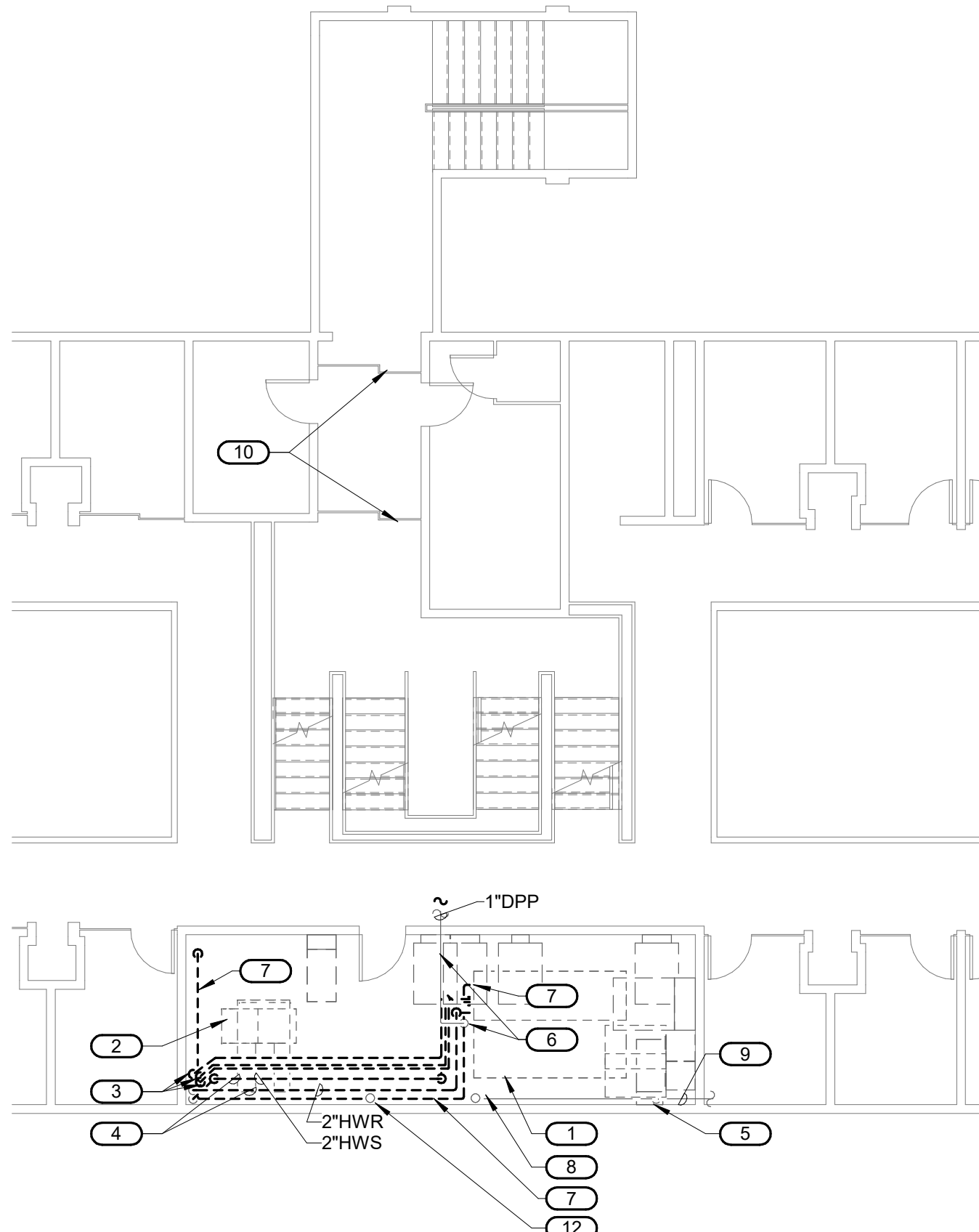
SHEET NUMBER

M202

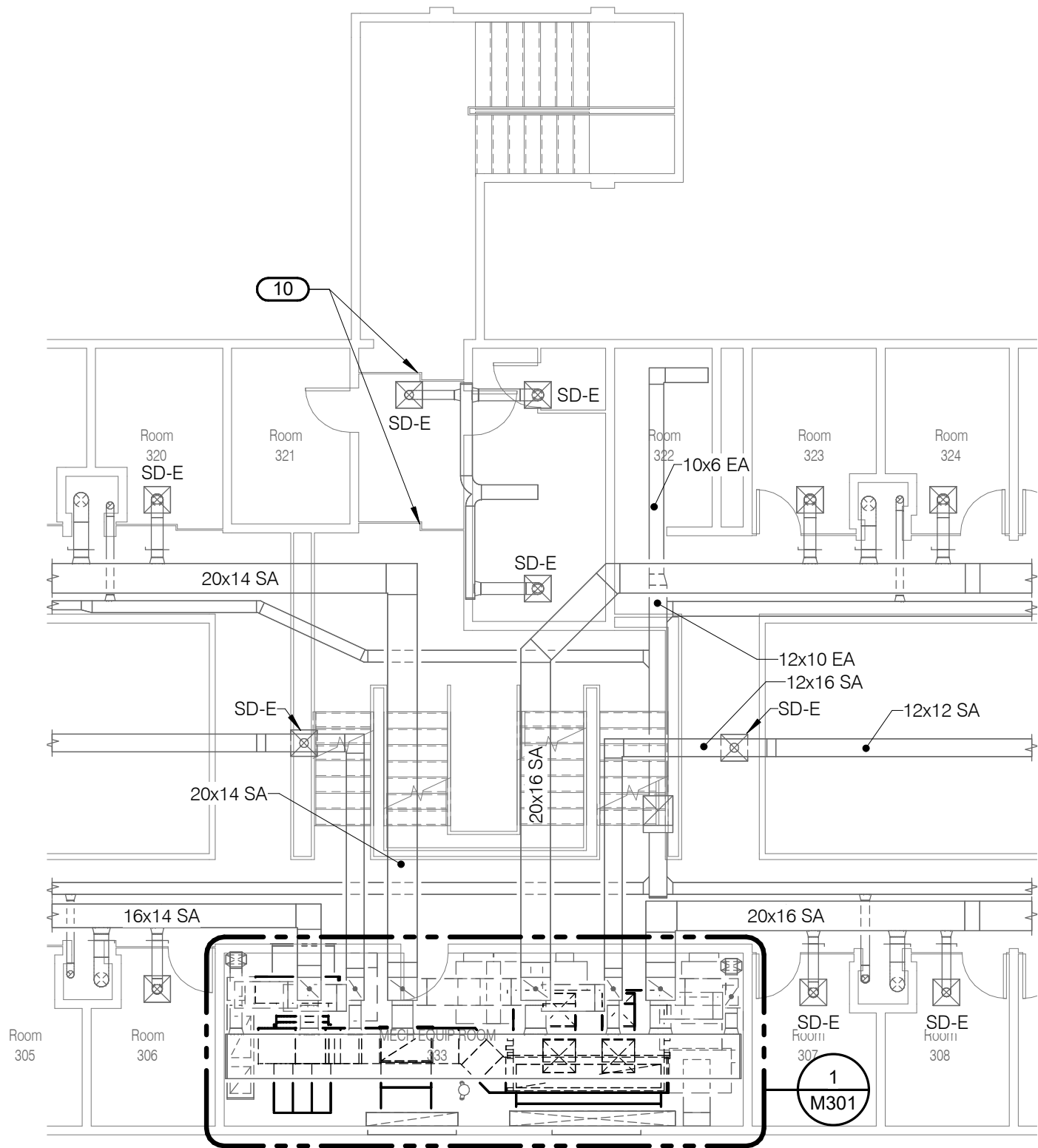
24006748.00 2/13/2025 10:02:31 AM 9451.00 DOC ASP LUA A/C Replacement



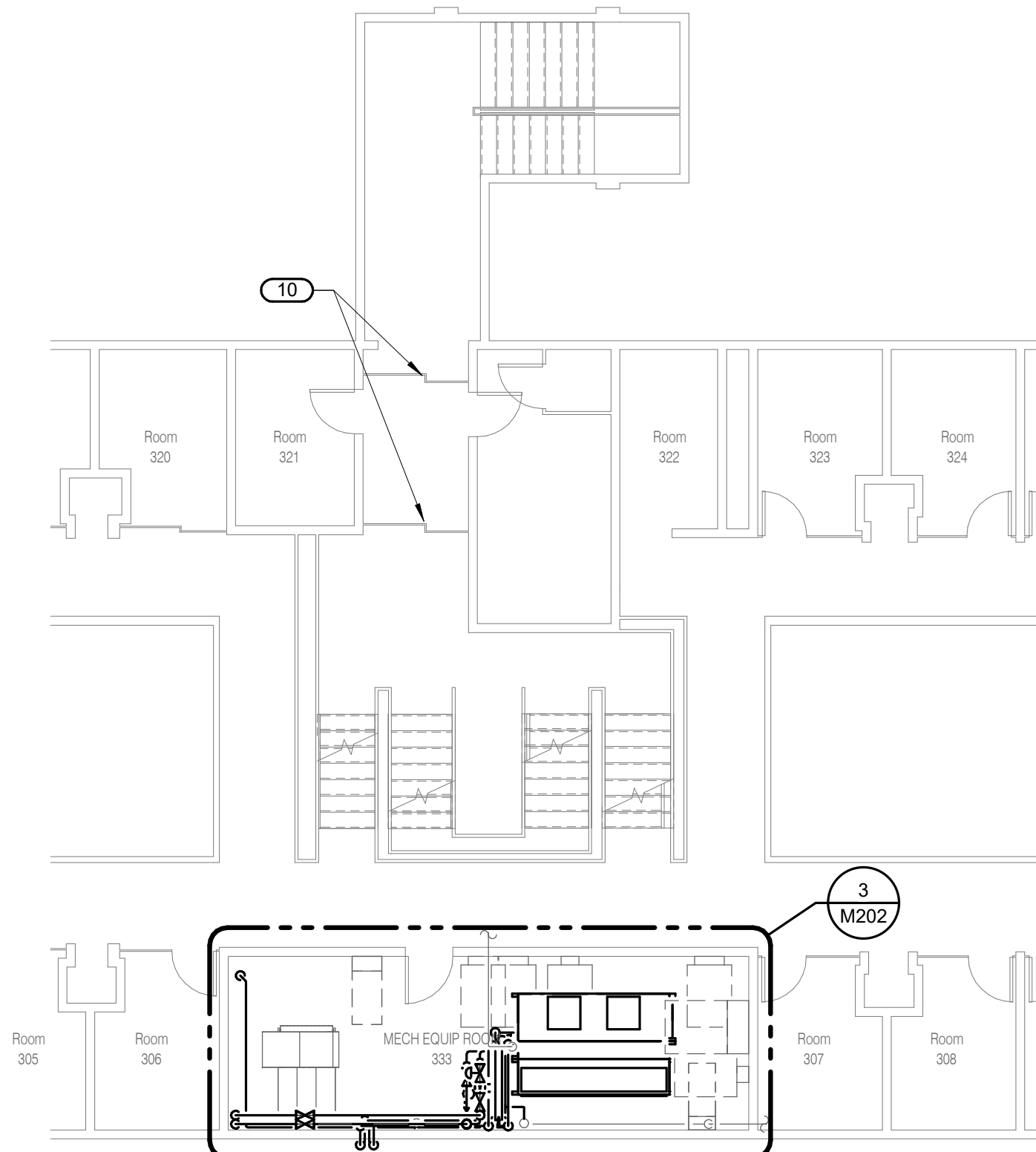
 **1 THIRD FLOOR DEMOLITION PLAN - VENTILATION**
1/8" = 1'-0"



 **2 THIRD FLOOR DEMOLITION PLAN - PIPING**
1/8" = 1'-0"



 **3 THIRD FLOOR PLAN - VENTILATION**
1/8" = 1'-0"



 **4 THIRD FLOOR PLAN - PIPING**
1/8" = 1'-0"

GENERAL NOTES:

1. BUILDING EXTERIOR WALLS HAVE NOT BEEN DRAWN TO MATCH EXISTING. EXISTING EXTERIOR WALLS ARE MUCH THICKER AND HAVE ARCHITECTURAL FEATURES WITH WIDER AND NARROWER WALLS. EXTERIOR WINDOWS HAVE NOT BEEN DRAWN. WINDOWS ARE LOCATED BETWEEN CELLS. REFER TO M201 FOR ADDITIONAL INFORMATION.

KEYNOTES:

1. REMOVE EXISTING AIR HANDLING UNIT.
2. REMOVE EXISTING RETURN FAN.
3. REMOVE ALL EXISTING REFRIGERANT PIPING FROM AIR HANDLING UNIT TO THE GRADE MOUNTED CONDENSING UNIT. PATCH EXISTING FLOOR OPENING.
4. REMOVE EXISTING HEATING WATER SUPPLY AND RETURN BACK TO VERTICAL DROPS IN CORNER AND PREPARE FOR EXTENSION TO NEW AIR HANDLING UNIT. A SHUTDOWN OF THE HOT WATER SYSTEM WILL BE REQUIRED. COORDINATE SHUTDOWN WITH OWNER. ONLY ONE SHUTDOWN WILL BE ALLOWED.
5. EXISTING TEMPERATURE CONTROL PANEL. REMOVE EXISTING AIR HANDLING UNIT CONTROLS AND PREPARE FOR INSTALLATION OF NEW CONTROLS. ANY EXISTING NON-AIR HANDLING UNIT CONTROLS TO REMAIN.
6. EXISTING DRAIN PIPING TO REMAIN. RECONNECT VERTICAL INTO NEW CONDENSATE PIPING FROM AHU.
7. REMOVE EXISTING COOLING COIL CONDENSATE FROM AHU BACK TO FLOOR DRAIN DISCHARGE LOCATION AND PREPARE FOR ROUTING OF NEW CONDENSATE DRAIN FROM NEW AIR HANDLING UNIT.
8. DISCONNECT EXISTING DRAIN PIPE FROM OUTSIDE AIR LOUVER PLENUM TO HORIZONTAL DRAIN PIPING AND PREPARE FOR NEW CONNECTION.
9. EXISTING PIPING ROUTED JUST ABOVE FLOOR AND BELOW OUTSIDE AIR PLENUM TO REMAIN.
10. PINCH POINT FOR ACCESS TO THIRD FLOOR IS APPROXIMATELY 2'9" WIDE. CONTRACTOR SHALL FIELD VERIFY. AIR HANDLING UNIT SHALL BE BROUGHT INTO BUILDING PER 4/M202 AND THEN BROUGHT UP INTERIOR STAIRS FROM SECOND TO THIRD FLOOR.
11. TAB CONTRACTOR SHALL PROVIDE PRE-BALANCE OF EXISTING AIR HANDLING UNIT AND RETURN FAN. RECORD SUPPLY, RETURN, OUTSIDE AND RELIEF AIR FLOW RATES AND OTHER DATA AS NOTED IN 23 05 93.
12. DISCONNECT EXISTING DRAIN PIPE FROM RELIEF AIR LOUVER PLENUM TO HORIZONTAL DRAIN PIPING AND PREPARE FOR NEW CONNECTION.

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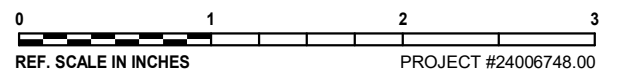
KEY PLAN

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REVISIONS

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SHEET INFORMATION

Issue	BID DOCUMENTS
Date	2/28/2025
Project #	24006748.00
Drawn	MIKMCC
Checked	PETERN
Approved	MIKMCC

SHEET TITLE

THIRD FLOOR PLAN - HVAC

SCALE

Scale: **1/8" = 1'-0"**

SHEET NUMBER

M203

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KEY PLAN

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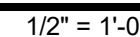
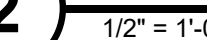
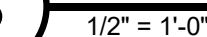
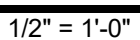
Issue	BID DOCUMENTS
Date	2/28/2025
Project #	24006748.00
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Checked	PETERN
Approved	MIKMCC

ENLARGED PLANS

Scale: $1/2" = 1'-0"$

SHEET NUMBER

M300



24006748.00 2/13/2025 10:02:36 AM 9451.00 DOC ASP LUA A/C Replacement

GENERAL NOTES:

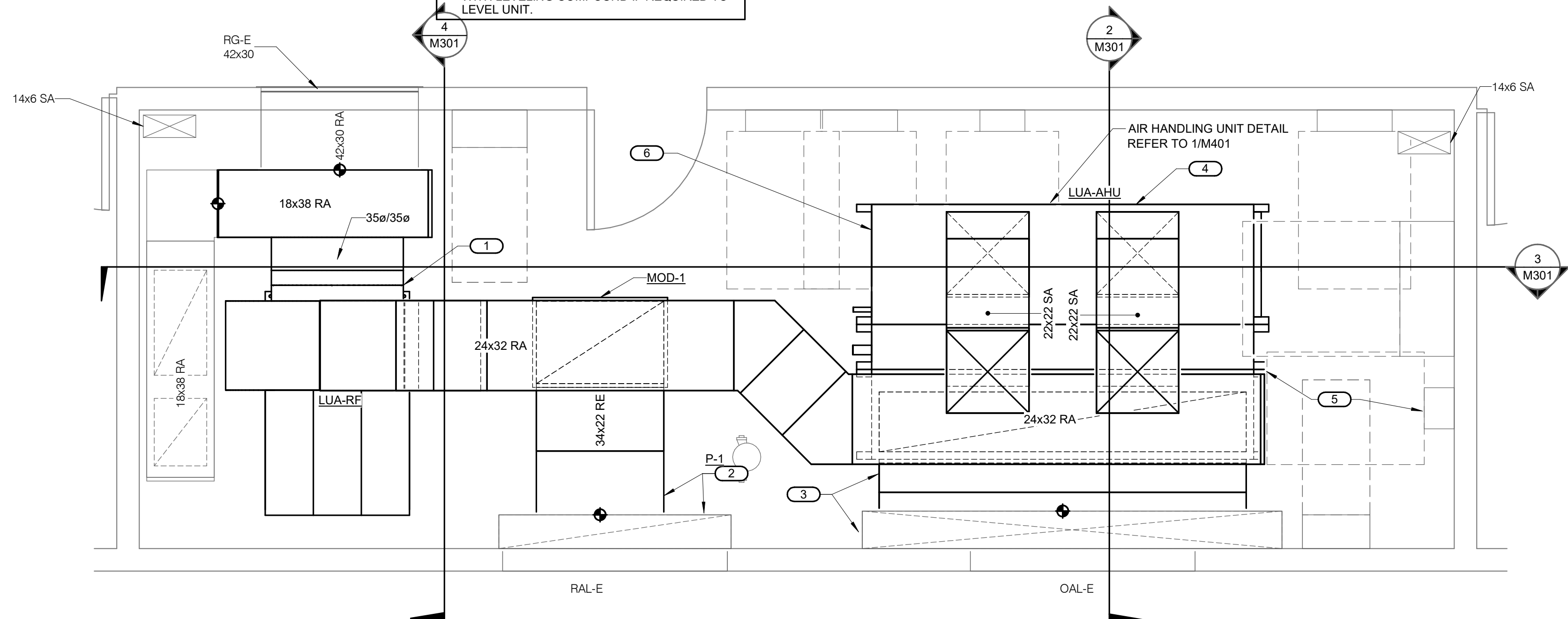
- BUILDING EXTERIOR WALLS HAVE NOT BEEN DRAWN TO MATCH EXISTING. EXISTING EXTERIOR WALLS ARE MUCH THICKER AND HAVE ARCHITECTURAL FEATURES WITH WIDER AND NARROWER WALLS. EXTERIOR WINDOWS HAVE NOT BEEN DRAWN. WINDOWS ARE LOCATED BETWEEN CELLS. REFER TO M201 FOR ADDITIONAL INFORMATION.
- DUCTWORK IN FLOOR PLAN HAS ONLY BEEN SHOWN FOR THE LOWER AREA OF THE MECHANICAL ROOM. A DUCT MAIN WITH TERMINAL AIR BOXES IS ROUTED HIGH IN THE MECHANICAL ROOM. REFER TO 1/8" SCALE PLAN THAT SHOWS UPPER DUCTWORK AS WELL.

KEYNOTES:

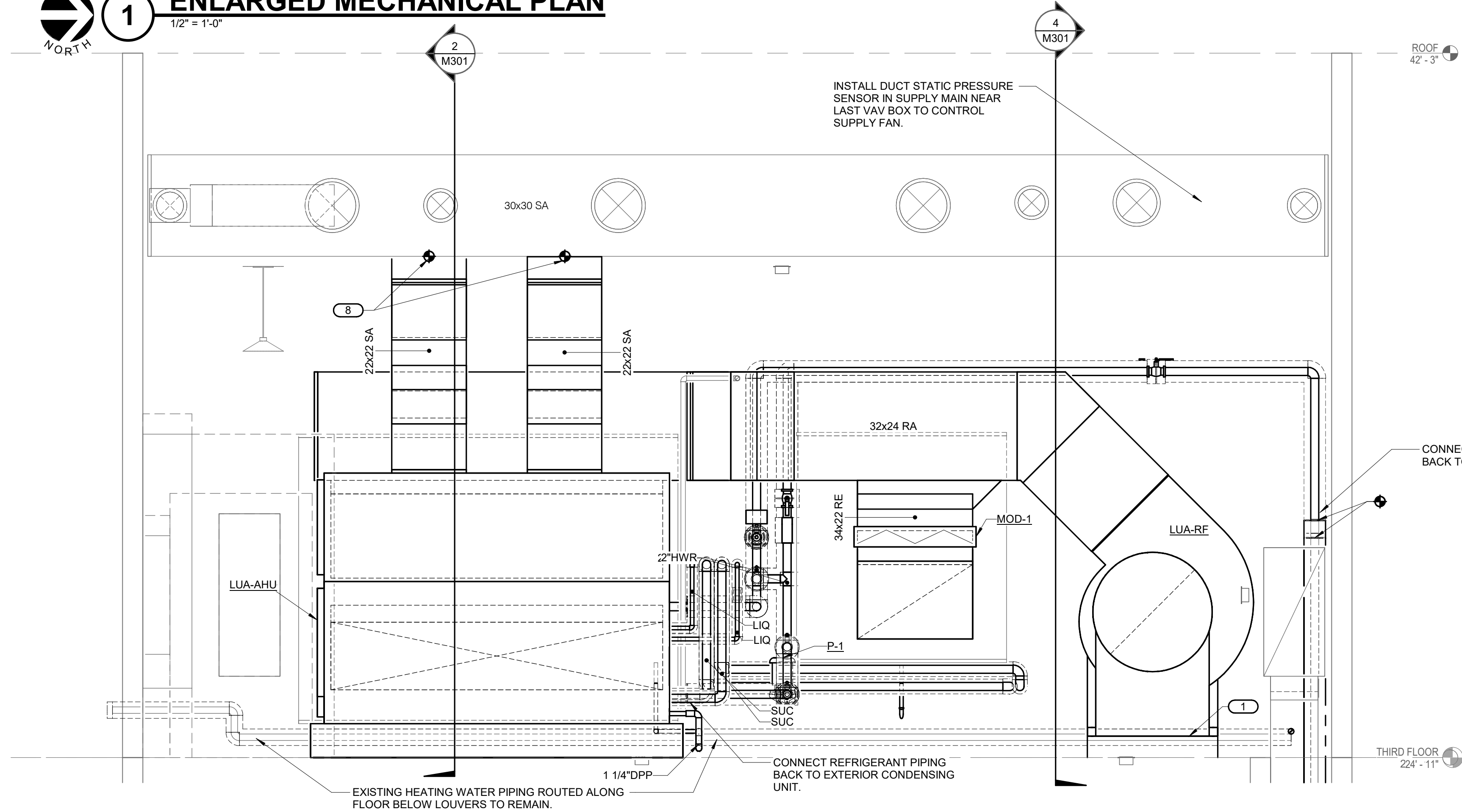
- INSTALL NEW FAN ON VIBRATION ISOLATION BASE. COORDINATE BASE HEIGHT TO COORDINATE WITH EXISTING RETURN DUCT AND GRILLE ELEVATIONS.
- INSTALL NEW RELIEF AIR DUCT TO CONNECT TO EXISTING LOUVER AND RELIEF AIR PLENUM DUCTWORK. CONNECT TO EXISTING OPENING IN RELIEF PLENUM OR REMOVE INTERIOR SECTION OF RELIEF PLENUM AND INSTALL NEW INTERIOR PLENUM WALL.
- INSTALL NEW OUTSIDE AIR DUCT TO CONNECT TO EXISTING LOUVER AND OUTSIDE AIR PLENUM DUCTWORK. CONNECT TO EXISTING OPENING IN OUTSIDE AIR PLENUM OR REMOVE INTERIOR SECTION OF OUTSIDE PLENUM AND INSTALL NEW INTERIOR PLENUM WALL.
- INSTALL AIR HANDLING UNIT ON EXISTING MECHANICAL ROOM FLOOR. LEVEL FLOOR WITH LEVELING COMPOUND IF REQUIRED TO LEVEL UNIT.

KEYNOTES (CONTINUED):

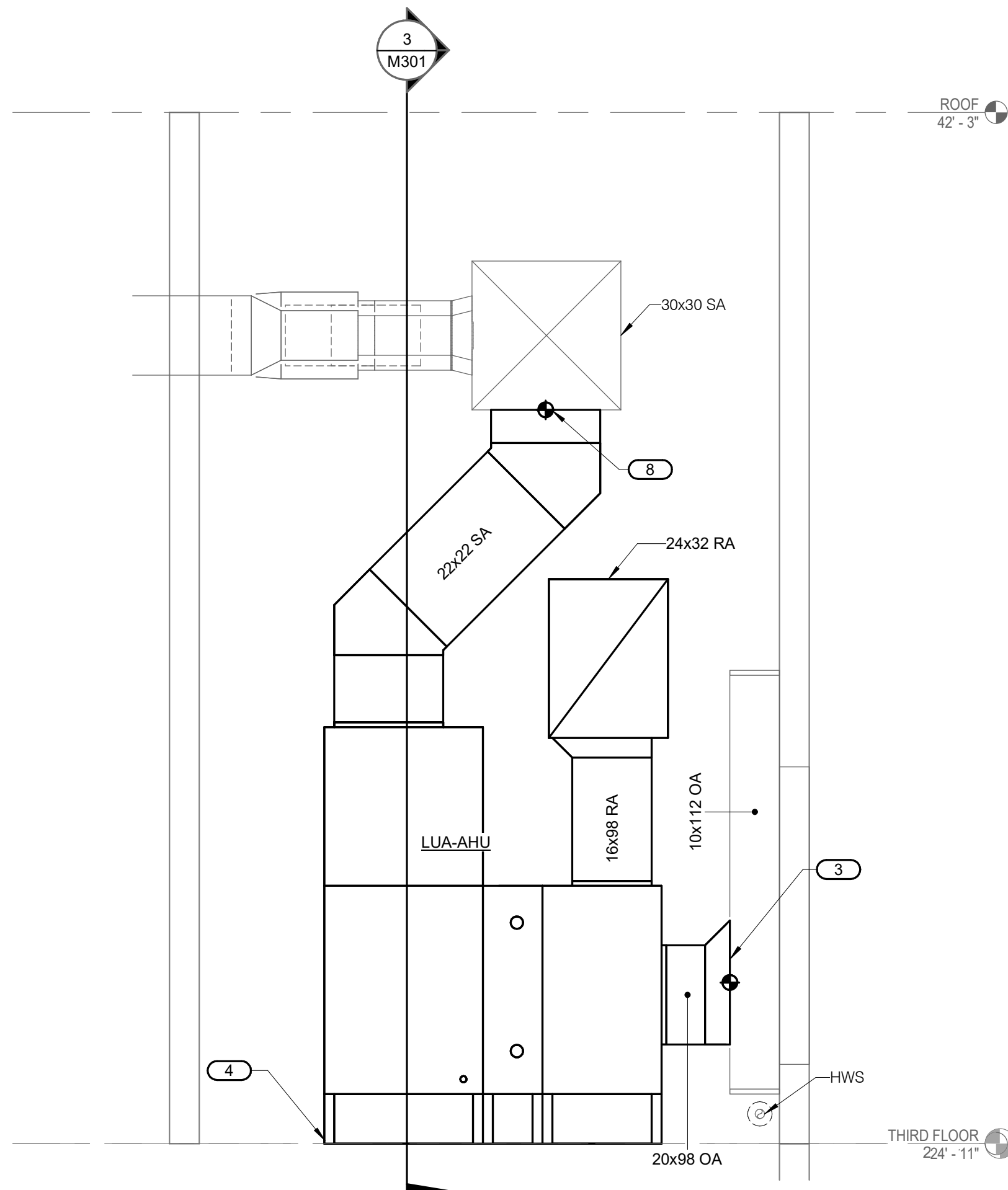
- INSTALL AIR HANDLING UNIT AND ASSOCIATED DUCTWORK TO ALLOW FOR 3'-0" SERVICE CLEARANCE TO NEW VFD.
- INSTALL DISCONNECT PROVIDED WITH AIR HANDLING UNIT ON EXTERIOR OF AIR HANDLING UNIT PER MANUFACTURER RECOMMENDATIONS. E.C. PROVIDE POWER AND WIRING. COORDINATE LOCATION WITH REFRIGERANT PIPING CONNECTIONS.
- CONNECT NEW RETURN AIR DUCT BACK TO EXISTING RETURN GRILLE DUCTWORK.
- CONNECT NEW SUPPLY AIR DUCTS BACK TO EXISTING SUPPLY DUCT MAIN. CONFIRM EXISTING DUCT SIZE AT CONNECTION POINT AND TRANSITION AS NEEDED.



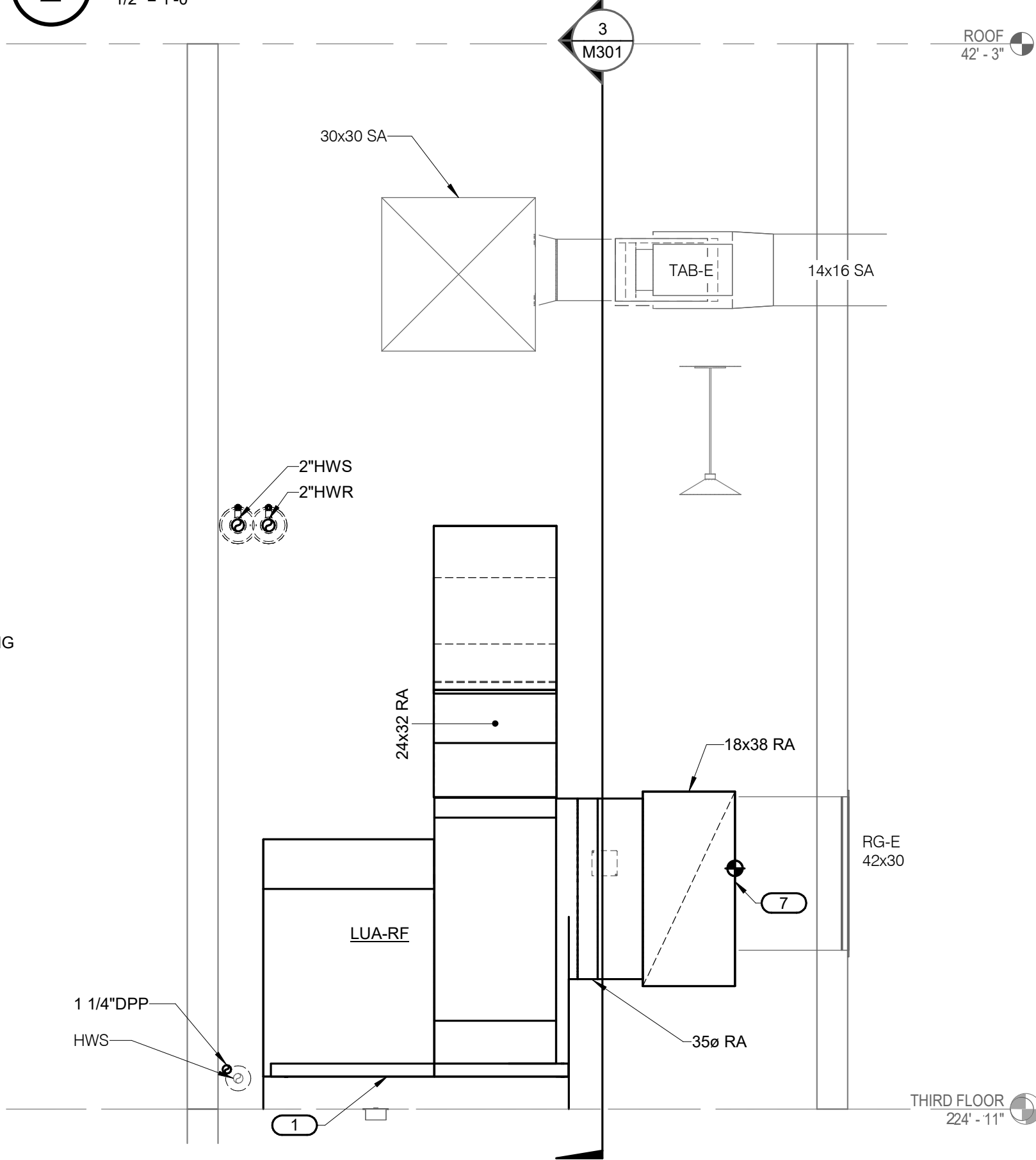
1 ENLARGED MECHANICAL PLAN
1/2" = 1'-0"



3 MECHANICAL ROOM SECTION - NEW WORK
1/2" = 1'-0"



2 AHU SECTION - NEW WORK
1/2" = 1'-0"



4 RETURN FAN SECTION - NEW WORK
1/2" = 1'-0"

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REF. SCALE IN INCHES PROJECT #24006748.00

REVISIONS

No. Date Revision / Issue

SHEET INFORMATION

Issue **BID DOCUMENTS**
Date **2/28/2025**
Project # **24006748.00**
Drawn **MIKMCC**
Checked **PETERN**
Approved **MIKMCC**

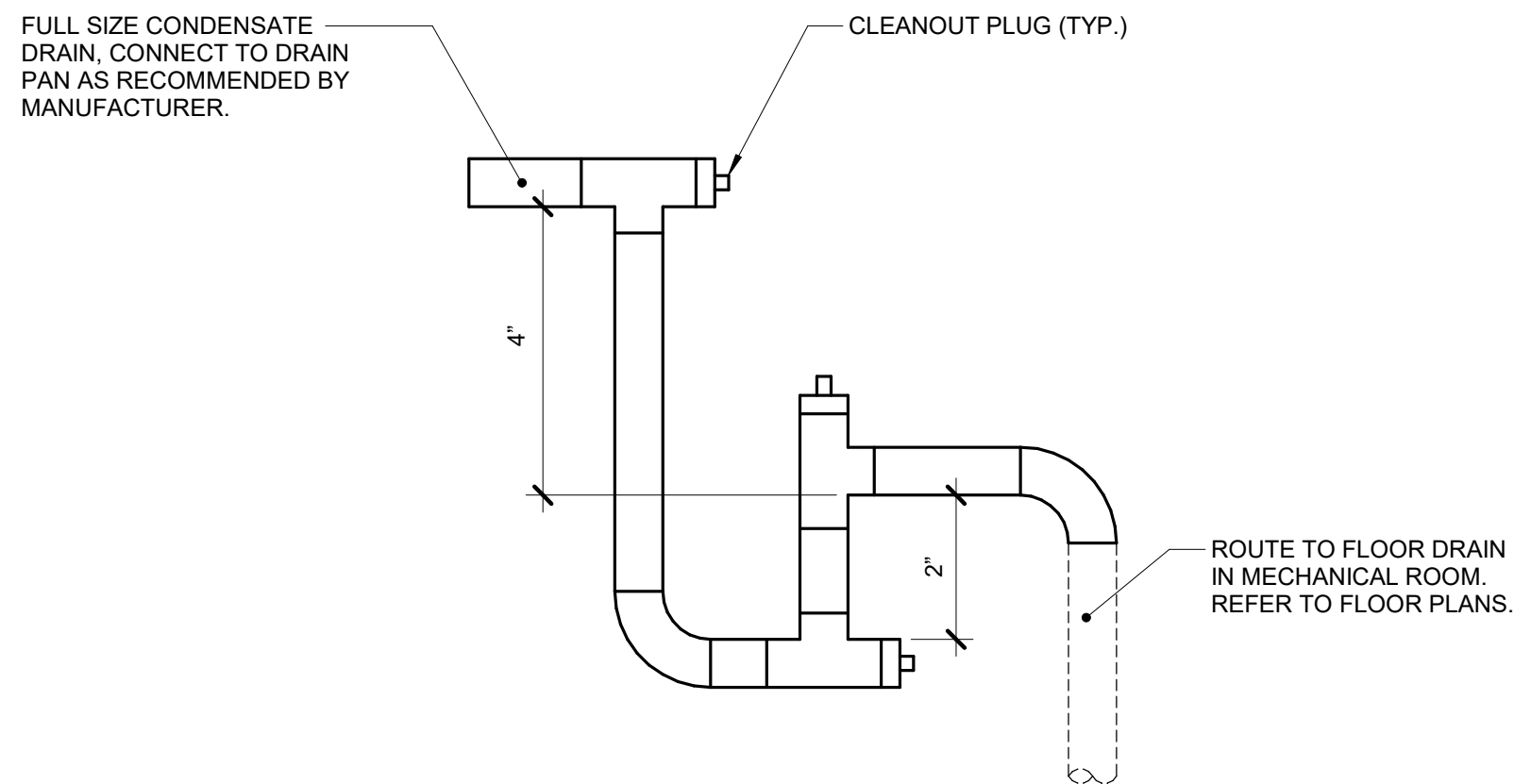
SHEET TITLE
ENLARGED PLANS

Scale: **1/2" = 1'-0"**

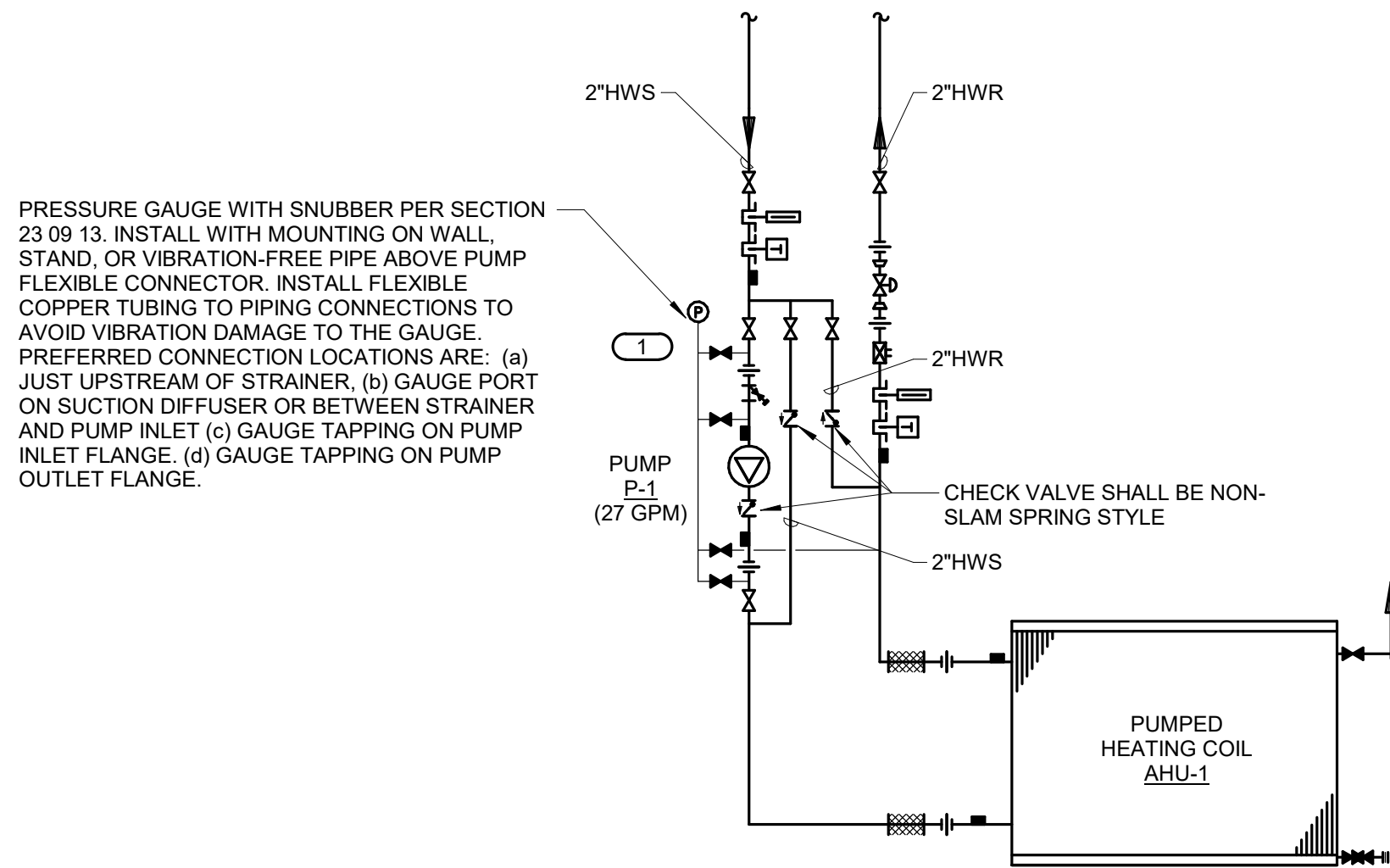
SHEET NUMBER

M301

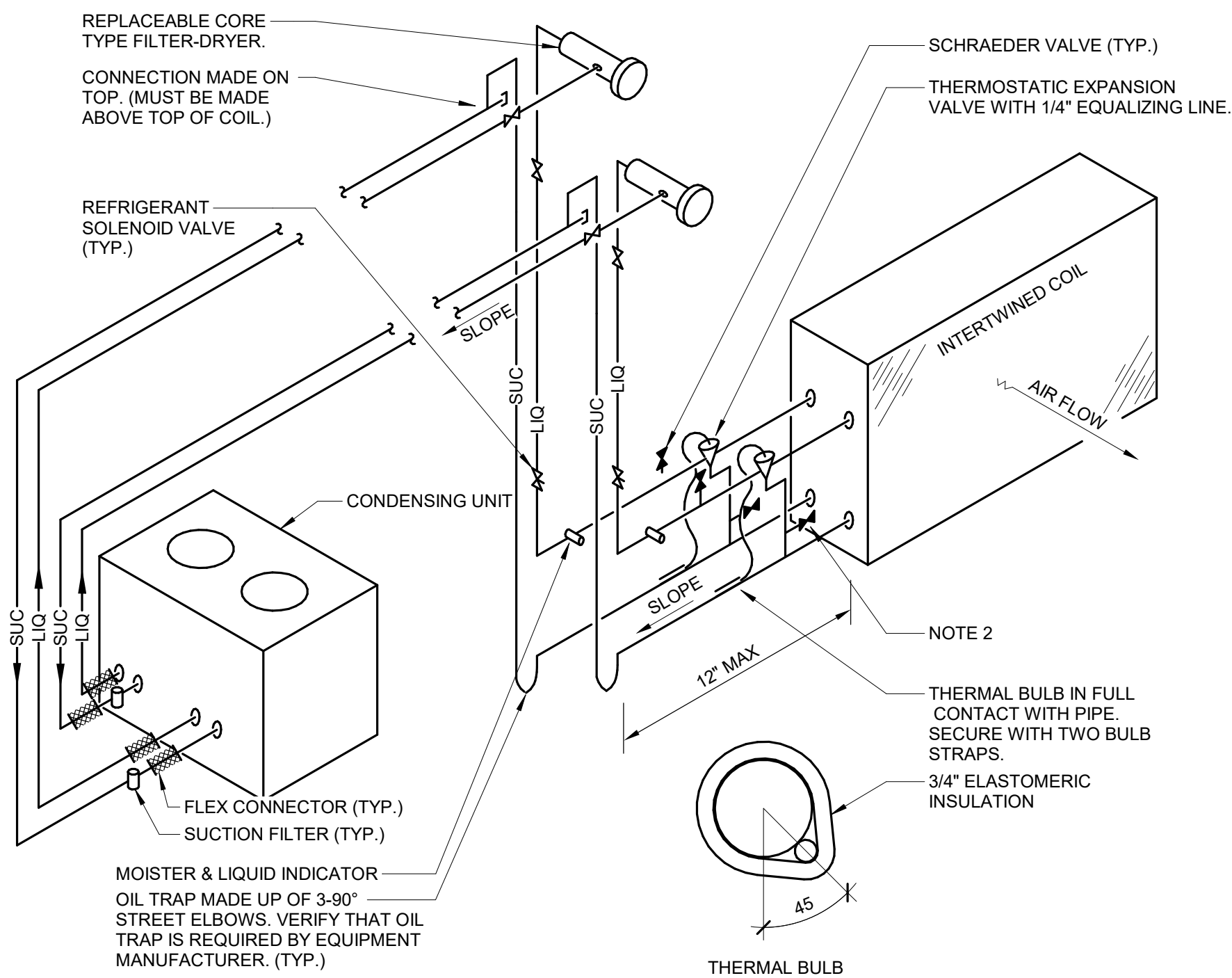
24006748.00 2/13/2025 10:02:37 AM 9451.00 DOC ASP LUA A/C Replacement



1 CONDENSATE TRAP - DRAW THROUGH COIL
NO SCALE



2 COIL - PUMPED HOT WATER COIL DETAIL
NO SCALE



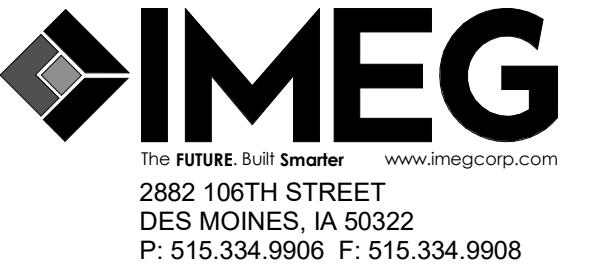
- NOTES:
- THIS DIAGRAM IS SCHEMATIC IN NATURE. UNIT MANUFACTURER SHALL SUBMIT DETAILED PIPING DIAGRAM SHOWING RECOMMENDED PIPING ARRANGEMENT IF DIFFERENT FROM ABOVE.
 - INSTALL 1/4" SCHRAEDER VALVES TO MEASURE REFRIGERANT PRESSURE WITH REFRIGERANT GAUGES.
 - PIPE SIZES, IF SHOWN ON DRAWINGS, ARE ONLY FOR THE CONVENIENCE OF THE BIDDERS. ACTUAL NUMBERS AND SIZES OF PIPES AND ANY ACCESSORIES SUCH AS ACCUMULATORS, RECEIVERS, SEPARATORS AND HEAT TRACING SHALL BE DETERMINED BY THE COIL SUPPLIER AND SUBMITTED AS SHOP DRAWINGS. NO COMPENSATION WILL BE MADE IF ACTUAL NUMBER OR SIZES OF PIPES EXCEED WHAT IS SHOWN.

3 REFRIGERANT - PIPING DIAGRAM W/INTERTWINED COIL
NO SCALE

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REF. SCALE IN INCHES
PROJECT #24006748.00

REVISIONS

No.	Date	Revision / Issue
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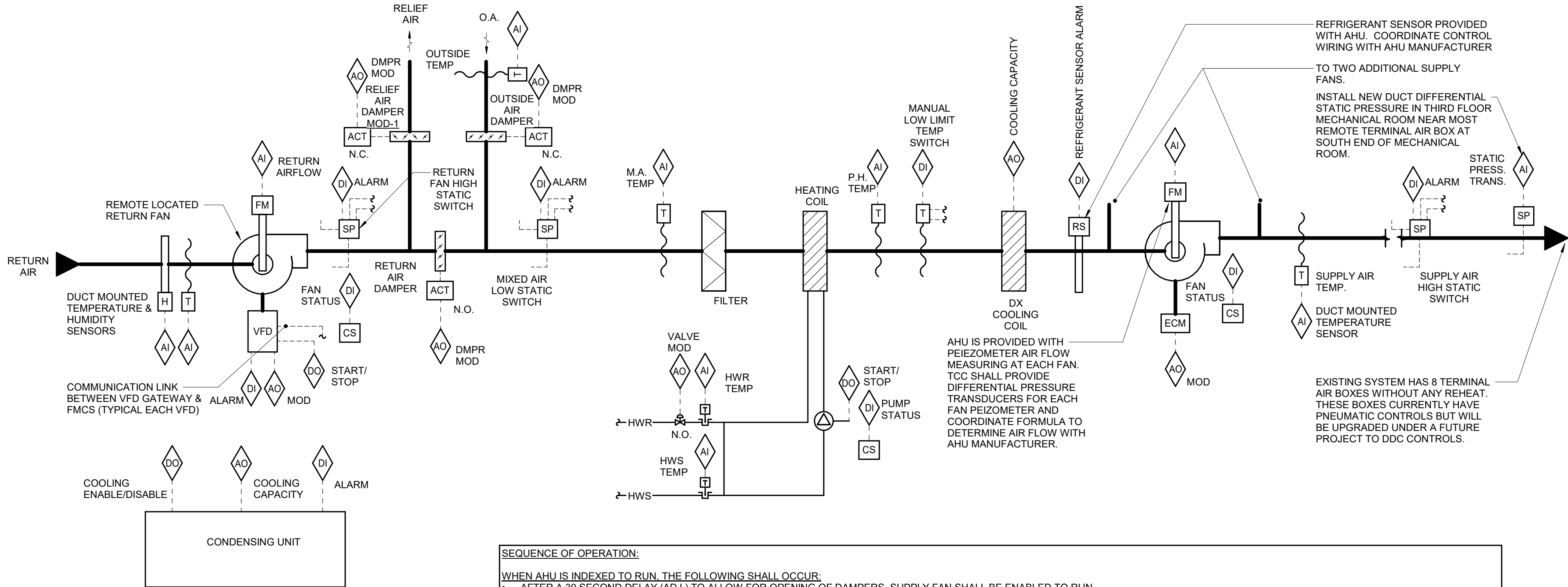
Issue	BID DOCUMENTS
Date	2/28/2025
Project #	24006748.00
Drawn	MIKMCC
Checked	PETERN
Approved	MIKMCC

SHEET TITLE
HVAC DETAILS

SCALE
Scale: 12" = 1'-0"

SHEET NUMBER

M400



SEQUENCE OF OPERATION:

WHEN AHU IS INDEXED TO RUN, THE FOLLOWING SHALL OCCUR:

- AFTER A 30 SECOND DELAY (ADJ.) TO ALLOW FOR OPENING OF DAMPERS, SUPPLY FAN SHALL BE ENABLED TO RUN.
- WHEN THE SUPPLY FAN HAS STARTED THE RETURN FAN SHALL START.

SUPPLY FAN OPERATION:

FMCS SHALL MODULATE SIGNAL TO SUPPLY FAN ECM MOTOR TO MAINTAIN DUCT STATIC PRESSURE AS MEASURED BY STATIC PRESSURE TRANSMITTER NEAR THE END OF THE CRITICAL DUCT BRANCH.

RETURN FAN OPERATION:

RETURN FAN SHALL BE INDEXED TO RUN WHENEVER THE SUPPLY FAN IS INDEXED TO RUN. FMCS SHALL MODULATE SIGNAL TO RETURN FAN VFD AS REQUIRED TO MAINTAIN THE AIRFLOW OFFSET OF 2,750 CFM (ADJ.).

STATIC PRESSURE RESET:

FMCS SHALL SET THE DUCT STATIC PRESSURE SETPOINT TO 1.5" (ADJ.). ONCE VAV BOX CONTROLS ARE UPGRADED, THE INTENT IS THAT A STATIC PRESSURE RESET BE INCORPORATED INSTEAD OF FIXED SETPOINT.

DISCHARGE AIR TEMPERATURE SETPOINT:

DISCHARGE AIR SETPOINT SHALL BE RESET BETWEEN 55°F (ADJ.) AND 85°F (ADJ.) BASED ON THE RETURN AIR TEMPERATURE SENSOR IN THE RETUN DUCTWORK.

VENTILATION AIR CONTROL:

OUTSIDE AIR FLOW RATE SHALL BE DETERMINED BASED ON REVIEW OF THE OUTSIDE AIR TEMPERATURE, RETURN AIR TEMPERATURE AND MIXED AIR TEMPERATURE. THE OUTSIDE AIR, RETURN AIR AND RELIEF AIR DAMPERS SHALL MODULATE IN OPPOSITION TO MAINTAIN THE MINIMUM OUTSIDE AIR FLOW RATE, OR TO SATISFY THE ECONOMIZER DISCHARGE AIR SEQUENCE. TCC SHALL ALSO COORDINATE WITH TAB CONTRACTOR TO SET A MINIMUM OUTSIDE AIR DAMPER POSITION BASED THE SCHEDULED MINIMUM OUTSIDE AIR DURING SUPPLY FAN MAXIMUM UNIT AIR FLOW.

COOLING COIL OPERATION:

WHEN IN MINIMUM OUTSIDE AIR MODE, FMCS SHALL MODULATE COOLING CAPACITY AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT.

WHEN IN ECONOMIZER MODE, FMCS SHALL NOT MODULATE COOLING CAPACITY UNLESS RETURN AIR DAMPER IS 5% (ADJ.) OPEN AND RELIEF AIR DAMPER IS 95% (ADJ.) OPEN.

HEATING COIL OPERATION:

HEATING COIL CONTROLS SHALL BE ENABLED WHEN OUTSIDE AIR TEMP DROPS BELOW 70°F (ADJ.). HEATING COIL CONTROLS SHALL BE DISABLED WHEN OUTSIDE AIR TEMP RISES ABOVE 74°F (ADJ.).

WHEN OUTSIDE AIR TEMPERATURE RISES ABOVE 38°F (ADJ.) FOR 10 MINUTES (ADJ.) HEATING WATER COIL CIRCULATION PUMP SHALL OPERATE ONLY WHEN HEATING IS CALLED FOR (HEATING WATER VALVE IS COMMANDED TO OPEN). WHEN OUTSIDE AIR TEMP DROPS BELOW 38°F (ADJ.) HEATING WATER COIL CIRCULATION PUMP SHALL OPERATE CONTINUOUSLY. ONCE ENERGIZED, HEATING WATER COIL CIRCULATION PUMP SHALL REMAIN IN OPERATION FOR MINIMUM 5 MINUTES (ADJ.) TO PREVENT SHORT CYCLING.

FMCS SHALL MODULATE HEATING WATER CONTROL VALVE AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT. HEATING SHALL BE DISABLED WHENEVER COOLING SYSTEM IS ENABLED.

ECONOMIZER OPERATION:

WHEN THE OUTSIDE AIR DRY BULB TEMPERATURE IS LESS THAN THE RETURN AIR DRY BULB TEMPERATURE THE FMCS SHALL ENABLE ECONOMIZER CONTROLS. WHEN OUTSIDE AIR DRY BULB TEMPERATURE IS GREATER THAN THE RETURN AIR DRY BULB TEMPERATURE FOR 10 MINUTES THE FMCS SHALL DISABLE ECONOMIZER CONTROLS AND SHALL RETURN THE UNIT TO MINIMUM OUTSIDE AIR MODE. ONCE ECONOMIZER CONTROLS HAVE BEEN ENABLED OR DISABLED, THE UNIT SHALL CONTINUE TO OPERATE IN THAT MODE FOR A MINIMUM OF 10 MINUTES (ADJ.) BEFORE BEING ALLOWED TO SWITCH BACK (TO PREVENT SHORT CYCLING).

IN ECONOMIZER MODE THE FMCS SHALL MODULATE THE RETURN AND RELIEF DAMPERS AS REQUIRED TO MAINTAIN DISCHARGE AIR TEMPERATURE SETPOINT.

ALARMS, INTERLOCKS, AND SAFETIES:

WHEN FIRE ALARM CONTROL PANEL INDICATES AN ALARM CONDITION VIS DUCT DETECTOR, AHU SHALL BE SHUTDOWN.

THE FOLLOWING CONDITIONS SHALL SHUTDOWN THE AHU AND SHALL INDICATE WHICH DEVICE IS IN AN ALARM CONDITION AT THE FMCS WORKSTATION:

- LOW STATIC PRESSURE SWITCH INDICATES MIXED AIR PRESSURE LESS THAN THE SPECIFIED DUCT PRESSURE CLASS OF THE OUTSIDE AIR DUCTWORK.
- HIGH STATIC PRESSURE SWITCH INDICATES RETURN AIR PRESSURE MORE THAN THE SPECIFIED DUCT PRESSURE CLASS OF THE RETURN AIR DUCTWORK.
- HIGH STATIC PRESSURE SWITCH INDICATES SUPPLY AIR PRESSURE MORE THAN THE SPECIFIED DUCT PRESSURE CLASS OF THE SUPPLY AIR DUCTWORK.
- SHOULD ANY ONE FOOT SECTION OF THE MANUAL RESET LOW LIMIT TEMPERATURE SWITCH SENSE AIR TEMP <35°F (ADJ.), IF MULTIPLE FREEZE STATS ARE REQUIRED, LOCATE ADJACENT TO EACH OTHER TO BE RESET BY A COMMON LATCHING RELAY.

THE FOLLOWING CONDITIONS SHALL INDICATE AN ALARM AT THE FMCS AND SHALL INDICATE WHICH DEVICE IS IN AN ALARM CONDITION, HOWEVER AHU SHALL CONTINUE TO OPERATE:

- HEATING COIL CIRCULATION PUMP IS COMMANDED TO RUN AND CURRENT RELAY INDICATES INSUFFICIENT CURRENT FLOW.
- AN ALARM IS INDICATED AT THE RETURN FAN VFD.
- SEND AN ALARM TO THE FMCS OPERATOR INTERFACE IF THE DISCHARGE AIR TEMPERATURE IS MORE THAN 5°F (ADJ.) ABOVE OR BELOW SETPOINT.
- AN ALARM IS INDICATED AT THE CONDENSING UNIT.

IN THE EVENT SUPPLY FAN IS NOT RUNNING (AS INDICATED BY THE CURRENT SENSING RELAYS) RETURN AIR FAN SHALL BE DE-ENERGIZED.

REFRIGERANT SENSOR ALARM:

WHEN THE REFRIGERANT SENSOR INDICATES AN ALARM CONDITION, THE FOLLOWING SHALL OCCUR:

- AHU SHALL BE ENABLED. SUPPLY FAN SHALL BE SET TO 100% OF DESIGN AIR FLOW.
- CONDENSING UNIT COMPRESSORS SHALL BE DISABLED.
- ALARM SHALL BE INDICATED THROUGH CONTROLS SYSTEM.

WHENEVER AHU IS SHUTDOWN THE FOLLOWING SHALL OCCUR:

- THE OUTSIDE AIR DAMPER AND RELIEF AIR DAMPER SHALL FULLY CLOSE.
- RETURN AIR DAMPER SHALL FULLY OPEN.
- HEATING COIL HEATING WATER CIRCULATION PUMP AND HEATING WATER CONTROL VALVE SHALL REMAIN UNDER CONTROL OF ITS INPUT SENSOR.
- COOLING SHALL BE DISABLED.
- SUPPLY FAN AND RETURN FAN VFDS SHALL BE DE-ENERGIZED.

CONTROL SYMBOL LIST			
NOT ALL SYMBOLS MAY APPLY.			
SYMBOL:	DESCRIPTION:		
	ANALOG INPUT		DIGITAL INPUT
	ANALOG OUTPUT		DIGITAL OUTPUT
	FLOW METER		HUMIDISTAT SENSOR
	HEATING/ COOLING COIL		HUMIDITY SENSOR (DUCT MOUNTED)
	FAN		FILTER
	AVERAGING TEMPERATURE SENSOR		SENSOR
	LOW LIMIT TEMPERATURE SWITCH		ACTUATOR
	PROBE TEMPERATURE SENSOR		DIFFERENTIAL PRESSURE SWITCH
			CURRENT SWITCH
			OPPOSED BLADE DAMPER
			PARALLEL BLADE DAMPER
			REFRIGERANT SENSOR
			STATIC PRESSURE SWITCH

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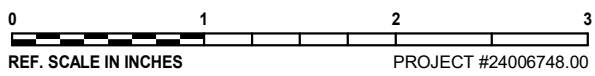
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REVISIONS

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SHEET INFORMATION

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Date **2/28/2025**
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Approved **MIKMCC**

SHEET TITLE
CONTROL DIAGRAMS

SCALE
Scale: **12" = 1'-0"**

SHEET NUMBER

M500

1

AIR HANDLING UNIT - VAV DX COOLING AND HEATING WATER

12" = 1'-0"

24006748.002/13/2025 10:02:39 AM9451.00 DOC ASP LUA AC Replacement

AIR HANDLING SCHEDULE - OWNER PURCHASED, CONTRACTOR INSTALLED

NOTES:
1. CONTRACTOR SHALL INSTALL FC1 OR FC2 FLEXIBLE CONNECTIONS PER 23 05 48 FOR PIPE CONNECTIONS TO AIR HANDLING UNIT.
2. CONTRACTOR SHALL COORDINATE PIPE CONNECTION AND SIZING REQUIREMENTS WITH MANUFACTURER. REFRIGERANT COIL HAS TWO CIRCUITS THAT ARE INTERTWINED.
3. CONTRACTOR SHALL RECEIVE, UNLOAD, DISASSEMBLE AND REASSEMBLE AIR HANDLING UNIT. COORDINATE WITH OWNER ON SHIPPING DATE.
4. FULL LOAD AMPS (FLA) IS PER FAN.

TAG NAME	AREA SERVED	SUPPLY FAN (NOTE 1)										ELECTRICAL								HEATING COIL - WATER								COOLING COIL							FILTER			MAX. DIMENSIONS							NOTES							
		NO. OF FANS	CFM TOTAL	MIN. CFM	EXT. S.P.	TYPE	RPM (NOTE D)	BHP EACH (NOTE E)	MHP EACH (NOTE E)	MINIMUM OUTSIDE AIR CFM		NO. OF POWER CONNECTIONS	VOLTAGE	PHASES	FULL LOAD AMPS (NOTE 4)	MINIMUM CIRCUIT AMPACITY	MAXIMUM OVERCURRENT PROTECTION	DISCONNECT(S)		CONTROLLER STARTER(S)	SCCR	NO. OF AUXILIARY CONNECTIONS	EAT °F	LAT °F	EWT °F	LWT °F		GPM	MBH	MAX. A.P.D. IN. W.C.	W.P.D. FEET HEAD	EAT DB °F	EAT WB °F	LAT DB °F	LAT WB °F	TOTAL MBH	MAX. A.P.D. IN. W.C.	SAT SUC °F	REFRIGERANT	CIRCUITING	CFM					TYPE	FACE VELOCITY	PRESSURE DROP	LENGTH	WIDTH	HEIGHT	WEIGHT (LBS)
LUA-AHU	LUA	3	9450	4060	2.5	DD PLENUM	2021	3.46	4.83	2750	1	208	3	10.6	35.3	45	MFR/EC	BY (NOTE A)	TYPE (NOTE B)	MFR	ECM	100000	0	44.0	81.0	180	152	27.0	370	0.16	1.9	82.7	69.0	64.0	59.4	307	0.24	45.0	R-32	INTERTWINED	9450	MERV 8	407	0.6	0.2	68	110	84	3669	DAIKIN APPLIED	CAH	NOTE 1, 2, 3

CONDENSING UNIT SCHEDULE - OWNER PURCHASED, CONTRACTOR INSTALLED

NOTES:
1.REFER TO SPECIFICATION SECTION 23 62 13 FOR ADDITIONAL REQUIREMENTS.
2. CONTRACTOR SHALL RECEIVE, UNLOAD, AND INSTALL CONDENSING UNIT. COORDINATE WITH OWNER ON SHIPPING DATE.
3. INSTALL FC2 FLEXIBLE CONNECTIONS PER 23 05 48 FOR PIPE CONNECTIONS TO CONDENSING UNIT.
4. CONDENSING UNIT WILL HAVE VARIABLE SPEED COMPRESSOR ON FIRST COMPRESSOR AND FIXED SPEED COMPRESSOR ON SECOND COMPRESSOR. CAPACITY CONTROL SHALL BE 4 STEP WITH 25% TURN DOWN.
5. CONDENSING UNIT SUPPLIER WILL PROVIDE STARTUP OF CONDENSING UNIT AND FINAL TRIP OF THE REFRIGERANT CHARGE.

TAG NAME	AREA SERVED	NOMINAL DESIGN TONS	REFRIGERANT	MAX. REFRIGERANT CHARGE	SATURATED SUCTION °F	AMBIENT TEMP °F	MIN. AMBIENT TEMP. °F	NUMBER OF COMPRESSORS	NUMBER OF STAGES (NOTE 4)	NUMBER OF CIRCUITS	NUMBER OF FANS	MAXIMUM ALLOWABLE SOUND POWER IN DB RE 10 ⁻¹² WATTS OCTAVE BAND CENTER FREQUENCY							ELECTRICAL					MAX. DIMENSIONS			WEIGHT																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																										
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FAN SCHEDULE

NOTES:
1.PROVIDE SHAFT GROUNDING AS REQUIRED IN THE MOTOR SPECIFICATION 23 05 13.
2. REFER TO 23 05 48 FOR VIBRATION ISOLATOR DESCRIPTION.
3. FAN CONSTRUCTION SHALL ALLOW FOR DISASSEMBLY AND REASSEMBLY. PINCH POINT FOR MOVEMENT OF EQUIPMENT IS 33-34". CONTRACTOR SHALL FIELD VERIFY PRIOR TO ORDERING FAN.
4. PROVIDE PIEZOMETER AIRFLOW MEASURING PORTS.
5. FAN ROTATION SHALL BE CW AND FAN DISCHARGE SHALL BE TAU.

TAG NAME	AREA SERVED	CFM	S.P. IN. W.C.	FAN CLASS	WHEEL DIA. INCHES	FAN RPM (NOTE F)	DRIVE TYPE	MAX. AMCA SONES	ELECTRICAL								WEIGHT	VIBRATION ISOLATION		MANUFACTURER	MODEL	NOTES
									BHP (NOTE E)	MHP (NOTE E)	VOLTAGE	PHASES	DISCONNECT		CONTROLLER/ STARTER							
													BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)						
LUA-RF	LUA	7200	1.00	I	30	638	BELT	14	1.67	2	208	3	EC	VFD	EC	VFD	673	B1 OR B2 AND M3	0.75"	GREENHECK	USF-30	NOTES 1, 2, 3, 4, 5

MOTOR OPERATED DAMPER SCHEDULE

NOTES:
1.COORDINATE DAMPER ACTUATOR LOCATION AND MOUNTING REQUIREMENTS WITH TEMPERATURE CONTROL CONTRACTOR.

TAG NAME	AREA SERVED	SIZE		CFM		BLADE CONFIGURATION	BLADE ORIENTATION	INSULATED	ACTUATOR TYPE (NOTE 1)	ACTUATOR POSITION	POWER FAILURE POSITION	POSITIVE POSITION FEEDBACK REQUIRED	NOTES
		WIDTH	HEIGHT	MAX.	MIN.								
MOD-1	RF-1 RELIEF AIR	34	22	7200	0	OPPOSED	HORIZONTAL	No	ELECTRIC	PROPORTIONAL	NORMALLY CLOSED (NC)	No	

PUMP SCHEDULE

NOTES:
1.INSTALL FC1 OR FC2 AT HEATING WATER PIPING CONNECTED TO PUMP.

TAG NAME	AREA SERVED	GPM	PUMP FT. HEAD AT DESIGN	MINIMUM PUMP EFFICIENCY	INLET SIZE	IMPELLER SIZE	ELECTRICAL								MANUFACTURER	MODEL	NOTES
							HP (NOTE E)	RPM	VOLTAGE	PHASES	DISCONNECT		CONTROLLER/ STARTER				
											BY (NOTE A)	TYPE (NOTE B)	BY (NOTE A)	TYPE (NOTE C)			
P-1	HEATING COIL	27.0	12.00	63	1 1/4"	3.750	0.25	1725	120	1	EC	NF	TCC	FV	BELL & GOSSETT	E-90 1.25AA	NOTE 1

DUCTWORK APPLICATION SCHEDULE

NOTES:
1. REFER TO THE SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.
2. REFER TO DRAWINGS FOR THE SHAPE OF DUCTWORK.
3. THE APPLICATION COLUMN, AS NOTED BELOW, SHALL TAKE PRECEDENCE OVER THE DRAWINGS UNLESS OTHERWISE NOTED.

ABBR.	SYSTEM	APPLICATION	MATERIAL	PRESS. CLASS	SEAL CLASS	ADDITIONAL REQUIREMENTS	TYPE	THICK	PLACE	NOTES
OA	OUTSIDE AIR	FROM OUTSIDE AIR LOUVER TO AIR HANDLING UNIT	SINGLE WALL, GALVANIZED STEEL	NEG. 2"	A	NONE	B (FibGla)	1 1/2"	WRAP	
RA	RETURN AIR	FROM RETURN FAN TO AIR TERMINAL AND FROM FAN TO AHU	SINGLE WALL, GALVANIZED STEEL	NEG. 2"	A	NONE	NONE	-	-	
RE	RELIEF AIR	FROM RELIEF DAMPER TO RELIEF AIR LOUVER	SINGLE WALL, GALVANIZED STEEL	POS. 2"	A	NONE	B (FibGla)	1 1/2"	WRAP	
SA	SUPPLY AIR	FROM SUPPLY FAN TO TERMINAL EQUIPMENT	SINGLE WALL, GALVANIZED STEEL	POS. 3"	A	NONE	A (FibGla)	1 1/2"	WRAP	

PIPE INSULATION SCHEDULE (HVAC)

GENERAL NOTES:
1. REFER TO THE SPECIFICATIONS FOR TYPE DESCRIPTIONS AND JACKETING REQUIREMENTS.
2. TYPE B INSULATION GREATER THAN 1" THICK SHALL BE INSTALLED USING MULTIPLE LAYERS OF 3/4" OR 1" WITH STAGGERED SEAMS.
3. PROVIDE RIGID INSERT AT HANGERS, EITHER PRE-MANUFACTURED COUPLINGS (REFER TO PIPE HANGER AND SUPPORTS SPECIFICATIONS) OR TYPE C OR D INSULATION. SEE SPEC. FOR MORE DETAILS.

SYMBOL	PIPE SYSTEM	INSULATION TYPE	INSULATION THICKNESS PER NOMINAL PIPE OR TUBE SIZE			NOTES
			< 1"	1" TO < 1.5"	1.5" TO < 4"	
23 PIPING - COOLING WATER						
DPP	DRAIN - PIPING	B (Elasto)	1/2"	1/2"	1"	
23 PIPING - HEATING WATER						
HWR	HEATING WATER RETURN	A (GlsFbr)	1 1/2"	1 1/2"	2"	
HWS	HEATING WATER SUPPLY	A (GlsFbr)	1 1/2"	1 1/2"	2"	
23 PIPING - REFRIGERANT						
LIQ	REFRIGERANT LIQUID	B (Elasto)	1"	1"	1 1/2"	
REF	REFRIGERANT	B (Elasto)	1/2"	1"	1"	
SUC	REFRIGERANT SUCTION	B (Elasto)	1/2"	1"	1"	

SCHEDULE GENERAL NOTES:

A. DISCONNECT AND CONTROLLER STARTER FURNISHED AND INSTALLED BY:
MFR = MANUFACTURER
EC = ELECTRICAL CONTRACTOR
MC = FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR.
MFR/EC = FURNISHED LOOSE BY MANUFACTURER INSTALLED BY ELECTRICAL CONTRACTOR.
TCC = TEMPERATURE CONTROL CONTRACTOR

B. DISCONNECT TYPE:
CB = CIRCUIT BREAKER
F = FUSED
NF = NON-FUSED
PLUG = PLUG AND CORD

C. CONTROLLER STARTER TYPE:
FV = FULL VOLTAGE
WYE = WYE-DELTA
SS = SOLID STATE (SOFT START)
MS = MANUAL STARTER
VFD = VARIABLE FREQUENCY DRIVE
VFD/B = VARIABLE FREQUENCY DRIVE WITH BYPASS
YD = WYE - DELTA
ECM = ELECTRONICALLY COMMUTATED MOTOR

D. FAN RPM SHALL NOT EXCEED 110% OF SCHEDULED VALUE. WITH THE SCHEDULED WHEEL TYPE. SUBSTITUTION OF BI OR BIA FANS FOR FC IS ACCEPTABLE IF EFFICIENCY IS NOT LOWER.

E. NO EQUIPMENT SHALL BE SELECTED ABOVE 90% OF MOTOR NAME PLATE RATING.

F. MUST BE WITHIN +/- 10% OF SCHEDULED RPM.

9451.00 DOC ASP LUA
A/C Replacement

406 N High St
Anamosa, Iowa 52205

IOWA DEPARTMENT OF
ADMINISTRATIVE
SERVICE

IMEG
The Future. Full. Smarter.
2882 106TH STREET
DES MOINES, IA 50322
P: 515.334.9906 F: 515.334.9908

PROFESSIONAL SEAL

KEY PLAN

CONSTRUCTION MANAGER
MCGOUGH CONSTRUCTION
217 E 2ND ST SUITE 120
DES MOINES, IA 50309

AGENCY APPROVAL

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0 1 2 3
REF. SCALE IN INCHES PROJECT #24006748.00

REVISIONS

No. Date Revision / Issue

SHEET INFORMATION

Issue **BID DOCUMENTS**
Date **2/28/2025**
Project # **24006748.00**
Drawn **MIKMCC**
Checked **PETERN**
Approved **MIKMCC**

SHEET TITLE

HVAC SCHEDULES

SCALE

Scale:

SHEET NUMBER

M600

NAME

LEVEL NAME

HEIGHT ABOVE PROJECT 0'-0"

1

KEYNOTE: INDICATES NOTE USED TO DESCRIBE ADDITIONAL INFORMATION ABOUT WORK REQUIRED, SPECIFIC TO THE SHEET AND/OR DETAIL

INDICATES DIRECTION OF TRUE NORTH

PLAN OR DETAIL NUMBER

PLAN OR DETAIL NAME

1

VIEW NAME

1/8" = 1'-0"

PLAN OR DETAIL SCALE

SIM

INDICATES SIMILAR DETAIL REFERENCED IN MULTIPLE LOCATIONS

DETAIL REFERRED TO BY SECTION CUT

1

M101

SHEET DETAIL IS LOCATED ON

T101

LINE TYPE AND TAG KEY:

NEW WORK BY THIS CONTRACTOR (WIDE LINE)

NEW

EXISTING TO BE REMOVED (SHORT DASHED PATTERN)

NEW UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

EXISTING TO REMAIN OR WORK BY OTHERS (NARROW LINE)

EXISTING

EXISTING TO BE REMOVED BY OTHERS (SHORT DASHED PATTERN)

EXISTING UNDERFLOOR OR UNDERGROUND (LONG DASHED PATTERN)

HALFTONING DOES NOT MODIFY SCOPE.

'TAG'-E TAGS WITH DASH 'E' INDICATES THE REFERENCED OBJECT IS EXISTING

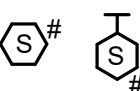
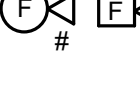
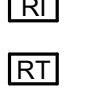
TAG-1 UNDERLINED TAG INDICATES OBJECT IS IN-SCOPE. IF NEW, ADDITIONAL INFORMATION IS AVAILABLE IN A SCHEDULE, MATERIAL LIST, OR SYMBOL LIST

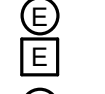
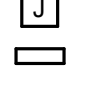
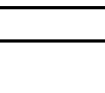
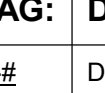
INDICATES AN EXISTING SYSTEM'S POINT OF CONNECTION/REMOVAL

CONTRACTOR ABBREVIATION KEY

ABBR:	DESCRIPTION:
C.M.	CONSTRUCTION MANAGER
E.C.	ELECTRICAL CONTRACTOR
G.C.	GENERAL CONTRACTOR
M.C.	MECHANICAL CONTRACTOR
P.C.	PLUMBING CONTRACTOR
T.C.C.	TEMPERATURE CONTROLS CONTRACTOR
V.C.	VENTILATION CONTRACTOR

ABBR:	DESCRIPTION:
ABV	ABOVE
AFF	ABOVE FINISHED FLOOR
C	CONDUIT (BRANCH CIRCUIT OR FEEDER CONTEXT)
EGC	EQUIPMENT GROUNDING CONDUCTOR
NC	NORMALLY CLOSED
NEMA #	NEMA RATING
NIC	NOT IN CONTRACTED SCOPE
ROOF	EQUIPMENT LOCATED ON ROOF ABOVE
SM	SURFACE MOUNTED
TYP	TYPICAL
UON	UNLESS OTHERWISE NOTED

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
COMMON AND SEQUENCE OF OPERATION SUBSCRIPTS			SUBSCRIPTS: TYPE / PROGRAMMING
			D = HVAC CONTROL # = 15, 30, 75, 110, 177 CANDELA RATING CD = CANDELA RATING SELECTED BY NICET DESIGNER
	FA-CP-#	EXISTING	FIRE ALARM CONTROL PANEL
	FA-120	28 31 00	FIRE ALARM SMOKE DETECTOR, CEILING OR WALL MOUNT
	FA-122	28 31 00	BLANK - PHOTOELECTRIC FIRE ALARM DUCT SMOKE DETECTOR
	FA-140	28 31 00	BLANK - PHOTOELECTRIC FIRE ALARM HEAT DETECTOR
	FA-210	28 31 00	AUDIO HORN/CHIME ALARM DEVICE, CEILING OR WALL MOUNTED
	FA-211	28 31 00	M = MINI-HORN S = SLEEPING / PATIENT ROOM FIRE ALARM REMOTE INDICATOR
	FA-242	28 31 00	FIRE ALARM REMOTE INDICATOR W/ TEST SWITCH
	FA-161	28 31 00	FIRE ALARM ADDRESSABLE CONTROL MODULE
	FA-250	28 31 00	BLANK = REFER TO PLANS FIRE ALARM SMOKE OR FIRE/SMOKE DAMPER CONTROL WITH DETECTOR, AND ADDRESSABLE MODULE, AND REMOTE INDICATOR (WITH TEST SWITCH WHEN APPLICABLE)
			# = INDICATES EQUIP OR SYSTEM

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
	ECONN	26 05 33	ELECTRICAL CONNECTION
	JB	26 05 33	JUNCTION BOX
	PANEL ####	EXISTING	PANELBOARD - SURFACE MOUNT
	MX-#	26 24 19	MANUAL SWITCH. REFER TO DISC/STA SCHEDULE
	SW-1P	26 09 33	SWITCH SUBSCRIPTS: BLANK = SINGLE POLE

TAG:	DESCRIPTION:	RELATED SPECIFICATION
DP-#	DISTRIBUTION PANEL	26 24 16
HT-#	HEAT TAPE	26 05 17
MCC-#	MOTOR CONTROL CENTER, REFER TO MOTOR CONTROL SCHEDULE	26 14 19
SPD-#	SURGE PROTECTION DEVICE	26 43 00
VFD-#	VARIABLE FREQUENCY DRIVE - REFER TO VFD SCHEDULE	26 29 23

RECEPTACLE SUBSCRIPT KEY:

DEVICE KEY:

= MOUNTING (IF APPLICABLE)

1 = CIRCUIT NUMBER

*IF LABEL IS ORIENTED HORIZONTALLY A SLASH WILL SEPARATE THIS INFORMATION. EX: A / 1

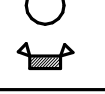
ELECTRICAL MOUNTING SUBSCRIPT KEY:

A MOUNT AT +6" TO CENTERLINE ABOVE COUNTER OR BACKSPLASH

C MOUNT AT CEILING (DEVICE OR ROUGH-IN CONTEXT)

S SURFACE MOUNTED

W WEATHERPROOF WIRING DEVICE, NEMA 3R WHILE-IN-USE COVER, WR LISTED

SYMBOL:	TAG:	SPEC SECTION:	DESCRIPTION:
	REFER TO LUMINAIRE SCHEDULE		DOWNLIGHT LUMINAIRE EMERGENCY UNIT

CONDUIT INSTALLATION SCHEDULE			
THE FOLLOWING SCHEDULE SHALL BE ADHERED TO UNLESS THEY CONSTITUTE A VIOLATION OF APPLICABLE CODES OR ARE NOTED OTHERWISE ON THE DRAWINGS. THE INSTALLATION OF RMC CONDUIT WILL BE PERMITTED IN PLACE OF ALL CONDUIT SPECIFIED IN THIS SCHEDULE. REFER TO CONDUIT AND BOXES SPECIFICATION 26 05 33 FOR ADDITIONAL INFORMATION.			
INSTALLATION TYPE	RMC	EMT	PVC
FEEDERS: SWITCHBOARDS, DISTRIBUTION PANELS, PANELBOARDS, MOTOR CONTROL CENTERS, ETC.		X	
BRANCH CIRCUITS: LIGHTING, RECEPTACLES, CONTROLS, ETC.		X	
MECHANICAL EQUIPMENT FEEDERS: PUMPS, CHILLERS, AIR HANDLING UNITS, ETC.		X	
FLOOR MOUNTED EQUIPMENT FEEDERS: PUMPS, ETC. (INCLUDE NO MORE THAN 6 FEET OF LFMC TO PUMP)		X	
CONTROLS (LIGHTING, POWER, BUILDING AUTOMATION, ETC.)		X	
WET AND DAMP LOCATIONS: (CONDUIT, BOXES, FITTINGS, INSTALLED AND EQUIPPED TO PREVENT WATER ENTRY)	X		
INTERIOR LOCATIONS WITH FINISHED CEILING AND WALLS: CONCEALED IN WALLS AND ABOVE FINISHED CEILINGS		X	
INTERIOR LOCATIONS WITHOUT FINISHED CEILINGS: CONCEALED IN WALL, EXPOSED ABOVE CEILINGS		X	
EXISTING INTERIOR LOCATIONS WITH FINISHED CEILINGS AND WALLS: CONCEALED IN WALLS AND ABOVE FINISHED CEILING UNLESS OTHERWISE NOTED		X	
UNDERGROUND (IN OR UNDER SLABS ON GRADE)	X		X

The diagram illustrates the Fire Alarm Riser (FACP-E) connections. It shows a central riser with four main branches: 1. Notification Appliance Circuit (NAC) with a bell symbol and a '4' in a circle. 2. Signal Line Circuit (SLC) with a bell symbol and a '2' in a circle. 3. HVAC Unit Shutdown (TYPICAL) with a bell symbol and a 'CM' in a circle. 4. A branch to a fire alarm control panel (FACP-E) with a bell symbol and a '1' in a circle. The diagram also shows a 'NOTIFICATION APPLIANCE CIRCUIT (NAC)' and a 'SIGNAL LINE CIRCUIT (SLC)' with their respective symbols and circuit numbers.

1 FIRE ALARM RISER

NO SCALE

NOTES:

- THE RISER DIAGRAM IS INTENDED TO CONVEY THE TYPES OF FIRE ALARM CONNECTIONS AND SPECIFICALLY DOES NOT INDICATE QUANTITIES, NUMBER OF CIRCUITS REQUIRED OR DISTANCES.
- THE COMPLETE FIRE ALARM SYSTEM SHALL MEET ALL APPLICABLE CODES AND MANUFACTURER'S RECOMMENDATIONS.
- CONTRACTOR SHALL COORDINATE ALL WIRE SIZES, TYPES AND REQUIREMENTS WITH THE VENDOR PRIOR TO BID. REFER TO SPECIFICATIONS TO DETERMINE CIRCUIT STYLES AND IF CONDUIT IS REQUIRED OR PLENUM RATED CABLE IS ACCEPTABLE.
- ALL +120VAC WIRING REQUIRED FOR OPERATION OF THE SYSTEM AS DESCRIBED IN THE CONSTRUCTION DOCUMENTS SHALL BE PROVIDED BY THE ELECTRICAL CONTRACTOR.
- ALL NECESSARY RELAYS MAY NOT BE SHOWN ON THIS PLAN, BUT WHERE REQUIRED FOR PROPER OPERATION OF THE SYSTEM THEY SHALL BE PROVIDED BY THE CONTRACTOR.

KEYNOTES:

- REPRESENTATIVE OF PROGRAMMABLE I/O POINTS IN THE PANEL OR A GENERAL SYSTEM TROUBLE/ALARM CONTACT CONNECTED TO THE SYSTEM NOTED. REFER TO SPECIFICATIONS FOR MORE INFORMATION.
- REFER TO SPECIFICATION FOR REQUIREMENTS OF EACH INITIATION LOOP AND WIRING STYLE. REFER TO FLOOR PLANS FOR DEVICES AND THEIR LOCATIONS.
- REFER TO SPECIFICATION FOR REQUIREMENTS OF EACH NOTIFICATION APPLIANCE CIRCUIT AND WIRING STYLE. REFER TO FLOOR PLANS FOR DEVICES AND THEIR LOCATIONS.
- PROVIDE NOTIFICATION APPLIANCE EXTENDER PANELS AS REQUIRED. DETERMINATION OF NEED TO BE MADE BY FIRE ALARM VENDOR. REFER TO SPECIFICATIONS FOR REQUIREMENTS AND ACCEPTABLE MOUNTING LOCATIONS.

ELECTRICAL RENOVATION NOTES:

THESE NOTES APPLY TO ALL ELECTRICAL SHEETS AND TRADES, INCLUDING BUT NOT LIMITED TO, LIGHTING, POWER, FIRE ALARM, AND OTHER LOW VOLTAGE SYSTEMS.

- EXISTING CONDITIONS ARE SHOWN BASED ON INFORMATION OBTAINED FROM FIELD SURVEYS, EXISTING BUILDING DOCUMENTS. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS.
- NOT ALL EXISTING EQUIPMENT, LUMINAIRES, AND CONDUIT ARE SHOWN. CONTRACTOR SHALL REVIEW EXISTING CONDITIONS AND REPORT CONFLICTS.
- CONTRACTOR SHALL REVIEW EXISTING CONDITIONS PRIOR TO FABRICATION OF CABLE TRAY, BUSWAY, CONDUIT RACKS, AND OTHER SYSTEMS. RISES AND DROPS MAY BE NECESSARY BECAUSE OF EXISTING FIELD CONDITIONS.
- ELECTRICAL CONTRACTOR SHALL REVIEW EXISTING CONDITIONS TO VERIFY ACCESSIBILITY TO THE AREAS OF THEIR WORK INCLUDING WALLS, FLOOR, CEILINGS, CEILING TILE/GRID, AND ROOF. ELECTRICAL CONTRACTOR IS RESPONSIBLE TO PROVIDE CUTTING, REMOVAL, PATCHING, AND REINSTALLATION OF AFFECTED AREAS ASSOCIATED WITH THEIR WORK BY COORDINATING WITH THE GENERAL CONTRACTOR OR QUALIFIED CONTRACTOR.
- WHERE EXISTING ELECTRICAL SYSTEMS ARE LOCATED IN AREAS THAT CONFLICT WITH NEW EQUIPMENT, PIPING, OR DUCTWORK TO BE INSTALLED, EACH CONTRACTOR SHALL EITHER ARRANGE NEW EQUIPMENT, CONDUIT, OR DUCTWORK IN SUCH A FASHION THAT IT DOES NOT CONFLICT WITH EXISTING SYSTEMS, OR REWORK EXISTING ELECTRICAL SYSTEMS TO ALLOW FOR INSTALLATION OF NEW EQUIPMENT, PIPING, OR DUCTWORK.

ELECTRICAL INSTALLATION NOTES:

- CIRCUIT NUMBERS ARE SHOWN FOR CIRCUIT IDENTIFICATION. CIRCUITING SHALL AGREE WITH NUMBERING ON THE PANEL PROVIDED. COMMON NEUTRALS MAY NOT BE USED FOR BRANCH CIRCUITS. BALANCE THE LOAD ON PANEL AS EVENLY AS POSSIBLE BETWEEN EACH PHASE.
- FLUSH MOUNT ALL LIGHTING CONTROL DEVICES AT +42" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED.
- FLUSH MOUNT ALL DUPLEX RECEPTACLES AT +18" FROM FLOOR (CENTERLINE DIMENSION), EXCEPT WHERE OTHERWISE NOTED. RECEPTACLES AND OUTLETS MAY BE SURFACE MOUNTED WHEN CONDUIT IS SPECIFIED EXPOSED. MOUNT EXTERIOR LOCATED RECEPTACLES WITH WHILE-IN-USE COVERS AT +20" FROM FINISHED GRADE (CENTER DIMENSIONS) TO MAINTAIN INSTALLATION ADA COMPLIANCE.
- ALL MATERIALS USED TO SEAL PENETRATIONS OF FIRE RATED WALLS AND FLOORS SHALL BE TESTED AND CERTIFIED AS A SYSTEM PER ASTM E814 STANDARDS FOR FIRE TESTS OF THROUGH-PENETRATION FIRESTOPS. REFER TO DIVISION 7 FOR ADDITIONAL INFORMATION AND REQUIREMENTS SPECIFIC TO FIRESTOPPING.
- CONNECTION FOR ELECTRIC WATER COOLERS (EWC) SHALL BE A JUNCTION BOX CONCEALED BEHIND WATER COOLER ACCESS PLATE OR BE A GFI RECEPTACLE LOCATED DIRECTLY BELOW AND CENTERED ON EWC. CONTRACTOR SHALL VERIFY TYPE OF EWC TO BE INSTALLED.
- MOUNT ALL FIRE ALARM PANEL STATIONS AT +42" FROM FLOOR (CENTERLINE DIMENSION) EXCEPT WHERE OTHERWISE NOTED.
- INSTALL ALL WALL MOUNTED FIRE ALARM NOTIFICATION DEVICES AT 90" ABOVE FINISHED FLOOR OR 6" BELOW THE CEILING, WHICHEVER IS LOWER, EXCEPT WHERE OTHERWISE NOTED. HEIGHT SHALL BE MEASURED TO THE TOP OF THE DEVICE.
- CONTRACTOR SHALL COORDINATE THE LOCATION OF ALL CEILING MOUNTED DEVICES AND EQUIPMENT WITH LUMINAIRES, SPRINKLER, AND CEILING DIFFUSERS. CENTER ALL DEVICES IN CEILING TILE PATTERN. SMOKE DETECTORS, CARBON MONOXIDE DETECTORS, AND OCCUPANCY/VACANCY SENSORS SHALL BE LOCATED NO CLOSER THAN 3 FEET TO AN AIR SUPPLY DIFFUSER OR RETURN GRILLE. CARBON MONOXIDE DETECTORS SHALL BE LOCATED 10 PLUS FT FROM FIRE PLACES, COOKING, AND SIMILAR FUEL-BURNING APPLIANCES.
- CONTRACTOR SHALL VERIFY ALL FURNITURE, MODULAR FURNITURE, AND EQUIPMENT LOCATIONS WITH ARCHITECTURAL PLANS, ELEVATIONS, AND REVIEWED SHOP DRAWINGS. PRIOR TO MAKING THE ACTUAL ELECTRICAL INSTALLATION, THIS CONTRACTOR SHALL ADJUST RECEPTACLES, OUTLETS, OR CONNECTION LOCATIONS TO ACCOMMODATE FURNITURE AND/OR EQUIPMENT.
- ELECTRICAL AND TECHNOLOGY EQUIPMENT SHALL BE MOUNTED TO AVOID IMPEDANCE OF OPERATION OF, AND/OR ACCESS TO ELECTRICAL AND MECHANICAL EQUIPMENT. ALL MOUNTING OF ELECTRICAL AND TELECOMMUNICATIONS EQUIPMENT, ON EQUIPMENT SUPPLIED BY ANOTHER CONTRACTOR, SHALL BE APPROVED IN ADVANCE BY THE OTHER CONTRACTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL OPENINGS REQUIRED IN WALLS. ALL OPENINGS SHALL BE REPAIRED TO MATCH EXISTING BY A QUALIFIED CONTRACTOR AT THE EXPENSE OF THIS CONTRACTOR. ALL CONDUITS THROUGH WALLS SHALL BE GROUTED OR SEALED INTO OPENINGS.
- EACH CONTRACTOR IS RESPONSIBLE FOR DAMAGE CAUSED BY THEIR ACTIONS TO THE WALLS, FLOORS, CEILINGS, AND ROOFS. THE CONTRACTOR WHOSE WORK CAUSES DAMAGE IS RESPONSIBLE FOR PATCHING TO MATCH ORIGINAL CONSTRUCTION, FIRE RATING, AND FINISH.
- REFER TO ARCHITECTURAL REFLECTED CEILING PLAN, ELECTRICAL, TECHNOLOGY AUDIO/VISUAL, AND OTHER ELECTRICAL PLANS FOR EXACT LOCATIONS OF ALL CEILING MOUNTED DEVICES, OTHER THAN SPRINKLERS.
- ELECTRICAL IDENTIFICATION. REFER TO SPECIFICATION SECTION 26 05 53 FOR COLOR/LABEL REQUIREMENTS FOR CONDUIT, BOX, CABLE/WIRE, AND EQUIPMENT.

ELECTRICAL SHEET INDEX	
E000	ELECTRICAL COVERSHEET
E203	THIRD FLOOR PLAN - ELECTRICAL
E400	ELECTRICAL DETAILS AND SCHEDULES
GRAND TOTAL: 3	

SYSTEM INPUTS	SEQUENCE OF OPERATION					
	PANEL/ANNUNCIATOR ALARM INDICATION	PANEL/ANNUNCIATOR SUPERVISORY INDICATION	PANEL/ANNUNCIATOR TROUBLE INDICATION	AUDIBLE ALARMS SEQUENCE	VISUAL ALARMS SEQUENCE	AHU & MECHANICAL FAN SHUTDOWN SEQUENCE
FIRE ALARM PANEL, TRANSPONDER, NAC PANEL LOW BATTERY	X					
FIRE ALARM PANEL, TRANSPONDER, NAC PANEL BATTERY OR CHARGER FAILURE		X				
FIRE ALARM PANEL, TRANSPONDER, NAC PANEL ABNORMAL SWITCH OR CONTROL POSITION.	X					
FIRE ALARM PANEL, TRANSPONDER, NAC PANEL GROUND FAULT, OPEN CIRCUIT, SHORT CIRCUIT			X			
FIRE ALARM PANEL, TRANSPONDER, NAC PANEL AC POWER LOSS OR IRREGULARITY			X			
NOTIFICATION APPLIANCE CIRCUIT OR SLC LOOP GROUND FAULT, OPEN CIRCUIT, SHORT CIRCUIT			X			
INITIATING DEVICE FAILURE OR COMMUNICATION ERROR			X			
FIRE ALARM PANEL MANUAL FIRE DRILL	X			X	X	
MANUAL PULL STATION	F	X		X	X	
SMOKE DETECTOR	S #_	X		X	X	
HEAT DETECTOR	H #_	X		X	X	
SMOKE DETECTOR FOR HVAC CONTROL	S		X			X

NOTES:

- ALL SYSTEM EVENTS SHALL BE LOGGED, AND DISPLAYED ON THE ANNUNCIATOR INTERFACE, IF APPLICABLE. SEE SPECIFICATIONS FOR MORE INFORMATION AND DESCRIPTIONS OF SEQUENCES OF OPERATION.

2 FIRE ALARM OPERATION MATRIX

NO SCALE

9451.00 DOC ASP LUA
A/C Replacement

406 N High St
Anamosa, Iowa 52205

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PROFESSIONAL SEAL

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AGENCY APPROVAL

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0 1 2 3
REF. SCALE IN INCHES PROJECT #24006748.00

REVISIONS

No. Date Revision / Issue

SHEET INFORMATION

Issue BID DOCUMENTS

Date 2/28/2025

Project # 24006748.00

Drawn JKG

Checked KLS

Approved TED

SHEET TITLE

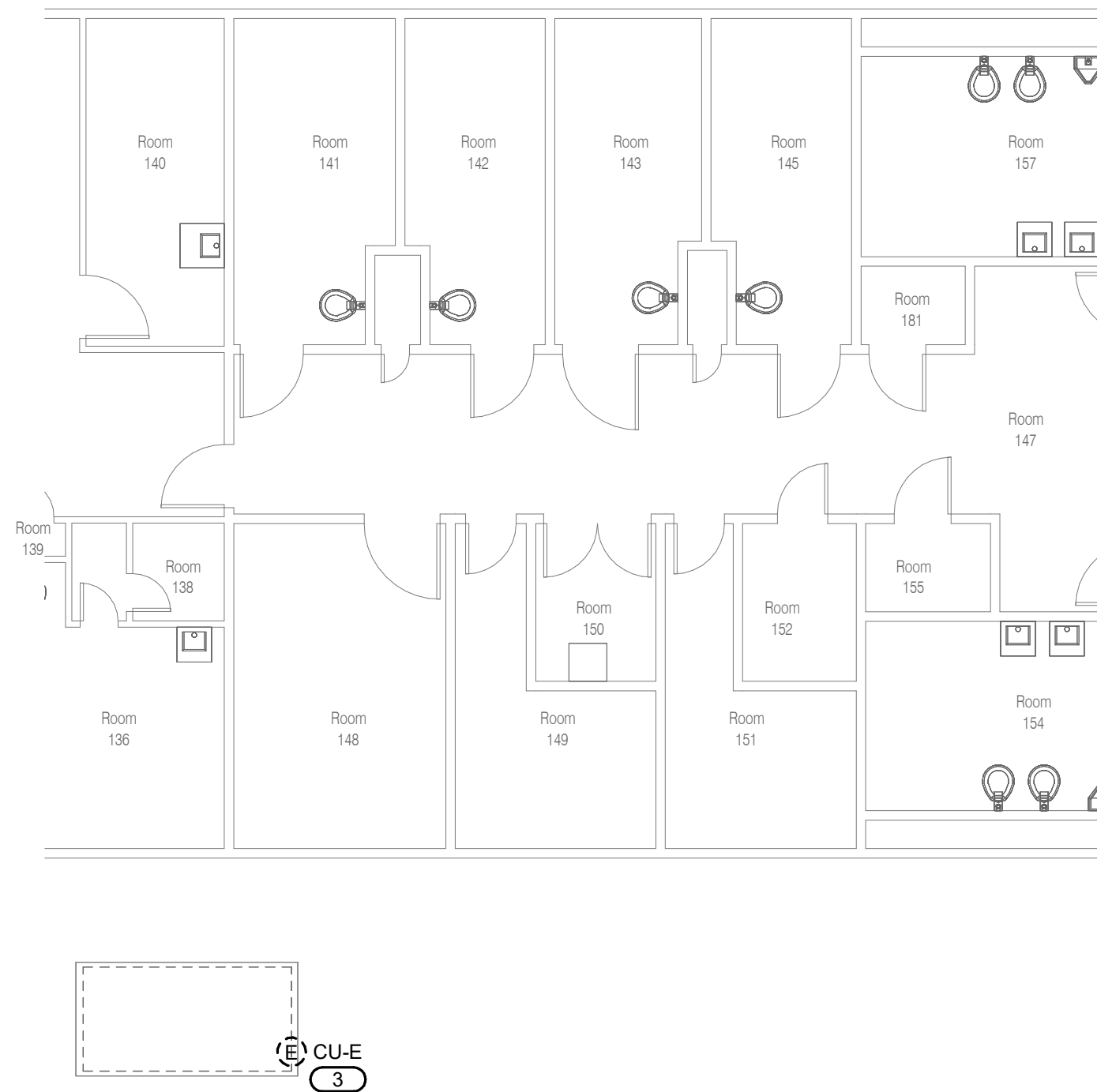
ELECTRICAL COVERSHEET

SCALE

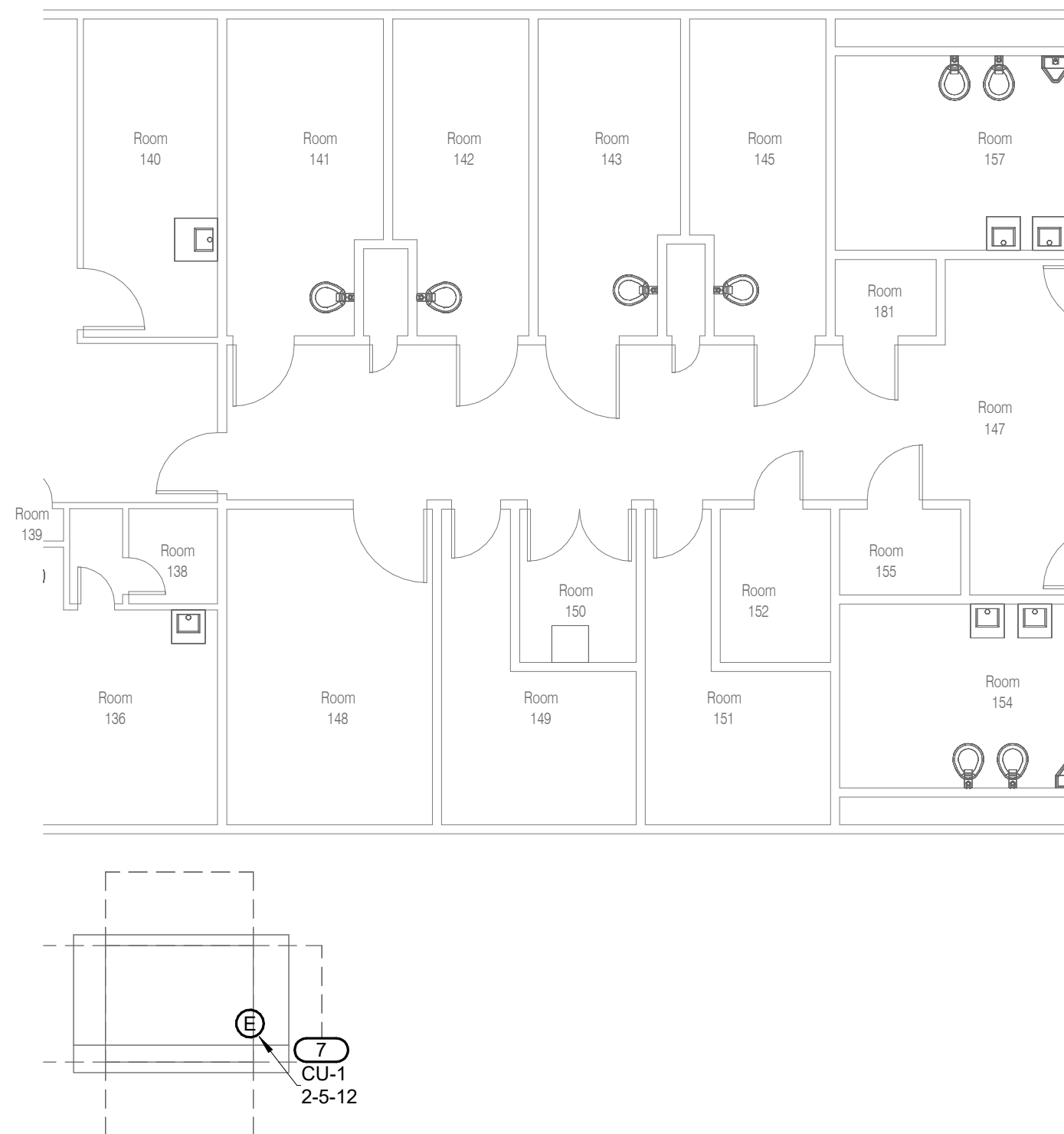
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SHEET NUMBER

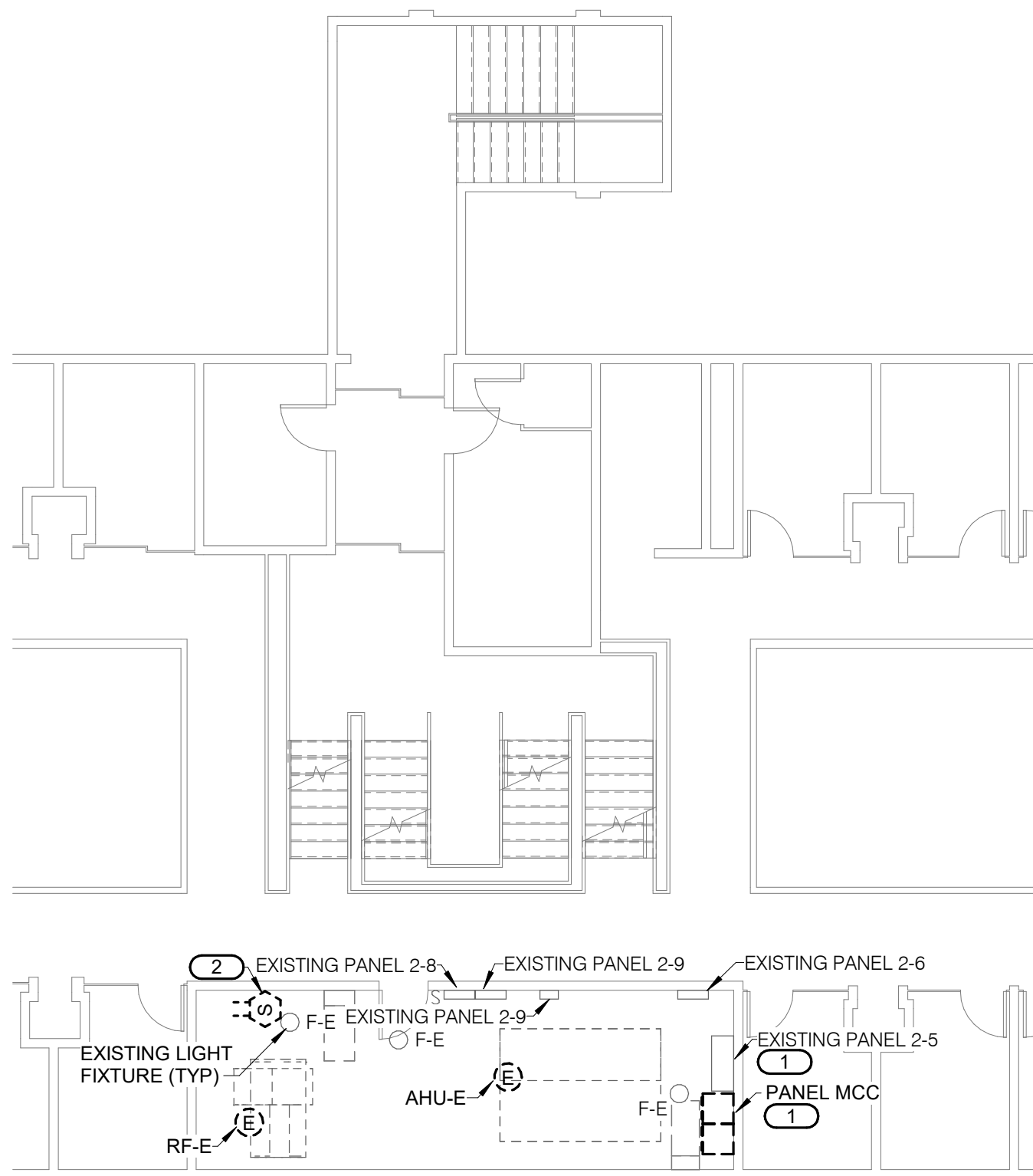
E000



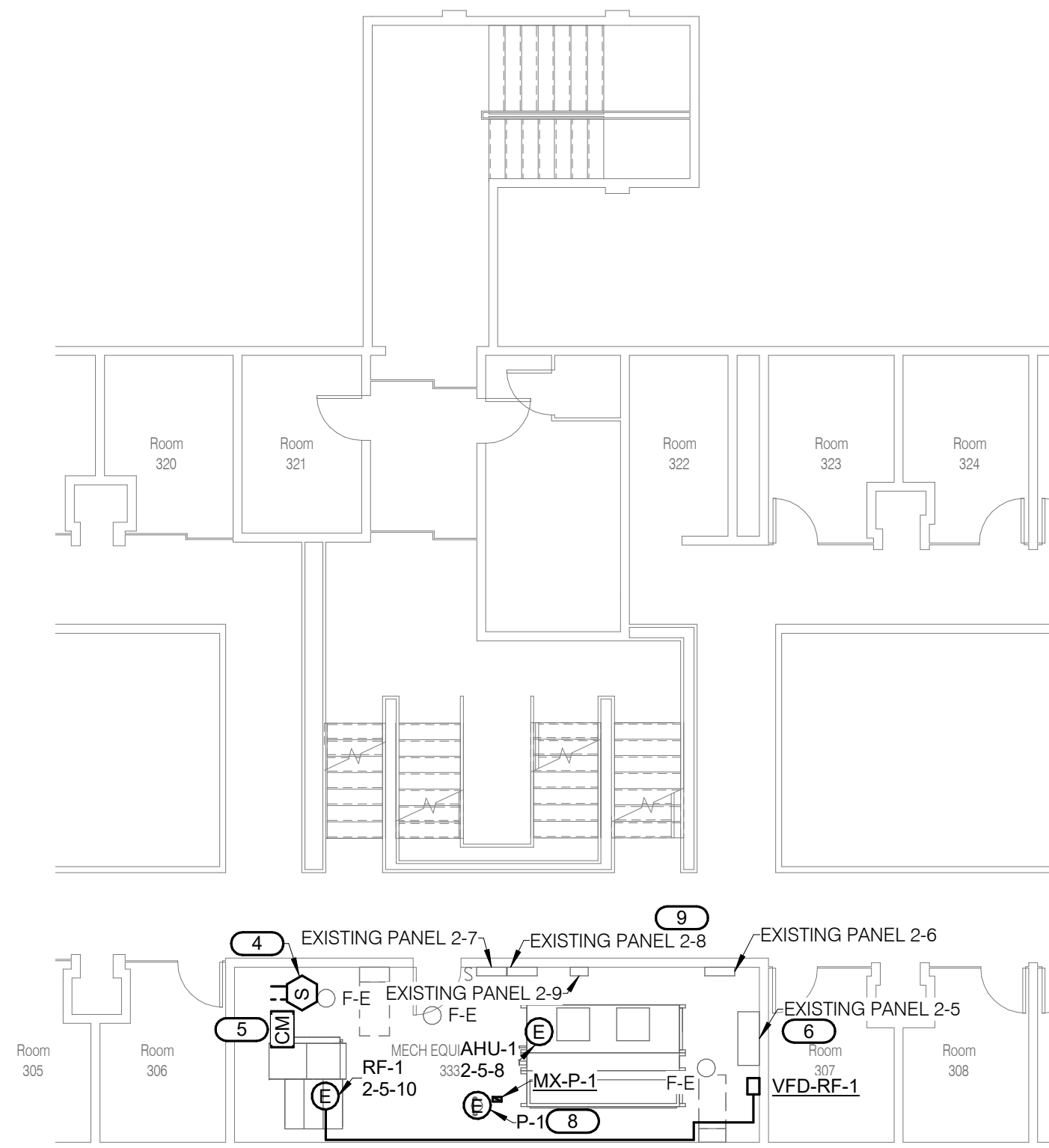
1 FIRST FLOOR DEMOLITION PLAN - ELECTRICAL
1/8" = 1'-0"



3 FIRST FLOOR PLAN - ELECTRICAL
1/8" = 1'-0"



2 THIRD FLOOR DEMOLITION PLAN - ELECTRICAL
1/8" = 1'-0"



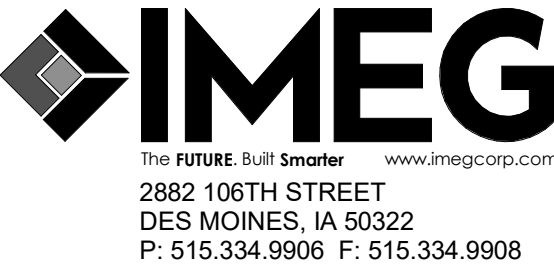
4 THIRD FLOOR PLAN - ELECTRICAL
1/8" = 1'-0"

- SHEET NOTES:**
1. NEW VFD FOR HVAC EQUIPMENT MUST BE ABLE TO FIT INTO THE SPACE VACATED BY THE MCC. MCC SPACE ROUGHLY 6FT TALL BY 3FT WIDE.
 2. SEE E400 FOR VFD AND PANEL SCHEDULES AND CONDUIT ROUTING DETAILS.
 3. DISCONNECT/STARTER PROVIDED BY MANUFACTURER, UNLESS OTHERWISE NOTED.
- KEYNOTES:**
1. DISCONNECT AND REMOVE MCC AND FEEDER BACK TO PANEL 2-5. BREAKER FEEDING MCC SHALL BE LEFT OFF AND MARKED SPARE.
 2. REMOVE DETECTOR AND VERIFY EXISTING FIRE ALARM CIRCUIT IS CONNECTED TO FIRE ALARM SYSTEM. PROVIDE NEW CIRCUIT AND CONNECT TO EXISTING FIRE ALARM SYSTEM.
 3. DISCONNECT CONDENSER UNIT 1 (CU-E) AND REMOVE FEEDER BACK TO SOURCE.
 4. MOUNT DUCT TYPE SMOKE DETECTOR IN RETURN DUCT.
 5. FIRE ALARM CONTROL MODULE FOR HVAC UNIT SHUTDOWN. INSTALL CONTROL MODULE AT FAN CONTROLLER.
 6. PROVIDE (1) NEW 225A/3P BREAKER, (1) NEW 45A/3P AND (1) NEW 20A/3P HASP LOCK BREAKER IN PANEL 2-5. BREAKERS TO MATCH EXISTING PANEL CHARACTERISTICS.
 7. EXTEND 3#4/0 & 1#4 EGC IN 2" C FROM NEW 225A/3P BREAKER TO NEW CONDENSER UNIT 1 (CU-1). SERVICE RECEPTACLE TO BE PROVIDED BY MANUFACTURER AS INTEGRAL TO UNIT.
 8. PROVIDE 2#12 & 1#12 EGC IN 3/4" C FROM NEW 20A/1P BREAKER IN CIRCUIT 41 OF PANEL 2-8 FOR FEED TO P-1.
 9. PROVIDE NEW 20A/1P BREAKER IN CIRCUIT 41 OF PANEL 2-8. BREAKER TO MATCH EXISTING PANEL CHARACTERISTICS.

9451.00 DOC ASP LUA A/C Replacement

406 N High St
Anamosa, Iowa 52205

IOWA DEPARTMENT OF ADMINISTRATIVE SERVICE



PROFESSIONAL SEAL

KEY PLAN

CONSTRUCTION MANAGER
MCSOUGH CONSTRUCTION
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REF. SCALE IN INCHES PROJECT #24006748.00

REVISIONS

No. Date Revision / Issue

SHEET INFORMATION

Issue **BID DOCUMENTS**
Date **2/28/2025**
Project # **24006748.00**
Drawn **JKG**
Checked **KLS**
Approved **TED**

SHEET TITLE

THIRD FLOOR PLAN - ELECTRICAL

SCALE

Scale: **1/8" = 1'-0"**

SHEET NUMBER

E203

24006748.00 2/13/2025 10:02:43 AM 9451.00 DOC ASP LUA A/C Replacement

EXISTING PANEL 2-5

ENCLOSURE: NEMA 1
FED FROM: 0/0P @
LOCATION: Room 271

SOLID NEUTRAL
GROUND BUS

MAIN: 800 MCB
VOLTS: 120/208 Wye
PHASE: 3
WIRE: 4
SCCR: 65 kA

NOTES:

CKT	LOAD DESCRIPTION	Load	POLES	FRAME	TRIP	TYPE	ACC.	WIRE AND RACEWAY	CIRCUIT KEY
1	PANEL 2-6 (PREVIOUSLY LABELED 4L1)	36 kVA	3	200	200	--	--	--	--
2	SPARE (PREVIOUSLY MCC)	0 kVA	3	200	200	--	--	--	--
3	PANEL 2-7 & 2-8 (PREV. LABELED 3L1 A & B)	42 kVA	3	200	200	--	--	--	--
4	SPARE	0 kVA	3	200	200	--	--	--	--
5	SPARE (PREVIOUSLY CU-E)	0 kVA	3	200	200	--	--	--	--
6	SPARE	0 kVA	3	200	200	--	--	--	--
7	SPARE	0 kVA	2	100	30	--	--	--	--
8	AHU-1	11.46 kVA	3	200	45			3#6 & 1#10 EGC IN 3/4" C.	*H
9	SPARE	0 kVA	2	100	30	--	--	--	--
10	RF-1	2.7 kVA	3	200	20			3#12 & 1#12 EGC IN 3/4" C.	*H
11	SPACE	--	2	--	--	--	--	--	--
12	CONDENSER UNIT 1	51.01 kVA	3	250	225			3#4/0 & 1#4 EGC IN 2" C.	*NB
13	PANEL 2-9	14 kVA	3	200	50	--	--	--	--
14	SPACE	--	1	--	--	--	--	--	--
15	SPACE	--	1	--	--	--	--	--	--
16	SPACE	--	1	--	--	--	--	--	--
17	SPACE	--	1	--	--	--	--	--	--
LOAD SUMMARY (INCLUDES ALL TUBS IN THIS PANEL)									
LOAD CLASSIFICATION		CONNECTED LOAD	DEMAND FACTOR		ESTIMATED DEMAND		TOTALS*		
HVAC		14.156 kVA	100.00%		14.156 kVA				
HVAC Cooling Only		51.014 kVA	100.00%		51.014 kVA		TOTAL CONNECTED LOAD: 157.17 kVA		
Spare		92 kVA	80.00%		73.6 kVA		TOTAL ESTIMATED DEMAND LOAD: 138.77 kVA		
							TOTAL CONNECTED AMPS: 436.26 A		
							TOTAL ESTIMATED DEMAND AMPS: 385.2		
							</		